SHARED STUDENT HOUSING IN THE NETHERLANDS

understanding student housing preferences
and moving towards desirable housing

S.B. van Vliet

4th of February 2025

PREFACE

This research focusses on a specific market trend within the Dutch student housing market; the potential loss of shared student housing as a housing product. A study in which all academic aspects I have developed through both my bachelor's degree at the University of Twente as well as my master's degree at Delft University of Technology come together. This research was carried out between the 26th of June 2024 and the 4th of February 2025.

The thesis reflects my aim to add knowledge to the real estate domain and to focus on inefficiencies within the housing market. Better focusing on the product-housing mix will eventually allow for a better outcome for people, the planet and the overall value added in the market, the profit.

Writing this thesis would not have been possible without the help from both of my supervisors and chair. I would like to thank Vitalija Danivska, Gerard van Bortel and Hans Wamelink for their support and guidance in the wonders of the academic world. All the way from the first steps of my research proposal to the end product, your constructive arguments proved to be a guide and source of knowledge for this research.

Finally, I would like to thank my family and friends for supporting me in any and all ways. Not only during this research specifically, but throughout my entire study!

Hoping you will gain valuable insights from this research!

Sten van Vliet
Delft, 4th of February 2025

COLOPHON

Shared student housing in the Netherlands: understanding student housing preferences and moving towards desirable housing

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In partial fulfilment of the requirements for the Master´s Degree programme of
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EXECUTIVE SUMMARY

Student housing plays a crucial role in students' academic and personal development. The Dutch student housing market consists of shared student housing (with shared kitchen and bathroom facilities) and individual student housing (studios or apartments with private facilities). While shared housing is more space- and resource-efficient, macro-economic and regulatory factors threaten its financial feasibility and thus viability in the current housing market. This research explored how shared housing offers can meet student demand despite these challenges as well as exploring the overall intrinsic value of sharing. To do so, a combination of research methods was used including a literature review, choice-based conjoint analysis (CBC), and a morphological analysis. The CBC analysis helped to quantify student preferences for different housing characteristics by simulating different housing options in a survey. The morphological analysis explored how various housing features could be combined to create new, attractive shared housing models.

The literature review aimed to understand the contextual factors influencing student housing demand and market supply. Main findings include a discussion on rent valuation policies, which show that rent prices follow from housing characteristics, and not the other way around. Meaning that housing characteristics are important to research, as is the underlying intrinsic value of sharing. The literature review also highlighted that housing is more than just a place to sleep; it is a crucial part of the academic and social lives or students, also relating to higher levels of Maslow' hierarchy of needs theory.

Next, the choice-based-conjoint analysis gives more insight into the importance of different elements in shared housing and student preferences. The findings revealed that both bachelor and master students prefer shared kitchens and bathrooms to a large extent. A notion also supported in other sources from literature, but which also gives importance to the rental price and location of housing.

After understanding the contextual factors and key drivers for demand, a morphological analysis was performed to evaluate the fit between customer demand and market offers. Eventually, combining these analyses allowed to from a value proposition canvas and -more specifically- a qualitative discussion on the quantitative results. Through this analysis, STING and FRIENDS shared housing were found to be potential shared housing forms. However, assessing these on the triple bottom line and the financial and legal feasibility showed that both forms do not show potential for large scale application.

Even though this research did not result in feasible value propositions for shared student housing, it does highlight an important notion regarding the heterogeneity of housing demand. Not every student wants to live in the same type of housing, but clear demand exists for different combinations or individual and shared housing. By further detailing this analysis into specific housing characteristics or geographic locations, the market can be better understood, and value propositions can be detailed further. Additionally, the use of these different theories show potential for the alignment of other housing products. It can help to better align market offers to customer demand, and as such create a pull-from-market instead of a push-to-market of housing products.

Ultimately, this research highlights the urgent need for policy adjustments to ensure that shared student housing remains a viable and desirable option. Real estate developers, housing providers, and policymakers need to work together to rethink regulations and better allocate rental allowance funds to not only subsidise one housing form, but instead facilitate a wider array of housing types. Without such action, the Dutch student housing landscape risks losing one of its most socially and economically beneficial housing types, negatively impacting students, the environment, and the broader housing market.

PART I | INTRODUCTION & RESEARCH DESIGN

CONTEXT

Student housing, a way of living for young adults who are just starting their academic career and further education. Besides being a home base during studies, it is also arguably an essential factor contributing to personal development in the young adolescent phase. The choice to live in student housing or to continue living with your parents also means a lot about your student life and how you choose to develop yourself as an individual. In contrast to regular housing, students generally have smaller spaces for living, studying, sleeping, and socialising (Thomsen & Eikemo, 2010). This makes student housing a special housing product within the overall housing market. Generally, two different types of student housing exist in the Netherlands: housing with facilities (kitchens and bathrooms) shared between roommates (further referred to as shared student housing) and fully independent student housing, which have its own kitchen, bathroom, and entrance door such as studios and multiple room apartments dedicated for one student (further referred to as individual student housing). Even though it might seem logical that students prefer the arguably additional comfort of their own facilities over shared ones -as Norwegian research by Thomsen & Eikemo (2010) shows, demand for shared or individual student housing in the Netherlands is more complex and nuanced. Hou et al. (2022) explains the preference for either option to actually be dependent on individual students and argues that the preferences might even change over time. For instance, bachelor students often prefer the more social aspect of shared housing whereas master students showed a preference for individual student housing. This creates a market demand for both housing types in the current -and future- generation of students, as further supported by Kences (2023); DUWO (2021). Furthermore, frequent encounters in shared spaces for students living in shared housing fosters stronger relationships, which directly improve psychological wellbeing (Easterbrook & Vignoles, 2015; Worsley et al., 2021). Thus, well-designed shared living spaces allowing for casual interactions create a sense of belonging and improve the overall wellbeing of students.

At the same time, shared housing uses less space per unit on average compared to individual housing (Scheele-Goedhart, 2019), making it a more efficient way to make use of the scarce land available for housing. Furthermore, facilities such as kitchens and bathroom are logically shared in shared housing, meaning that fewer facilities need to be created for the same number of customers to make use of it. This reduces the amount of raw materials needed as fewer of these facilities need to be built. This naturally reduces the ecological footprint of shared housing dwellings compared to individual dwellings.

However, due to several macro-economic as well as industry specific circumstances, shared student housing is becoming increasingly scarce. The underlying story is that shared student housing might (almost completely) vanish if no action is taken. A bold statement but one we will come back to after going through the motivation in the paragraphs below. The amount and type of housing available is naturally dictated by two aspects. On the one hand, by adding new housing, meaning new development projects which add different forms of housing to the total housing stock. On the other hand, the housing stock is influenced by how (efficiently) the current housing stock is used. For example, one large dwelling could be transformed into multiple smaller ones or vice versa, which changes the potential use and target audience.

In the current landscape, new development projects face a multitude of issues. First, macro-economic difficulties for the Dutch housing market include an overall lack of workforce; increased material costs; and increased interest rates (Hilverda, 2023). Furthermore, ground exploitations for new built projects are currently often not feasible, for which the Dutch Ministry of the Interior and Kingdom Relations (2023) argues that regulatory change is needed in order to address this infeasibility.

In recent years, the Netherlands has dealt with a major housing shortage of around 315.000 houses (van de Ven, 2024). Besides driving up housing prices, this shortage also asks for more delicate and efficient use of the existing housing stock. This means that several regulatory changes have taken place in the buy-to-let sector of the existing housing stock, among which are the restructuring of the rent valuation system and the introduction of the law for affordable rent (Hoogbergen, 2023). The perceived effect of these changes is a different use and allocation of the housing stock to other target audiences, for example, from shared housing for three roommates to a single household.

On top of this, a more prominent issue for shared student housing specifically is the current legislation in regards to setting the maximum rent price through the 'woningwaarderingsstelsel (WWS)' combined with the inability to get rental allowance for shared student housing (RIGO Research en Advies, 2022). Due to current legislation, individual housing tends to be cheaper for students while being more profitable for the investor. The difference between the lower living costs and the higher profits is covered by the government in the form of rental allowance (Mourik & Wassenberg, 2023). Essentially subsidizing individual housing and putting pressure on the use of societal funds. As shared housing is not subsidized, it reduces the impact on society as a whole.

Given the market conditions discussed before, e.g. increased building costs, additional pressure is placed on the business case for investors and thus developers (DUWO, 2021; INT-2, personal communication, September 3, 2024). As a result, (re)development student housing projects often almost fully consist of individual student housing, due to their higher return and thus potential for profitability. Individual housing is also the only real option for housing providers to currently offer in (re)development projects. As a result, student complexes (re)developed over the past decade have almost entirely existed of individual student housing, which has created an increasing imbalance between shared and individual student housing (Scheele-Goedhart, 2019). Meanwhile, the student population for higher education between the academic years of 2014-2015 and 2023-2024 increased from 646.300 to 739.200, representing a growth of 14 percent (Hooft van Huijsduijnen et al., 2024). Table 1 below further details the development of student housing over the past ten years. Here, it shows that individual housing with a single room (e.g. a studio) has gained tremendously in market share. A trend also identified and described by RIGO Research en Advies (2022), which even identified a decrease from 210.000 shared dwellings in 2015 to 194.800 dwellings in 2022 for 'traditional' shared housing operated by buy-to-let investors. A sidenote, the exact numbers of (shared) student housing differ between sources but the general outline remains the same; individual housing is gaining vastly in market share while some sources claim the number of shared housing dwellings is even going down. Hoogbergen (2023) further supports and clarifies this trend. It is argued that this decrease of shared student housing comes from changing regulations on the buy-to-let market, where maximum rent levels were introduced for mid-rent housing in 2024. Combined with the financial buying power of other demographics such as starters, private investors sold off their typical investment buy-to-let properties (van der Veen, 2025; Veenstra, 2024). While this trend allowed for example starters or other demographics to buy their own house, it decreased opportunities for students to rent rooms in these -usually shared housing- dwellings. Naturally, the number of rooms available for shared student housing further decreased as a result.

Table 1: Development of student population and housing between 2015 – 2024 (Hooft van Huijsduijnen et al., 2024; van Hulle, 2015)

	2015		2024		Comparison 2015 - 2024
Number of students in higher education	646.300		739.200		+ 14%
Living with parents	284.500	44%	334.400	45%	+ 18%
Living in student housing	361.800	56%	404.800	55%	+ 12%
Shared housing	210.300	58%	220.100	54%	+ 5%
Individual housing | single room	42.600	12%	73.200	18%	+ 72%
Individual housing | multiple room	108.900	30%	87.200	22%	- 20%

Combining these trends and issues, allows us to circle back to the statement concerning the potential disappearance of shared student housing. As explained above, general market conditions make it hard to develop housing at all and the industry specific issues make it even harder to develop more student housing. This general development is also the main reason for this research. Through a year of working with different actors in the industry (housing associations, multiple tenant organizations, political parties, real estate developers developing student housing) a general impression is left behind that shared student housing is not going to make it in the current landscape. Better understanding what options are available, what students prefer and what preferences students have, will however help to ensure future generations of students can still benefit from the advantages of shared student housing.

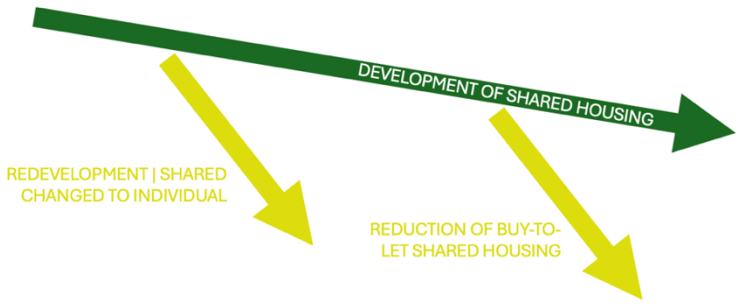


Figure 1: Illustrative root-cause development of no. of shared student housing between 2015-2021 (Author, 2024)

PROBLEM DESCRIPTION

The situation described in the previous section is supported by numerous articles from industry experts - mentioned below- which all point towards one side of the equation in making shared student housing feasible: changing governmental incentives. As argued by several (non-academic) sources such as newspapers (KRO-NCRV, 2023; Delft Op Zondag, 2024; DUWO, 2021), the difficulty when developing a positive business case is two-folded. First of all, the current rental housing valuation system (*WWS*) limits the amount of rent to be paid for shared housing, as aspects such as the energy label and location are not incorporated in the valuation system for shared housing, the *WWSO* (RIGO Research en Advies, 2022). Adding regulatory policies surrounding rental allowance -for which shared units are not eligible- causes housing associations such as DUWO (2021) to argue that it is not feasible to develop shared student housing with these policies in place. The problem is even more complex when exploring the relationship between the *WWS(O)* and rental allowance. As researched by Hooft van Huijsduijnen et al. (2023), students living in individual student housing typically have to pay less than those living in shared housing. If only *WWS* policies change, and guidelines surrounding rental allowance do not change, students living in shared student housing would end up paying even more. This would further increase the imbalance between shared and individual housing. In this context, DUWO (2021) argues that in the current housing market, developing shared student housing can only be financially feasible if the government changes both policies.

The situation becomes even more pressing when looking at typical student-oriented cities such as Delft. These cities often have housing associations specifically for students which offer a significant amount of (shared) student housing. DUWO in Delft for examples offers approximately 8.500 rooms for students, roughly making up 50% of the total supply (RIGO Research en Advies, 2022). However, a significant part of the (mostly shared) housing complexes have been built in the 1970-1980's and are reaching their technical end-of-life. An example of such a situation is the '*van Hasseltlaan'* complex for which redevelopment plans are being worked out at the time of this research. The result of this redevelopment is very likely to be the loss of shared units in favour of individual units in absolute numbers (DUWO, n.d.). Due to the difficulties described before, it will be very difficult to develop shared housing again in the current landscape for the *van Hasseltlaan* but also for other housing complexes in Delft. This would mean that shared student housing is simply set to almost disappear if no action is taken. To prevent this loss of shared student housing, the feasibility for housing associations and real estate developers need to be financially sound. This raises the need to not only think about adding more student houses to meet growing demand -as mentioned by the municipality of Delft in their housing policy (Gemeente Delft, 2024)- but to also think about the type of student housing to add. Knowing what students want to share and what important factors play a role in this sharing principal is then essential to understand.

In short, tension has been created by these trends on multiple ends. An increase of higher education students of 14% between 2015 – 2024 combined with a lower increase of housing (12%) in the same period already fuels the housing shortage. In the same timeframe, the type of housing has shifted towards more individual single room housing over shared and multi-room individual housing, as highlighted in Table 1 above due to the situation described in the context section. Inevitably, the question arises what the effect of these trends over the past ten years has been on the end-users and customers: the students themselves. They are the ones 'consuming' the product offered: housing. Thinking more critically about their position in the debate and the effect of the type of housing offered to them, can help in better aligning the development of the 30.000 new student dwellings which are planned to be built between 2022 – 2032 in the Netherlands (Hooft van Huijsduijnen et al., 2024).

PART I | 1.1. PROBLEM STATEMENT

From the context section above, it becomes apparent that different macro-economic circumstances (among which are higher building costs and increased sustainability demands) have made it more difficult to develop shared student housing while staying within *WWS* and rental allowance regulations. A conclusion supported by RIGO Research en Advies (2022). The changed landscape and new difficulties make that the amount of shared student housing might even be in decline (Hoogbergen, 2023). Even though the multitude of actors and interests make it a complex landscape, the problem for student housing seems to boil down to

a financial one. Developing (market) parties are deemed to be indifferent about developing shared or individual student housing, as long as the financial case is sound (DUWO, 2021; INT-2, personal communication, September 3, 2024). This means that, for students to be able to live in shared housing, either the financial feasibility for shared student housing needs to be addressed -and be comparable to the business case for individual student housing- or other aspects within the business case for shared student housing needs to change. Understanding customer demand can help to create better housing solutions for customers to enjoy and make use of. This investors perspective also gives a clear motivation for this research and helps to frame the outline of this research.

Overall, the current strategy of (mostly) developing individual student housing creates several problem owners. Even though the following description is not exhaustive, several forms of impact can be described through the 'triple bottom line' theory or 'people-planet-profit' as first developed by Elkington (1994).

> *''The triple bottom line is a business concept that states firms should commit to measuring their social and environmental impact—in addition to their financial performance—rather than solely focusing on generating profit, or the standard "bottom line."''*
>
> Miller (2023), p.1

People will suffer as students will not have the option to choose for shared housing, even though students living in shared housing tend to have an overall better wellbeing and it is an important experience for their personal development (Easterbrook & Vignoles, 2015; Worsley et al., 2021).

Planet is impacted by this development in at least two ways. More individual student housing requires more scarce land as individual dwellings are larger on average (Hooft van Huijsduijnen et al., 2023; Mourik & Wassenberg, 2023). Moreover, more raw materials are used as each student room requires their own facilities instead of sharing facilities such as kitchens and showers among a multitude of students (RIGO Research en Advies, 2022).

Profit of society as a whole is reduced as student housing will only be financially feasible as long as rental allowance is provided to develop individual housing. Adding more individual student housing will thus create more rental allowance (which comes from tax money) to be used for student housing and reduces the overall profit for society. This essentially results in overstimulating one single living form; individual student housing without leaving a choice for the student to choose between shared or individual living. Furthermore, Vereniging Kences (2024) argued that shared housing is on average 22% cheaper to construct compared to individual student housing.

RESEARCH GAP, AIM & RELEVANCE

From the previous sections, a step towards a research gap, aim and academic and societal relevance is created in this section. At the same time, this section will outline the scope of this thesis and highlight which parts are to be included. Given the differing regulatory frameworks between countries, the Netherlands is taken as the basic system in which the developed business models will need to function, meaning that this thesis is geographically bound to the Netherlands.

PART I | 1.2. RESEARCH GAP

In recent years, many aspects of student housing in the Netherlands have been researched in several scientific articles and theses. The emphasis of this research has -among other topics- mostly been on: the social effects of buy-to-let housing on neighbourhoods and the housing market (Francke et al., 2023); the influence of a housing shortage on student wellbeing (Boer, 2023); setting up frameworks for evaluating student satisfaction with their housing (Thomsen & Eikemo, 2010) or numerous graduating studies on ways of designing shared or co-housing for students (Andruszkiewicz, 2023; Doelman, 2023; Warfman, 2024). Furthermore, the housing industry itself has given attention to the feasibility difficulties described above (DUWO, 2021; KRO-NCRV, 2023). Student (rights) organizations have also continuously been seeking attention for this issue, even in national politics (Delft Op Zondag, 2024; van der Veen, 2025; Veenstra, 2024). Moreover, consultancy organizations have been given attention to this issue in yearly monitoring and policy reports (Hooft van Huijsduijnen et al., 2023; RIGO Research en Advies, 2022). One of the main conclusions of one of these reports is the following:

> *''The solutions to this affordability problem can be categorized into three categories: (1) solutions that reduce construction and rental costs, (2) solutions that increase tenants' disposable income, and (3) solutions that address rogue landlords, thereby lowering the average living costs. Sustainability measures and standards put additional pressure on the affordability of student housing.''*
>
> RIGO Research en Advies (2022), p.19

Despite these three points slightly moving beyond the quick fix argument as typically used in the shared student housing debate (e.g. revising the *WWS(O)* and rental allowance system), there is still work to be done. An overarching question for all three of these points is what students want and how this can be facilitated in what form by which housing providers. Even though some papers have gone into detail on housing preferences (Hooft van Huijsduijnen et al., 2024; Nijënstein et al., 2015; Thomsen & Eikemo, 2010), some gaps still remain. Looking more detailed into what the most important aspects of shared housing are to students will help developers and housing providers to better align their offer to customer demand. What are students willing to share? With whom are they willing to share? What is the demand for shared housing in general? How do student housing wishes compare to what the market can offer? All of these points are yet not explicitly discussed in literature, but can help in to move forward in this debate.

PART I | 1.3. PERSPECTIVE, OBJECTIVE & DELIVERABLES

The main aim of this research is to study shared housing preferences of students and understand how these can be matched to what can be offered. As such, the perspective of this study is that of an investor which tries to better understand customer preferences and provide a fitting product mix to them. A complex perspective but one that makes sense when considering the issues outlined before. This research will be done through a combination of theories such as the value proposition canvas and the triple bottom line; as well as methodologies such as literature review, stated choice experiment and morphological analysis. Doing so will result in a qualitative conclusion on how shared student housing in the Netherlands can be achieved. All of these theories and methodologies will be further elaborated upon and detailed below.

Important is to also recognize the scope of this research. In the end, the ideal situation would be to identify a type of shared housing which satisfies all the needs of the triple bottom line. With housing being desirable

for students, the end-users (**people**); minimizing the use of raw materials (**planet**); and financially feasible for all parties with a minimum impact on society as a whole (**profit**). Given the context, problem statement and objective described above, a distinction can also be made in the triple bottom line. For this research, the profit and planet dimensions can be seen as a motive to further look into the topic in general. They will be taken as the basis, but the research will not primarily focus on these aspects. Instead, identifying and understanding the effect of housing characteristics on the people dimension will be taken as the main concept to be further researched and developed.

The outcome of this study will be a qualitative discussion on the relation between the customer demand and the offer from housing providers. This qualitative discussion will be substantiated by a quantitative analysis of shared student housing preferences as well as a qualitative analysis of the current (shared) student housing landscape. As the variables in development and investment are far and wide, the end-result will not include feasibility studies of shared student housing. The focus is to understand housing preferences in a broad sense and relate these to market capabilities in a clear and concise way.

PART I | 1.4. SOCIETAL & ACADEMIC RELEVANCE

In terms of societal relevance, it would be very interesting to map and highlight the issue of student housing and to understand customer demand better. The discussion above emphasizes the importance and societal relevance. Understanding what students want, can help housing providers to better align their offers with the desired demand. Furthermore, some aspects identified could potentially even help to create a form of shared housing within the current landscape of rental allowance difficulties.

Besides societal relevance, this research will have important academic relevance as it will take a real-life societal problem -to which a lot of attention is currently given- and create a better understanding of this issue. By applying a combination of methodologies, a new technique of bridging the gap between customer wishes and actual market capabilities can be tested. In turn, this technique might be further developed to better bridge these gaps.

RESEARCH QUESTION

Following from the previous sections, it becomes apparent that this research will have an overall aim to scope out understand the shared student housing market better and to move towards a way of adding student housing that is: desirable for the customers, e.g. students (**people**); minimizes the use of raw materials (**planet**); and is financially feasible for all parties (**profit**). As such, a discrepancy is found in what is currently known (student preferences for shared housing) and the goal (more shared student housing); placing this thesis into the research domain in line with the work of Schlangen (2021). Combining this domain with the social sciences and management domain, leads to the following research question:

''How can shared housing offers meet the demand of students?''

Moving towards an answer to this research question requires different steps to be taken and sub questions to be answered (also see Table 2 below). First and foremost, the context of student housing and the factors influencing it need to be mapped and understood before other steps can be taken (SQ1). After a first analysis of this landscape, the exact needs and wishes of end users and other stakeholders need to be better understood and formulated. Only then the focus can move towards understanding what the main influencing factors are when relating the market capabilities (offer) to customer (student) demand (SQ2). Understanding the importance of these factors can help to relate the demand to the overall market capabilities (SQ3). Together, these questions will answer the overall research question posted above.

Table 2 : Sub-questions to the research question (Author, 2025)

	SUB-QUESTIONS	**RESEARCH METHODS USED (further explained below)**
SQ1	*''What contextual factors influence the offer and demand of student housing?''*	Diverging RQ - Literature review
SQ2	*''What are the main factors influencing students' choice for types of housing?''*	Diverging RQ - Literature review - Conjoint analysis
SQ3	*"What housing characteristics can be combined to form shared student housing offers which align with housing demand?"*	Converging RQ - Morphological analysis

This research setup is based on a funnel where sub questions one and two will have a diverging effect and sub question three will bring these insights together in a converging qualitative analysis. The different sub questions and the main research methods will be further discussed in the research design section below.

RESEARCH DESIGN

This section discusses the research design and motivates choices for certain types of methodology. In line with the work of Verschuren & Doorewaard (2010), the research design consists of two parts. First, the conceptual part clarifies the knowledge or development gap, scope and explains the problem in more detail. The technical design consequently explains how to operationalize and carry out the proposed research. The conceptual design has already been outlined in the previous sections of this report where the emphasis has been on the nature of the problem and the effect it has on main stakeholders. This section will therefore further elaborate on the technical design and will start with an overview of all aspects in Figure 2 below.

