

An enquiry concerning micro apartment  
acceptance

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## Abstract

This thesis will aim to shed light on policy measures which can be utilized to increase the willingness of individuals to live in micro apartments in order to stimulate compact building in large urban areas. These policy values will be related to, and derived from life values of individuals. Both existing literature on life values, housing and micro apartments were used, as well as conducting survey questionnaires amongst 200 young and elderly urbanites in the 4 largest Dutch cities. The life values that relate to micro apartments and its surroundings are: comfort, togetherness, money, leisure, universalism, freedom, security, power, and health. These values have been made concrete through policy applications that have been evaluated by using a survey questionnaire, where both descriptive and inferential statistics have been utilized to answer the following research question: how can municipalities increase willingness of young and elderly urbanites to live in micro apartments, using policies based on knowledge about behavioural choice making, in order to stimulate compact building in large urban areas? The results show that policies based on the life values money and freedom were the most prevalent in the sample, and the values comfort and togetherness least so. Furthermore it appeared that there are both significantly different results in the policy preferences amongst different age groups, as well as differences in preferences amongst the different cities. This means that there is additional value for municipalities to differentiate in their policies when a certain target population is envisioned. Municipalities should also take into account the differences per location, in order to maximize results.

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# Chapter 1: Introduction

## 1.1 Background

In the Netherlands, there is a large shortage of suitable living space, especially in the urban areas of the country, of about 100.000-140.000 residential units (RaboResearch - Economisch Onderzoek, 2018). Next to that, the problem can be specified further to a shortage of affordable living space. In the 4 biggest Dutch cities (Amsterdam, Rotterdam, The Hague and Utrecht) residential real estate prices have soared after 2014, and especially in the last year, where the average yearly increase in the purchase price of residences in these 4 cities is 13,3% (RaboResearch - Economisch Onderzoek, 2019). A “simple” answer would be to construct more residences, as economic theory suggest that *ceteris paribus*, an increase in supply will lead to a lower price until demand is met. But this is not always an option in large cities where space is a scarce good. Though, where there are problems, there are also solutions. When cities have to cope with a lack of space, and a large demand for residences, they could simply “sprawl” out, but we know from literature that this has many negative consequences in terms of congestion, air and water pollution, car dependency, etc (Erwing et al., 2002). A different perspective is to decrease the size of residences up to a point where they become so called “micro apartments”. These micro apartments have the benefit of being smaller, which allows real estate companies to construct more units on a lot, and thus reduce the cost per apartment, as the majority of the costs arise from the lot itself (Stern and Yager, 2018). It is important that there is a clear understanding what is meant with the term “micro apartment”. Although there is no standard definition, a working definition is a small studio apartment, typically less than 350 square feet (about 33 square meters), with a fully functioning and accessibility compliant kitchen and bathroom” (Whitlow et al. (2014).

## 1.2 Research problem

Traditionally, in the Netherlands too, the ideal picture with regards to residences is one alike to a terraced house, or preferably a detached house, with a garden (Giesecking et al., 2014). A micro apartment seems to be the complete opposite of this, yet the construction of micro apartments seems to be a very valid instrument for more compact building, which can help with the residence shortage. The problem is making people want or accept such a small residence as opposed to the aforementioned ideal. This is where the research proposal of this thesis comes in; the aim is to research how municipalities can stimulate the acceptance of micro apartments. The research question is thus as follows: “How can municipalities increase willingness of young and elderly urbanites to live in micro apartments, using policies based on knowledge about behavioural choice making, in order to stimulate compact building in large urban areas?”. To answer this main question, a few other things need to be researched, for which several sub-questions have been formulated:

- What behavioural factors influence housing preferences and how do we make these behavioural factors more concrete for policies?
- For whom should the municipality develop policies to increase willingness?
- How do young and elderly urbanites currently view micro apartments, and what are the main values that influence this choice?
- Is there a need for targeted policies; utilising policies based on age and based on location.

The first sub-question was asked due to the fact that consumer choice theory, including the purchase of a house, goes deeper than just cost (Jansen et al., 2011), as behavioural factors play a role in this as well. As the aim of this research project is to “translate” these factors into policies, so that municipalities can mitigate the aforementioned problem, policy applications are required.

Seeing that different groups of people have different needs and desires regarding housing (Coolen & Hoekstra, 2001; Foye, 2016) the second sub-question was asked to establish suitable groups of people for micro apartments. Then, once suitable groups have been found, their current views on micro apartments, combined with the main values that influence their perceived attractiveness of micro apartments, are revealed through survey questionnaires, so that municipalities can anticipate on these values with suitable policies. This makes sub-question 3 relevant. Finally, to give the municipalities even better policy advice, the established groups can be narrowed down even further (on location and age, as those are the categorical variables). This, again, is based on the same literature for sub-question 2 where housing preferences are not uniform across people.

### 1.3 Thesis outline

Where chapter 1 discusses the background and research problem of this thesis, chapter 2 will introduce the fundamental concepts that shape this research project by discussing the theoretical background, conceptual model and hypotheses. Furthermore, some of the most important concepts will be clarified to avoid any misinterpretation. This chapter also aims to answer sub-question 1, as this is a theory based question. Then, in chapter 3, the research methodology will be discussed with the method of data analysis, quality and some accompanying ethical considerations. Chapter 4 is where all the results will be analysed, while trying to find answers to the remaining sub-questions. These sub-questions will be shortly answered in chapter 5, while also reflecting on the results by placing them to previous research. The final chapter, 6, will reflect on the research process and give recommendations for future research.

## Chapter 2: Theoretical framework

### 2.1 Theoretical background

The leitmotiv throughout this thesis are the behavioural factors that influence consumer housing preferences and the policy applications of said behavioural factors. While existing theory relates both these topics separately to consumer preferences, this thesis will take the novel approach of translating the relevant behavioural factors into policy applications. The behavioural factor used here is the so called life value (Rokeach, 1973; Lindberg et al., 1989; Schwarz, 1992). Of course, this variable was not randomly selected as a basis to explain housing preferences. Life values are the main driving factor in consumer behaviour; as people intend to achieve such values in their lives (Gärling et al., 1985). Furthermore, this does not only apply for general consumer decision making, but also in consumer housing decisions (Stoeckler & Hasegava, 1984). Coolen and Hoekstra (2001) see values as the influencer of individual preference and choice preferences. This is also agreed upon and taken further by Schwarz (1994), who states that values are that which governs all individual actions, for they are seen as objectives which individuals need to attain. Schwarz (1994) sees values as “desirable trans situational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity”. These values are very similar to, but not the same as, the life values of Rokeach (1973), Lindberg et al. (1989) and Schwarz (1992). The differences are, for this thesis, arbitrary, seeing that both values are the driving factors and guiding principles behind an individual’s actions and choices, which is what is relevant here. In line of the rhetoric of Rokeach (1973), as well as an expression of how decisive these values are for consumer decision making, this thesis will also use the term “life values” when speaking of the behavioural factor that influences decision making. Using the life values obtained from the previously mentioned literature, the following values are deemed relevant when relating them to housing preferences:

- Comfort
- Togetherness
- Money
- Leisure
- Universalism
- Freedom
- Security
- Power

Now, aside from these values, the value “health” is a worthy addition to this thesis, as there has been a lot of research done on health related to housing, and concrete examples in fostering or improving health of residents. These concrete examples can, and will, like for the other life values, be made concrete into policies, which are explained under the policy section below.

### 2.1.1 Life values

The life value comfort was first mentioned Rokeach (1973), and refers to the degree in which one's life can be seen as "comfortable", or "prosperous". By this, prosperity, is not meant as in wealth, considering a separate value has been created for that. Rather, comfort should be defined here as a lack of hardship. Or things that make individuals happy, without them necessary being activities that take place in one's spare time.

Togetherness is the feeling of belonging, the feeling of unity when related to people (Rokeach, 1973; Lindberg et al. 1984). Schwarz (1992) defines this feeling of belonging even more explicit by stating that it is the feeling that "people care about me". Note that there is inherently a spatial component linked to this aspect, seeing as this feeling can be evoked by those around us, in the most literal sense of the word: neighbours.

Thirdly, the life value money refers to the wealth an individual possesses. This is physical wealth, not spiritual wealth. Lindberg et al. (1984), refer to it as "the ability to afford things". Which is a suitable definition for micro apartments. Here, money will thus be the level of material wealth an individual possesses, the ability to pay the rent of a micro apartments, or even to afford the purchase of one. As Rokeach (1973) has stated: money is often one of those life values that individuals prioritize in achieving. This depends on the sub-group, as (on average) certain populations such as young professionals put more emphasizes on this value than elderly people, seeing that young professionals have many wants and needs, for which money is often the key: a commodity which most young professionals have not had enough time to gather in abundance.

Lindberg et al. (1984) define leisure as "doing something meaningful in one's spare time". But this definition is highly abstract, as "meaningful" can be interpreted in a multitude of ways. Instead, the proposed definition here will be more in line with that of the "hedonism" value of Schwarz (1992), which is about the enjoyment of life. Combining these two will give the definition used here, where leisure is about the enjoyment of one's spare time. Enjoyment is different for every individual, but should be incorporated considering that a house, and its surroundings can contribute to this enjoyment.

Subsequently, the life value universalism puts the focus on the nature aspect of "unity", contrary to the value togetherness which emphasizes the people aspect of unity. Achieving unity with nature might seem almost mystical, or spiritual, which is partly true. The main papers that have been used up till now also included a spiritual or religious value. When looking at Rokeach (1973), the fitting definition would be "inner harmony". But from a policy application point of view, such a realisation is rather difficult when looking at micro apartments; would proximity to a church suffice, or maybe a meditation room in the apartment complex? Most applications are meant for religious people. Yet, spirituality, and unity are not values strictly for religious individuals. Using part of the definition that Bougouffa and Permana (2017) use to describe a "spiritual life", it is possible to combine unity and spirituality with a concrete policy application that works for both religious and non-religious people alike. The important part is "trying to deal consciously with the environment". Here, the environment is not the "surroundings" of an individual in a general sense, such as the built environment, but rather the natural surroundings of an individual.

Schwarz (1992) sees freedom as a "motivational type" that people chase in order to achieve self-direction. The two concepts are inherently intertwined, and Schwarz sees self-direction as intendent thought and action. Rokeach (1973) notes that freedom refers to the freedom of choice, without restrictions. Considering freedom is viewed as a very important value for well-

being in general (Rokeach, 1973), and the fact that there are ample policy applications related to micro apartments available, this life value was included.

Security is one of those life values that is viewed as the most basic of all (Schwarz, 1992). In this case, security is defined in both the individual way, but also as group based security. While actual security is important, in this thesis, the sense of security will be used, as this coincides best with the perceptions of an individual. This is also how Li (2010) defined security in his research when relating it to housing in Shanghai. After all, a neighbourhood can be factually very secure, but if said neighbourhood is not perceived as such, the overall assessment of liveability will be impacted negatively because of the low perceived security.

When using the word power, one does not immediately think of micro apartments, quite the opposite. People associate power with big and strong, not with something that has the word “micro” in it. Yet, power is a life value that is relevant for micro apartments. According to Schwarz (1992), power is a value that a group accepts in order to justify the injustices regarding status differentiation, and the dominance/submission role that different people take in society.

Finally, health, the newly proposed life value in this thesis. In this case, health refers to an individual’s physical health. Even though there are also relations between the apartment and one’s mental health (Bougouffa & Permana, 2017), the mental aspects have been covered mainly through the other life values. Since this article does also briefly state the linkage between physical health and housing, as a factor for one’s quality of life, we can borrow the definition for physical health from here. The main idea is that physical health, or simply health in this thesis, refers to the absence of long term physical health problems, the (physical) ability to exercise and the (physical) ability to take part in leisure activities. Though, there is still partly a mental aspect to it, as feeling calm, feeling active and feeling rested. These feelings are in part fuelled by the physical state of individuals, which makes them relevant to add to the definition.

### 2.1.2 Policies

In order to answer the main research question, the various life values need to be made concrete into various policies. The first life value discussed above was the value “comfort”. For this value, two policies were chosen; a shared laundry room and the possibility to keep pets. The reasoning behind using a shared laundry room as a comfort value is that it saves space in the apartment, which is the main variable associated with comfort (Lindberg et al., 1989). While individuals can also see this as a negative influence on their comfort, as they have to walk to the laundry rooms and (usually) pay in order to use the washing machine/dryer. Though, according to Whitlow et al. (2014), having a shared laundry room is the main community related amenity that people take into consideration when renting an apartment (is a positive way). Using pets as a policy choice is one that is highly intertwined with housing. Especially in apartments, pets are a highly debated choice seeing that not everyone is fond of them. Yet, there has been empirical research that there are significant benefits to pet ownership (and thus facilitating ownership) on mental health. They can provide both companionship, comfort and can cheer people up through their perceived happiness (Cohen, 2002). Despite the fact that not everyone likes pets, and people can show this in the survey, having a policy that allows for pets in the apartment complex does not mean that residents need to own a pet, it is merely an option.

For togetherness, small scale living and a shared living room were selected, in order to avoid urban alienation that the city brings with it (Wirth, 1938). Furthermore, Li (2009) mentions in his research on community attachment and housing choice the importance of level of trust among neighbours. In his results he shows that a sense of belonging (like the definition used here), was one of the main reasons for people to remain living in a certain neighbourhood. A sense of

belonging is invaluable for residential bonding with the housing community, something that is mainly brought about by these policies, which foster socialisation.

Affordability was also included as a variable, to reflect the money life value in Lindberg et al. (1989) and Schwarz (1994). Affordability reflects the affordability of the object in question: micro apartments. Affordability is a variable included in a majority of the research regarding housing (Jansen et al., 2011), as affordability is usually the main limiting factor in people's housing options. Because of the importance of affordability, it had to be included in the model.