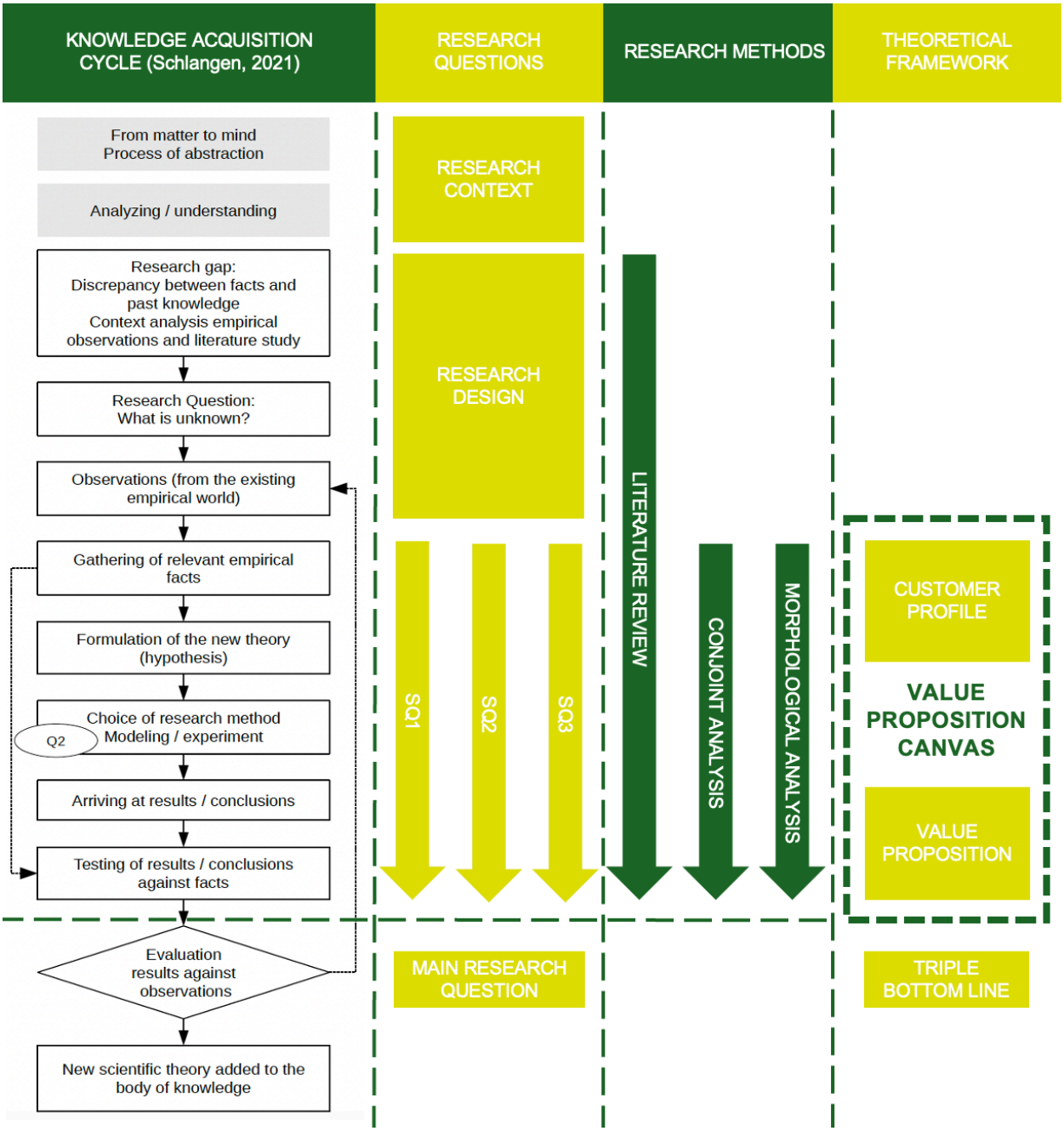


Figure 2: Research overview (Author, 2025)

Figure 2 above graphically shows the relation between the overall knowledge acquisition cycle as developed by Schlangen (2021); the sub questions used in this thesis; and the research methods. The knowledge acquisition cycle starts with the process of understanding the presumed issue at hand and describing it; this creates the context of the research. The context can be found in the previous sections as the conceptual research design. After this, the research design section goes into detail on the research gap and research question as well as the technical research design, this very section. After these stages, the acquisition cycle describes a loop in which the questions from the research design will be answered. For this research, three distinct sub questions have been formulated, for which three research methods are required in answering them. All of these methods (further discussed below) use a different approach, but each one roughly moves according to the knowledge acquisition cycle where empirical facts are gathered; hypotheses are formulated; research methods are used, experiments take place; results are reported; and conclusions are checked. Together, the questions allow for building the value proposition canvas, which is part of the theoretical framework discussed below.

Important to note is that both the vertical and the horizontal axis of Figure 2 have an important meaning. The horizontal axis highlights the different elements, and to which steps each element relates. Vertically, the graph shows the progression and order of the steps.

PART I | 1.5. RESEARCH OUTLINE

The sections below focus on developing and highlighting the selected research methods required to provide an answer to the different sub questions and overall research question. Besides the research methods, it is also important to form a theoretical framework to create a structured outline for this research. The framework is based on the value proposition canvas and will help to connect, combine and relate the different research questions to each other.

PART I | 1.5.1 THEORETICAL FRAMEWORK

When developing the theoretical framework, it is important to take a step back first. As a basis, the introduction above requires relating customer wishes to the physical product which can be offered. This calls for research into the product market mix, and thus into the underlying way in which the characteristics of a product are adapted to market demand. The value proposition canvas, developed by Ostenwalder et al. (2014), provides a theoretical overview of relating demand to the offer. The theory offers users a way to systematically analyse and understand both customer demand as well as the product offered. Connecting these helps companies to ensure their products are effective in fulfilling customer demand. The theory uses elements of the larger business model canvas, developed by Osterwalder et al. (2005), but solely focusses on the mix between the product and the customer demand. Below, the theory behind the value proposition canvas is discussed, after which the theory is operationalised for this research.

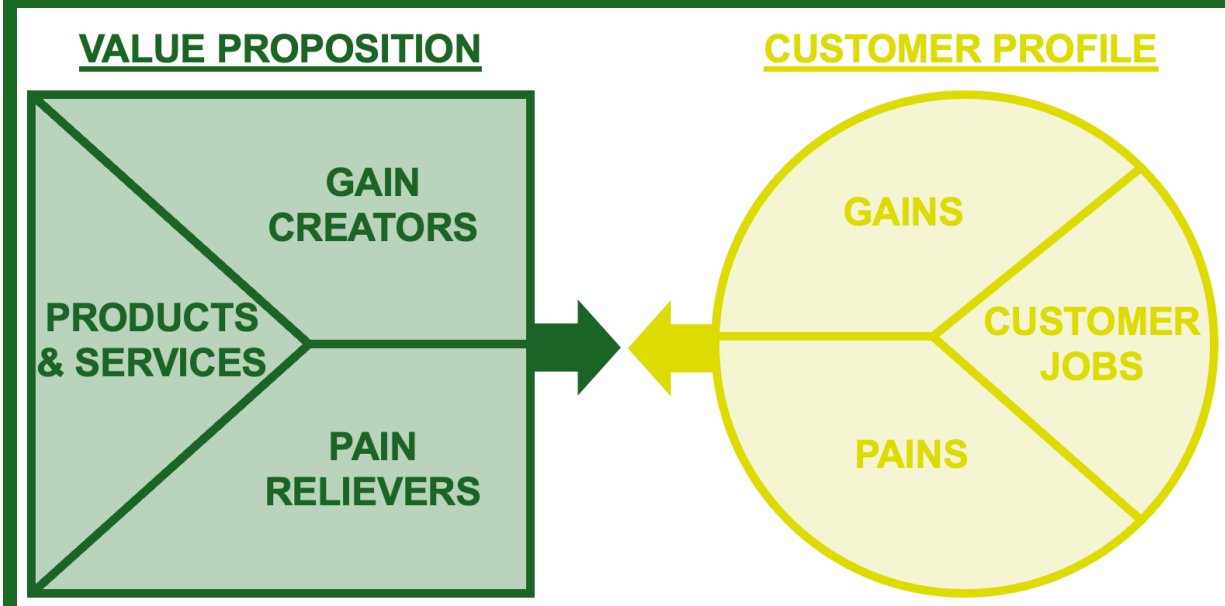
THEORETICAL SIDESTEP | THE VALUE PROPOSITION CANVAS
(International, n.d.; Ostenwalder et al., 2014)

This canvas consists of two part: the Customer Profile, to identify the customer's jobs, pains, and gains; and the Value Proposition, which outlines how a product or service is used to create gains, alleviate pains, and provide solutions to meet customer needs. By connecting the two, the canvas helps businesses to ensure that their offerings are effectively solving customer problems and delivering meaningful value.

The Value Proposition relates to the offer side of the business model canvas and is concerned with:
- Gain creators | How does the product offer added value to the customer?
- Pain relievers | Which customer pains are relieved by the product?
- Products and services | A detailed description of the actual product and service.

The Customer Profile relates to the demand side of the business model canvas and relates to:
- Gains | The perceived benefits for the customer. How does the product help?

- Pains | What issues does the customer experience when fulfilling the job?
- Customer jobs | What need is the customer trying to fulfil?



To fill out the value proposition canvas, some careful considerations must be made. These considerations can best be discussed alongside the different sub questions. SQ1 is concerned with contextual factors. It seeks to identify and describe the shared student housing sector. This analysis will provide input for two important parts of the value proposition canvas: both the 'Products & Services' of the 'Value Proposition' side of the model and the 'Customer jobs' of the 'Customer Profile' side. The former will describe important student housing characteristics for the offer while the latter describes the needs to be fulfilled.

The next step is connecting both sides of the value proposition canvas, the 'Value Proposition' and the 'Customer Profile' in an efficient way. This step is therefore about understanding the (relative) importance of different housing characteristics according to the customers, which relates to SQ2. Furthermore, this step will further segment the total student population into more specific segments expressing similar demand.

In SQ3, a more elaborate discussion on different housing characteristics can take place in which the demand is related more to market capabilities. This will create a basis for further discussing and evaluating the gain providers, pain relievers, customer gains and customer pains of both sides of the value proposition canvas.

Moving through these steps, several things will become clear. First, a better understanding what customers (students) want from the product (housing); what the relative importance is for several housing aspects; and what options satisfy this demand. In turn, this provides an answer to the main research question.

PART I | 1.5.2 RESEARCH METHODS

Figure 3 below relates the overall theoretical outline discussed above and the way in which the value proposition canvas will be filled out. This section further discuss the methodology used to carry out the steps described above.

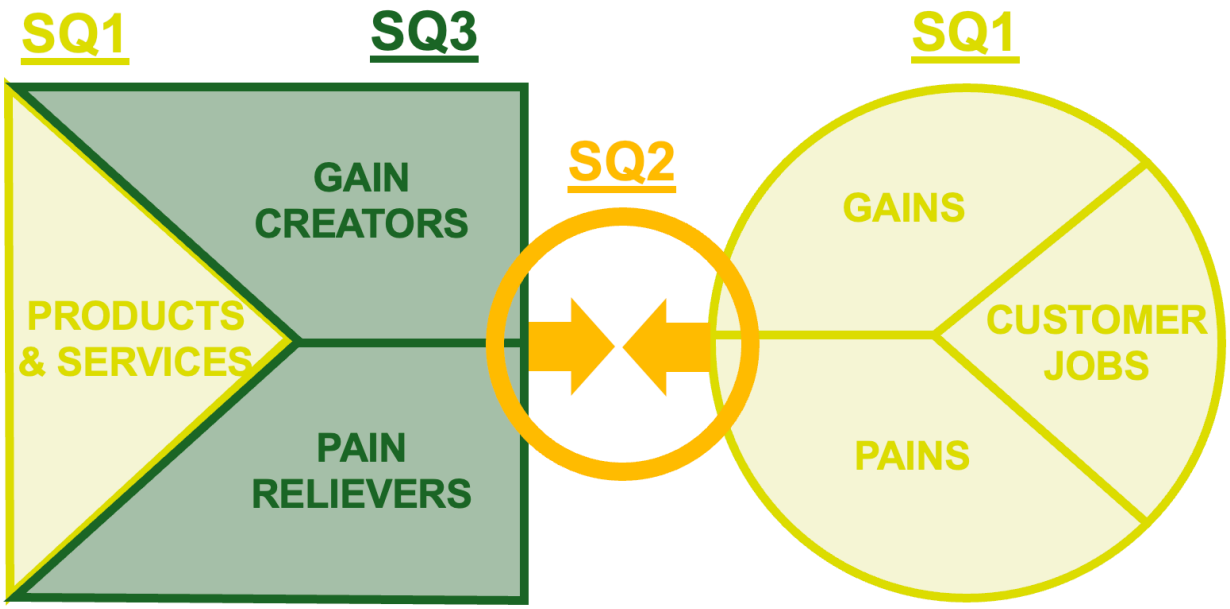


Figure 3: Stages of sub questions in relation to the value proposition canvas (Author, 2025)

LITERATURE REVIEW

To lay a first basis in understanding the context of shared student housing, a structured literature review will be performed. Performing a literature review is the building block for any type of research, relating existing knowledge to new applications is essential (Snyder, 2019). This analysis will therefore focus on capturing important factors related to student housing to provide an answer to SQ1. Among other factors, this will include a further review of current macro- and market-specific circumstances and shared student housing preferences. In the literature review, several types of papers and articles will acquired through search engines such as Science Direct, Web of Science and Google Scholar. In this way, scientific papers, master theses, policy documents and research from the industry itself can be used. By using relevant keywords with OR & AND Boolean operators, different articles will be highlighted and incorporated into the framework.

EMPIRICAL DATA COLLECTION

Providing an answer to SQ2 requires a more elaborate approach. Following from the structured literature review, further work is required to capture customer preferences on different housing aspects. In short, the offer and demand need to be related to each other, which requires understanding customer preferences. For this purpose, a stated choice experiment (SCE), or conjoint analysis, will be used. Originally mostly used as a marketing technique, a conjoint analysis is a type of survey in which characteristics of different products can be tested and their relative importance can be evaluated (Kløjgaard et al., 2012). The added benefit of a conjoint analysis over a regular survey is that it provides more insight into the relatedness and comparison between characteristics (Rao, 2010). Furthermore, a conjoint analysis is more efficient in gathering responses compared to elaborate interview or focus group session. Moreover, it is important to note that conjoint analyses have been used by several authors (Hooft van Huijsduijnen et al., 2024; Nijënstein et al., 2015; RIGO Research en Advies, 2022) for establishing housing preferences among students, further supporting the compatibility to this research purpose. A stated choice experiment would satisfy the outline above, with emphasis on the influence of the context of the experiment and the respective importance of aspects.

As detailed by Bliemer & Rose (2024), this type of research is a survey-based method used to analyse decision making by presenting individuals (e.g. students) with hypothetical scenarios. Essentially four types of conjoint analyses have been developed over the years (Rao, 2010). From more basic self-explicated conjoint analysis, where respondents are asked to rank different levels per attribute, up to adaptive conjoint

analysis which automatically tailors the answers to focus on the most relevant attributes per respondent. Two commonly used analyses are the choice-based conjoint (CBC) and the maximum differential (MaxDiff) analysis (Halversen, 2020). Whereas the latter focuses on manually ranking characteristics of a product, a CBC presents respondents with hypothetical combinations of characteristics and asks to make a choice between them. From this operation, customer preference can be analysed and determined. Besides the relative importance of these characteristics, the preference for different options can also be determined (Rao, 2010). Furthermore, this analysis also allows to distinguish different segments within the pool of respondents.

THEORETICAL SIDESTEP | DESIGNING STATED CHOICE EXPERIMENTS (SCEs)
Insights combined through a scoping review on the works of: Bliemer & Rose (2024); Kløjgaard et al. (2012); Rao (2010).

Different authors include different steps when designing a stated choice experiment. Below, different steps outlined by several authors are combined into four steps to perform in designing a SCE.

i. Determine whether an experiment is labelled (f.e.: transport choice: car 1, car 2, train, bus) or unlabelled (i.e.: route A, route B, route C).
ii. Selecting attributes and levels. Attributes can be quantitative (e.g.: waiting time) or qualitative (e.g.: the choice of hospitals) and are often gathered through interviews, group discussions, literature reviews, and expert opinions in a qualitative manner. When doing so, the following points are important to consider:
    a. Not all attributes can be included. The total set of attributes needs to describe the choice and represent a trade-off for respondents.
    b. The selected attributes and levels need to form a complete image and leave no room for misinterpretation or assumptions on key elements. Attributes should also not be combined as this might lead to different interpretations.
    c. Attributes containing a risk, political or policy element need to be carefully and unambiguously described.
    d. Having the same number of levels for each attribute reduces the perceived importance of attributes with more levels and increases the validity of the results.
    e. Tend to have three to five attributes in order to reduce cognitive capacity of respondents.
iii. Conduct pilot study through expert evaluation or qualitative interviews with target audience.
iv. Conduct main study.

Selecting the attributes and levels for the SCE is especially important for this specific research. Essential is to make sure the options shown in the experiment are complete products without any omissions (e.g. not including a ‘screen size’ attribute for a smartphone). To do so, the attributes and levels for the SCE, as well as for the morphological analysis discussed below, will be selected based on a list of criteria discussed in the empirical data collection.

Carrying out the choice-based conjoint analysis and collecting the data can be done through many different types of software. One of which is Sawtooth which offers a software package for a CBC. Determining the required number of responses for a conjoint analysis is dependent on many different aspects and no general rule is agreed upon in literature. Instead, a consideration needs to be made between statistical robustness and practical (time, money) constraints (Conjointly, n.d.). Based upon the statistical research of Peduzzi et al. (1996), a general rule of thumb has been developed by Halversen (2020), which is stated below. In this heuristic, the baseline is that each level needs to be displayed a minimum of 500 times in order to provide meaningful insights.

$$n \geq \frac{500(c)}{ta}$$

$$\begin{gathered} with: \\ n = no.of\ respondents \\ c = the\ maximum\ number\ of\ levels\ in\ an\ attribute \\ t = the\ number\ of\ tasks\ in\ the\ exercise \\ a = the\ number\ of\ concepts\ in\ a\ task\ (not\ including\ 'none') \end{gathered}$$

From both the structured literature review and the choice-based conjoint analysis, a good understanding of the current student housing landscape and the customer demand can be formed. However, as the conjoint analysis will solely focus on the sharing aspect of student housing, an additional step needs to be made in relating the demand to the overall market offer and creating more complete value propositions. For this purpose, a morphological analysis will be used to combine and expand the findings of the literature review and conjoint analysis in a qualitative way. A morphological analysis is a problem solving and idea-generation tool originally developed by Zwicky in the 1960s (Álvarez & Ritchey, 2015). It is a relatively simple technique which offers users the benefit of having an overview of all options alternatives, which allows for establishing the fit and usefulness of the options in meeting the overall goal set out. By breaking down a product into fundamental components (characteristics), a qualitative comparison of the combination of these components can be made (Álvarez & Ritchey, 2015). For example, a pen can be broken down into the casing, the ink colour, and the type of ink. Comparing different options for all these characteristics can lead to many different combinations but also to the conclusion that some aspects might not fit well together which also gives new insights. This systematic approach allows to think about unique or unusual solutions not previously identified in a qualitative way and is therefore very suitable for this research.

CONCLUDING

Based on the steps above, a qualitative conclusion can be drawn which provides a qualitative answer to the overall research question. This conclusion can be reported in the form of the value proposition canvas which is built up using the different sub questions and research methods. It starts with understanding the market context from sub questions one; which feeds the input for establishing the customer demand established in sub-question two; and then feeds into an analysis on expanding these housing characteristics into more detailed value propositions. This all leads to a qualitative discussion on housing characteristics and which aspects are found to be important in leading to an overall understanding of student housing preferences. This will help housing providers and developing parties in developing student housing that: is desirable for the customers, e.g. students (**people**); minimizes the use of raw materials (**planet**); and is financially feasible for all parties (**profit**). Even though the weight of the conclusion will lie on the people component, some discussion on the planet and profit dimension will also be included.

READING GUIDE

The remainder of this report is structured as follows. First, the context described in the first part of this chapter will be further expanded in the literature review, focussing on analysing different aspects of student housing from both academic sources as well as from policy documents. Afterwards, a chapter on empirical data analysis will move through collecting and analysing new data through a choice-based conjoint and morphological analysis. This research will conclude with a discussion of the most interesting findings and a conclusion in which the research question will be evaluated and answered.

PART II | LITERATURE REVIEW

CONTEXT OF STUDENT HOUSING

The literature review below will attempt to find underlying reasons for the situations described in the context for and introduction to this research. The focus will lie on understanding the (Dutch student) housing market better including financial and policy outlines. Furthermore, housing preferences for students will be discussed based on the analysis of different articles which will result in building a first part of the theoretical framework: the customer profile as discussed before in the research design.

When starting a structured literature review, it is always interesting to see what type of articles are available. Using different search keys (shown in Table 3 below) in ScienceDirect naturally led to a high number of articles. By rephrasing the key terms further and making use of Boolean operators, a total of thirty-five sources (articles, paper, interviews, etc.) were eventually used in this literature review.

Table 3: Search keys used in literature review (Author, 2025)

Search key	Number of results from ScienceDirect
Student housing	76.951
Shared student housing	37.478
Shared student housing in the Netherlands	5.180
"Student housing"	910

PART II | 1.1. THE DUTCH HOUSING MARKET

Student housing provides -as the name suggest- housing for students. Understanding the context in which it operates is however not as easy as understanding the name. The context in this case is the housing market, a difficult and unambiguous market to understand. The housing market is often defined as a volatile and dynamic market that over time has reacted to a wide variety of economic trends and crises and is prone to governmental policy (Deelen et al., 2020). Laying a basis in understanding the market is however important to get a better feeling for the development of student housing and the market in which it needs to function. Something which will be briefly discussed below.

The Dutch housing market has historically shown a gradual increase of house prices since the 1940s, except for two periods of economic crisis where a clear decline can be seen. These crises being the oil crisis in the 1970s and the housing crises of 2008 (Deelen et al., 2020). Even though this trend line is not rare in an international context, the Dutch housing market characterizes itself through relative long periods of in- or decrease of housing prices together with higher extremes compared to other European countries (Deelen et al., 2020). Put short, the Dutch housing market historically has reacted slower and heftier to market conditions than other European countries. Spatial characteristics as well as governmental policy are identified to be a major reason for these differences between countries. According to Michielsen et al. (2019), the scarcity of land and strict spatial planning policies results in a relatively inelastic supply of housing. When looking at for example Germany, the prominent and well-developed liberal rental market combined with more flexible spatial planning make for less elastic house prices (Deelen et al., 2020). Summarizing, the housing market is a complex market influenced by many different actors and aspects. The Dutch housing market specifically is comprised of an array of complex policies which further hinder the effect of quick policy interventions. Instead, Deelen et al. (2020) argue that policy best be aimed at improving the structural functioning of the housing market. Creating more elastic housing supply and bridging the gap between the buying and rental sector. Incidental policy interventions often do not help in creating a long-term stable market and might inadvertently create a negative effect due to the complex policy landscape (Michielsen et al., 2019). This creates a further focus area to consider when specifically looking at student housing in this thesis.

POLICY OUTLINE FOR DUTCH HOUSING MARKET

Following from the previous section, the Dutch housing market struggles with a general shortage of housing. The Ministerie van Algemene Zaken (2023) projected the shortage to reach 317.000 houses by 2024. To counteract this deficit, an agenda has been proposed by the same ministry to build 900.000 new houses by 2030. This policy recognizes the need to develop all types of housing, but with a focus on affordable (social and mid-rent) housing. In line with the argumentation in the section above, reasons for the deficit mainly point towards spatial policy in multiple ways (Ministerie van Algemene Zaken, 2023). Furthermore, the same policy outline specifies the shortage to be caused by market specific circumstances such as higher building costs as well as general trends such as population growth and smaller households, which in turn creates more overall demand for housing. Moreover, as the industry typically applies residual costing practices, which results in a certain purchasing price before starting the slow spatial planning process, the business case after moving through the spatial planning process might be infeasible due to change market conditions during the development period. For example, the risen building costs over the past few years have led to many infeasible projects for development parties. In order to counteract these uncertainties and risks, the Ministerie van Algemene Zaken (2023) aims to reduce the spatial planning process while also making use of specific development plans based on the need in specific regions of the Netherlands.

SUSTAINABILITY TRENDS OF THE HOUSING MARKET

Within the real estate industry, several trends can be distinguished. One of the main trends is sustainability. Sustainability in terms of energy consumption; sustainability in terms of amount and type of material usage, but also sustainability in terms of reusability of materials and even the structure of buildings after it has served a first use. As outlined in the problem statement, the planet component of this discussion suffers when more individual housing is added to the student housing stock. Taking these sustainability elements into account Is therefore important and relevant when analysing the context of student housing.

First looking at the energy consumption, a goal has been set in order to be CO_2 neutral by 2050 and a reduction of 55% of CO_2 in 2030 compared to 1990 (Ministry of the Interior and Kingdom Relations, 2022). Among others, this goal will need to be achieved by insulating housing and phasing out E-F-G energy labels. Roughly one million houses in the rental sector will need to be improved, which naturally also includes student housing. Furthermore, the use of wood and other CO_2-neutral or negative building materials will further help in reducing the emissions from construction. New frameworks for making better use of already existing infrastructure are also continuously developed under the concept of the circular economy, as explained and applied by Kyrö (2020).

Part of this development is increasing the flexibility of a building and therefore increasing the adaptability of a building over time whenever demands changes (Kyrö, 2020). For example, a building which is now built as office space might be changed to housing in the future whenever market conditions dictate this change. Another option is splitting one large apartment into two or vice versa whenever demand changes for either option. Thinking about the adaptability beforehand is done increasingly more to prevent additional consumption or waste of building materials.

Another major trend in the construction industry is modular housing. As outlined by two recent theses from the TU Delft Doelman (2023) & Vader (2022), modular construction can be applied to student housing. Even though both theses highlight areas of improvement before the building method can be applied to its full potential, significant steps have been made in further operationalising the method. In the end, modular construction is expected to form a more streamlined and efficient building process.

PART II | 1.2. THE DUTCH STUDENT HOUSING MARKET

Relating the conditions on the general housing market to student housing specifically is something which cannot primarily be found in policy or academic literature. Even though the issues highlighted in the previous section are not all specified to the student housing market, the introduction has already given some insight into the relevant trends and difficulties, more can be said about the specific goals and functioning of the student housing market.

GENERAL DEVELOPMENT OF STUDENT HOUSING MARKET

Part of the proposed total of 900.000 new dwelling before 2030 mentioned before are 60.000 new units of student housing. A Goal set out by the Ministry of internal affairs based on the action plan for student housing (RIGO Research en Advies, 2022). Achieving this goal is done through five lines of action, being:

1. *''More grip on inflow,*
2. *Increasing the amount of housing by new developments and better usage of the existing housing stock,*
3. *Affordable student housing,*
4. *Taking on the peakload and*
5. *(Temporary) housing for international students.''*

RIGO Research en Advies (2022), p.13

In the context of this thesis, the second point in these lines of action is arguably most interesting. In further operationalising this goal, several process agreements are made between market parties and different layers of government for both new and existing student housing (RIGO Research en Advies, 2022). For new housing, the action plan outlines the necessity to make precise agreements on a municipal level between market parties and the municipality to determine what amount of housing can reasonably be created within time and resource constraints.

The action plan does underpin the advantages of shared housing as already discussed in the context (e.g. better social contact and increased student wellbeing). However, when looking which actions are proposed to ensure the availability of shared student housing, the Ministry of Housing and Spatial Planning (2022) is less clear. Proposed actions in this action plan point towards municipalities for monitoring and steering the division between shared and individual student housing through local agreements (e.g. *prestatieafspraken*) (Ministry of Housing and Spatial Planning, 2022)

DEVELOPMENT OF HOMESTAY OFFERINGS

For the existing housing stock, special mention in the action plan for student housing is given to stimulating homestay (*hospita)* or home sharing as it can boost the total amount of housing available (RIGO Research en Advies, 2022). Homestay is a living form where a houseowner rents out vacant rooms to others while common spaces such as living rooms, bathrooms and kitchens are typically shared between the tenant and the homeowner. An opinion article by Mourik & Wassenberg (2023) also gives specific notion to the use of homestay offerings. In this article, the focus is placed on the multiple benefits homestay offerings can potentially have on students but also on society in a larger sense. First of all, more housing would be available to students for which Mourik & Wassenberg (2023) also argue that it is a desired shared housing type and not individual housing. Another added benefit is the reduction of rental allowance, as less individual student housing would be built. A further suggestion is even made for dividing the total rental allowance over all students living in student housing and not just for individual housing. The most important notion in this article is the acknowledgment that the student housing shortage requires the use of alternate housing solutions and not just individual student housing.

In recent times, the Dutch government has set out to improve the potential and use of homestay (*hospita)* offerings. The Ministry of Housing and Spatial Planning (2024), argued that roughly one third of all dwellings in the Netherlands is suitable for a living form where a single room is rented out to a tenant, sharing facilities such as the kitchen and bathroom. Furthermore, approximately eight percent of homeowners with a house suitable for homestay is considering the option to rent out this space. At the same time, severe limitations for homeowners exist which makes it harder for homestay offers to become more popular. In an opinion article, Tilli (2024), argues that these limitations start with the requirement for an indefinite rental agreement. As a result, mortgage providers often argue that the resell value of a dwelling is lower when an indefinite rental agreement is made which means they do not give permission for homestay rental. Taking away the requirement for an indefinite contract is however a political decision which is being discussed. A secondary reason is the lack of clarity for homeowners to start a homestay offering and the lack of municipal guidelines

available, creating a lot of uncertainty what is allowed (Tilli, 2024). This means that -even though students are eligible for a temporary contract- homestay offerings are not widespread available as of yet.

A serious notion is however also given regarding homestay offerings. Using larger dwellings for homestay in this way slows down the moving flow of households from larger dwellings to smaller apartments as people age and creates congestion for certain housing types. It reduces the availability of larger homes for starters and other households (Ministry of the Interior and Kingdom Relations, 2022). The suggestion made in this policy outline to prevent this congestion is to enforce 'a proper landlord' (*goed verhuurderschap)*. Meaning that offering student housing in this way should not take away from the availability of housing for these other demographics. At the same time, a claim is made for additional research in understanding the impact of this policy outline. Few articles describe the willingness of students for homestay offers and the effect of certain demographical aspects on the preference for homestay offers, further calling for additional research.

STAKEHOLDERS IN THE DUTCH STUDENT HOUSING MARKET

Besides students as customer, many different stakeholders can be thought of when discussing the student housing market. From housing providers (investors), up to legislators and real estate developers. In the section, an attempt will be made to better frame and understand the interests of these different stakeholders. First looking at the housing providers, or the landlords; Hooft van Huijsduijnen et al. (2023), distinguished seven types of landlords. Namely: private investors (large institutional ones or private investors); KENCES-housing associations (an organization representing housing associations dedicated to student housing); other housing associations; informal housing providers; privately owned by students; homestay *(hospita)*; and others. Figure 4 indicates the share each type of housing provider has in the overall landscape. Private investors -further specified as both large and smaller investors not living in the property- offer the most amount of housing of any housing provider. Their main aim is often to invest in housing as a (secondary) stream of income. Some buy-to-let investors sometimes also tend to provide housing for direct family members (e.g. their children).

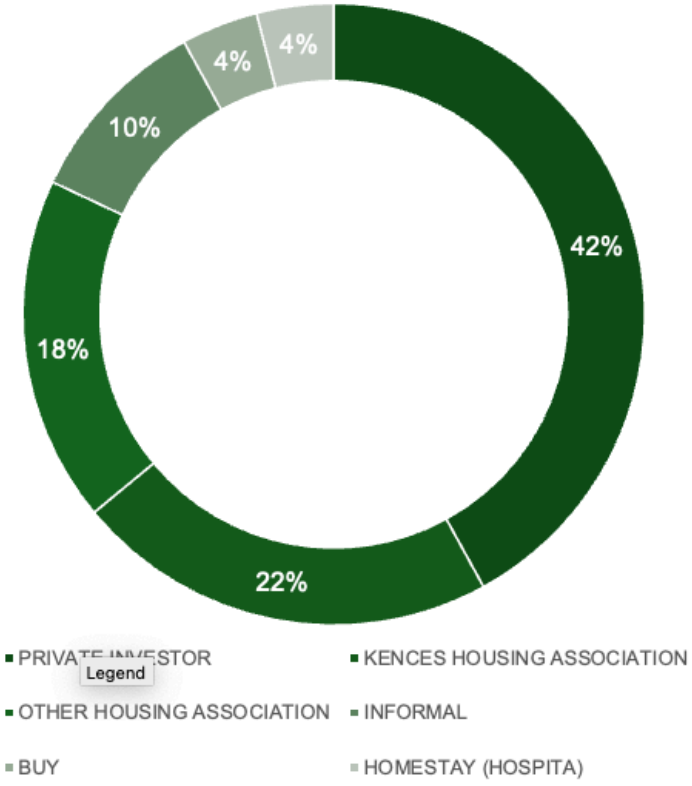


Figure 4: Division of housing providers (Hooft van Huijsduijnen et al., 2023)

Besides the housing providers as the eventual investors and operators of student housing, new housing is often created by real estate developers. Typically, a developer acquires land and develops housing to add to the housing stock. As developers often do not operate as investors, it is important to note that they are less involved in the operation and use of the dwellings and (INT-2, personal communication, September 3, 2024). Put simply, their objective is instead to maximize the value of the real estate, which means making design choices that private owners or (large) investors are willing to buy and rent out to for example students. This means that the design choices made by the developers regarding for example typology are vital in what offers are eventually created. These choices are influence by many different factors, including regulations such as the rent valuation system. Also understanding customer demand can help in creating something that is not only desired from a financial point of view, but also from a demand point of view. Meaning that it is also the responsibility and the interest of this stakeholder to think about how housing should look like.

Within the built environment, ample of government organizations are involved on different levels in legislation and enforcement. As previously discussed, several ministries are for example especially concerned with legislation and policies for student housing on a national level. Even though it is hard to describe in one conclusion, the national government is concerned with creating housing for each demographic and promote or disadvantages certain developments using for example rental allowances, rent valuation systems or other policies. On a lower level, municipalities have the same perspective and interest but use other tools to ensure these results. Through for example local agreements with housing associations; sale of building locations; guidelines for new development projects; and zoning plans, they are able to steer and guide development plans (INT-2, personal communication, September 3, 2024).

PART II | 1.3. FINANCIAL & LEGAL ASPECTS

Before diving further into a discussion of the Dutch housing market, it is important to mention and explain several legal frameworks and different regulatory interventions which have been mentioned up until this point. Part of the analysis below also goes into more detail on the business case housing providers and developers have to work with given policies such as the Rent Valuation System (*WWS)* as well as the law for affordable rent.

Looking at a simple comparison of the maximum rent which can be charged by housing providers for shared and individual housing, allows to better understand what influence the rent valuation system(s) and financial incentives (e.g. rental allowance) have. As mentioned before in the introduction, the difference in rent and rental allowance between shared and individual housing is complex and includes multiple factors. Figure 5 shows the results of a survey carried out by Hooft van Huijsduijnen et al. (2023) among Dutch students. In this figure, the average housing costs (including service costs and rental allowance whenever applicable) are higher for shared student housing compared to individual student housing with an average of €30,-/ m^2 and €33,-/ m^2 respectively. This holds true for any type of housing provider.

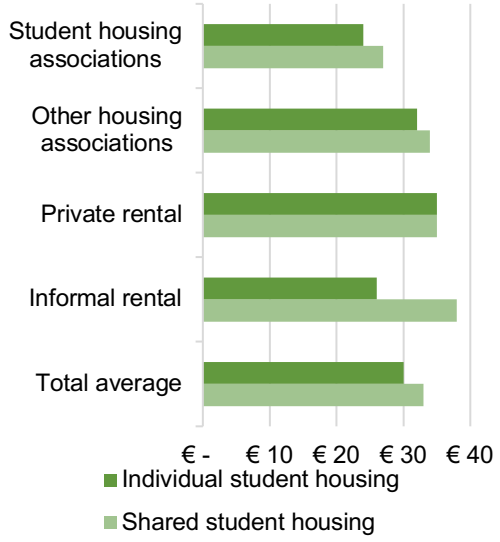
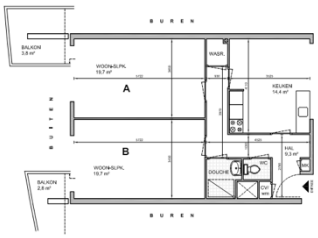
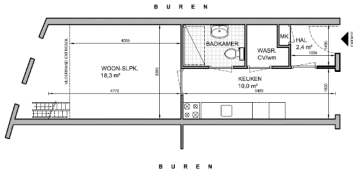


Figure 5 : Net housing costs per m^2 (Hooft van Huijsduijnen et al., 2023)

When looking further into the difference between shared and individual student housing, a comparison between two options in the same housing complex operated by DUWO (a student housing association), leads to the comparison in Table 4 below. At first glance, this comparison makes a strong case for individual student housing. On the one hand, housing providers benefit from a 101% higher base rental price per m^2 while the tenant benefits from a 28% lower net rent per m^2. Looking more specifically into the reason for this situation, the rental allowance plays a huge part. With € 12,15/ m^2, only the rental allowance for individual housing is more than the base rental price for shared housing with € 9,80/ m^2. Naturally, this governmental incentive for individual housing thus creates a difficult business case for housing providers wanting to offer shared housing.

Until 1997, the national government allowed municipalities to appoint shared student housing complexes to be eligible for rental allowance (Bato, 2009). This regulation was discontinued as it made legislation more complex and resulted in higher administrative costs. Shared housing which was already eligible for rental allowance, did keep the benefit, meaning that older, large scale shared housing complexes are currently still eligible for rental allowance.

Table 4: Case comparison between individual and shared student housing at Balthasar van der Polweg, Delft. (INT-1, personal communication, April 24, 2024)

Shared student housing				**Individual student housing**			
		*Reference case: Two-bedroom apartment operated by DUWO (student housing association). Total of 31,55 m² (19,7 m² per room and 11,85 m² share in shared areas)*				*Reference case: Studio operated by DUWO (student housing association). Total of 30,7 m²*	
Monthly costs (per 01-07-2024)	**Total**		**Per m²**	**Monthly costs (per 01-07-2024)**	**Total**		**Per m²**
Base rental price	€ 309,34		€ 9,80	Base rental price	€ 603,57		€ 19,66
Service costs (incl. energy)	€ 109,24		€ 3,46	Service costs (incl. energy)	€ 138,28		€ 4,50
Gross rent	**€ 418,58**		**€ 13,27**	**Gross rent**	**€ 665,85**		**€ 21,69**
Rental allowance	*- € 0,00*		*- € 0,00*	*Rental allowance*	*- € 373,00*		*- € 12,15*
Net rent	**€ 418,58**		**€ 13,27**	**Net rent**	**€ 292,85**		**€ 9,54**

RENT VALUATION SYSTEM

Understanding where the difference in base rental price described before comes from requires looking into the two rent valuation systems which exist in the Netherlands. One for individual housing (*Woningwaarderingsstelsel, WWS)* and one for shared housing *(Woningwaarderingsstelsel voor Onzelfstandige eenheden, WWS(O))* (Ministry of General Affairs, 2020). Both systems work in a similar way where dwellings score points based on objective features and with that determine the quality of a dwelling. These characteristics include for example the size, the energy label, or the estimated value (*WOZ-waarde)* of the dwelling (Kences, 2024). Based on these characteristics, a dwelling is placed in one of three sectors: the social, mid-rent of the free rental sector. For the social and mid-rent sector, the maximum rent a landlord can charge a tenant is based on the total number of points awarded to a dwelling based on objective criteria, which is translated into a certain price.

Recently the *WWSO* has been revised, potentially boosting feasibility studies for housing providers, as the new system increases the maximum amount of rent. This will in turn make it more feasible to develop shared housing (Kences, 2024). However, simultaneously, no changes are made to the regulations regarding rental allowance. This further imbalances the division between shared and individual housing, as discussed in the context of Part I. This change has made shared housing more expensive for the tenant, while individual housing remains at the same level. This creates a further dilemma for housing providers, as it asks the question to what extent student are willing -and should need- to pay additionally for shared housing. Shared housing is always placed into the social housing sector based on the WWS(O)) (Ministry of General Affairs, 2020)

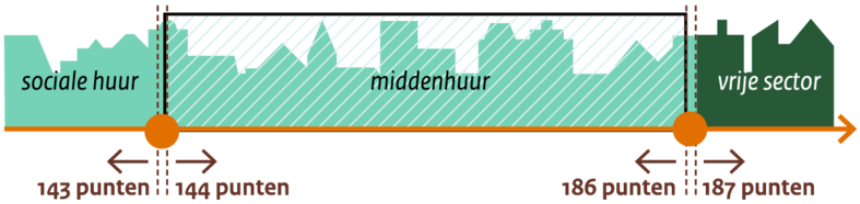


Figure 6: WWS (Koninkrijksrelaties, 2024)

LAW FOR AFFORDABLE RENT

One major recent change is the 'Law affordable rent' (*Wet betaalbare huur)* as it came into effect as of July 1st, 2024. The aim of this law is to both better protect renters against excessive rent prices but to also reduce uncertainty for them. Included in this regulatory intervention is a revision of the *WWS* and *WWSO* as outlined above.

Another major change relates to the types of contracts used in the rental market. With the introduction of the law for affordable rent, only permanent rental contracts can be used (Ministery of the interior, 2024). However, given the specific situation of students, temporary so-called campus contracts can be used to give more flexibility to investors and to safeguard an outflow of students living in student housing whenever they complete their studies.

What this new regulation has potentially also changed, is the use of so-called FRIENDS contracts. With these contracts, two or more roommates share a single self-sustained dwelling under one rental contract without being a single household. As described by Dirks et al. (2023), it allows for a more efficient use of the housing stock as it reduces the amount of small households. This type of contract is most suited for the social or mid-rent sector and has the added benefit that the total rent is often affordable for tenants without the need of rental allowance, which again saves the government. However, with the introduction of the law for affordable rent, the government requires that tenants sharing a contract form a 'durable household' (Hielkema, 2024). If this is not the case, house sharing is only possible using possible using shared housing contracts, eliminating the idea and legal use of the FRIENDS contract. Due to this change, it is expected that the total rent per dwelling is taken down, potentially resulting in infeasible situations for housing providers.

Now that the law affordable rent has come into effect, market parties varying in size (from buy-to-let investors up to large investors) have also voiced their views on the matter through various outlets. Some believe in the argumentation and potential positive effect of more regulation (Klaassen, 2024) while others firmly believe that the added regulation will result in a reduction of the housing stock available on the rental market (Ermerins, 2024; Pothast, 2024). The latter arguments against the regulation are also claiming to already see an increase in rental properties being sold off when tenants (are forced to) move out, also in case of buy-to-let student housing as already outlined in the context of part I. Whenever these are sold off, this type of housing is typically bought by expats or higher income first time buyers, which asks the question if the law meets the desired outcome of a more fair rent (Ermerins, 2024).

As these laws have only just come into effect, no single answer can be given to what the eventual effect will be on the amount of (shared) student housing operated by a larger or smaller private investor. However, the previous paragraphs have shown and highlighted a lot of uncertainty caused by these regulatory measures. Unsure is how the market will react, but it can be said that the chosen line of policy is focusing on regulating the market, which is in line with the action plan as set out by RIGO Research en Advies (2022). Specifically understanding these effects is however also not part of this thesis and will therefore also not specially be discussed in coming chapters. This discussion will however be incorporated in the development of different business models for student housing to assess the eventual feasibility and desirability for alle stakeholders.

PART II | 1.4. NEW DEVELOPMENTS HOUSING TYPOLOGY

The type of build says a lot about the impact a building has on aspects such as the financial and environmental performance (Scheele-Goedhart, 2019). Specifically looking into the financial performance and the return on investment (ROI) of two case studies, gives a better understanding of (re)development projects. On the one hand, a large new-built complex and on the other a transformation of a smaller complex. In this comparison summarized in Table 5 below, Scheele-Goedhart (2019), concluded that for smaller transformation projects, shared housing offer a higher return compared to individual housing given that more dwellings can be created on the same floorplan. For larger new built projects, a clear distinction was found between individual and shared housing with individual housing scoring 3,4 percent point higher in ROI. Even though it is important to highlight the limitations of this study: only two case studies being used

and the high number of assumptions, it is important to highlight the potential of the type of built on the overall project performance. In smaller settings, the difference in return seem to lie closer together.

Table 5: Case study comparison of ROI (Scheele-Goedhart, 2019). Translated and adapted visually by author.

	Case study: new built		Case study: transformation	
	Individual	*Shared*	*Individual (2 units)*	*Shared (3 units)*
A. Direct investment	€ 20.500.000	€ 20.500.000	€ 2.250.000	€ 2.250.000
B. Exploitation costs	€ 561.568	€ 300.000	€ 33.694	€ 27.000
C. Income	€ 2.589.264	€ 1.625.232	€ 127.642	€ 146.271
ROI (B-C)/A	**9,9%**	**6,5%**	**4,2%**	**5,3%**

When looking beyond this comparison, several master theses from the architecture faculty of the Technical University of Delft can be found that investigated different forms of shared student housing. Below, several of these theses are highlighted to show the way in which shared housing might be formed.

ADAPTIVE REUSE OF CAMPUS BUILDINGS TOWARDS STUDENT HOUSING

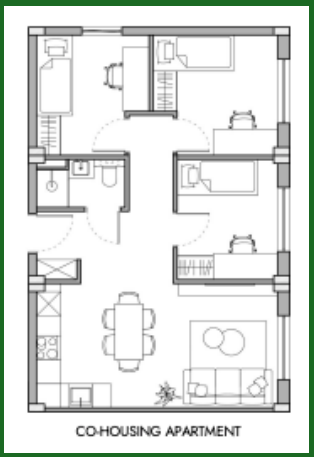
After analysing different campus buildings of the TU Delft on their potential for redevelopment into student housing, a design was made for one of these buildings. In this design, sharing spaces was kept as a central theme and shared housing was developed.

(Warfman, 2024)

MODULE+ TOWARDS AFFORDABLE AND QUALITATIVE STUDENT HOUSING

''The main point of my work is an attempt to create an universal system based on computational design and timber modules, which could be a potential solution to the problem of the lack of sufficient number of affordable student housing, while providing adequate quality of living conditions. Focusing on people and their needs in the context of looking for new tools and ways of shaping and creating space is, as I believe, a key aspect of architecture. In turn, the approach to the problem from the technical, engineering side of architecture, examining the combination of timber modular architecture and computational design, as well as raising the issue of "1 Million Homes", in my opinion fits well into the thematic framework of the Architectural Engineering studio.''

(Andruszkiewicz, 2023)



These two these show several aspects interesting to consider for this research. First of all, Warfman (2024), provided a more detailed study on repurposing buildings into student housing. Scoring well on the planet aspect of the triple bottom line as the amount of raw materials needed are reduced. This research

furthermore included the type and configuration of common spaces such as: living rooms, kitchens, music areas but also shared study spaces and different types of relaxation rooms. Nugent (2016), presented a more detailed study on common spaces and success factors in creating these. Even though no exact correlation was found, some attributes were found among the most successful shared spaces. Shares spaces should be visible and open, promoting spontaneous interaction. Providing multiple activities in one space furthermore helped to make it easier for students to join different activities. Shared spaces should also not be too large or too small and have a variety of functions. Success is also fostered in students having ownership in a place which are of good quality with plenty of light and comfortable and flexible furniture.

The work of (Andruszkiewicz, 2023) also translates another innovation (modular housing) described before in the sustainability trends section and makes it into a tangible design proposal. In this process, both the planet and profit dimension are impacted as modular housing is often cheaper to produce but it also allows to be reused more easily (Kyrö, 2020; Vader, 2022).

STING CONCEPT

In an attempt to circumvent the difficulties surrounding rental allowance and limited rent for shared housing, another housing concept has been developed, the STING concept. As explained by DUWO (2023), this housing typology combines small, self-contained individual housing with a larger shared common space. The private space is around 20 m^2 and includes a bathroom and a very small kitchen, just enough to validate for rental allowance. A larger common space of 40 m^2 shared between ten students includes a larger kitchen. Using the small size of the private rooms, students are forced to use the common space more, creating the feeling of shared housing.

PART II | 1.5. CUSTOMER DEMAND

To know what student housing should look like and what functions it needs to fulfil and perform, this part will focus on better understanding the customers of student housing: the students' themselves. Through a literature review, outcomes of several surveys were identified which will be discussed below. The outcomes from three research papers and consultancy reports will be discussed below. One paper describing student housing preferences in Norway and two describing student housing preferences in the Netherlands.

First, Thomsen & Eikemo (2010), analysed aspects which influenced student housing satisfaction in Trondheim, Norway. The outcomes indicated that the type of tenancy/ ownership was most important, followed by the impact of demographic variables; housing location; different housing characteristics and individual facilities (kitchen/ bathroom). This study concludes with the importance of a sense of belonging for students and being able to make a place a home, albeit a temporary home. The importance of student housing and being able to express a personality is stressed here.

Second, Nijënstein et al. (2015), studied the housing preferences and human values among student renting housing from *WonenBreburg,* a housing association from the region of Eindhoven, the Netherlands. This study found that students consider price the most important aspect, respectively followed by cycling time to the campus, room size, and kitchen sharing. As with the work of Thomsen & Eikemo (2010), this paper stressed the importance of students characteristics on housing preferences. From the analysis, several socio-demographic such as nationality, gender, educational level, openness to change, and self-enhancement were found to be statistically significant for student housing preferences. The authors describe this significance as 'Heterogeneity in student housing preferences' and claimed to be the first ones to show that housing preferences differ among students. This fuels the discussion on ensuring that different types of housing are available to satisfy the needs and demand of different students and left room for further understanding what type of common spaces can create this heterogeneity.

As a third study, Hooft van Huijsduijnen et al. (2024), reported housing preferences among students in their yearly student housing monitoring reports of 2023 and 2024. These reports are commissioned by Kences and the Dutch Ministry of the Interior and Kingdom Relations and offer a detailed analysis on -among other

aspects- the overall development of the size and composition of the total student population; affordability analyses; student wellbeing; and a description of relevant policy developments. Every yearly revision includes additional relevant topics, making these reports the national standard on student housing. A survey on housing preferences among 49.300 respondents indicated that housing expenses was the most important housing characteristics, followed respectively by the type of housing, location, size, and availability of a common room.

Even though each of the papers described above uses a slightly different angle, it is interesting to see the similarities in housing characteristics and the importance of them. Even though Hooft van Huijsduijnen et al. (2024), is the only one reporting the relative importance of these housing characteristics, all papers clearly show the importance of sharing facilities, the price, location and room size.

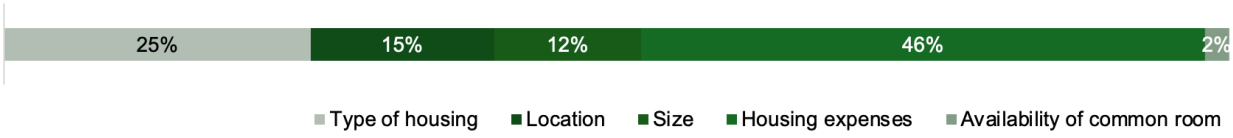


Figure 7: Respective importance of housing characteristics (Hooft van Huijsduijnen et al., 2024)

Besides the overall importance on these aspects in the total student population, these aspects can also be broken down into three housing types: shared housing, single-room housing, and multi-room housing. As can be seen in Figure 8 below, the results and importance are in line with the overall results in Figure 7 above. Interesting to note is that the housing costs is relatively more important for single- and multi-room (individual) dwellings while the location and size of the room is especially relevant for shared housing.