Leisure, as has been discussed is about the enjoyment of one's spare time. While everyone has different ways of doing this, and there is not one universal policy application that can capture a feeling of enjoyment for every single person, or even every single potential micro apartment resident, the policy application chosen was meant to enable the life value leisure for as many people as possible. The policy application in this case is the inclusion of stores in the apartment complex. This way, people can choose (purchase) their own form of leisure. The choice for stores within the apartment complex came from Whitlow et al. (2018), as this was a highly ranked variable for individuals when making micro apartment renting decisions.

Regarding unity related policies for micro apartments; on a small scale, this can be realized by creating a communal garden, where residents can feel at peace with their "own" piece of nature. By tending to, or even being in, the garden people can come at ease, or find inner peace amongst themselves (Pretty, 2014). For this policy, it is important that the residents can interact with the garden to maximise the effect of oneness with nature. By sharing maintenance for the garden, residents can positively influence the life value togetherness as well, assuming that multiple people are present in and maintain the garden at a certain point in time. The main benefit of using this policy measure is to allow for the realisation of the spiritual needs of an individual (Pretty, 2014), without it being limited to a certain religion. Therefore, this policy is preferred over, for example, an inter-apartment complex church.

Where many "regular" houses have individual garages (either attached to the house or not), where people can store their cars, this is not an option for micro apartments. If the real estate developer intends to support car usage, a common solution for apartment buildings is either a parking lot adjacent to the complex, or an underground parking garage. Considering open space is a very scarce good in large cities, having large parking lots in the open are often a very costly amenity. Instead, here, car access will be realised through underground parking garages, underneath the apartment complex. Moreover, it should be noted that private parking places are one of the most frequently utilised dwelling features in housing preferences research (Jansen et al., 2011). Similarly to the research of Lindberg et al. (1989), car usage, as well as proximity to public transport will be used as policy measures to embody the freedom life value, as they reflect the spatial interpretation of freedom best. Finally, the last policy that relates to freedom is commuting distance. Both Lindberg et al. (1989) and Whitlow et al. (2014) used this variable in their articles. As a shorter commuting distance results in both freedom in transportation choice (walk, or cycle to work instead of drive), as well as more free time, this third policy application was chosen.

Security is a life value that can be materialised in many different ways, even when relating to micro apartments (Whitlow et al., 2018). Therefore, a more abstract policy measure was chosen to allow municipalities to fill in the exact specifics for themselves, depending on the requirements regarding security for specific neighbourhoods. The policy here is simply called "a safe environment", which could be seen as safe from crime, but also safe from traffic accidents.

Power is (also) achieved by increasing, or maintaining, one's social status. In the case of housing, this is often researched at a neighbourhood level, which is also the level at which the policy is implemented in this thesis; the reputation of a neighbourhood. The main way to allow for an increase in social status on a neighbourhood scale is to make the neighbourhood itself the status symbol. Examples of status symbol neighbourhoods in the Netherlands are the Grachtengordel in Amsterdam due to its fame and expensive real estate. The main expectation here is that individuals do not place as much value on positive social status a neighbourhood gives, but do experience strong negative feelings when the neighbourhood is perceived as "bad" by other people, considering individuals want to maintain social status (Schwarz, 1992). Finally, it should be noted that the neighbourhood as a status symbol has nothing to do with community/place attachment here; the relevance is put on the social status one receives, or perceives to receive from living in a certain neighbourhood.

For the policy measure related to health, this thesis looks at Lee et al (2012), who conducted a survey in the Seoul area, where urbanites were surveyed on potential spatial design measurements that can improve the health of people who live in apartments. The most essential (according to participants) variable is having a non-toxic environment. Non-toxic environments are largely not within the scope of municipalities. Of course, municipalities can reduce the amount of non-electric cars within the city centre, but results will be small in areas that are already seen as "clean". However, another way to stimulate non-toxic environments, as well as to stimulate general health of individuals, is to live within green surroundings, a small urban piece of nature. Hoffman et al. (2017) confirmed the beneficial effects of nature on people's health. Concrete policy applications like green roofs, or even green patches can reduce environmental hazards such as the urban heat island effect, and "filter" the air around us.

## 2.2 Conceptual model

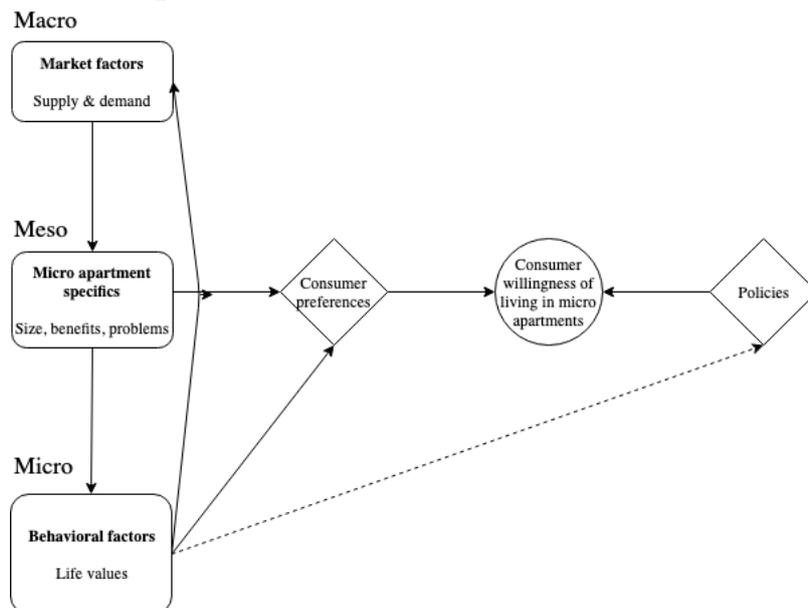


Figure 1: Conceptual model (own source)

Figure 1 displays a visualisation of the conceptual model that this thesis will be based on. There are three levels on which the micro apartment willingness policies should be based. First of is the macro level, which is about supply and demand on the housing market. These so called “market factors” influence the meso level consisting of the micro apartment specifics. On the lowest level life values come into play. These life values, together with the micro apartment specifics and the market factors, in turn make for consumer preferences with regards to micro apartments. These consumer preferences directly influence the willingness of the consumer to live in micro apartments. When municipalities aim to draw more people to micro apartments, they have the option to make use of policies. These policies also directly influence consumer preferences. Finally, the dotted line between the micro level and the policies is a possibility, when the municipalities start using the life value based policies proposed here, or create other life value based policies. This thesis will focus on the life values (micro level), and how they relate to policies, which can be used to influence consumer willingness.

## 2.3 Hypotheses

The main hypothesis that will be tested in this thesis are the following:

- The main values that influence individuals willingness to live in micro apartment are money and comfort.
- There is a need for targeted policies, but only age based policies.

This hypotheses are based on the results stated in Lindberg et al. (1989) and Rokeach (1973), where individuals revealed the most important life values regarding residential choice and life values in general, categorized by various sub-populations respectively.

## Chapter 3: Methodology

### 3.1 Research method

Aside from literature research, most relevant data for this thesis was collected by administering a survey, where quantitative data was collected and analysed using statistical software (SPSS in this case), in order to discover relationships amongst sub-groups in certain policies and their corresponding values.