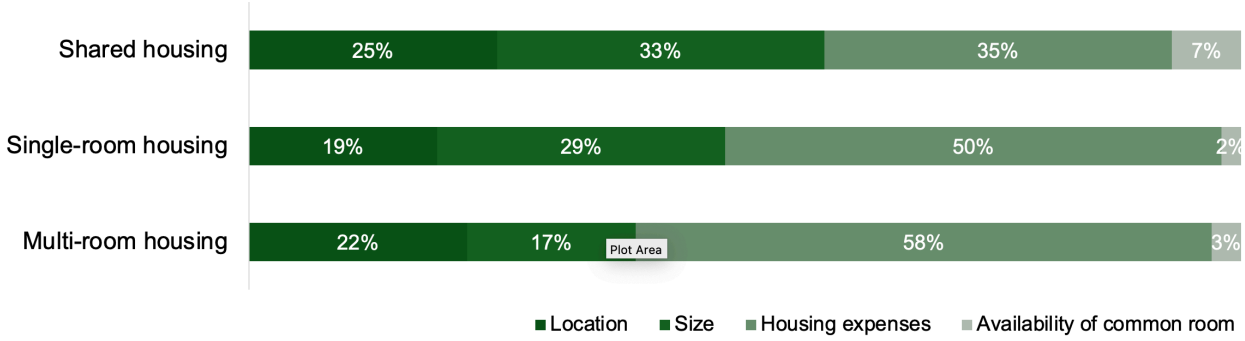


Figure 8: Respective importance of housing characteristics, broken down into current housing types (Hooft van Huijsduijnen et al., 2023)

From the conjoint analysis conducted by Hooft van Huijsduijnen et al. (2024), preferences of students have been determined for the nine most popular housing combinations. These combinations can be seen as examples of how various characteristics together influence housing preferences. The bars in Figure 9 below highlight the preference for the different housing options. As can be seen here, demand exist for shared, single-room and multiple-room individual housing, but the right combination of characteristics is important. For example, one-room apartments are only preferred over rooms with shared facilities if the housing costs are manageable and it is in a good location. Additionally, shared housing is preferred when it is: large enough, affordable, and it is in a good location.

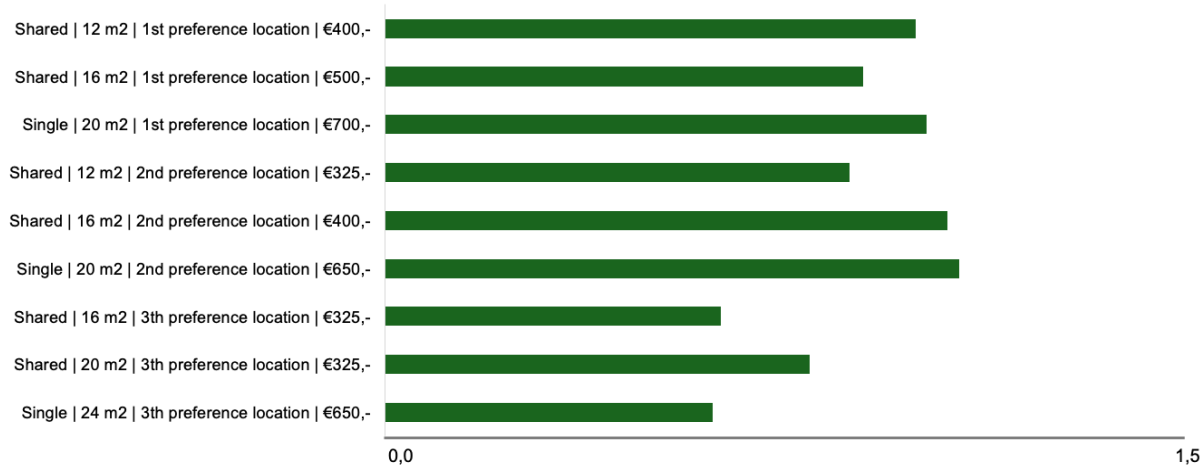


Figure 9: Housing preferences, normalised scale (Hooft van Huijsduijnen et al., 2024)

PREFERENCES FOR HOUSING TYPES

Besides identifying the most important housing characteristics and what factors influence these preferences, ABF Research (2024) analysed the preference for housing type in a separate report. In this report, a separate survey was carried out among students with the choice between their: current housing type; preferred housing type in the current financial landscape; as well as the preferred housing type with a hypothetical rental allowance of €150,- for shared housing. As such, the influence of rental allowance described before with the financial and legal aspects, is taken out of the equation. This allows to analyse student preference when levelling the playing field in terms of rent price. The results from this survey can be found below in Figure 10. The importance of housing characteristics on the overall housing preference can be understood better when carefully examining this figure. Comparing the first two bars with the other bars shows that the current housing stock does not meet the required demand, not for young, nor for students in general. Preferably, more students would want to live in individual (single- or multiple-room) housing with the current rental prices as these offer more comfort while being cheaper than shared housing (Hooft van Huijsduijnen et al., 2024). However, the preference is drastically changed when taking away the financial argument by including rental allowance for shared housing. Almost seventy percent of young students would in turn prefer shared housing over individual housing. For the entire student population, a similar trend can be seen. This analysis justifies the wish for shared housing and again quite clearly shows the main obstacle for the preference of (especially young) students: the financial argument, as also identified before. A critical note however also applies here; the total housing stock offers too much shared housing according to this analysis (62% vs 27% or 36%). With the current housing shortage, it is however uncertain whether this means there currently also is too much shared housing or whether the total shortage cancels out this ‘oversupply’. No concluding answer can be given based on the available data, but it might be likely that actual demand will shift towards shared housing under the current market conditions.

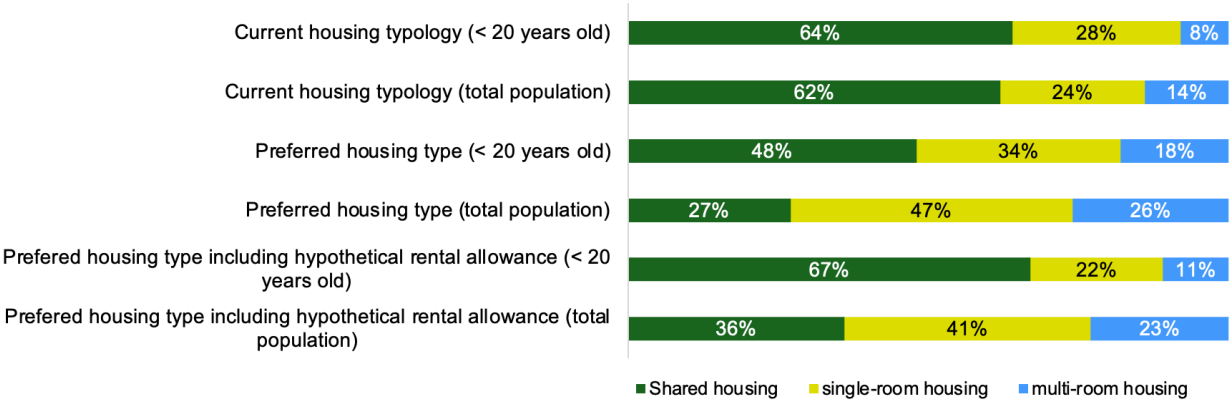


Figure 10: Preferences for housing types (ABF Research, 2024)

As previously discussed, this research highlights the wish for shared housing for both younger and older students, where younger students respectively showed a larger preference for shared housing. This trend is in line with the work of Verhetsel et al. (2017), where a larger overall preference was found for individual housing but simultaneously also still a significant preference for shared housing under Belgium students.

When specifically looking into the willingness of students to pay for certain aspects, Hooft van Huijsduijnen et al. (2023), identified that:

> *"Students are willing to spend an additional 155 to 230 euros to live in the city centre or on campus instead of at the edge of the city. For a one-room apartment, students are on average willing to pay 185 euros more in housing costs than for a room with shared facilities. A multi-room apartment instead of a one-room apartment is worth an additional 180 euros to students."*
>
> *Hooft van Huijsduijnen et al. (2023), p.12*

The outcomes above highlight the significance of price and location, but also housing type. Students generally view shared housing as an inferior product to individual housing, resulting in a lower price which they are willing to pay (Hooft van Huijsduijnen et al., 2024).

SOCIAL PREFERENCES & IMPLICATIONS

Besides the preference of students for different types of housing, finding housing in the first place still proves to be a challenge in the overheated housing market. Hooft van Huijsduijnen et al. (2024), estimated the shortage of student housing to be 23.100 dwellings in 2024 with a potential increase to 26.300 – 42.400 dwellings by 2032. Besides the housing shortage causing a lot of stress for students, postponing the time when students start living on their own also naturally influences their personal development and their overall student career (Fang & van Liempt, 2021).

Besides the effect on students in general, international students face additional issues in obtaining housing. Fang & van Liempt (2021), also concluded that international students are further disadvantaged in finding student housing due to the prevailing culture in (shared) student housing. With the introduction of the law for proper land lordship, additional attention was given to the position of international students (Ministry of Housing and Spatial Planning, 2023). For example, the selection procedure for new roommates must be published beforehand and cannot include discriminatory elements such as the ability to speak Dutch. Secondly, another frequently described point is the changing view of student housing. From simply being a home to stay in, up to a piece of social infrastructure (Card & Thomas, 2018; Franz & Gruber, 2022; Klaveren et al., 2021; Xulu-Gama, 2019). For different international situations, all papers independently describe the added layer which student housing plays for the overall social development of students. Looking more specifically into the case for the Netherlands, Hooft van Huijsduijnen et al. (2023) describe the well-being of Dutch students living in shared housing to be significantly higher compared to those living at home or in independent housing. No significant difference in well-being is observed between students living at home and those living in individual housing. Similarly, for international students, no notable difference in well-being is shown between those residing in shared housing and those in individual housing. Interestingly, even though students in shared housing report higher well-being compared to those in individual housing, many still prefer a one-room studio apartment as also highlighted in Figure 8 above. One key reason is the importance students place on housing costs. For a relatively little additional amount (after accounting for renal allowance), students gain considerable benefits from a studio in terms of comfort compared to a room with shared facilities.

PART II | 1.6. VALUE PROPOSITION CANVAS

Based on the literature review, a preliminary step can be made in filing out several parts of the value proposition canvas. On the one hand, the discussion has shown several potential products and services (part of the value proposition) as well as the customer profile. Below, each part will be further elaborated upon.

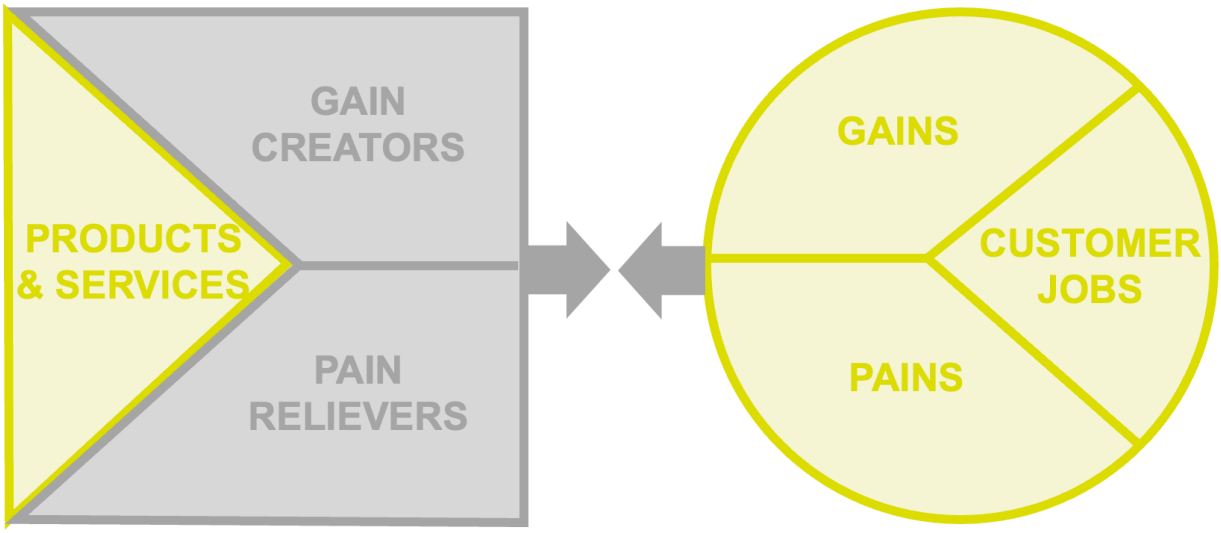


Figure 11: Update of theoretical framework (Author, 2025)

PRODUCTS & SERVICES

Throughout the context setting and the literature review, several types of housing can be identified, as also highlighted in Figure 12. As discussed before, Hooft van Huijsduijnen et al. (2024) defines two types of student housing: individual and shared. With a distinction into less than five or 5 and more roommates for shared housing and single room (studio) or multiple room individual housing.

Besides these options, the STING concept; mixed living forms between elderly and students; and dorm rooms were less used, but also identified throughout the literature review.

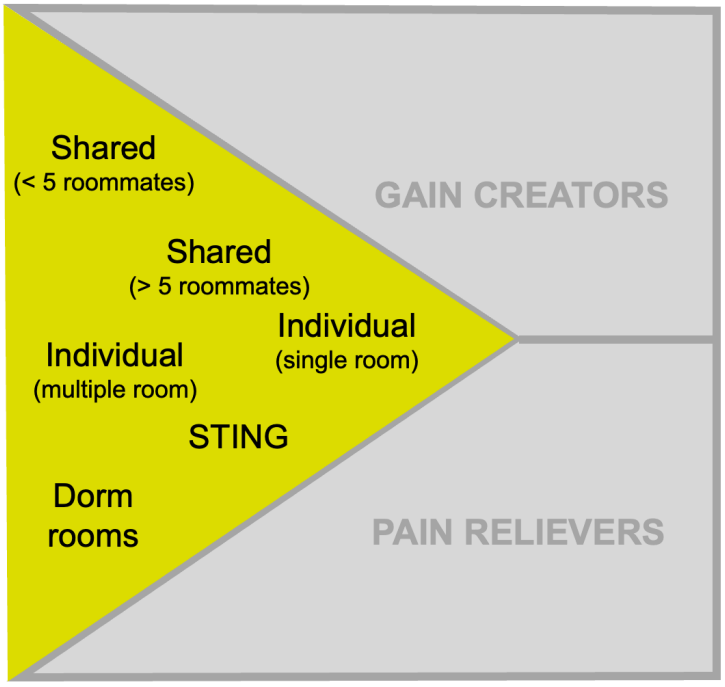


Figure 12: Updated value proposition (Author, 2025)

CUSTOMER PROFILE

Based on the discussion above, a customer profile and customer segments can be further developed to report and summarize the main findings for the customer demand section. In developing the customer profile, three points will need to be discussed: the customer jobs: *what need is the customer trying to fulfil*? The gains; *what are the perceived benefits for the customer*? And the pains: What *issues does the customer experience*? (Ostenwalder et al., 2014). For defining the exact customer segments, a careful consideration needs to be made at a later stage to distinguish relevant segments within the total pool of customers. For now, the focus is on a generic profile for student housing.

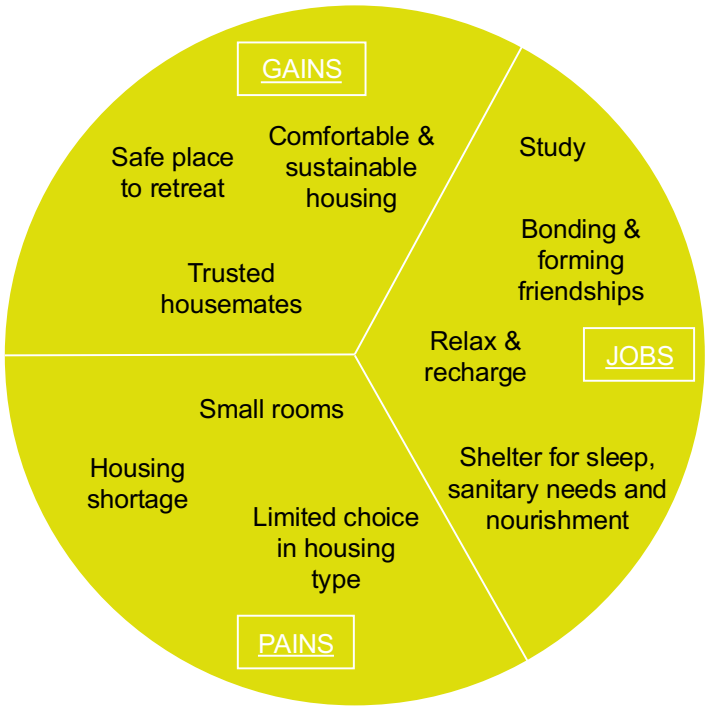


Figure 13: Updated customer profile (Author, 2025)

Housing is more than just four walls with a place to sleep and shelter. That much has been proven by the motivation for this research in the first place and the literature review above. Housing should (ideally) also align with customer demand in making it a home and not just a house. More specifically, housing in this respect can be described alongside Maslow' Hierarchy of needs (Zavei & Jusan, 2012). Maslow' pyramid refers to a psychological theory that organizes human needs into five levels: physiological needs (food, water, shelter); safety; love and belonging; esteem; and self-actualization (Maslow, 1943). By satisfying lower level needs, steps can be made towards the end goal; self-actualization and overall personal development. This theory explains the content and customer jobs of this thesis in an elegant way. Of course, the basic needs students want to fulfil are having a physical place to shelter and sleep but the end goal is more than that. The goal is to create a sense of belonging in the place where you live, to create friendships and have a form of housing which helps in developing a personality. As such, interactions between peers is vital in building a form of belonging (Easterbrook & Vignoles, 2015). How these interactions take place and which elements are important in describing this, remains unknown. In a way, a tension is also sometimes created between the levels of Maslow' pyramid. For example, safety and security implies a private space whereas a sense of love and belonging is fuelled by sharing spaces with peers or social weaker audiences like refugees or elderly. Even though this note is out of bounds for the overall scope of this research, it is an important aspect to take into consideration.

With this perspective in mind, the customer jobs for student housing are displayed in Figure 13. Typical issues experienced with current housing as well as typical gains, both based on the literature review above, are also included in this figure.

Following from the previous sections, different characteristics were identified which can help in distinguishing different types of customers. First of all, ABF Research (2024) uses age (below 20 and over 20 years old) and housing type (shared, single-room and multiple room housing) as segmentation factors. Building on this segmentation, a distinction can be made and further specified into not only age but also the study phase (bachelor, master or PhD-students). On top of age, this will allow for further differentiation and segmentation, more specifically aligned with the customer market. Furthermore, Fang & van Liempt (2021); Nijënstein et al. (2015) also give a good foundation to include nationality as a customer segment.

KEY TAKEAWAYS & UPDATED RESEARCH GAP

The literature review has provided valuable insights into student housing, deepened our understanding of the problem gap described in the introduction, and provided a preliminary understanding of customer (student) demand for shared housing.

While the policy analysis of the housing market indicated clear quantitative goals for the development of housing, it lacked specific qualitative goals for student housing on a national level. However, a discussion on the financial aspects did further highlight the importance and influence of rental allowance on the overall type of demand for housing (ABF Research, 2024). As also indicated by Mourik & Wassenberg (2023), rental allowance effectively subsides a living that is not desired with funds which arguably could be better divided among all students creating better housing options that have a lower impact on the planet and profit dimension of the triple bottom line. With the focus on homestay offerings as a way to alleviate the student housing shortage (Mourik & Wassenberg, 2023), a first step seems to have been made by the national government to focus more on the qualitative aspect of developing more housing. However, at the same time a lot remains uncertain. What does sharing mean for students? Which facilities would they like to share? With whom would they like to share these facilities? A first understanding on these has been created through the works of (Hooft van Huijsduijnen et al., 2024; Nijënstein et al., 2015; Thomsen & Eikemo, 2010) but still the gaps mentioned are left to be researched. Furthermore, some of these papers are already ten to fifteen years old and not all focus on the Netherlands. Making it interesting to further look into these preferences and what sharing means for students in the Netherlands. As these papers did already build a case for heterogeneity in housing preferences based on socio-demographic characteristics of students, it is also interesting to look into the effect of these characteristics.

From the different types of demand, the customer profile highlights and justifies what tasks students require from their housing product. Alongside Maslow's hierarchy of needs theory and the works of Fang & van Liempt (2021); Thomsen & Eikemo (2010), housing is not only there to fulfil low level needs, but should also allow for personal development and higher personal needs. It should ideally also be a facilitator for the life a student chooses to lead. Therefore, student housing should for example also facilitate a certain amount of social interaction and be located in a place close to everyday needs of students.

PART III | EMPIRICAL DATA COLLECTION

OUTLINE OF ANALYSES

As outlined in the chapter on research design, two analyses will be conducted in the empirical data collection part of this research. Both a choice-based conjoint analysis as well as a morphological analysis. Both require the input of different characteristics and different options for these characteristics. As both analyses require similar input, this part will discuss the selection of criteria and the division of characteristics between the two analyses using selection criteria and qualitative evaluation of characteristics found in literature.

PART III | 1.1.1 HOUSING CHARACTERISTICS IDENTIFIED

Different papers and studies related to student housing have been discussed up until this point. Similarities and differences can be found throughout these studies in the form of the characteristics which have been researched. Table 6 below highlights different attributes -or characteristics- of five different studies specifically focused on student housing. Important to note is that this list is not exhaustive. Nor can it be with almost forty characteristics identified by Muslim et al. (2012) alone. Besides the three articles discussed in the customer profile chapter of the literature review, the works of Hou et al. (2023; Muslim et al. (2012) will be included in this table for completeness. Besides these studies, no other papers on housing preferences specific for student housing were identified from a literature review.

Table 6: Overview of housing characteristics identified in four different papers (Author, 2025)

Satisfaction of Students' Living Environment between On-Campus and Off-Campus Settings: A Conceptual Overview	Landelijke Monitor Studentenhuisvesting 2024	Aspects of student housing satisfaction: a quantitative study	Student residential apartment performance evaluation using integrated AHP-FCE method	Beyond demographics human value orientation as a predictor of heterogeneity in student housing preferences
Muslim et al. (2012).	(Hooft van Huijsduijnen et al., 2024)	(Thomsen & Eikemo, 2010)	(Hou et al., 2023)	(Nijënstein et al., 2015)
Housing conditions: Type of accommodation; Location and proximity to campus; Usability and arrangement Social activities: space; Housemate and neighbourhood interaction Community facilities and services	Type of housing Location Size Living expenses Common rooms	Type of tenancy/ ownership The impact of demographic variables Housing location Different housing characteristics (size, character, style) Individual facilities (kitchen/bathroom)	Visual comfort Thermal comfort Aural comfort Fire safety Hygiene	Price Size Cycling time to campus Cycling time to city centre Bathroom Kitchen Walking time to supermarket Walking time to park Outdoor space

PART III | 1.1.2 SELECTION CRITERIA

The housing characteristics identified above include a wide variety of aspects. Moving towards coherent sets of attributes, requires selection criteria to be developed. Even though pricing is typically included in a conjoint analysis, the scope of this research requires a different approach. The conjoint analysis is focused on the intrinsic value of sharing, as well as characteristics related to shared housing. The price of housing is seen as an effect of the selected value proposition, in line with the way the rent valuation system *(WWS(O))* functions. Price follows housing characteristics and not the other around. Therefore, it is more important to investigate what student find important in shared housing instead of the trade-offs made when

including pricing. This will also provide new insights over previous conjoint analyses on student housing such as the work of Hooft van Huijsduijnen et al. (2024); Nijënstein et al. (2015). The morphological and qualitative analysis will provide further insights into housing characteristics which are deemed not be the most essential to include in the conjoint analysis but which are still vital in building a complete value proposition. Given this outline, Table 7 below gives several selection criteria for selection attributes from Table 6 above as well as form the literature review. A qualitative discussion on remaining attributes will help to determine which elements will be included in the morphological analysis afterwards. The criteria in Table 7 require to look back into the literature review. More specifically, these criteria stem from both different levels of Maslow' hierarchy of needs as well as the from the research scope set out in the introduction. Hence, the criteria will be a mix of what respondents will find important in housing, as well as the ensuring a specified focus for this specific research goal.

Table 7: Selection criteria for attributes of choice-based conjoint analysis (Author, 2025)

Related to	Criterium	Explanation
Physiological needs	At least two characteristics describing basic housing elements to be included.	Housing should first and foremost include basic elements describing to what extent housing is desirable.
Love and belonging or higher	At least two characteristics of shared student housing to be included.	Belonging is largely based on the relations formed in housing. Sharing facilities aids in forming these bonds.
Recent trends	At least two characteristics related to recent trends and developments in the field of shared student housing to be included.	Understanding the effect of recent trends can help to better understand to what student prefer in their housing.

PART III | 1.1.3 SELECTING ATTRIBUTES

Comparing the housing characteristics in Table 6 shows a great array of focus areas. Where one paper solely focuses on physical building aspects, others focus on more generic attributes of housing such as location and size. In line with the selection criteria described above, attributes will be phrased for: basic housing characteristics; sharing different types of facilities; as well as for recent trends. Doing so will allow for a relevant but not too cognitive demanding analysis for respondents with many different attributes, as outlined in the research methodology on choice-based conjoint analysis.

First looking at the basic housing characteristics, the literature review before mainly outlined the importance of location and room size. Therefore, both will be included in this survey as basic physiological needs. Including different facilities to share with others will allow for a more distinct analysis on which types of facilities can be shared. These facilities include: the kitchen, bathroom, shared living room and different types of common room. To determine the attributes as specifically and efficiently as possible, two attributes will be included that specifically target sharing, the kitchen and bathroom as two separate attributes. This allows to omit an attribute specifically on the type of housing, as it is already captured in these attributes, which limits the required number of attributes as well as it increases the level of detail. To develop the value proposition potentially further, market innovations for student housing will be tested. As such, a first step might be made into understanding the appreciation of students to move towards 'housing as a service', where multiple additional services can be included. These services might include offering washing machines of options for cleaning. As described in the literature review, another interesting trend is the use of common spaces with a greater number of students as a substitute for traditional shared housing. The

type of spaces however differ greatly and include study spaces, gyms and relaxation rooms with tv's or other games (Nugent, 2016)

Evaluating the housing characteristics based on the selection criteria for the choice-based conjoint analysis, results in assigning several of the characteristics found in the five studies discussed before. These are highlighted in yellow in Table 9 below. For the remaining, characteristics, it is vital to critically assess their potential to be used in the morphological analysis, which will be done below.

Moving through the housing characteristics, several things stand out. First, the rent was found to be very important for student preferences in the literature review (Hooft van Huijsduijnen et al., 2023; Nijënstein et al., 2015). This makes it interesting to include in the morphological analysis. By relating the **housing sector and the rent** in the way described in the literature review, a qualitative comparison is allowed for. Furthermore, the type of housing has been split up in the CBC to allow for a more detailed comparison in terms of preference. Bringing the effect of this split back on the appropriate **housing type** in the morphological analysis will better show what other options of the characteristics will be appropriate to use. Besides these characteristics, the type of tenancy/ ownership found by Thomsen & Eikemo (2010) is also further discussed in the stakeholder analysis. Different **housing providers** as well as a discussion on different **contract types** such as FRIENDS contracts was also discussed in detail. Including these in the morphological analysis will further help to specify what is appropriate as a market offer. Lastly, different market conditions for the **type of build** (new built or existing housing stock) were also discussed elaborately in the context. The literature review even gave a further discussion on the effect of modularity or transformation projects on the business case, making it interesting to include in the morphological analysis.

After moving through the motivation above, several characteristics identified are still not included in either of the analyses. For the work of Muslim et al. (2012), the usability and social activities were not included as these would be hard to further substantiate into different options or levels. Similarly, the housing conditions in this study as well as the works of Hou et al. (2023), were not included into either the CBC or the morphological analysis given that these characteristics are too detailed. The assumption is made that student housing in this context is up to and according to building code. Nijënstein et al. (2015), used four different attributes for the location. As the location was identified as being a more basic housing characteristic for Maslow' hierarchy of needs in the discussion above, the choice was made to only include the relative distance to campus and the city centre. The supermarket and park were excluded to keep the analysis more focussed. Furthermore, outdoor space was not included as an attribute as it does not harbour major sharing elements.

From the discussion above, Table 8 highlights the selected attributes for both the choice-based conjoint and the morphological analysis where they are displayed again for clarity. These attributes will be operationalised into different levels or options in the respective analyses below.

Table 8: Attributes selected for CBC and morphological analysis (Author, 2025)

Choice-based conjoint analysis	Morphological analysis
Location	Housing sector and rent
Room size	Housing provider
Types of common spaces	Housing type
Sharing your bathroom with	Contract type
Sharing your kitchen with	Type of build
Additional services offered	

Table 9: Overview of housing characteristics identified in five different papers (Author, 2025)

Characteristics included in conjoint analysis		Characteristics included in morphological analysis		Characteristics not included in either analysis
Satisfaction of Students' Living Environment between On-Campus and Off-Campus Settings: A Conceptual Overview	Landelijke Monitor Studenten-huisvesting	Aspects of student housing satisfaction: a quantitative study	Student residential apartment performance evaluation using integrated AHP-FCE method	Beyond demographics human value orientation as a predictor of heterogeneity in student housing preferences
Muslim et al. (2012).	(Hooft van Huijsduijnen et al., 2024)	(Thomsen & Eikemo, 2010)	(Hou et al., 2023)	(Nijënstein et al., 2015)
Housing conditions: Type of accommodation; Location and proximity to campus; Usability and arrangement Social activities: space; Housemate and neighbourhood interaction Community facilities and services	Type of housing Location Size Living expenses Common rooms	Type of tenancy/ ownership The impact of demographic variables Housing location Different housing characteristics (size, character, style) Individual facilities (kitchen/bathroom)	Visual comfort Thermal comfort Aural comfort Fire safety Hygiene	Price Size Cycling time to campus Cycling time to city centre Bathroom Kitchen Walking time to supermarket Walking time to park Outdoor space

CHOICE-BASED CONJOINT ANALYSIS

The literature review conducted before has -among others- provided a good understanding on different characteristics of student housing. The presumed importance of housing expenses as well as changing demand has been established through different reports carried out by several parties. However, a deep dive can be made on top of these articles into what shared housing is and which preferences exists among students. For example, which facilities do students want to share? How important are different types of common rooms? How important are additional services in relation to the housing expenses? Exactly this will be the topic of the stated choice experiment in this thesis. Looking into these aspects can help to form better value propositions for the customers in the end.

The software used for this analysis is Sawtooth. An online tool offering the possibility to perform an adaptive choice-based conjoint analysis (Selka et al., 2010). Meaning that the software automatically changes the hypothetical housing options throughout the survey based on the input of respondents. If some preferences are uncertain, the software will automatically focus on altering these levels to get a better rating of the preferences for each respondent.

PART III | 1.2. DESIGNING THE CHOICE-BASED CONJOINT ANALYSIS

As outlined in the research design section, the first step in developing a CBC is determining the label of the attributes. As these different attributes will already describe housing in different ways, an unlabelled experiment will be used. Meaning that no specific names (such: ‘studio’, ‘sting’ or ‘shared’) will be given to the options generated for analysis. Instead, they will simply remain unnamed to not put too much emphasis on these labels but instead more on the levels discussed below.

As outlined before, six housing characteristics have been identified for the CBC, being: location; room size; types of common spaces; sharing your bathroom with; sharing your kitchen with; and additional services offered. Below, these attributes will be operationalised into levels, or different options for each attribute. An overview of these levels can be found in Table 10 below. In line with the methodology section, each attribute was given the same number of levels, four in this case. In setting the different qualitative levels, special notice was given to include different forms of both individual and shared housing options. For example, including ‘your landlord’ as a level allowed to also study the preference for homestay offerings without explicitly mentioning the specific housing type.

Table 10: Overview and substantiation of levels for SCE Author, 2025)

LOCATION	**LEVELS**
The locations partially follow from the combination of the work of (Hooft van Huijsduijnen et al., 2024; Nijënstein et al., 2015). The options are however expanded to include locations further away in order to allow for examining the possibility of commuting.	In city centre
	On university campus
	15 min. by bike away from city centre and campus
	30 min. by public transport away from city centre and campus
ROOM SIZE	**LEVELS**
The average room size for shared student housing in the Netherlands is 18 m^2 (Hooft van Huijsduijnen et al., 2024). Assuming steps of 5 m^2 leads to a spectrum of options for the room size.	15 m^2
	20 m^2
	25 m^2
	30 m^2
TYPES OF COMMON SPACES	**LEVELS**
Different themes for common spaces were set as levels based on the work of Easterbrook & Vignoles (2015); Nugent (2016). Both papers describe the potential for study spaces and different types of relaxation rooms.	Dedicated study space
	Relaxation room
	Fitness
	None

SHARING YOUR BATHROOM WITH	
Levels for sharing a bathroom follow from the work of Hooft van Huijsduijnen et al. (2024), which identified the difference between no sharing, and sharing with less or more than five other students. Including 'your landlord' allows to also evaluate homestay potential.	No one else
	Less than 5 other students
	More than 5 other students
	Your landlord
SHARING YOUR KITCHEN WITH	**LEVELS**
As a kitchen is a similar facility typically shared, identical levels were used to the previous attribute.	No one else
	Less than 5 other students
	More than 5 other students
	Your landlord
ADDITIONAL SERVICES OFFERED	**LEVELS**
Additional services for tenants are identified based on recent trends and general market research described in the literature review. Framing these services in four different service packages gives a more concrete comparison and explicitly tests whether the combination of services is desirable. In order to reduce cognitive capacity required with respondents, the details of levels were kept to a minimum.	None
	Basic | shared washing machine
	Medium | shared washing machine & bi-weekly cleaning
	Full | private washing machine, weekly cleaning

Based on the selection of attributes and levels, Table 11 below gives a complete overview of all elements to be used for the CBC.

Table 11: Overview of attributes and levels for the CBC (Author, 2025)

LOCATION	ROOM SIZE	TYPES OF COMMON SPACES	SHARING YOUR BATHROOM WITH	SHARING YOUR KITCHEN WITH	ADDITIONAL SERVICES OFFERED
In city centre	15 m^2	Dedicated study space	No one else	No one else	None
On university campus	20 m^2	Relaxation room	Less than 5 other students	Less than 5 other students	Basic | shared washing machine
15 min. by bike away from city centre and campus	25 m^2	Fitness	More than 5 other students	More than 5 other students	Medium | shared washing machine & bi-weekly cleaning
30 min. by public transport away from city centre and campus	30 m^2	None	Your landlord	Your landlord	Full | private washing machine, weekly cleaning

PART III | 1.2.1 PILOT STUDY

Part of the process of setting up a CBC is to conduct a testing phase in which a respondent is asked to reflect on the attributes and levels identified. The testing phase for this research included an interview with one respondent in which several elements were identified to be unclear. The first version did not include the room size as an attribute, which resulted in the feeling that it was not a complete housing options (INT-3, personal communication, October 10, 2024). Furthermore, the additional services first included the use of a bicycle for some levels. This made the levels very detailed and too long.

Besides the results from testing with the target audience, further specifying the outline of the research also resulted in taking out the rent price as an attribute in order to focus more on the intrinsic value of sharing as discussed before. Omitting this attribute also allow to include room size as discussed above.

PART III | 1.2.2 SETTING UP STUDY

Based on the input of attributes and levels, Sawtooth recommends fourteen runs (t) and three options per experiment run (a) plus a 'none' option in each run in case no option was seen as desirable. Based on the heuristic described in the research methodology and a maximum of four levels (c) per attribute, this results in a minimum required 48 respondents for this analysis.

$$n \geq \frac{500(c)}{ta} \qquad n \geq \frac{500(4)}{14 * 3} \qquad n \geq 48$$

Furthermore, for validity and qualitative purposes, it is important to look at the different combinations and exclude certain impossible or illogical combinations. For this survey the combination of any type of common space when sharing either a kitchen or bathroom with the landlord was excluded as homestay does not allow for this. Furthermore, the minimum room size was set to 20 m^2 in case either the bathroom and/ or kitchen are not shared to create a feasible product. Besides these exclusions, no other combinations were excluded.

BACKGROUND QUESTIONS

Designing a survey for a stated choice experiment or in this case a CBC, also requires thinking about background questions in order to create customer segments later (Nijënstein et al., 2015). Questions regarding segmentation need to be included beforehand to allow for a qualitative analysis of the results afterwards. Furthermore, filtering the right respondents requires including some additional background questions.

First looking at segmentation, the background of respondents needs to be understood and potential distinctive factors need to be identified. One important factor which came back throughout the literature review, is the influence of age in of housing preferences. Both Hooft van Huijsduijnen et al. (2024) and Verhetsel et al. (2017) argued that housing preferences for either shared or individual housing change in different age categories. In these analyses, a distinction was made between students below twenty and above twenty years old. Further segmentation factors include the study phase, which also checks to ensure only (recent) students fill out the survey. Students graduated within three years are still deemed to be representative for the overall student population. Besides these factors, Fang & van Liempt (2021); Nijënstein et al. (2015), gave a strong case for including nationality as a potential customer segment. The current living situation combined with the overall results might also give qualitative insight into how demand changes over time.

Besides the factors mentioned above, many other factors can of course be identified and used. However, given the goal of this conjoint analysis, the factors identified above are deemed to be sufficient to include as background questions before the start of the stated choice experiment. Table 12 below shows a complete overview of these questions and possible answers.

Table 12: Background questions for CBC (Author, 2025)

BACKGROUND QUESTIONS	OPTION ALTERNATIVES
What is your age?	*Open question*
Which option best describes your current study phase?	Bachelor level
	Master level
	PhD
	Graduated less than 3 years ago
	Not studying or graduated more than 3 years ago *(Excluded from study)*
Which option best describes your current living situation?	Shared housing with less than 5 students
	Shared housing with more than 5 students
	Studio
	Alone in a multi-room apartment
	Homestay (*hospita*)
	Living with parents
	Other
What is your geographic background?	Dutch student
	EU-student (non-Dutch)
	Non-EU student

Appendix A shows how the questions were exactly formulated, as well as the interface for respondents of the CBC using the Sawtooth software.

PART III | 1.3. RESULTS FROM CHOICE-BASED CONJOINT ANALYSIS

This section will focus on describing the data obtained using the Sawtooth software. First, the process of data cleaning will be described. After which a brief overview will be provided on the demographic background of the respondents. Finally, the data and outcome of the conjoint analysis will be presented.

PART III | 1.3.1 RESPONDENTS AND DATA CLEANING

Given the limitations of the data collection method, the Sawtooth software package, a maximum of fifty respondents could be included in the analysis. During the data collection period, which ran from December 2th 2024 up until the 21th of December 2024, a total of seventy-one respondents have (partially) answered the survey. From these responses, fifty complete responses have been recorded in the dataset, whereas five responses were above the limit offered by Sawtooth and thus not included. Sixteen respondents did not fully fill out the dataset, meaning that these responses were not included in the dataset. After which, the data was checked, and data cleaning was carried out. This included filtering the background questions for respondents not likely to be in the desired target group or incomplete responses. Based on these criteria, no responses were deleted for the eventual dataset apart from the twenty responses mentioned before. Important to note is that no extremely young or old respondents were included, and the question on the current study phases also already filtered out unwanted responses (former students which stopped studying more than three years ago). As Sawtooth does not allow segmenting quantitative variables, an additional nominal variable was added which translated the quantitative ‘age’ variable into two qualitative options. Younger than 21 and 21 years old or older than 21, the same division used by Hooft van Huijsduijnen et al. (2024).

PART III | 1.3.2 RESPONDENTS DEMOGRAPHICS

Tables 13 through 16 below as well as the corresponding figures display the demographic background of the respondents. It can be observed that from the total of 50 responses collected, 19 bachelor and 19 master students were included. Making an exactly even distribution between the two. Furthermore, 4 PhD students and 8 already respondents graduated less than three years ago. No respondents not studying, or which graduated more than three years ago opened the survey. The age of respondents was distributed from seventeen through 31, with a mean value of 22. 15 respondents were younger than 21 years old while

the remaining 35 respondents were 21 years or older. Within the current housing typology, most respondents live in shared housing with fewer than five roommates, followed by studio housing. Interesting to note is that all categories have at least two responses. Dutch students made up 60 percent of respondents, followed by 22 percent non-Dutch EU students and 12 percent non-EU students. One respondent selected the 'other' option and claimed to be a 'Dutch PhD student'. Unfortunately, the respondent could not manually be moved to the correct category.

Table 13: Results for background question 1 | Study phase (Author, 2025)

Q1: Study phase			
Item #	**Item**	**Count**	**Percent**
1	Bachelor level	19	38,0%
2	Master level	19	38,0%
3	PhD	4	8,0%
4	Graduated less than 3 years ago	8	16,0%
5	Not studying or graduated more than 3 years ago	0	0,0%

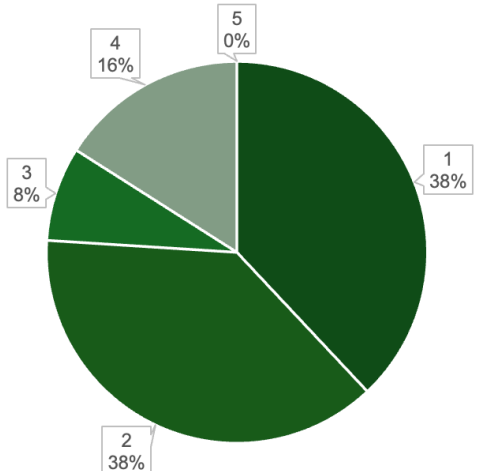


Table 14: Results for background question 2 | Age (Author, 2025)

Q2: Age			
Min	**Max**	**Total**	**Mean**
17	31	50	22

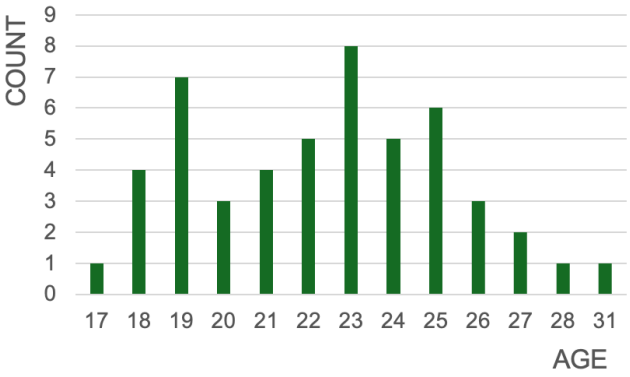


Table 15: Results for background question 3 | Current housing typology (Author, 2025)

Q3: Current housing typology			
Item #	**Item**	**Count**	**Percent**
1	Shared housing with less than 5 students	15	30,0%
2	Shared housing with more than 5 students	9	18,0%
3	Studio	10	20,0%
4	Private multi-room apartement	5	10,0%
5	Homestay (NL: hospita)	2	4,0%
6	Living with parents	9	18,0%
7	Other…	0	0,0%

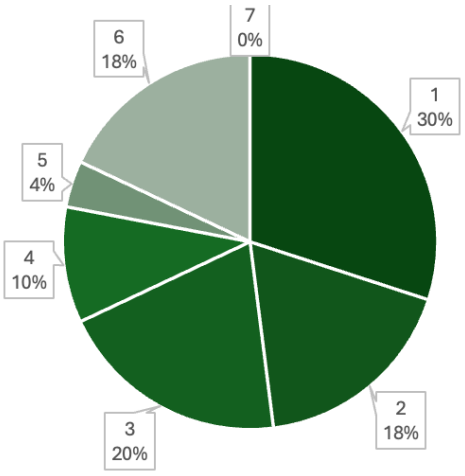
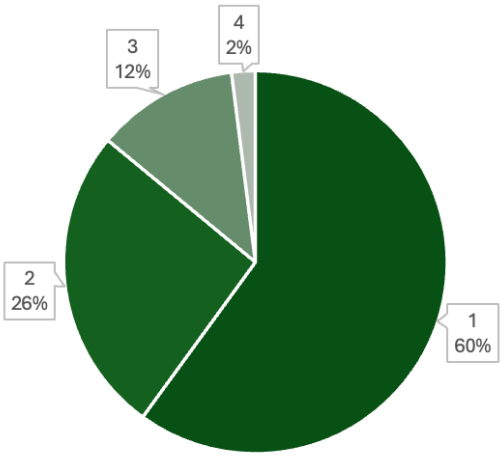


Table 16: Results for background question 4 | Geographic background (Author, 2025)

Q4: Geographic background			
Item #	**Item**	**Count**	**Percent**
1	Dutch student	30	60,0%
2	EU-student (non-Dutch)	13	26,0%
3	Non-EU student	6	12,0%
4	Other….	1	2,0%



PART III | 1.4. RESULTS FROM STATED CHOICE EXPERIMENT

Using the ‘’Choice-Based Conjoint Analysis’’ (CBC) as outlined in the previous section resulted in fifty respondents, each with their own preferences and thus datapoints. Interpreting these responses can be done using a variety of (complementary) techniques. Hierarchical Bayes estimation (HB) and a Latent Class Analysis (LCA) are two techniques proven to be very suitable when interpreting the results of a CBC (Sawtooth Software (inc.), 2021; Wellman & Vidican, 2008). Both techniques are therefore typically also found in research applying conjoint analyses of some sort (Dino et al., 2025; Nijënstein et al., 2015). Below, the difference between the techniques is highlighted briefly to help understand how to interpret the results.

Hierarchical Bayes estimation uses statistical inference methodologies to evaluate part-worth utilities, both at the individual level and group level (Hill, 2017). Simply put, HB evaluates respondents’ preferences and combines these insights to evaluate preferences in a larger population. All while providing a very robust statistical underpinning. Latent class analysis works slightly different. This estimation technique focusses on the outcome of a dataset and finds similarities in preferences on individual level to form a desired number of customer segments (Hill, 2017).

Even though these techniques rely on slightly different fundamentals, both have their distinct benefits. A latent class analysis allows to fully work from the dataset in finding customer segments without the need of predefining background questions (Sawtooth Software (inc.), 2021). Hierarchical Bayes estimation can instead reflect individual preferences more accurately if respondents are distributed more continuously instead of discretely. Furthermore, market simulations based on HB estimation are often more effective than LC (Sawtooth Software (inc.), 2021). As a result, LCA is used less in recent times, and HB is gaining in popularity and applicability as it is able to both provide descriptive statistics on datasets as well as segmenting respondents (Hill, 2017; Sawtooth Software (inc.), 2021).

Selecting which technique(s) to use is dependent on the purpose of the analysis in the first place. For this specific research, the main purpose is to identify preferences of the respondents. As such, identifying the customers segments is a secondary aim. Software from Sawtooth uses a hierarchical Bayes estimation to evaluate the CBC together with segmentation options and a market simulator to predict the preference for housing options. In doing so, the latent class analysis is not an option available in the standard package (Hill, 2017). Segmenting respondents in this dataset is therefore based on HB analysis combined with the demographics from the background questions defined by the researcher. Even though this means that the benefits of a latent class analysis will not be incorporated, it is important to note that segmentation based on HB estimation in combination with carefully selected background information of respondents still allows for a valid analysis as also employed by Nijënstein et al. (2015). Furthermore, segmenting respondents in this way will also allow to make use of the simulator tool pack included in the Sawtooth software.

PART III | 1.4.1 HIERARCHICAL BAYES ESTIMATION

Table 17 below gives a full overview of the utility estimates of the levels defined as well as the relative importance of attributes in the conjoint analysis. It is important to make a very clear distinction between the utility estimates and the relative importance of attributes. First the relative importance, this metric shows how important each attribute is when making a choice for housing. For example, the choice for selecting a house for 17% can be attributed to the room size as can be seen in Figure 14 below. The utility values on the other hand show the preferences within these attributes. Looking at the utility estimate, an indication of the preference for each specific level is given. Higher values in the 'Utility estimate' column in Table 17 relate to more preferred options while lower values relate to less preferred options. The color of the cell also indicates the relative preference from respondents, with red corresponding to less desired options and green relating to more desired options. As the utility estimated are standardised, the values can also be compared between the different attributes. Following from the conjoint analysis, Table 17 shows that sharing a bathroom with a landlord was the most undesirable option. Meaning that respondents were very unlikely to select a housing product which included this level. At the same time, a private bathroom scored the highest utility estimate which means that respondents valued this level especially and were likely to select a housing alternative including this level.

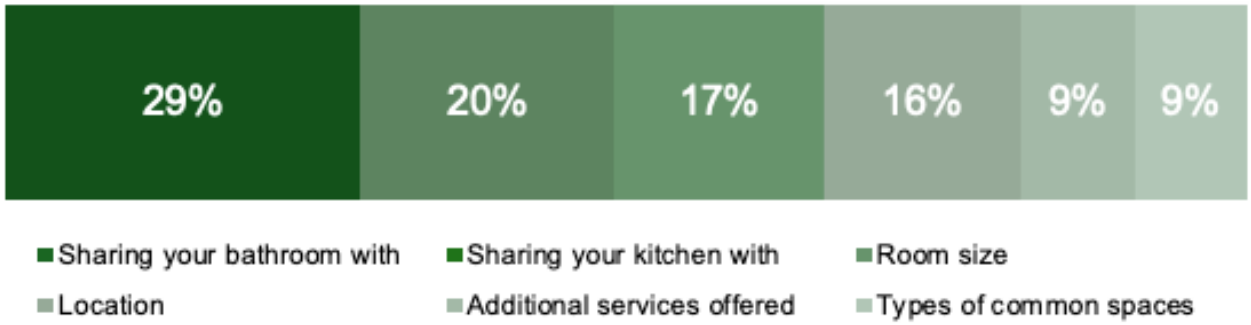


Figure 14: HB | Relative importance of attributes when selecting housing (Author, 2025)

The data in Table 17 and Figure 14 show that respondents value the type of bathroom and the type of kitchen most with twenty-nine and twenty percent respectively. Following these attributes are the room size (17%); location (16%); Additional services offered (9%); and the types of common spaces available (9%). Besides the actual levels, the 'None Option' row is also important to consider. This value shows how likely respondents were to select the 'none' option in the conjoint analysis when selecting an option. It therefore both indicates whether options were a suitable product for respondents in the first place and gives a first indication of the overall desirability of the hypothetical housing products.