The survey was administered to residents of the 4 biggest cities in the Netherlands: Amsterdam, Rotterdam, The Hague and Utrecht in order to get an overview of individuals willingness on micro apartments and how to improve this. This choice was made for two reasons, both relating to the feasibility of micro apartments: these are the 4 cities where residential real estate prices have grown the most, and considering they are the biggest Dutch cities, micro apartment construction is a lot more feasible than in small towns (Iglesias, 2014). The exact locations of where the surveys took place can be found in Appendix A. The city centres were avoided during the search for survey participants due to the increased likelihood of encountering tourists or people from other parts of the country. Using the information stated in 4.1, the research population was narrowed down to young professionals (whether or not still studying) ranging in age from about 20-30 years old, as well as the elderly starting from 60+ years old. Selection took place mainly based on outward appearances, due to this being the least intrusive method for determining someone's age. Because of the varied schedules of the groups: studying, working, or doing neither, data was gathered on a large variety of time slots, but also days. Most professionals and students are busy during the day, so they were surveyed either during the weekend, or in the evening. The survey was conducted on paper. Finally, as for the reasoning why this method was chosen instead of other techniques, most notably so called "laddering"; surveys have the benefits of being suitable for extensive research (Clifford, 2016), which is the type of research suitable when enquiring the attitude of urbanites towards micro apartments. In fact, surveys are an excellent way to capture people's attitudes, perceptions and behaviours (Clifford, 2016). The author mentions this: "Survey research is particularly useful for eliciting people's attitudes and opinions about social, political and environmental issues such as neighbourhood quality of life, or environmental problems and risks. This style of research is also valuable for finding out about complex behaviours and social interactions". Something to note with survey research is that there is a knowledge expectation of the researcher: he or she needs to know the research problem, important theories (to design the questionnaire) and make sure the questionnaire remains accessible.

### 3.2 Data analysis

After all the surveys had been administered, the gathered data was entered into an Excel spreadsheet to both give a structured and easy to read overview, as well as to make it possible to conduct statistical tests on the data using SPSS. The gathered survey data answers sub-question 3 and 4. Whereas literature research answers sub-question 1 and 2. While not all questions included in the survey were used in the analysis, the majority of them were. It should be noted that survey questions 4 and 5. were mainly included as a potential back up, but seeing that during the research process the focus of this thesis became more narrow, said questions were not used further.

### 3.3 Data quality

For the data itself, no missing values were present. But, there were some ambiguities with the exact Likert value participants gave to certain policy measures, which could slightly alter the results. This point will be elaborated on in 6.1. The data was very usable for this research project, even though question 4 and 5 were not used during the analysis. When copying the ages of each household member from written text to a digital Excel format, the program sometimes registered years as dates instead. Yet, once the file was used in SPSS, this problem was no longer present.

### 3.4 Ethical considerations

During the data collection, the researcher has to be aware of its own positionality. This meant trying to avoid steering participants towards a particular answer for a certain policy measure. Aside from giving the occasional explanation (when asked by the participant), the participant could fill in the questionnaire without interruption. Furthermore, when making the questionnaire, very careful consideration had to be taken regarding the choice of words. The questions were written in a very neutral way, again, to avoid steering participants to a certain answer. While administering the questionnaires, a letter from the thesis supervisor was brought along, which explained the idea behind the survey, and provided the contact information of the thesis supervisor in case participants had any questions. Once the data was gathered and digitalized, it was stored on a hard drive in order to avoid leakage, even though it did not contain confidential data. Once the thesis has been approved of, and graded, the dataset itself will be deleted. There is no intention, or even possibility, to share the results of this research with the participants, considering no contact information was exchanged, nor was this needed for the type of research conducted.

## Chapter 4: Results

### 4.1 Micro apartments for who?

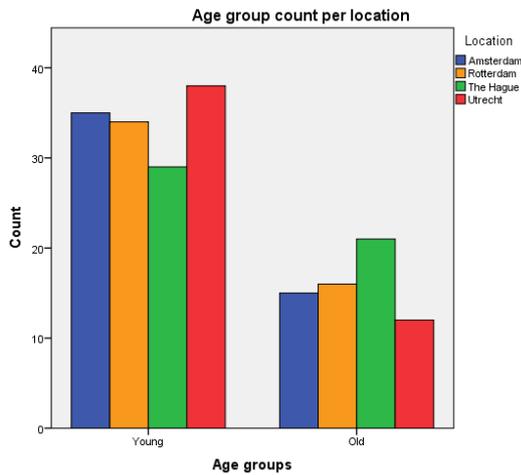
As has been stated earlier in this thesis, the most logical potential habitants of micro apartments are individuals that make up small households, so either young professionals/recent graduates, and elderly people, who do not have children. Whitlow et al. (2014), confirm this by noting that that main target group for micro apartments are single young professionals (mostly under the age of 27). Yet, if the intention is to stimulate compact building, the target group should not be limited to single young professionals, but should also include other groups that may be potentially interested in, or suitable for living in a micro apartment. Especially, considering elderly are (on average) more satisfied by living in small apartments than young people are (James, 2008). Residential satisfaction starts to increase once tenants pass middle age.

When taking a worldwide perspective: the micro apartments in Hong Kong consist of mostly 2 person households, but also with a significant proportion of single person households (Lau and Wei, 2018). Though, just like what Whitlow et al., (2014) stated, in Hong Kong too, the largest age group are 30-34 year olds. When adding up the groups that would be classified as “elderly” in this research, only 2,94% of the residents interview where 60 years or older. Iglesias (2014) briefly mentions that micro apartments are marketed towards people in their 20s and 30s, but are perfectly suitable for the elderly as well.

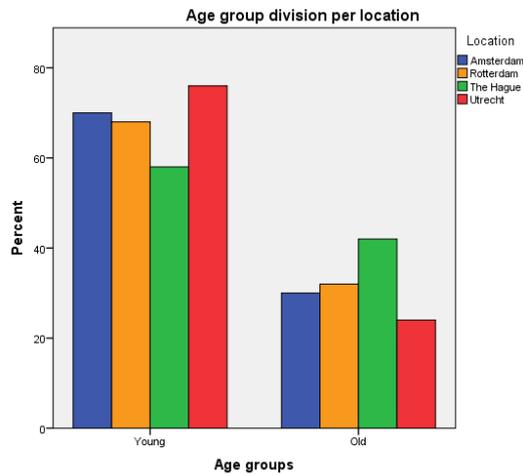
Still, the fact that current micro apartment occupants tend to be younger should not be a reason to exclude elderly people can be suited to their housing needs and preferences, something that will be analysed in the next sub-question.

### 4.2 Current views and values

To get a reliable representation of young and elderly urbanites, the dataset consists of people, selected using the method described in 3.1 where  $N = 200$ . There are 50 participants per city. The dataset consists of no missing values. The mean household size was 1,61 with a range of 3 and a standard deviation of 0,671. Even though the aim was to incorporate only singles and couples, some people had (young) children. Though, because of the low amount of “large” households, and because of the fact that the mean household size is within the envisioned range, these households have not been excluded from the analysis. Figures 2 and 3 give a sense of how the age groups are distributed per city, as those are the grouping variables in this research. The reasoning behind the usage of age groups instead of median household age is related to the statistical method that is used during this research. Age groups were used in figures 2 and 3 for consistency. The specifics behind the age groups can be found below.



**Figure 2:** Number of young and old households per location.



**Figure 3:** Percentage young and old households per location.

The relevant descriptive statistics regarding the policies with the lowest median can be found in table 1:

Variable	Median	Standard deviation
Shared laundry room	1	1,001
Shared living room	1	0,748

**Table 1:** Descriptive statistics lowest median

Whereas the relevant descriptive statistics regarding the policies with the highest median can be found in table 2:

Variable	Median	Standard deviation
Affordability	4	0,994
Parking garage	4	1,201
Commuting distance	4	0,901

**Table 2:** Descriptive statistics highest median

Ergo, on average, not categorizing by age group or location, the policies that urbanites favoured most were micro apartment affordability, a parking garage and a favourable commuting distance. On the other hand, the policies least favoured were the shared laundry room and the shared living room.

#### 4.2.1 Policy analysis

When comparing the results with existing literature, it should be noted that there are some large similarities. According to Jones et al. (2004), Jansen et al. (2011) and Li (2011), the affordability of a house is one of the biggest factors that determine the willingness of individuals to live in said house. This notion seems to be one of the most important factors for willingness to live in micro apartments as well. This reflects the importance of the money life value, which has been confirmed by Lindberg et al (1984). In New York, policies have already been deployed to increase supply of affordable micro apartments (Infranca, 2013; Stern and Yager, 2018) and subsequently demand for micro apartments. Whitlow et al. (2014) even note that the affordability of a micro apartment is the main decision factor in renewing rental contracts (by renters), and note that it is also the main factor in deciding to rent a micro apartment over a regular apartment, given that the micro apartment is cheaper.

Next up is the parking garage. While this variable was deemed important by individuals in making micro apartments more attractive, practice suggests two things. One of them is the relative low importance placed upon parking spaces during lease: 32% marked having a private parking space as important (Whitlow et al., 2014). Remarkably, when this question was asked in a rent scenario, 72% marked private parking space as an important amenity. In this research, there is no clear distinction between purchasing/renting/leasing a micro apartment, as it was about the willingness to live inside of one. Therefore, the comparison might be difficult to make.

Considering that the favourable commuting distance was one of the most highly valued policies that would make micro apartments more attractive was a bit surprising. Whitlow et al. (2014) researched the micro unit over conventional unit trade off, and found that only 19% of the respondents would pick a shorter commuting distance as a 1<sup>st</sup> or 2<sup>nd</sup> mention. What is even more surprising is that Whitlow et al. (2014) conducted their research in the USA, where commuting distances are, on average, longer than in the Netherlands. Therefore, one would expect there to be diminishing marginal returns with regards to lowering the commuting distance in the Dutch case. However, this was not the case for this sample. The results specifically for micro apartments that Whitlow et al. (2014) presented were in line with those of Lindberg et al. (1989) for apartments in general. While location was a valued “housing attribute”, decreasing the commuting distance did little to improve the predictability of their model. Most improvements from the model regarding the location attribute came from a shorter distance to schools and downtown. It should be noted that the surveyed locations in this research already had a very favourable distance to both schools and downtown, and therefore commuting distance might be valued higher here. Finally, in the Shanghai case researched by Li (2011), which looking at housing choice, proximity to work was ranked highly by upper middle class individuals.

Having a shared laundry room also showed an effect opposite of what existing literature mentions. According to Whitlow et al. (2014), 83% of renters found it important or very important to have a shared laundry room within the micro apartment complex when making rental decisions.

#### 4.2.2 Age and micro apartments

To establish whether the age group has an influence on the opinion regarding suitability to live in a micro apartment, a Chi-squared test was used, where the age group (categorical) and the ordinal variable related to participant’s initial view of the major drawback of a micro apartment (size), questioned by stating “A micro apartment (< 33m<sup>2</sup>) is too small to fulfil my housing needs.” were tested for significance. The test results can be found in table 3 below:

Variable	Value	Df	Asymptotic significance (2-sided)
Micro apartment too small	4,610	4	0,330

**Table 3:** Significant Chi-squared test results for micro apartments being too small to fulfil housing needs \* age groups.

These results lead to the conclusion that the relationship between these two variables was not significant. Thus, young people were no more likely to view the size of a micro apartment as a hinder to live in a micro apartment than elderly people did. This conclusion is the opposite of what existing literature claims (Iglesias, 2014; Whitlow et al., 2014; Lau & Wei, 2018), as they do mention that size forms a problem for elderly people.

Finally, the respondents also had the option to impose additional amenities that would make living in a micro apartment more attractive to them. The inclusion of a childcare centre was the most popular “new” amenity with 12 mentions (all of which were categorized under the young age group). Other mentions were a fitness room (8 mentions), a playground (7 mentions) and a fire place in the apartment itself (3 mentions).

### 4.3 Targeted policies

This section will discuss the question whether or not there is a need for age or location based policies. First off, the dataset contains information of the ages of household members of the surveyed individual, as well as the median household age (calculated after the surveys took place). Seeing the purchase of a house is something that involves the entire household, the median household age was taken as the age variable. Even though this median household variable is technically a ratio variable, the decision was made to recode the variable into two different categories, young and old. The method used here was thus to utilise the median household age and set a certain threshold, which functioned as the dividing “line” between the young and the old bracket. If the median household age was  $\leq 40$  the value label was “Young”, and if the median household age was  $> 40$ , the value label was “Old”. This was done because while it is perfectly fine to use a ratio variable as an independent variable, the data was distributed in an odd way; the median household ages were either on the lower end of the spectrum, or on the higher end of the spectrum, nothing in between. Which makes sense, considering the participants were selected based on their age. This thesis aimed to survey only young professionals or elderly people. With this in mind, it makes more sense to subdivide the variable into two different categories. Subsequently, the independent variables had to be chosen, which in this case were the policy measures aimed to make micro apartments more attractive, which were all ordinal variables due to the usage of the Likert scale. Since all variables are categorical, and the independent variable is the grouping variable, the choice for a Chi-squared test is the logical choice. The advantage of using a Chi-squared test is that not only it establishes whether or not a significant difference exists, but also which categories amount for the differences found (McHugh, 2013). The main downside here is that the Chi-squared test does not analyse all the variables at once, but 12 (one for each dependent variable) separate Chi-squared tests had to be used to analyse the data in the way that is intended here. The significant results can be found in table 4 below:

Variable	Value	Df	Asymptotic significance (2-sided)	Age group that values the dependent variable more
Affordability	37,748	4	0,000	Young
Green surroundings	52,267	4	0,000	Old
Private garden	55,732	4	0,000	Old
Small scale living	91,071	4	0,000	Old
Safe environment	41,591	3	0,000	Old
Commuting distance	16,641	3	0,001	Young