The utility scores in Table 17 refer to the overall preference of the level, and thus the likelihood respondents would select a housing type which includes this level. The date shows a clear preference for living in the city centre, whereas living 30 minutes away is regarded as a very bad option. For the room size, a clear preference can be seen for larger rooms, with a sharp cut-off for rooms of 15 m^2. Sharing a bathroom shows the overall highest importance and also includes the highest and lowest scoring utility value, making it a very important attribute. For sharing a kitchen, a similar trend can be found but with overall lower scores. Interesting to point out is that sharing a kitchen with less than five roommates was preferred over a private kitchen. The results furthermore show that both the common spaces and additional services showcase relative low utility estimates with low standard errors, meaning they were both not preferred and not important in setting housing preferences.

Table 17: HB | Utility estimates and relative importance shared student housing (Author, 2025)

N = 50 Attribute	Level	Relative importance	Utility estimate	Standard Error	Lower 95% CI	Upper 95% CI
Location		**15,9%**				
	In city center		24,87	4,79	15,24	34,50
	On university campus		7,40	4,53	-1,71	16,51
	15 min. by bike away from city center and campus		9,12	2,81	3,48	14,76
	30 min. by public transport away from city center and campus		-41,39	6,50	-54,45	-28,33
Room size		**16,9%**				
	15 m2		-46,53	4,71	-55,98	-37,07
	20 m2		-7,82	3,44	-14,72	-0,92
	25 m2		16,84	3,17	10,46	23,21
	30 m2		37,52	6,13	25,20	49,83
Types of common spaces		**9,0%**				
	Dedicated study space		-1,99	4,11	-10,24	6,26
	Relaxation room		12,54	2,93	6,66	18,43
	Fitness		-3,46	2,80	-9,09	2,16
	None		-7,09	2,35	-11,81	-2,37
Sharing your bathroom with		**28,7%**				
	No one else		48,48	8,04	32,33	64,63
	Less than 5 other students		34,84	5,29	24,22	45,47
	More than 5 other students		-20,54	8,68	-37,97	-3,11
	Your landlord		-62,78	8,87	-80,59	-44,96
Sharing your kitchen with		**20,4%**				
	No one else		8,23	5,72	-3,27	19,72
	Less than 5 other students		28,71	4,13	20,41	37,00
	More than 5 other students		10,64	7,43	-4,29	25,57
	Your landlord		-47,57	6,39	-60,41	-34,73
Additional services offered		**9,1%**				
	None		0,00	3,02	-6,06	6,07
	Basic | shared washing machine		-5,97	3,57	-13,15	1,20
	Medium | shared washing machine & bi-weekly cleaning		2,33	3,37	-4,44	9,10
	Full | private washing machine, weekly cleaning		3,64	3,81	-4,02	11,30
None Option			-45,13	7,70	-60,60	-29,65

PART III | 1.4.2 CORRELATION & STATISTICAL SIGNIFICANCE

Moving forward with these results requires to evaluate the correlation and statistical significance of the available data. As Sawtooth offers limited insights into these aspects, additional steps need to be taken in understanding these measures through an SPSS analysis. Appendix B shows the correlation between the background questions. It was found that the study phase and age are strongly significantly correlated, meaning that if one changes, the other is also highly likely to change. As students get older when moving through their studies, this relationship also makes sense and can be easily explained. It does however mean that including both variables in elaborate statistical analyses is likely to influence the results through

multicollinearity (Mascha & Vetter, 2018). However, as this research will not include such analyses, simply noting the correlation and keeping it in mind is sufficient.

Similar to the works of Nijënstein et al. (2015), a linear regression model can be used to estimate the statistical significance of the background. Meaning that the extent to which certain segmentation factors explain housing preferences can be understood. This analysis gave the significance levels shown in Table 18 below for the respective attributes and background questions. Based on a standard alpha value of 5% (Mascha & Vetter, 2018), unfortunately only a few datapoints were found to be statistically significant. Being the effect of study phase on room size and the effect of age on room size. All the other combinations were found not to be significant. Now the question arises what this lack of statistical significance means. It means that, based on the data available, no claim can be made that the results are a good representation of the actual population (Mascha & Vetter, 2018). As a result, it is important to acknowledge that the results of the conjoint analysis are merely an indication of the population which lacks full statistical significance. The reason for this lack of statistical significance can also be found in the relatively small sample size of fifty, as statistical significance increases when sample sizes increase. From Table 17 above, the relatively high standard error and small sample size also lead to wide confidence intervals. Meaning there is a lot of uncertainty in establishing the exact utility estimates.

Table 18: Significance levels of attributes and segmentation factors (Author, 2025)

N = 50	**P-value** Study phase	**P-value** Age (cat.)	**P-value** Current housing typology	**P-value** Geographic background
Location	0,796	0,610	0,259	0,629
Room size	0,032	0,039	0,094	0,710
Types of common spaces	0,491	0,738	0,691	0,524
Sharing your bathroom with	0,207	0,078	0,113	0,424
Sharing your kitchen with	0,656	0,818	0,628	0,855
Additional services offered	0,872	0,091	0,277	0,608

PART III | 1.4.3 SEGMENTATION

As discussed before, the responses will be segmented based on the background questions, using the Hierarchical Bayes Estimation within the Sawtooth software. Based on the questions included, the following four different segmentation options can be distinguished: study phase; age; current housing typology; and demographic background.

BASIS FOR SEGMENTING

Evaluating the most appropriate segmentation factor is typically based on a combination of the statistical significance as well as a qualitative interpretation of the socio-demographic segmenting factors in similar CBC analyses (Nijënstein et al., 2015; Thomsen & Eikemo, 2010). As the data in this study does not show statistical significance, a qualitative interpretation of the data will be most important in selecting a segmentation factor. Appendices C through F show the total overview of each background question with their related utility values and deviation (delta) from the total dataset.

Segmenting by study phase (Appendix C) shows that major differences can be found in sharing a bathroom. Bachelor students valued a private bathroom less than the total sample whereas master students and respondents having graduated less than three years ago valued this level clearly more. Furthermore, PhD students valued a dedicated study space way more as a common space compared to the total sample.

The correlation established between study phase and age means that similar observations are found when segmenting by age (Appendix D). Respondents younger than 21 valued a private bathroom clearly less whereas older respondents valued private facilities more.

Segmenting by current housing typology (Appendix E) show patterns which can be expected. Respondents currently living in shared housing show a larger preference for sharing facilities with more roommates whereas respondents living in individual housing show the opposite preference. The same goes for respondents currently living in homestay situations which show a large preference for sharing facilities with their landlord. The utility values furthermore indicate that respondents generally live in the type of housing they prefer the most. Meaning that student living in shared housing value options for sharing facilities the most and students living in individual housing value private facilities the most. Students living with their parent show a greater acceptance of living more than thirty minutes away from the city centre and campus. What is interesting about the data, is that students living in homestay situations clearly had a way lower score for the 'None Option', indicating they were less selective when selecting housing.

Lastly, segmenting by geographic background (Appendix F) indicates that Dutch students prefer sharing facilities more than EU and non-EU students, which in turn value private facilities more. Furthermore, non-EU students are more acceptant of smaller room sizes. Looking at homestay offers; the data shows that non-Dutch respondents are slightly more acceptant of sharing facilities with a landlord compared to Dutch respondents. These values however remain negative, indicating these options are not the preferred ones but are simply preferred more by non-Dutch students.

MOTIVATION FOR SEGMENTATION

Given this analysis, the choice was made to select current study phase as the main segmenting value, with bachelor and master level as the two levels. This choice was based on multiple reasons. First of all, both age and study phase showed significance for one level. Given their correlation, selecting one would essentially also mean that the effects from the other characteristic be included. Furthermore, ABF Research (2024); Hooft van Huijsduijnen et al. (2024); Nijënstein et al. (2015), all described the effect age or study phase, has on student housing preferences. Selecting study phase over age means it was possible to only focus on students currently studying and not recently graduated students or PhD students. The sample size of these segments was also quite small with eight and four responses respectively, further reducing the statistical significance when using these segments. Even though their data was valuable for the overall analysis, shared housing options should be fully focussed on student preference and thus bachelor and master students were selected to be the customer segments. Segmenting by either current housing typology and geographic background would have led to more customer segments with smaller sample sizes per segment.

Overall, these factors make that the even customer segments for bachelor and master students (n=19 for both) are the most appropriate customer segments to use for the dataset at hand. Figure 15 below also highlights a comparison of relative importance of attributes when segmented by study phase. Further indicating the distinct customer preferences. Based on these customer segments, a clear morphological analysis can be carried out and the simulation tool from Sawtooth can be used to test the preference of housing types. Based on this segmentation the p-value of the linear regression, indicating the significance of the results, went up for most attributes as shown in Table 19 below. Even though this indicates a lower level of significance, this can be attributed to the further reduced sample size. The qualitative discussion outlined above however prevails for this research objective.

Table 19: Significance levels of study phase segmented (Author, 2025)

	P-value Study phase (N=50)	**P-value** Study phase (segmented) (N=38)
Location	0,796	0,686
Room size	0,032	0,272
Types of common spaces	0,491	0,606
Sharing your bathroom with	0,207	0,088
Sharing your kitchen with	0,656	0,723
Additional services offered	0,872	0,948

SEGMENTATION BASED ON STUDY PHASE

Segmenting by bachelor and master level students, results in a different ranking of relative importance for the housing attributes. Figure 15 below indicates that Master level students give more importance to the type of bathroom compared to bachelor level students and the total sample. Bachelor level students in turn give more importance to sharing a kitchen.

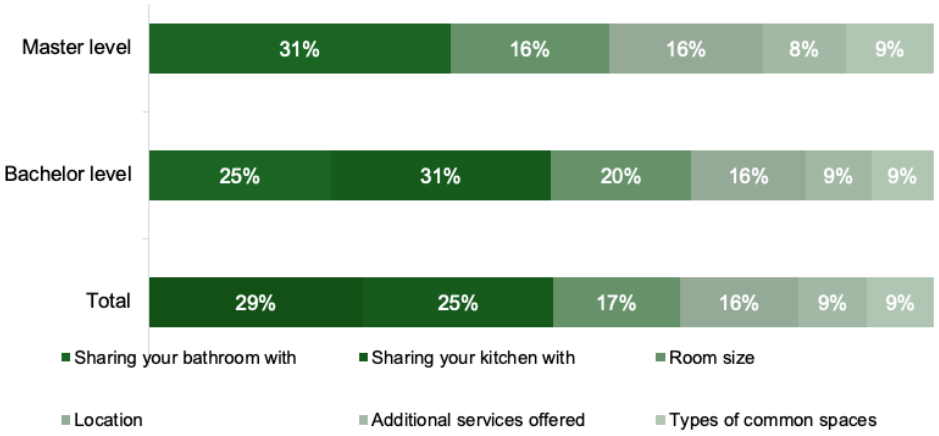


Figure 15: Relative importance of attributes segmented by bachelor and master level (Author, 2025)

Table 20 below dives deeper into these differences and compares the utility scores between the total dataset, bachelor as well as master level respondents. This analysis provides a more detailed version of the segmentation described above. For the location, similar preferences can be seen for all groups. The city center is regarded as the most preferred option, while on campus housing has a positive but relatively low score. The option for fifteen minutes away by bike remains acceptable, especially for master students. Interesting to see is that a very sharp downturn can be identified for housing thirty minutes away is by both bachelor and master students.

The room size shows a similar trend across both bachelor and master students, where rooms of 15 and 20 m^2 show strong negative utilities and thus being especially unpopular. Rooms of 25 to 30 m^2 show a strong preference, even including the highest overall utility score for bachelor students. In terms of common spaces, a relaxation room is valued most positively by both bachelor and master students. Albeit it with relatively low utility score, indicating that these elements are not very important for housing preferences. All other types of common spaces are similar in scores, indicating students are rather indifferent about the type of common spaces available.

Private bathrooms have the highest overall utility score for master students, indicating a strong preference. Interesting to note is that sharing with less than five other students is also very much accepted by students, and even preferred over a private bathroom by bachelor students. Interesting to note is that sharing a bathroom with a landlord consistently results in (one of) the lowest utility scores for both bachelor and master students. Making it the least preferred option and a very much disliked option across the board. Sharing a kitchen with a landlord resulted in similar, highly negative utility scores. Indicating that both bachelor and master students dislike this option. Sharing with roommates is found to be preferred, but less strong than sharing a bathroom. Interesting to notice is the slight negative preference of bachelor students for a private bathroom. This groups values a shared kitchen the most, being indifferent about sharing with the number of roommates.

From the analysis, no additional services appear to be especially tempting for students. A shared washing machine and bi-weekly cleaning seem to be slightly positive for master students while being slightly negative for bachelor students. Overall, no baseline can be found for a specific type of additional service. The ‘None Option’ shows negative scores for both bachelor and master students. Indicating that students prefer some housing over no housing at all. Furthermore, this score also indicates the preference of

students for some of the housing types shown. Bachelor students, in this sense, tended to value housing types more than master students.

These results suggest that a location close to the city centre or campus and larger rooms are drivers of higher preference. Private facilities are especially important for master students over bachelor students, where the latter also showed a preference for sharing with roommates over a private kitchen and bathroom. Additional services and common spaces showed to be less important drivers of housing preferences.

Table 20: HB | Utility estimates segmented by study phase (Author, 2025)

		Total		Bachelor level		Master level	
	N=	50		19		19	
Attribute	Level	Utility	Standard Error	Utility	Delta	Utility	Delta
Location	In city center	24,87	4,79	30,94	6,07	24,29	-0,58
	On university campus	7,40	4,53	6,19	-1,21	1,90	-5,50
	15 min. by bike away from city center and campus	9,12	2,81	4,69	-4,43	14,05	4,93
	30 min. by public transport away from city center and campus	-41,39	6,50	-41,82	-0,43	-40,25	1,15
Room size	15 m2	-46,53	4,71	-46,91	-0,38	-49,78	-3,26
	20 m2	-7,82	3,44	-12,57	-4,75	-4,91	2,91
	25 m2	16,84	3,17	17,07	0,23	17,58	0,74
	30 m2	37,52	6,13	42,41	4,90	37,12	-0,40
Types of common spaces	Dedicated study space	-1,99	4,11	-7,38	-5,39	2,53	4,52
	Relaxation room	12,54	2,93	14,28	1,74	9,94	-2,60
	Fitness	-3,46	2,80	-3,77	-0,31	-3,45	0,01
	None	-7,09	2,35	-3,14	3,95	-9,02	-1,93
Sharing your bathroom with	No one else	48,48	8,04	16,49	-31,99	62,35	13,87
	Less than 5 other students	34,84	5,29	31,18	-3,66	40,83	5,99
	More than 5 other students	-20,54	8,68	7,69	28,23	-34,75	-14,21
	Your landlord	-62,78	8,87	-55,35	7,42	-68,42	-5,65
Sharing your kitchen with	No one else	8,23	5,72	-8,06	-16,29	13,09	4,86
	Less than 5 other students	28,71	4,13	30,03	1,32	28,68	-0,03
	More than 5 other students	10,64	7,43	28,51	17,87	1,36	-9,28
	Your landlord	-47,57	6,39	-50,48	-2,91	-43,13	4,44
Additional services offered	None	0,00	3,02	3,46	3,45	-1,58	-1,58
	Basic | shared washing machine	-5,97	3,57	1,12	7,09	-9,19	-3,22
	Medium | shared washing machine & bi-weekly cleaning	2,33	3,37	-10,14	-12,47	11,83	9,50
	Full | private washing machine, weekly cleaning	3,64	3,81	5,57	1,93	-1,06	-4,70
None Option		-45,13	7,70	-64,13	-19,01	-35,46	9,67

PART III | 1.4.4 OUTPUT OF CHOICE-BASED CONJOINT ANALYSIS

Summarizing the results of this conjoint analysis, Table 21 and Table 22 below show the utility scores for each level in a tabular form similar to the setup of the morphological analysis below. This layout will help to evaluate and relate the results of the choice-based conjoint analysis to the options in the morphological analysis later on.

Table 21: Results of choice-based conjoint analysis segmented by bachelor students (Author, 2025)

LOCATION	ROOM SIZE	TYPES OF COMMON SPACES	SHARING YOUR BATHROOM WITH	SHARING YOUR KITCHEN WITH	ADDITIONAL SERVICES OFFERED
16%	19,6%	8,8%	25,4%	21,1%	9,1%
In city centre 30,94	15 m^2 -46,91	Dedicated study space -7,38	No one else 16,49	No one else -8,06	None 3,46
On university campus 6,19	20 m^2 -12,57	Relaxation room 14,28	Less than 5 other students 31,18	Less than 5 other students 30,03	Basic | shared washing machine 1,12
15 min. by bike away from city centre and campus 4,69	25 m^2 17,07	Fitness -3,77	More than 5 other students 7,69	More than 5 other students 28,51	Medium | shared washing machine & bi-weekly cleaning -10,14
30 min. by public transport away from city centre and campus -41,82	30 m^2 42,41	None -3,14	Your landlord -55,35	Your landlord -50,48	Full | private washing machine, weekly cleaning 5,57

Table 22: Results of choice-based conjoint analysis segmented by master students (Author, 2025)

LOCATION	ROOM SIZE	TYPES OF COMMON SPACES	SHARING YOUR BATHROOM WITH	SHARING YOUR KITCHEN WITH	ADDITIONAL SERVICES OFFERED
In city centre 24,29	15 m^2 -49,78	Dedicated study space 2,53	No one else 62,35	No one else 13,09	None -1,58
On university campus 1,90	20 m^2 -4,91	Relaxation room 9,94	Less than 5 other students 40,83	Less than 5 other students 28,68	Basic | shared washing machine -9,19
15 min. by bike away from city centre and campus 14,05	25 m^2 17,58	Fitness -3,45	More than 5 other students -34,75	More than 5 other students 1,36	Medium | shared washing machine & bi-weekly cleaning 11,83
30 min. by public transport away from city centre and campus -40,25	30 m^2 37,12	None -9,02	Your landlord -68,42	Your landlord -43,13	Full | private washing machine, weekly cleaning -1,06

MORPHOLOGICAL ANALYSIS

As mentioned before, the selection of housing characteristics included in the conjoint analysis is not a complete overview of an eventual housing product. The selection criteria formulated rather focusses on the most distinctive characteristics for this research specifically but leaves room to build a more complete housing product. This section will focus on doing just that. The fit between different housing characteristics identified in the literature review and the results from the conjoint analysis can reveal what offers meet the demand of students in different segments. A morphological analysis is a useful tool to create such an overview of potential solutions and can aid in forming innovative option solutions (Álvarez & Ritchey, 2015). In a morphological analysis, structural relationships are investigated between different aspects of an object in a qualitative way. It is about which options fit together, and which do not when designing something like a product or solution. Similar to a conjoint analysis, a morphological analysis uses different categories (attributes) with multiple options (levels) that can be combined into different options. It does so using a table where the attributes are typically displayed in the top row and the different options are listed in rows below.

In the first section of this chapter, student housing characteristics were evaluated and divided over the choice-based conjoint analysis and the morphological analysis. The characteristics will first be operationalised into different meaningful levels based on the data of the literature review. Afterwards, the morphological analysis will be carried out for both bachelor and master students, being identified as the customer segments from the conjoint analysis.

PART III | 1.5. DESIGNING THE MORPHOLOGICAL ANALYSIS

Below, the characteristics for the morphological analysis defined before in the outline of this part, will be operationalised into meaningful options. Like the conjoint analysis, the options defined below were found through a combination of a literature review and ideation by the author. Important to note is that most options for these housing characteristics discussed below, were already discussed in the literature review. Combing all these characteristics and options will lead to a morphological table to be used in this analysis.

PART III | 1.5.1 HOUSING SECTOR AND RENT

Within the Dutch rental sector, three types of rental housing are distinguished. Social housing, mid-rent housing and free sector rental (Ministry of General Affairs, 2020). Each of these sectors have their own target groups within the Dutch population and related characteristics. Where housing in the social and mid-rent sector is meant for people with lower incomes, the free rental sector is meant for higher income households for which landlords are free to set their own rent level. To better regulate the affordability of housing in a tense housing market, the social and mid rent sectors are more regulated by the government and the rent is regulated through a point system known as the ‘’woningwaarderingsstelsel’’ or WWS. Besides dictating the maximum rent, the WWS also categorizes housing into the social, mid-rent or free rental sector based objective measures such as floorspace, assumed housing value (*WOZ waarde)* and amenities available. Table 23 below further highlights the differences and characteristics of the different sectors and is based on this definition of the Ministry of General Affairs (2020).

Table 23 : Longlist description of levels of the housing sector (Author, 2025)

HOUSING SECTOR	EXPLANATION
Social housing	Social housing is meant to be for anyone with a low income and in general is offered through housing associations. Besides a set maximum rent and a regulated yearly rent increase, renters can apply for rental allowance in a lot of situations (for individual housing). A dwelling is considered to be social housing in case it scores a maximum of 143 points, which translates to a maximum monthly rent of € 879,66 in 2024 (Ministry of Housing and Spatial Planning, 2024a).
Mid rent housing	The mid rent housing sector is meant for people with average income and is more regulated since the law for affordable rent (*Wet betaalbare huur*) came into effect as of July 2024. As with social housing, municipalities can regulate mid rent

	housing for certain income groups and the maximum rent is regulated through the WWS. A dwelling is considered to be mid rent housing when is scores between 143 and 186 points, which translated to a maximum monthly rent between € 879,67 and € 1.157,95 in 2024 (Ministry of Housing and Spatial Planning, 2024a).
Free rental market	A dwelling in the free rental sector is meant for households with a higher income. These dwellings must be individual housing and the maximum rental price is not regulated. The yearly rent increase is however regulated. Dwellings need at least 187 WWS points to be considered free rental housing.

PART III | 1.5.2 HOUSING PROVIDER

Following from the stakeholder analysis in section 2.2.1., several housing providers offer student housing on the Dutch housing market. For the sake of this thesis, housing providers are defined as any property owners that rent out living space to students. As this also includes homestay or hospita situations, solely investors would not form a complete overview of housing providers. Table 24 below further discusses and explains the characteristics of different student housing providers.

Table 24: Longlist description of levels of the housing provider (Author, 2025)

HOUSING PROVIDER	EXPLANATION
Institutional investors	Institutional for-profit investors. Established institutions that tend to operate in the mid- of free rental sector. The aim is to invest in housing on behalf of institutionalized organizations and generate a steady income stream.
Small private investor	Smaller private for-profit investors. E.g. private buy-to-let investors operating one or several properties in a semi-formal capacity. The aim is to generate a steady income stream as an (additional) form of income. Alternatively, buy-to-let investors sometimes tend to provide housing for direct family members (e.g. their children).
Kences housing associations	Non-profit housing associations providing low-income housing specifically for students. These different housing associations are united within one interest group: Kences. The aim is to provide good quality, affordable housing specifically for students.
Housing association	Non-profit organizations providing low-income housing for any demographic, including students. The aim is to provide good quality, affordable housing for low-income households.
Homestay (hospita)	Students renting a dedicated room within the house where the landlord itself also lives. The general aim varies, but generally the aim is to provide housing for students as well as generating an additional income stream for the homeowner

PART III | 1.5.3 HOUSING TYPE

Through the literature review, several different types of student housing were identified. The overview in Table 25 below includes both shared and individual housing and is aimed to capture all different types of student housing that exist in an (international) context. For the aim of this thesis, ‘housing type’ is defined as the physical space in which students can live.

In the overview, a distinction is made between shared housing with a maximum of five students and more than five students. Given that dynamics in social interaction changes between the number of roommates (Hooft van Huijsduijnen et al., 2024), which found five roommates to be the most distinctive tipping point in shared housing preferences.

Table 25: Longlist description of levels of the housing type (Author, 2025)

HOUSING TYPE	EXPLANATION
Shared facilities with max. 5 roommates	A maximum of five roommates living in shared housing with their own dedicated space. Shared facilities include: the kitchen, bathroom, and common space.
Shared facilities with min. 5 roommates	Five or more roommates living in shared housing with their own dedicated space. Shared facilities include: the kitchen, bathroom, and common space.
Multiple rooms	Individual student housing where a student has multiple rooms in a fully self-contained dwelling. No facilities are shared with roommates.
Single room (studio)	Individual student housing where a student shares no facilities with roommates, and all functions are contained within one single room. Only the bathroom is situated in a separate room to the living, sleeping and kitchen area.
Mixed living form – student and elderly	A living form where student live inside of a larger living complex. Students usually pay less in exchange for time and effort taking care of elderly living in the same building. In this way, a win-win is created where student can live in affordable housing and elderly are less lonely.
Dorm rooms	Sharing one single bedroom with two (or more) students, as commonly used in US or UK student dormitory.
STING	Living form where multiple independent units with own facilities are placed together with a common room to promote cohesion (Dag, 2022).

PART III | 1.5.4 CONTRACT TYPE

The explanation for the different options in Table 26 below give a first understanding of the contract type. Different types of contracts were identified in the legal dimension of the literature review, which included a discussion on the FRIENDS contract type.

Table 26: Longlist description of levels of the contract type (Author, 2025)

CONTRACT TYPE	EXPLANATION
Indefinite rental contract	Following from legal analysis in the literature review, it becomes apparent that regular rental contracts can only be give based on an indefinite timeframe.
Short stay (e.g. campus or youth contract)	Besides the regular contract, housing providers for students still have the option to give out campus contracts. Meaning that the contract is dependent on the student actively studying. After graduating, a renter must move out, promoting a continuous flow of students. Similarly, a youth contract can only be applied for regulated rental sectors, meaning the social and mid-rent housing sector. In contrast to a regular housing contract, the tenant needs to be young than twenty-eight when entering the contract. The contract also has a fixed duration of five years to promote the flow of tenants.
FRIENDS	Multiple persons living in shared housing by use of one single contract. The roommates are seen as a household and do not have any further connection to each other. Requires the group to not be a regular household (e.g. no couple).