**Table 4:** Significant Chi-squared test results where age group is the independent variable.

### 4.3.1 Age policy analysis

These results lead various conclusions. First off, young people were more likely to value affordability than elderly people. These differences could be explained by the fact that the young people interviewed have little work experience (often recent graduates), and thus had little time to gather wealth. Affordability, and correspondingly the life value money, has two sides to it; not only are more affordable houses generally more attractive, no matter the wealth of an individual, (Li, 2011), but affordability is also an exclusion factor; when a household simply does not have enough money, a house, and also a micro apartment, is simply not an option for individuals where the rent, or purchasing price exceeds their budget. This means that micro apartments which people view as “expensive” might not even register, despite the many other possible advantages that this apartment would offer. Secondly, elderly people were more likely to value green surroundings than young people. While various explanations are possible, it could simply be that elderly people have more free time (no job), and thus are more able to enjoy their surroundings, which makes them value green surroundings more than the young age group. Thirdly, elderly people were more likely to value a private garden than young people. Seeing that private gardens are the policy application of universalism, the same difference is observed by Rokeach (1973), where people in their 30’s reported a significantly lower median value for “inner harmony” in their value systems (life values aggregated per individual) than people in their 60’s and 70’s. Fourthly, elderly people were more likely to value small scale living than young people. This implies that elderly people might have a bigger need for additional relationships, or more true to the definition of the relevant life value (togetherness): the feeling that people care about them. The reasoning here is that elderly people do not have a job and their partner might have passed away. Two factors that reduce the amount of socialization of elderly people. Fifthly, elderly people were more likely to value a safe environment than young people. This could mean that elderly people feel more vulnerable, and desire an environment where they are less likely to be mugged or experience other forms of harm. Seeing that elderly people experience physical impairments more often than young people, this is not unlikely. Finally, young people were more likely to value a shorter commuting distance than elderly people. This conclusion is not really a surprise, as a significant portion of the elderly age group are past the age of retiring, and do no longer have a job (assuming people do not work past the legal retirement age). Having a favourable commuting distance would not make living in a micro apartment more attractive, seeing that there is no distance to commute.

### 4.3.2 Location policy analysis

Similarly, to establish whether location based policies would provide additional value, the Chi-squared test was used again, seeing that the same variable types were used, even though the independent variable changed from age group to location. However, this does not matter as the variable type remains the same. The significant results can be found in table 5 below:

Variable	Value	Df	Asymptotic significance (2-sided)
Shared laundry room	25,767	12	0,012
Shared living room	30,694	12	0,002
Stores in the apartment complex	24,260	12	0,019

**Table 5:** Significant Chi-squared test results where location is the independent variable.

These results lead to the conclusions that people from Utrecht were most likely to value having a shared laundry room. Secondly, that people from The Hague were most likely to value having a shared living room. And finally that people from Amsterdam were most likely to value having stores in the apartment complex. These results are highly surprising, as there seems to be no logical relationship between the dependent variable and the location. Nor is there any scientific literature to relate these results to. To establish whether these results are caused by the differences in age groups amongst the cities, an ordinal logistic regression could have been used. Yet, the reasoning behind not doing so lies in the lack of strength and predicting power that the model would have with this dataset, considering there are only two potential independent variables: age group and location.

## Chapter 5: Discussion and conclusion

Four different sub-questions have been utilised in order to answer the main research question of this thesis. The answers to these questions will be shortly stated here both as a service to the reader, as well as to allow for the results to be linked to the conceptual model (figure 1).

The first sub-question is a multi-layered question, where the answer consists of multiple parts: first off, life values have been selected as the behavioural factors that influence housing preferences. These values are: comfort, togetherness, money, leisure, universalism, freedom, security, power and health. By using existing literature on life values, consumer preferences, human psychology and housing preference research, these values were made into possible policy applications. Subsequently, to answer the second sub-question, literature was analysed, where the outcomes show that micro apartments are suitable for both young professionals, as well as for elderly people. The third sub-question marks the beginning of the usage of the collected data, by using descriptive and inferential statistics, and is another multi-layered question. The results show that neither age group has a significantly different attitude towards the size of micro apartments being a problem. The life values that appeared most important for micro apartment preferences are: money and freedom. Finally, to answer sub-question 4; there is a need for both age based policies, as well as location based policies by municipalities if their desire is to increase the willingness of individuals to live in micro apartments.

This thesis focussed on the micro level of the conceptual model (figure 1). Yet, seeing that the model is made up of two other levels that should influence consumer preferences, which in turn affect the willingness of people to live in micro apartments. Should municipalities implement the proposed policies, the willingness to live in micro apartments will increase. There is a lack of concrete examples, but, as has been stated before, in New York affordability policies were successfully implemented to increase micro apartment supply and demand (Infranca, 2013; Stern and Yager, 2018). This is also the policy measure that this thesis recommends, should the municipality limit itself to implementation of one policy, as money emerged as the primary life value that influenced willingness to live in micro apartments. Seeing that the young age group is more likely to value affordability, this policy measurement would prove especially effective if the municipality want the micro apartment residents to be young. Such a measure can be combined with another measure by granting real estate companies the permit to construct micro apartment complexes amidst, or close to, areas that have a high job density, so that the policy of “favourable commuting distance” is implemented, which is also more likely to be valued by the young age group. There are more combinations possible, as long as age group and location are taken into account, wherever relevant. This way municipalities can maximise the effects of the policy measures.

Returning to the conceptual model, the utilisation of policy measures that have a positive effect on the willingness of individuals to live in micro apartments, will over time change the macro level of the model: supply and demand for micro apartments. While policies other than affordability might not directly alter supply, if real estate developers notice the increased willingness of individuals to live in micro apartments, the developers can see micro apartment construction as more feasible, which would increase supply. According to the model, this should in turn affect the micro apartment specifics. While this certainly could happen, this thesis showed that the policy measures themselves directly altered the micro apartment specifics.

## Chapter 6: Reflection and recommendation

### 6.1 Reflection on the research process

During the research project, some difficulties were encountered that should be prevented in future research. First off was the misinterpretation of the Likert scale by the research participants. Some participants thought that certain measures do not positively contribute to the attractiveness of micro apartments, and gave the policy application a score of 1 or 2 (strongly disagree and disagree respectively). On the other hand, other participants who felt the same way about the policy's impact on micro apartment attractiveness gave the policy a 3 (neutral). There is also a second problem associated with the Likert scale in the form of an ambiguity. Some policies add negative value (pets if allergic, or stores and noise pollution), while other policies do not have any negative consequences would they be implemented. This causes these policy measures to be systematically biased versus those policy measures with potential negative consequences. Finally, it is possible that sub-optimal policies were used as a measure for a certain value, as people might still strongly feel for a specific value, but not as much for that individual policy. Yet, all policy measurements went through a thorough selection procedure where various sources of academic literature have been used to identify how well a specific policy reflects a certain life value. Criteria used were prevalence in literature, desirability, and impact on life values.

### 6.2 Recommendations for further research

This research project tried to, through using several policy measures, discover how municipalities could improve micro apartment acceptance. While a number of these policies can help this goal, only a relatively small amount of policies were investigated. For further research, more policies should be included in the evaluation, to get a more complete picture of what works and what does not. Furthermore, using an AHP (Analytic Hierarchy Process) to analyse consumer preferences regarding micro apartments could prove to be useful in order to establish hierarchies in their decision making and figure out what values and policies could really persuade individuals to live in a micro apartment. The downside is that these are individual based, and aggregating results will be difficult when the desire is to establish overall effective policies. Finally, feedback from policy makers is something that could add a lot of value to this type of research with regards to the possible implementation and feasibility of the most appealing policies.