PART III | 1.5.5 TPYE OF BUILD

Again, based on the different master theses and other literature, four different types of building methodology were identified. Below, these levels are further operationalised and substantiated in Table 27.

Table 27: Longlist description of levels of the type of build (Author, 2025)

TYPE OF BUILD	EXPLANATION
New build (modular)	Modular buildings consist of pre-constructed blocks which interlink. These building blocks are produced away from the construction site and are 'plug-and-play'. Overall, it is generally accepted in literature that this type of build reduces the project costs, shortens the construction time and reduces the amount of environmental effects (Subramanya et al., 2020)
New build (traditional)	A traditional building method is often defined as an on-site building activity in which manual labour is used to construct a building from the ground up. In recent years, the division between traditional and modular build has decreased and overlapped (Subramanya et al., 2020). For this thesis, traditional build is defined to be a building methodology without the use of large, pre-installed plug-and-play dwellings to be installed.
Transformation	This type of build assumes there an already existing building structure to be changed into another function or layout. Examples include transforming a former office building into housing or changing the layout of larger dwellings into smaller dwellings suitable for student housing.
Existing housing stock	This type of build assumes the use of the current housing stock. Meaning current student housing as well as housing which could be rented to students without requiring additional investments.

PART III | 1.5.6 MORPHOLOGICAL TABLE

Combining the different characteristics and options from the operationalisation above leads to the morphological table shown below as Table 28.

Table 28: Morphological table (Author, 2025)

HOUSING SECTOR AND RENT	HOUSING PROVIDER	HOUSING TYPE	CONTRACT TYPE	TYPE OF BUILD
Social housing	Large investor	Shared facilities with max. 5 roommates	Regular housing contract	New build (modular)
Mid-rent sectors	Small private investor	Shared facilities with more than 5 roommates	Short stay (e.g. campus or youth contract)	New build (traditional)
Free rental sector	Kences housing associations	Multiple rooms	FRIENDS contract	Transformation
	Housing association	Single room (studio)		Existing housing stock
	Homestay (hospita)	Mixed-use concept – vulnerable groups (elderly)		
		Dorm rooms		
		STING		
		Shared facilities with non-students		

PART III | 1.6. MORPHOLOGICAL ANALYSIS

Below, a morphological analysis will be used based on the customer segments identified before in the conjoint analysis: bachelor and master level students. The overall purpose of this analysis is to find housing options which suit the customer demand identified. This will be done in a qualitative two-step process, detailed below.

First, the different housing characteristics identified and included in the morphological table -described above- will be evaluated on their fit with the customer demand. This evaluation will be done in a qualitative way where results from both the literature review as well as the conjoint analysis will be used in an objective manner. The fit between the different elements and the customer segments will be categorized into a 'bad', 'medium', 'good' or 'no specific preference identified' fit. Table 29 and Table 30 provide a graphic overview together with the argumentation on the different levels of fit.

The second step in the morphological analysis is related to forming the actual housing solutions. This means that the value proposition can be made explicit and be related to the customer demand in the value proposition canvas. Even though the argumentation below will already give some insight into different housing options, the simulation section afterwards will go into more detail on the fit with the customer demand and the perceived pain relievers and gain creators.

Important to keep in mind throughout is that not only the most ideal preferences, e.g. only wanting large sized rooms in central locations, are used in this analysis. It is rather about which housing characteristics are acceptable and which are not for different customers. Furthermore, the purpose of this morphological analysis is to create options for shared housing. Meaning that, the focus of the discussion will be on sharing elements and not so much on individual housing. Despite the preference shown for individual facilities (bathrooms and kitchens) in both literature (Hooft van Huijsduijnen et al., 2024; Nijënstein et al., 2015; Thomsen & Eikemo, 2010) as well as the conjoint analysis conducted in this study.

PART III | 1.6.1 BACHELOR LEVEL

The conjoint analysis gave a clear conclusion on the preferences for bachelor students. They value large rooms, in the city centre with preferably a maximum of five other roommates. The data furthermore showed that bachelor students strongly disliked living more than thirty minutes away from the city centre and campus or sharing a bathroom or kitchen with their landlord. Table 29 below shows the morphological analysis graphically.

The conjoint analysis has shown a strong preference for sharing a kitchen as well as sharing a bathroom for bachelor students. Therefore, a housing typology where facilities are shared with any number of roommates form a good fit with customer demand. Any type of individual housing (single or multi-room) is deemed to be a medium fit as the conjoint analysis shows a lower, but positive, preference for a private kitchen and bathroom. This observation is further supported by ABF Research (2024), discussed in the literature review where the preference for shared facilities by younger students was also established. Even though the STING concept outlined in the literature review might prove to be a step in-between shared and individual housing, the negative utility values for a private kitchen in the conjoint analysis limit the fit to a medium level. As the housing type now mostly includes shared housing options, only the social housing sector presents a good fit as shared housing is always placed in the social rental sector and not the mid-rent or free sector (Ministry of General Affairs, 2020).

Looking at the type of housing provider, the conjoint analysis has shown a strong case against sharing facilities with a landlord. Meaning that homestay is flagged as being a bad fit for bachelor students. Following from the introduction and literature review of this research, it was furthermore identified that (small) private investors are moving away from the student housing market due to feasibility concerns (van der Veen, 2025; Veenstra, 2024). This too creates a medium fit as a housing provider. Furthermore, the literature review also identified that housing associations associated with Kences have difficulty with developing shared student housing (DUWO, 2021). Therefore, no housing provider is found to be a good fit in offering the housing desired by bachelor students. As also identified in the legal analysis section of the

literature review, housing providers tend to avoid the use of permanent housing contracts as much as possible. Given the fact that students are still allowed to be given temporary short stay contracts, creates a good fit for short stay (campus) contracts as well as youth contracts which offer housing contracts for a maximum of five years.

Both the literature review as well as the introduction have extensively described the difficulty in developing shared housing options by housing providers. Scheele-Goedhart (2019), did however demonstrate a case comparison in which small transformation projects provided a more profitable business case for shared housing over individual housing. Given the assumptions in this case and the uncertainty of the scale-up, as described in the literature review, a medium fit is created. As a result, current shared housing offerings in the existing housing stock offer the best fit with the customer demand. This however does reiterate the starting point of this research; the lack of potential for developing new shared housing options.

Table 29: Morphological analysis segmented for bachelor students (Author, 2025)

Bad fit	Medium fit	Good fit	No specific preference identified

HOUSING SECTOR AND RENT	HOUSING PROVIDER	HOUSING TYPE	CONTRACT TYPE	TYPE OF BUILD
Social housing	Large investor	Shared facilities with max. 5 roommates	Regular housing contract	New build (modular)
Mid-rent sector	Small private investor	Shared facilities with more than 5 roommates	Short stay (e.g. campus or youth contract)	New build (traditional)
Free rental sector	Kences housing association	Multiple rooms	FRIENDS contract	Transformation
	Housing associations	Single room (studio)		Existing housing stock
	Homestay (hospita)	Mixed-use concept – vulnerable groups (elderly)		
		Dorm rooms		
		STING		
		Shared facilities with non-students		

PART III | 1.6.2 MASTER LEVEL

Master students showed a clear preference for a large room located in the city centre, but also accepted housing 15 min. away by bike. Having a private bathroom was valued clearly by master students while they preferred to share a kitchen with a maximum of five other roommates. A slight preference was shown for shared washing machine and bi-weekly cleaning while no clear preference was shown for any type of common space.

Table 30: Morphological analysis segmented for master students (Author, 2025)

Bad fit	Medium fit	Good fit	No specific preference identified

HOUSING SECTOR AND RENT	HOUSING PROVIDER	HOUSING TYPE	CONTRACT TYPE	TYPE OF BUILD
Social housing	Large investor	Shared facilities with max. 5 roommates	Regular housing contract	New build (modular)
Mid-rent sectors	Small private investor	Shared facilities with more than 5 roommates	Short stay (e.g. campus or youth contract)	New build (traditional)
Free rental sector	Kences housing associations	Multiple rooms	FRIENDS contract	Transformation
	Housing association	Single room (studio)		Existing housing stock
	Homestay (hospita)	Mixed-use concept – vulnerable groups (elderly)		
		Dorm rooms		
		STING		
		Shared facilities with non-students		

Based on these elements, shared facilities with a maximum of five other roommates as well as multiple and single-room individual housing has been established as being a good fit. Given the simultaneous preference for a private bathroom and a shared kitchen, a STING living concept was furthermore identified as a good fit. This housing type offers the advantages of private facilities with the added benefit of a shared kitchen, making it possible to obtain rental allowance (Dag, 2022). As a result, Kences housing associations are looking towards using this housing type.

As discussed in the literature review, master students are able and willing to spend more on rent than bachelor students (Hooft van Huijsduijnen et al., 2024). Meaning that sharing housing using a FRIENDS contract offered by a small/ large investor in the mid-rent or free rent sector becomes a more realistic option. Some serious notes however apply to the use of a FRIENDS contract, as the law for affordable rent limits the use of this contract type which was discussed in the literature review (Hielkema, 2024). This type of combination would however present a very good alternative to meet the demand identified in the conjoint analysis. Furthermore, housing offers in the mid-rent sector are also becoming more scarce following from the law for affordable rent (Ermerins, 2024; Pothast, 2024).

Master students showed a further disinterest in sharing a kitchen or bathroom with their landlord. Creating a bad fit with homestay offers and sharing facilities with non-students. Based on this analysis, the type of built present a good fit with shared housing offers available in the current housing stock. The use of a STING concept also shows a potential medium for new build modular construction.

PART III | 1.7. SIMULATING HOUSING OPTIONS

After moving through the data collection, this section makes for a good opportunity to look back at the theoretical framework with which this research started: the value proposition canvas. As explained before, this theory relates the customer demand to market offerings. Where the customer demand has been formed through the literature review and the conjoint analysis, the market offerings -and thus the value proposition- can now be made explicit based on the morphological analysis. After identifying these value propositions, the desirability of each can also be tested through the simulation software included in the conjoint analysis. The software from Sawtooth allows to test specific hypothetical housing combinations and establishes the fit and desirability of each. This essentially relates the customer demand to the value proposition and thus combines both sides of the value proposition canvas. Important to note is that the simulation is limited to the attributes and levels defined before in the conjoint analysis. Meaning that the simulation cannot test the effect of all characteristics. What can be tested is the desirability of arguably the most distinctive element of the morphological analysis: the housing type.

Based on the morphological analysis, several housing types can be identified for the respective customer segments. In doing so, the most interesting options from the perspective of a real estate developer can be included. Based on the fit within the morphological analysis, several housing options will be evaluated for both customer segments: the most preferred housing option from the conjoint analysis; the STING living concept and individual single room housing (a studio). Additionally, given the applicability of a FRIENDS living concept for master students, this housing type will additionally be included for master students. For each of these housing types, Table 31 shows an overview of levels defined for the simulation. Assumptions have been made for specific attributes (location, types of common spaces, additional services offered) of the STING, studio and FRIENDS housing type as the housing typology does not dictate any specific level for these attributes. Meaning that this simulation is not exhaustive but merely reflect the perspective of a real estate developer.

Table 31: Selected housing mixes for simulation (Author, 2025)

	Most preferred by Bachelor Students	Most preferred by Master Students	STING	Individual single room (studio)	FRIENDS shared housing
Location	In city center	In city center	On university campus	15 min. by bike away from city center and campus	In city center
Room size	30 m^2	30 m^2	20 m^2	30 m^2	15 m^2
Types of common spaces	Relaxation room	Relaxation room	Relaxation room	None	Relaxation room
Sharing your bathroom with	Less than 5 other students	Less than 5 other students	No one else	No one else	Less than 5 other students
Sharing your kitchen with	Less than 5 other students	Less than 5 other students	Less than 5 other students	No one else	Less than 5 other students
Additional services offered	Full | private washing machine, weekly cleaning	Medium | shared washing machine & bi-weekly cleaning	Medium | shared washing machine & bi-weekly cleaning	Basic | shared washing machine	None

Based on the different housing typologies detailed above, Sawtooth estimated the relative preference of bachelor students as shown in Figure 16 below. Interesting to see is that besides the most preferred option and a studio, STING also proved to be a desirable option for 18% of the bachelor students. Important to note is that a FRIENDS housing type was not included for bachelor students as it assumes a rent higher than bachelor students can pay.

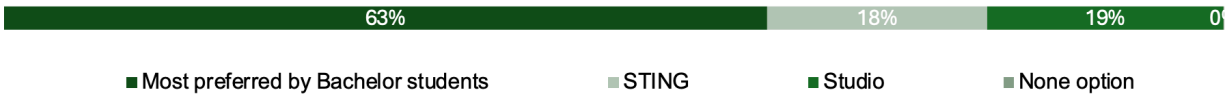


Figure 16: Simulation results for bachelor students (Author, 2025)

The simulation for master students included four different housing types. Figure 17 below indicates the preference for these housing options. This simulation shows that STING and a FRIENDS housing typology offer a good alternative to the most preferred option as well as individual studio housing.

Figure 17: Simulation results for master students (Author, 2025)

Based on these results, a qualitative conclusion can be drawn for the gain creator and pain reliever qualities of each of these housing types. Meaning that the last remaining green parts in the value proposition canvas can be filled out, also highlighted in Figure 18.

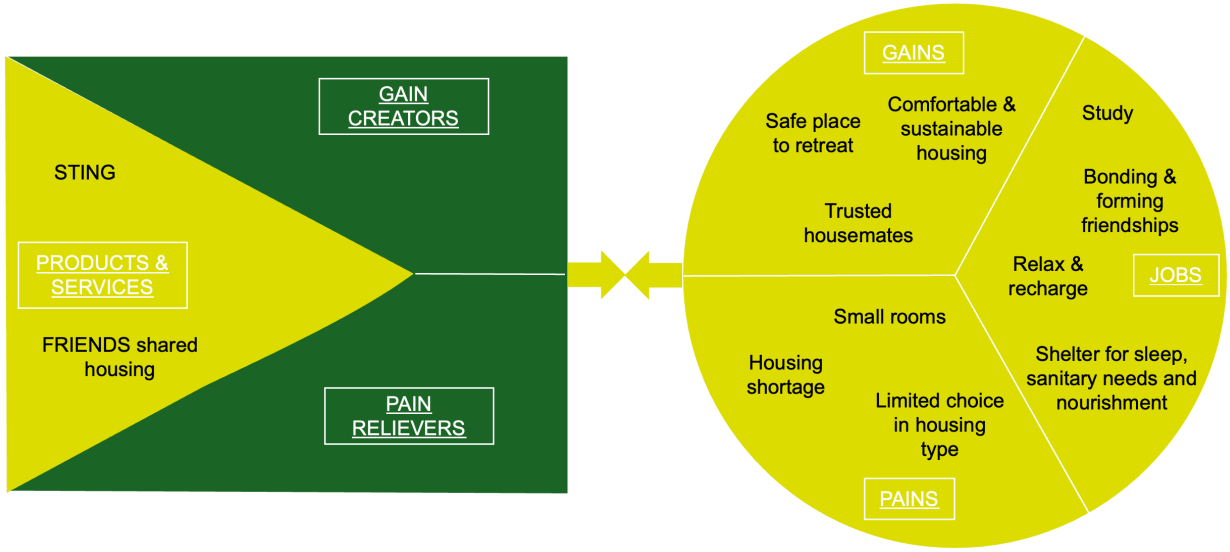


Figure 18: Overview of value proposition canvas (Author, 2025)

The selected housing options can be seen as the products and services within the value proposition and are limited to the STING and FRIENDS shared housing concepts as these arguably can be classified as shared housing. For each of these products, gain creators and pain relievers can be identified to align with the customer profile developed in the literature review, done so in Table 32 below. As can be seen in this table, the STING and FRIENDS shared housing concept offer similar gain creators. Both options provide private spaces, combined with common shared spaces to connect with roommates, relating to the ‘safe place to retreat’ and ‘Trusted housemates’ gains described in the customer profile. For the pain relievers, STING offers a presumably feasible business case which theoretically allows to quickly add more shared housing, relieving to the ‘Housing shortage’ customer pain. It is furthermore a new housing type to choose from, helping relieve the ‘Limited choice in housing type’ pain. For the FRIENDS shared housing concept,

the main pain reliever is the theoretical rejuvenation of shared housing, relieving to the 'Limited choice in housing type' customer pain.

Table 32: Gain creators and pain relievers for selected housing types (Author, 2025)

Selected products & services	Gain Creator	Pain reliever
STING	Private space to retreat Common spaces to connect with roommates	Potential to quickly add more shared housing New housing type to choose from
FRIENDS shared housing	Private space to retreat Common spaces to connect with roommates	Rejuvenation of traditional shared housing

Important to note is that these products, the perceived gain creators, and pain relievers are described from a more ideal and theoretical point of view. The discussion and conclusion chapter will further evaluate these options and provide an integral answer to the overall research question.

EMPIRICAL DATA COLLECTION | KEY TAKEAWAYS

The empirical data collection focussed on two analyses; a choice-based conjoint which eventually fed into a morphological analysis. After first establishing and operationalising the most appropriate housing characteristics for each analysis, a better understanding of housing preferences and customer segments was established through the conjoint analysis. By evaluating the fit between the elements of the morphological analysis and the customer segments, a move was made towards different products and services for the value proposition canvas.

Even though the conjoint analysis did find statistically significant results, the analysis still allowed for a detailed indicative analysis of housing preferences among the respondents. Based on segmenting the respondents into bachelor and master level students, non-significant differences were found in housing preferences. Notably, bachelor students appear more willing to share a bathroom and kitchen with fewer than five other tenants, even being preferred over private facilities. Even though master students also showed a preference for sharing a kitchen with a maximum of five roommates, they also showed a stronger inclination toward having private facilities. As such, the 'love and belonging' selection criterium outlined in Table 7 proved to be an important element for housing preferences. It therefore supports the claim made in establishing the customer profile. Housing is -or can be- more than satisfying more basic human needs.

The 'physiological needs' included in this conjoint analysis, location, and room size, however still proved to fulfil an important role in housing preferences where an expected trend was shown for larger rooms in generally more favourable (the city centre) locations. The sharp cut-off points within both attributes, housing smaller than 15 m^2 or 30 minutes away were especially interesting to find. Additional services and the types of common spaces, included as recent trends in the analysis, showed little effect on housing preferences with the lowest relative preferences as well as the lowest utility values. The low value of the 'None Option' for all segments did indicate that the hypothetical housing options included in the analysis were preferred by the respondents.

Form these results, the morphological analysis showed the effect on the housing options available and helped in determining the fit with potential interesting housing solutions such as FRIENDS or STING housing. Making use of the simulation module of the Sawtooth software, a quick analysis on what the demand for these different housing types could be found where an alternative was given to a studio or the most preferred housing option of each segment.

PART IV | DISCUSSION & CONCLUSION

DISCUSSION

Both the literature review and the empirical data collection in this research have arguably shown interesting results, which this section will aim to highlight. It will do so in a structured way. First, the main trends identified in the results will be discussed. Based on these results, practical and theoretical implications will be expanded upon. Based on the outcomes of these sections, limitations of this study will be included, as well as recommendations for future research.

DISCUSSION ON THE RESEARCH RESULTS

Several studies on housing characteristics for student housing were discussed in the literature review. These studies indicated that student housing preferences mainly depend on the price; type of shared facilities; size; and distance from important amenities (Hooft van Huijsduijnen et al., 2024; Nijënstein et al., 2015). Even though price was not included in the conjoint analysis in this research, it is interesting to note that the relative importance of the other attributes is comparable between the conjoint analysis in this study and literature. The choice-based conjoint analysis showed that sharing facilities, room size and location were found to be relatively most important. The similarity in results further leads to the indication that, even without segmenting different student types, sharing facilities is of great importance for students in general. The results of this research further specified that sharing with a maximum of five roommates was preferred for both bachelor and master students. On top of the studies in the literature review, this has shown the added intrinsic preference for sharing a kitchen.

Looking into the segmentation factors, the work of Nijënstein et al. (2015) discussed in the literature review elaborately describes the effect of individual personality characteristics such as openness to change on housing preferences. In contrast to the conjoint analysis in this study and the work of Scheele-Goedhart (2019), Nijënstein et al. (2015) do not show importance of age and or study phase. Instead, the heterogeneity in housing preferences expressed are attributed more to personality types and human values. What is more interesting from Nijënstein et al. (2015) is the topic of heterogeneity in the first place. The standard error in the research results show that not one single housing option can satisfy the needs of all students. Meaning that there should always be a mix. Together with the socio-demographic values identified in this and other research, it further gives argument to create different types of housing. Individual, shared but potentially also options which combine both such as the STING concept.

At first glance, the STING housing concept seems to offer a good compromise. It offers a private bathroom and small private kitchen and thus rental allowance, with the benefit of a shared common room (DUWO, 2023). Even though this concept combines elements with high utility scores in the conjoint analysis, it relies on a common room for the sharing element. Given the lack of relative importance of a common room found in the conjoint analysis, and supported by the work of Hooft van Huijsduijnen et al. (2024), some limitations can be defined. First, it is uncertain to what extent a common room in STING housing will be used in practice and what sociological effect it will have on the relation between roommates if they can still retreat to their own private spaces. Asking the question whether housing concepts combining common rooms and private facilities can replace traditional housing with shared facilities. Furthermore, this typology requires adding more bathrooms and kitchens compared to ‘regular’ shared housing, using more raw materials and thus negatively impact the planet aspect. Profit of society as a whole is also still impacted negatively as rental allowance is still required in order to provide a feasible business case (Dag, 2022). The morphological analysis as well as the simulation of housing types does indicate the potential but still important reservations exist in terms of all aspects of the triple bottom line.

Based on the morphological analysis, another option for shared housing can be found in shared housing with a maximum of five students through a FRIENDS contract. An option for which Scheele-Goedhart (2019) point out that a higher return on investment and thus a positive business case can be attained. In essence, the housing typology does not change, but the added benefit is that the total rent can simply be shared between roommates. Meaning that housing providers can attain similair rent levels in the social-, mid-, or free rental sector while students have the option to live together and apply for rental allowance as a group if applicable. A sidenote is however strongly given by van de Ven (2024; Veenstra (2024) which

point out that a lot of smaller buy-to-let housing owned by small investors is being sold off. Meaning that, despite scoring well on customer demand and the impact on the planet, the business case is put under additional pressure with hefty remarks on the profitability.

A final notable result is the effect with whom you are sharing. The conjoint analysis showed that homestay is for example not desired by Dutch students. A slightly higher preference exists for international students, but the overall utility value remained negative. Indicating that homestay is not preferred. However, students living in homestay offers did indicate a large preference for homestay. Indicating that preferences do exist for it and students are not just living there because no other housing options are available. From this, the question could be asked whether it really is as bad as it seems or whether it just has a negative perception.

INTERPRETATIONS AND IMPLICATIONS OF THE RESEARCH

Based on the outcome of this research, several theoretical and practical conclusions can be distinguished. This section will focus on highlighting and discussing the most important elements.

THEORETICAL IMPLICATIONS

This research has demonstrated the use of a value proposition canvas in combination with a choice-based conjoint and morphological analysis in understanding customer housing demand. As far as known, no research gives specific attention to the fit between these different theories and methodologies. Other studies using a choice-based conjoint analysis also do not focus on creating housing products -or value propositions in other words- from the results. Meaning that the operationalisation of the value proposition canvas as an overall theory using a choice-based conjoint and morphological analysis in this way has been a first.

In the end, the theoretical framework proved to be capable of making a combination and a translation between quantitative and qualitative results. By critically determining the correct level of detail for the attributes and levels, a suitable analysis in answering the research gap could be developed. As a result, the conjoint analysis was able to give insight into what sharing exactly means and has provided a first use of this framework. Regardless, additional focus on the integration of the different elements would however benefit future use of the model. For example, more attention could be given to the way the analyses feed from the conjoint analysis into the morphological analysis and then back into the simulation software included in the conjoint analysis. The moment when elements of the morphological analysis are determined could also be changed to align better with the outcome from the conjoint analysis.

Overall, the framework does allow to understand housing preferences better and shows capabilities to be applied at different levels of detail. The theory used is not just applicable to student housing, but also to other housing forms and can change the way housing typology is determined. By including customer demand in an earlier stage, housing offers can be aligned better and overall improve the quality of the housing market. In this research, the theory has been applied at quite a low level of detail. Further specificizing attributes on different level of detail (for a specific city or housing characteristic) could help in understanding and refining preferences in different stages.

PRACTICAL IMPLICATIONS

This research has resulted in a more quantified understanding of shared housing preferences compared to usual claims on preferences for shared housing. Most importantly to keep on stressing however, the data shows clear heterogeneity in the results. Meaning that, even though many students prefer some form of shared housing, demand clearly also exists for fully individual student housing. The results are therefore also averages and only an indication for a single housing type in a wider spectrum of market offers.

What this research has shown, are promising and interesting points to move forward with in the debate on shared student housing. It has qualitatively shown the gaps between demand and housing offers and which elements contribute to these gaps.