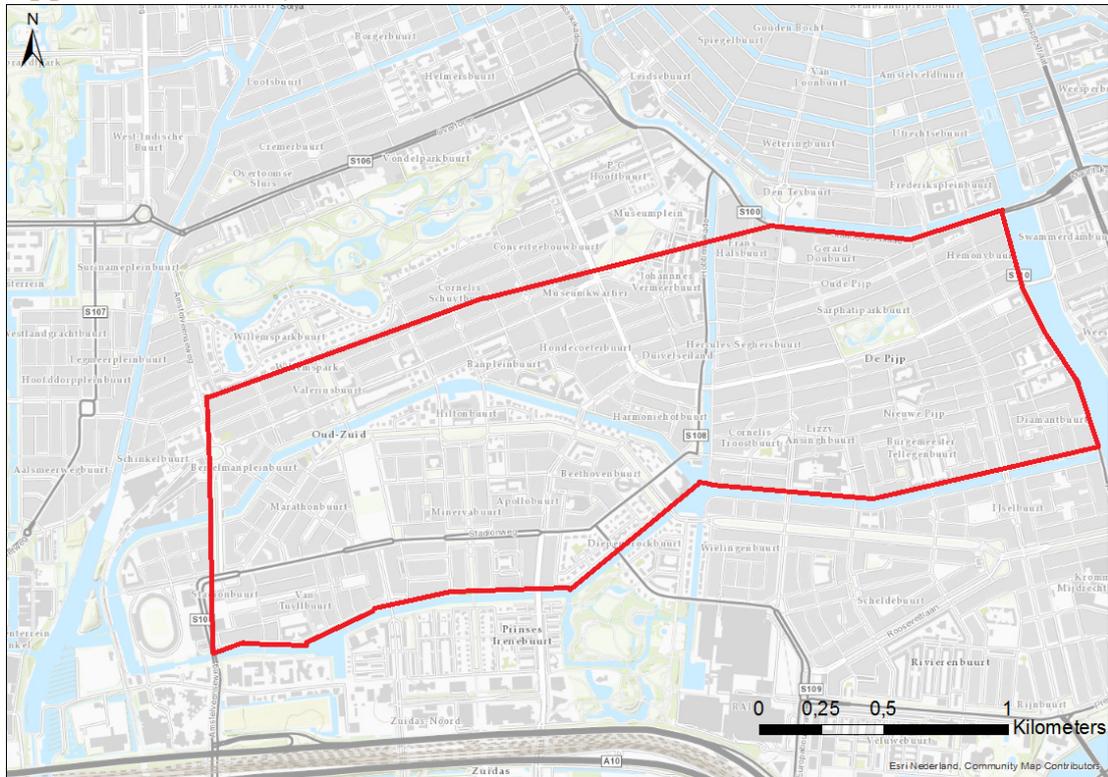
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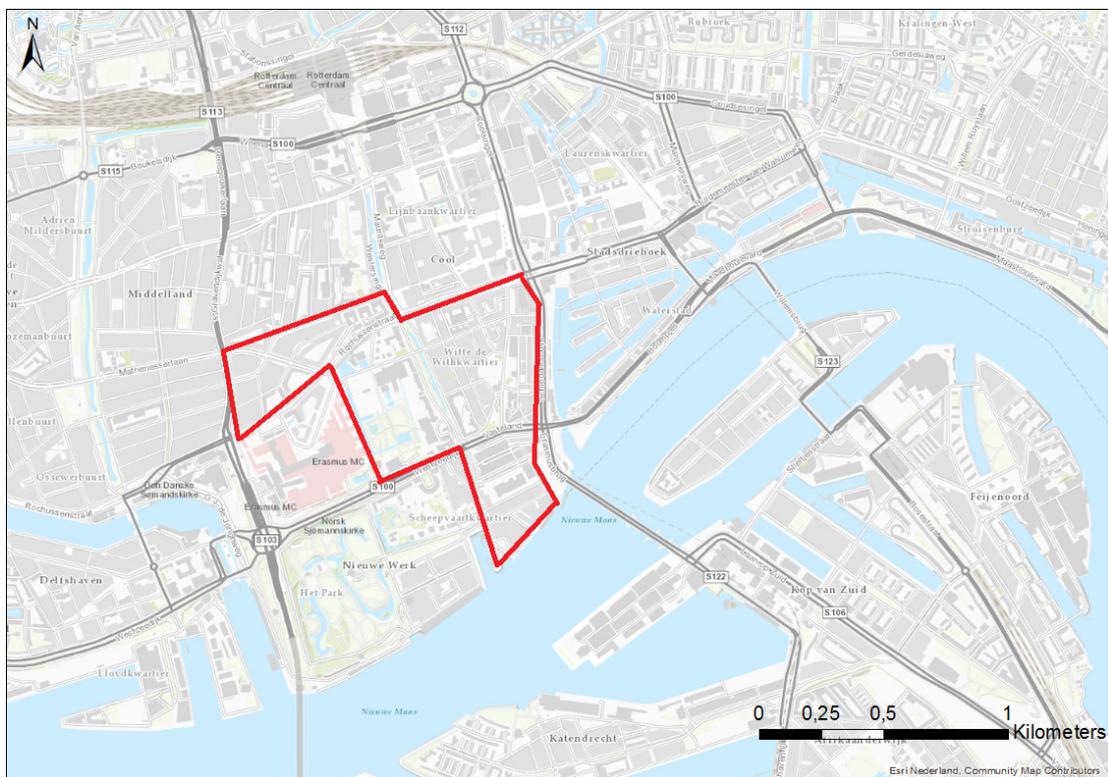
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# Appendices

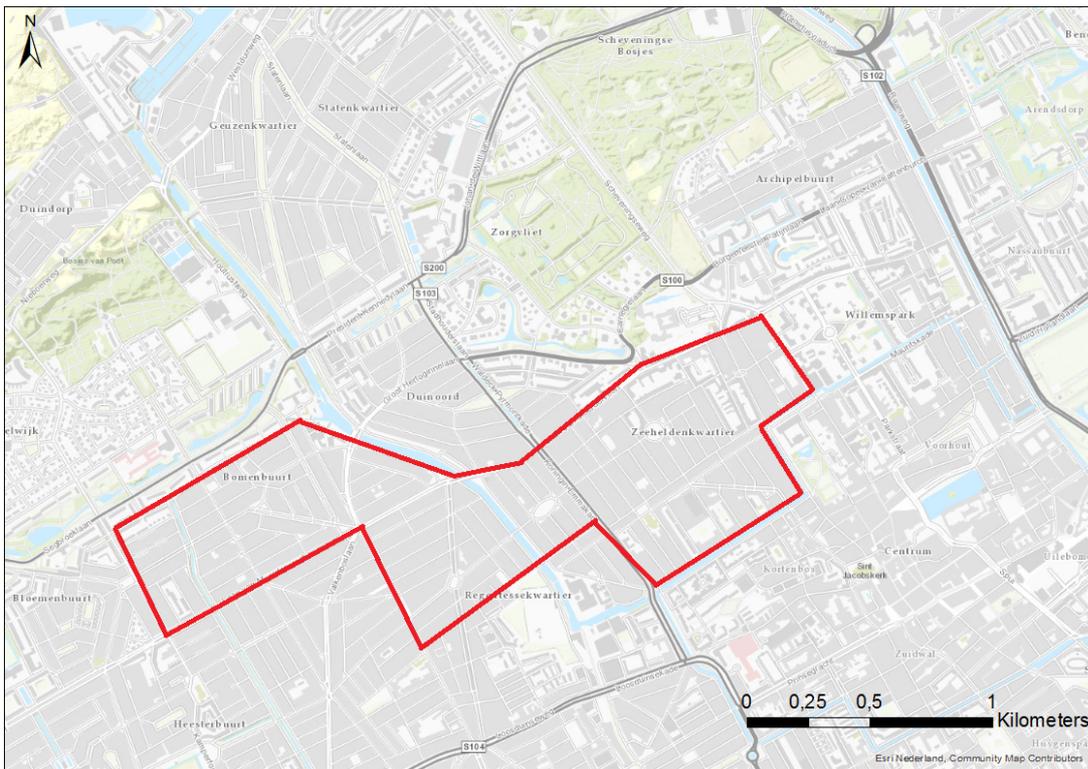
## Appendix A: Survey locations



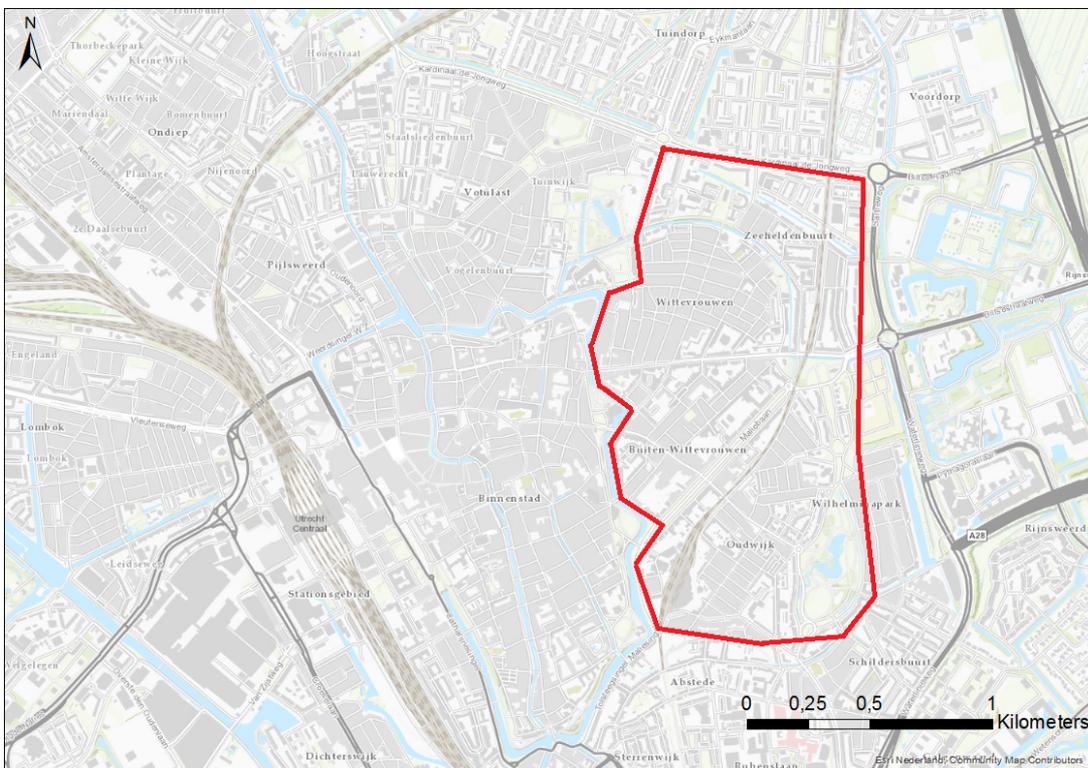
Amsterdam



Rotterdam



The Hague



Utrecht

## Appendix B: Survey questionnaire

The questionnaire will use a 5-level Likert scale where the division is as follows:

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Questions/statements (in Dutch, since I expect the participants to be Dutch. If I do encounter non Dutch-speaking urbanites, I will ask them the same questions in English) :

1. Uit hoeveel mensen bestaat uw huishouden?  
*How many people make up your household?*
2. Wat is de leeftijd van de leden van uw huishouden?  
*What is the age of the people in your household?*
3. Een micro appartement (< 33m<sup>2</sup>: afmetingen trailer vrachtwagen) is te klein om aan mijn woonbehoefte te voldoen.  
*A micro apartment (< 33m<sup>2</sup>) is too small to fulfill my housing needs.*
4. Ik hecht meer waarde aan de kwaliteit van mijn woning dan de afmetingen hiervan.  
*I value the quality of my home more than its size.*
5. Ik hecht meer waarde aan de kwaliteit van mijn woonomgeving dan de afmetingen van mijn woning.  
*I value the quality of my living environment more than the size of my home.*
6. De volgende voorzieningen maken het wonen in een micro appartement acceptabeler voor mij (zelfde Likert schaal als met de voorgaande vragen) :
  - a. Gedeelte wasruimte binnen het appartementencomplex
  - b. Gedeelte “woonkamer” binnen het appartementencomplex
  - c. Betaalbaarheid
  - d. Winkels binnen het appartementencomplex
  - e. Groenvoorzieningen
  - f. Privé tuin (alleen toegankelijk voor mensen die binnen het complex wonen)
  - g. Kleinschalig wonen
  - h. Nabijheid treinstation of andere vormen van ov
  - i. Veilige omgeving
  - j. Mogelijkheid om huisdieren te houden en deze uit te laten.
  - k. Parkeergarage
  - l. Goede reputatie buurt
  - m. Gunstige woon-werk afstand
  - n. Voldoende daglicht
  - o. Anders, vul in

*The following amenities make living in a micro apartment more acceptable for me (same Likert scale as with the previous questions):*

- a. Shared laundry room within the apartment complex*
- b. Shared "living room" within the apartment complex*
- c. Affordability*
- d. Stores within the apartment complex*
- e. Green surroundings*
- f. Private garden (only accessible for people living in the apartment complex)*
- g. Small scale living*
- h. Proximity to train station or other forms of public transport*
- i. Safe environment*
- j. Possibility to keep pets*
- k. Parking garage*
- l. Neighbourhood has a good reputation*
- m. Favourable commuting distance*
- n. Other, fill in*

With corresponding values (this is for data-analysis purposes and will not be shared with participants):

- a. Comfort
- b. Togetherness
- c. Money
- d. Leisure
- e. Health
- f. Universalism
- g. Togetherness
- h. Freedom
- i. Security
- j. Comfort
- k. Freedom
- l. Power
- m. Freedom
- n. Other, fill in