Furthermore, one of the main questions left at the end of this thesis is the question what dictates housing offers. Should it be more of a push-to-market by housing providers which offer whatever they can develop in a feasible business case, or should it be more of a pull from the market for specific housing types? Aligning the two is something which has arguably gone wrong in the current landscape of shared student housing. This research has been an attempt in rectifying that trend and to provide ways in aligning the elements again. Using the insights on what students find important in shared housing can help in steering the development of shared housing.

LIMITATIONS OF THE RESEARCH & RECOMMENDATIONS FOR FUTURE RESEARCH

Doing research also means acknowledging to what the limits are of the results and to what extent they are both reliable and valid. Cohen et al. (2017), define reliability as the consistency of the results (whether they can be reproduced) whereas validity refers to the accuracy of the results (whether the results represent what they actually should). After assessing the limitations of this research, recommendations for future research will be discussed.

LIMITATIONS

This research has focused on better understanding housing preferences of students and helping to form a better understanding of the current landscape for shared student housing in the Netherlands. This has included operationalising the value proposition canvas to test and understand housing preferences using two analyses: a choice-based conjoint analysis and a morphological analysis. While the individual methodologies and techniques mostly certainly are not new, the combination is.

Arguably, the weight of the results presented lie on the choice-based conjoint analysis. Meaning that serious reliability and validity issues could stem from the way this analysis is set up and carried out. First assessing the validity of the conjoint analysis. The results did not prove to be statistically significant, meaning that the results can only give a first indication of the actual population but not a definitive result. As argued before, the lack of statistical significance can largely be attributed to the limited sample size of fifty respondents, following from the limitations of the Sawtooth software package used. Increasing the sample size could be a good way to further investigate the results discussed above and to find statically significant results. Even though the background questions showed a lot of variability, the results could still be biased as the authors own network was used in finding respondents. Both expanding the sample size and using other data sources could help to further generalize the results and create a more valid outcome. Furthermore, the lack of statistical significance made it harder to select the most appropriate segmentation factor, only allowing for qualitative and argumentative selection criteria.

Assessing the reliability of the analyses requires looking back at the way the models were set up. Starting with selecting the attributes for both the conjoint and the morphological analysis. Even though the attribute selection was done as objectively as possible, a lot of assumptions and other choices for selecting the scope had to be made. Looking back at the attributes and levels included in the conjoint analysis, some points of critique can be placed. The location for example included different types of levels, with some being an actual location and others describing the distance from a location. Using the same type of levels, for example travel time to the city centre, could have improved the validity of the analysis. Another discussion is about the specific attributes themselves. Even though six distinct attributes were used, housing has many more characteristics which could have also been included which would have resulted in completely different preferences. The number of attributes is however always a limitation in a conjoint analysis. Moreover, the perspective of a real estate developer put the sharing element central. A different perspective would give more importance to other characteristics and eventually potentially different conclusions.

Beyond the conjoint analysis, an important caution also needs to be placed on many different assumptions made throughout. One of the most important are the focus points and qualitative discussion in the morphological analysis which for a large extent could not be attributed to objective arguments but rather a

qualitative discussion. In order to minimize potential bias, the value proposition canvas was used to report and relate the different elements, all while maintaining the perspective of a real estate developer.

Overall, this research has combined quantitative with qualitative data. An arguably delicate process in which the objectivity from the author is essential to maintain. Even though significant effort was placed on remaining objective, it is important to note that the author was previously in involved with student rights organizations advocating for more shared student housing. Despite not deliberately doing so and placing a lot of focus for justified argumentation from literature, this role might have influenced the analysis to some extent.

RECOMMENDATIONS FOR FUTURE RESEARCH

Based on discussion so far, many different relations between housing characteristics and other topics can be further researched. For simplicity, a distinction will be made in expanding the analyses as well as defining other, more specific research topics.

EXPANDING THE ANALYSES

A first recommendation is to critically walk through the setup of the conjoint analysis and to expand the sample size to be able to get significant results from the analysis and make substantiated claims on housing preferences. Besides rerunning the choice-based conjoint analysis, the list of attributes and the levels included can also be expanded. For example, the morphological analysis could be made more specific if more was known about the relative importance of contract duration among students. Right now, the analysis was mostly limited to a qualitative discussion on the potential fit between different contract types and the housing provider. Adding uncertainty to a housing situation might however change the preference of students and therefore impact the potential fit with other characteristics.

Shared housing between different demographics can lead to mutually beneficial situations as outlined by Mourik & Wassenberg (2023). This research has shown that this does not seem to be the case for students in homestay situations living with their landlord. Briefly outlined in the literature review but not included in the conjoint analysis, the potential for shared housing between students and socially weaker groups such as elderly or refugees could potentially lead to mutually beneficiary situations. Again, the hypothesis is that not all students would prefer these types of living situations, but it might be that some do. Based on the experiences in this research, a conjoint analysis seems to be a fitting technique to better understand housing preferences for the type of roommate.

Another point to research is the effect of including the rent price on housing preferences. Given the importance of this attribute identified in other studies, it was a bold move to not include it in the conjoint analysis for this research. Even though the scope was clear; understanding the underlying intrinsic value of sharing, the housing solutions presented in the conjoint analysis arguably seem to not fully represent an actual housing option and little downside is included when going for the most ‘ideal’ housing option such as the biggest room or the most central location. Potentially structuring the price in a random way, or including different pricing schemes similar to the work of ABF Research (2024) might give more nuanced insights into the housing preferences.

The conjoint analysis could also benefit from being made more specific. Right now, the option for living 30 minutes away from campus and the city centre showed to be very negative. However, taking a more specific geographical location, Delft for example, could make the options more specific and get more specific insights. For example, whether students prefer to live more in suburbs, or whether they are willing to travel further to campus when they live in different cities such as The Hague or Rotterdam. First conducting market research on the housing market in a specific city (locations, student demographics such as age, personality types) could also help in defining the fit between demand and offer and eventually make investment choice for housing providers.

RECOMMENDATIONS FOR RESEARCH TOPICS

This research has highlighted the potential for STING to be a potentially effective alternative housing form for shared housing. However, besides the discussion on the planet and profit impact, the physical design of the common spaces is also vital in the success and use of these common spaces (Dag, 2022; Nugent, 2016). Therefore, it is recommended to further look into what drives the success of common spaces and in which ways they can be used. Different options could then be tested in for example another conjoint analysis to expand the understanding of housing preferences, and to build from this research in a complementary way.

The expansion of housing characteristics can in this sense also be described as an ongoing iterative process, in which each analysis further deepens the knowledge of preferences in several elements towards a value proposition. The theoretical framework in this study has attempted to do so in a preliminary way using a morphological analysis. Even though this resulted in a valid analysis, further research and use of the model could help to validate the framework further. The model could be used in understanding student housing preferences but also seems fitting for other types of housing on different levels of detail.

The literature also gave a quick insight into some policies in the housing sector. Even though not included in the scope of this research, it is worthwhile to note some elements. One of the more interesting aspects is the discussion on rent price and differences in rent between shared and individual housing. While the literature review first established that shared housing tends to be more expensive per square meter, Hooft van Huijsduijnen et al. (2023), established an opposite willingness among students to pay an additional €185,- for a studio over shared housing. With the average rent price being higher for shared housing and the high relative importance of rent in student housing preferences, this raises the question to think more critically about the rent valuation system. Outside of the scope for this research but potentially redistributing of the rental allowance as described by (ABF Research, 2024) could help in. Further research into the policies surrounding shared housing could help in understanding which aspect fully prevent shared housing from being developed.

A final recommendation is on the push-to-market or general pull-from-market in housing in general and to what extent housing preferences are an element in deciding on housing typologies. This discussion was also a leading cause for this thesis as it relates to the overall feasibility question caused by the related policies. Further research in aligning these policies could help to make the effects more insightful and be a step forward in better aligning housing offers to overall market demand.

CONCLUSION

Shared student housing is a way to promote social interaction and to build relations in a fragile phase in the young life of students. This presumption described in the context of part one is what initially started this research. The topic of shared student housing was made urgent by the reduction of both private buy-to-let shared housing owned by small investors (van der Veen, 2025; Veenstra, 2024) as well as the transformation of shared housing options to individual housing with Kences housing associations (DUWO, 2021). Even though little quantitative insight is available or defined for these trends, it did raise the question whether shared student housing is going to disappear. The trend that a space-efficient solution which is beneficial and desired by customers would be lost made a case to further look into this topic.

SQ1: WHAT CONTEXTUAL FACTORS INFLUENCE THE OFFER AND DEMAND OF STUDENT HOUSING?

After setting the context, a more detailed analysis took place in which the factors affecting both the offer and demand side of the value proposition canvas could be researched. A structured literature review revealed that the type of housing offer is mostly dependent on the rent valuation system (*WWS(O)*), which promotes certain aspects (such as a private bathroom) by attributing more points and a higher rental price. Combined with regulations for rental allowance, important differences in financial feasibility are caused, which guides the preference of housing providers towards individual housing (Mourik & Wassenberg, 2023). Simply put, the additional rent possible for individual housing makes it a more feasible product in the challenging and highly competitive housing market. As changing this policy is arguably a straightforward decision but dependent on political willpower, the focus of this research shifted towards another blindside identified; what defines shared housing for students? What preferences do students show for sharing specific types of facilities? What factors can influence the decision for housing typology?

An analysis of the demand side for shared housing revealed that housing can be more than being a place for shelter, sleep, sanitary needs and nourishment. In a broader sense, the demand for shared housing requires looking beyond these physiological needs in Maslow's theory of needs. Student housing should facilitate bonding and the formation of interactions and friendship. Even though many more contextual factors were identified, this sharing element became the primary focus of this research as especially Nijënstein et al. (2015) showed the clear heterogeneity in housing preferences between different student segments. Not all students want the same but finding and defining certain customer segments helps to understand what characteristics are valued.

SQ2: WHAT ARE THE MAIN FACTORS INFLUENCING STUDENTS' CHOICE FOR TYPES OF HOUSING?

Generic student housing preferences mainly depend on the price, size, distance from important amenities as well as the types of shared facilities (Hooft van Huijsduijnen et al., 2024; Nijënstein et al., 2015). From these housing characteristics, the choice-based conjoint analysis in this report focused on the intrinsic value of sharing and identified several drivers. Even though the sample size was too small to provide statistical significance, the outcome still offers a good indication that higher levels of Maslow's theory of needs are relatively important in selecting housing. Meaning that with whom a kitchen and bathroom are shared, are main factors for choosing housing among the attributes studied in the conjoint analysis. These results are also largely in line with other studies on housing preferences such as Hooft van Huijsduijnen et al. (2024); Nijënstein et al. (2015) with argue for the importance of sharing. These characteristics are followed by attributes related to lower levels of Maslow's theory, such as location and room size. Recent trends towards common spaces as a replacement for shared facilities, as well as additional services were found to be of little influence for both bachelor and master students.

Even though a distinct preference was shown private facilities in literature and especially also when segmenting by master students, it is important to note the preference for sharing facilities with roommates, especially when no other clear drivers are present such as a reduced rent price for studios. An interesting

conclusion both found in the conjoint analysis, as well as in the work of Scheele-Goedhart (2019), which attempted to level the playing field by measuring the effect of including rental allowance for shared housing. This underlines the intrinsic value of sharing facilities. The discussion, however, also gives an indication that sharing is not as simple as it sounds. The discussion hypothesized that mutual beneficiary situations could be created by sharing between students and socially weaker groups like the elderly or refugees. Probably not for all students, understanding the preference or acceptance might help to further expand housing typologies. The preference for homestay offers included in the conjoint analysis have demonstrated a first evaluation, and similar studies can be conducted for other demographics.

The results and discussion also highlighted the importance of study phase, or age, as a driver in housing preferences. A driver also found by Hooft van Huijsduijnen et al. (2024), but for which Nijënstein et al. (2015) found limited variation in their results. However, as argued by all authors and shown in the results section of this research, differences in preference are found among virtually any socio-demographic or personality traits. Further fuelling the argument for ensuring heterogeneity in housing types.

SQ3: WHAT HOUSING CHARACTERISTICS CAN BE COMBINED TO FORM SHARED STUDENT HOUSING OFFERS WHICH ALIGN WITH HOUSING DEMAND?

The morphological analysis expanded the results from the choice-based conjoint analysis in a qualitative way and presented a discussion on the fit between the demand and several market capabilities. As already hypothesized in the context outline in the introduction, it was found that few capabilities are present in the current landscape. A hypothetical option was discussed for the use of a FRIENDS concept in the mid-rent or free rental sector, especially for master students, but at the same time it was also made impossible due to the law for affordable rent. Another option presented in the morphological analysis is the STING concept, combining the best -and worst- of both worlds as outlined in the discussion. Important to note is that, while both bachelor and master students showed a preference for it, it does not take away arguments on the profit and planet dimension of the triple bottom line and also not conclusively for the people dimension. Still having some private facilities results in less spontaneous interaction, reducing the benefit of ‘true’ shared housing. In line with argumentation by Nugent (2016), focusing on the qualitative aspects of the common spaces are vital if these options are developed further. Especially considering the results from the conjoint analysis which did not show large preferences for any common space.

The morphological analysis identified two potential options for shared student housing: housing using the STING concept as well as a FRIENDS shared housing concept. In order to assess their actual performance, including all elements of the triple bottom gives a clear understanding and summarizes the analyses as well as the discussion section.

Table 33: Evaluation of shared housing types identified (Author, 2025)

	People	**Planet**	**Profit**	**Implementation potential**
STING	Medium performance. Potential of common space uncertain.	Poor performance. Requires significant usage of raw materials.	Poor performance. Heavily dependent on rental allowance.	Legally and financially feasible
FRIENDS shared housing	Good performance. The absence of private facilities boosts social interaction, the main benefit of shared housing.	Good performance. Combining small private spaces with shared facilities.	Good performance. Limited to no dependence on rental allowance.	Financially and legally infeasible

From the analysis above, it shows that STING housing scores poor to medium on the triple bottom line. Limiting the potential despite the legal and financial feasibility identified in the literature review. FRIENDS shared housing on the other hand scores well on all elements of the triple bottom line, but as it is essentially regular shared housing, lacks in financial and legal feasibility. Concluding, no clear housing form can be identified which satisfy all elements in the current landscape.

MAIN RESEARCH QUESTION: HOW CAN SHARED HOUSING OFFERS MEET THE DEMAND OF STUDENTS?

Based on the results, discussion and concluding statements above, an answer can be provided to the main research question. This research has not found a clear housing product which real estate developers can implement to provide shared student housing in the current political landscape while simultaneously scoring well on the triple bottom line. Despite the theoretical attractiveness of STING housing, limitations exist on the people, planet, and profit dimensions. FRIENDS housing on the other hand shows potential by scoring well on all dimensions but legal restrictions exist which prevent widespread implementation. This also limited the pain relievers and gain creators identified for the respective products for the value proposition canvas in the morphological analysis section. Making it hard to draw definitive conclusions on the applicability of these value propositions.

As such, the discussion pointed towards the starting point of this research, changing governmental policies related to maximum rent levels and rental allowance. In short, the financial balance between individual and shared housing needs to be revisited and aligned with what students can pay for their housing. Besides simply offering rental allowance to all forms of student housing, this might also mean that individual student housing could get more expensive and thus de-incentivised. Alternatively, municipalities could also be given the power again to appoint certain housing complexes as being eligible for rental allowance, as was standard practice until 1997. Moreover, the standard allowance students get could also be used to subsidise housing costs. The political decision required simply needs a more elaborate analysis to understand the effects of different policy interventions. Overall, making use of the willingness of students to live in more efficient housing results in an overall higher score on the triple bottom line.

Looking into the intrinsic value of sharing, this research has given more insights for real estate developers in knowing what key driving elements are for students in sharing housing and showed a way to quantify these. It gave better insights into what sharing is, creating a clearer value proposition canvas and way to not only qualitatively but also quantitatively relate these different elements. It has given the insight that -in an ideal situation- not only price is an important element but that different segments of students exist which all prefer sharing some elements of their housing. The discussion on common spaces and additional services and their potential to relieve some of the pain from not sharing, means that it worthwhile to look better into what makes these spaces successful as outlined in the potential for future research.

Finally, this research has shown that understanding housing preferences and aligning housing offers with market demand can be an iterative process. The theoretical model laid out and applied in this research, shows potential to be used in doing so. It shows potential to be used on different levels of detail, in a general sense but also for specific (re)development projects. As such, it can be a very useful tool for real estate developers to determine housing typology in different levels of detail. For student housing, but also in a more general sense.

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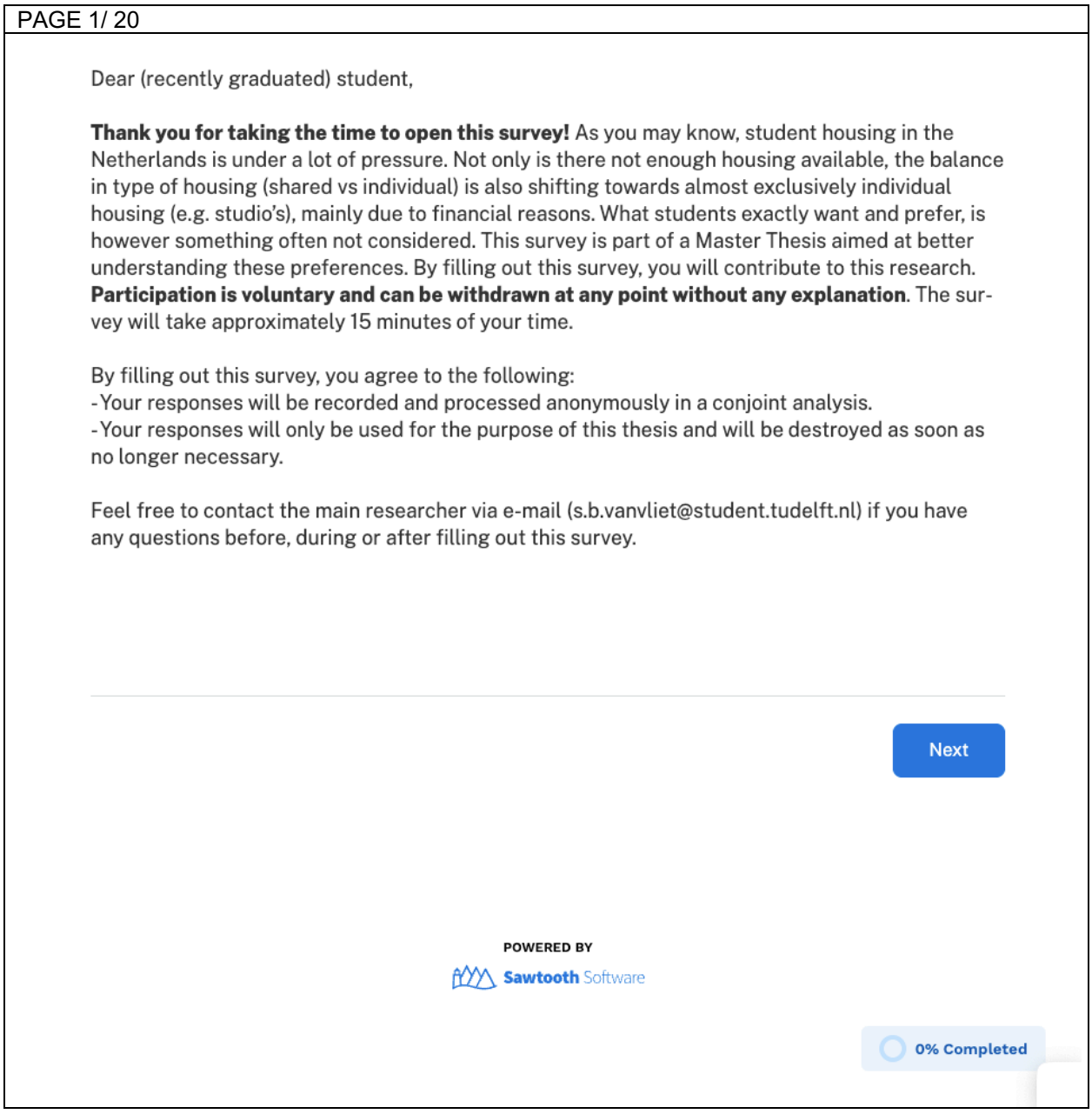
PART VI | APPENDIX

APPENDIX A: INTERFACE OF CHOICE-BASED CONJOINT ANALYSES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Dear (recently graduated) student,

Thank you for taking the time to open this survey! As you may know, student housing in the Netherlands is under a lot of pressure. Not only is there not enough housing available, the balance in type of housing (shared vs individual) is also shifting towards almost exclusively individual housing (e.g. studio's), mainly due to financial reasons. What students exactly want and prefer, is however something often not considered. This survey is part of a Master Thesis aimed at better understanding these preferences. By filling out this survey, you will contribute to this research. **Participation is voluntary and can be withdrawn at any point without any explanation**. The survey will take approximately 15 minutes of your time.

By filling out this survey, you agree to the following:
- Your responses will be recorded and processed anonymously in a conjoint analysis.
- Your responses will only be used for the purpose of this thesis and will be destroyed as soon as no longer necessary.

Feel free to contact the main researcher via e-mail (s.b.vanvliet@student.tudelft.nl) if you have any questions before, during or after filling out this survey.

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This survey consists of two parts. Please read the outline below in detail.

The **first part** will ask for some generic background questions such as your age and study level to later categorize the different responses.

In the **second part**, you will be asked to make several choices between three different housing options. If all options are undesirable to you, a 'none' option can be selected. Please note that all characteristics not included in the table are deemed to be similar. For example, all rooms have an energy label A and are in good condition.

Again, feel free to the main researcher via e-mail (s.b.vanvliet@student.tudelft.nl) if you have any questions before, during or after filling out this survey.

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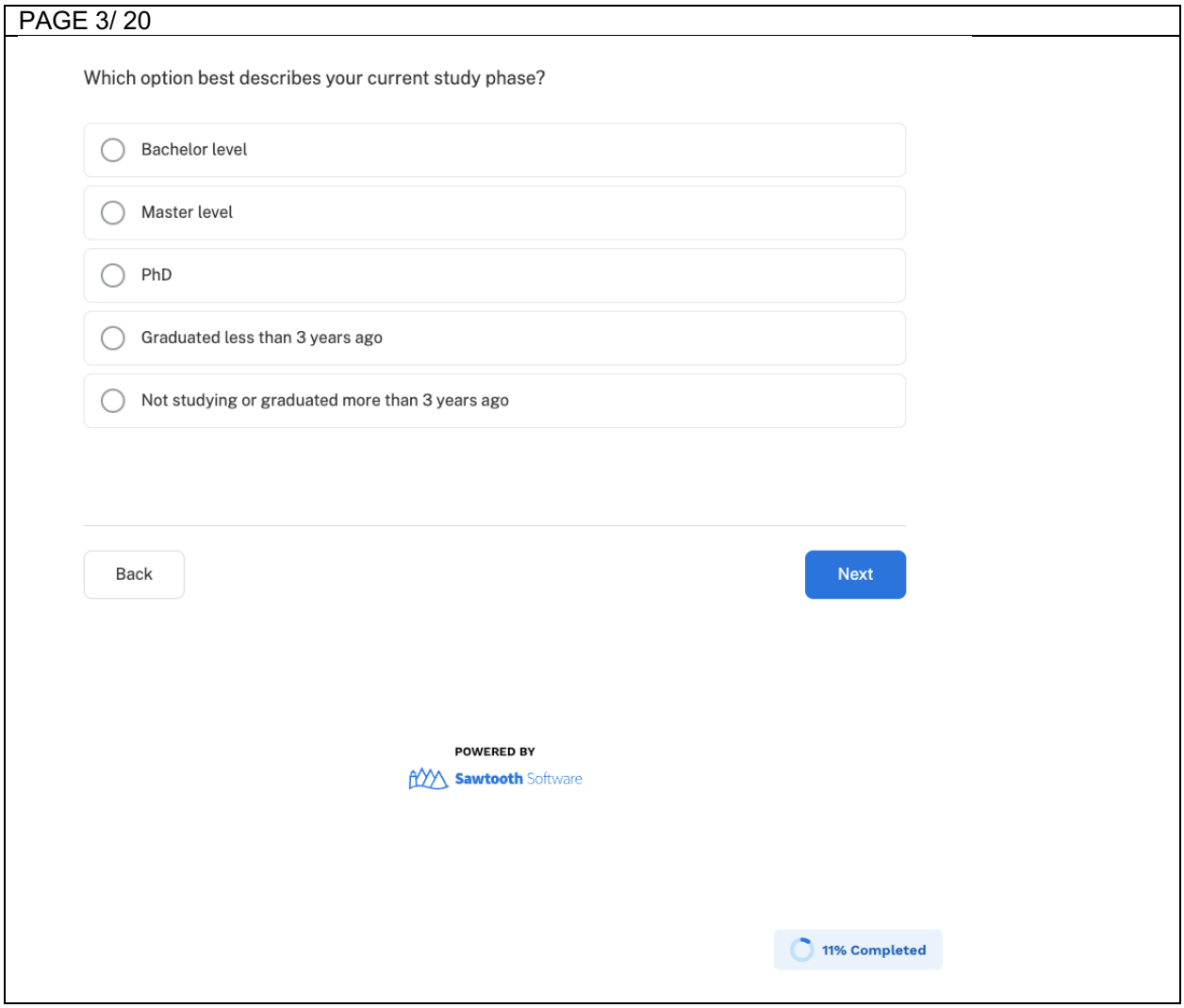
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Which option best describes your current study phase?
Bachelor level
Master level
PhD
Graduated less than 3 years ago
Not studying or graduated more than 3 years ago
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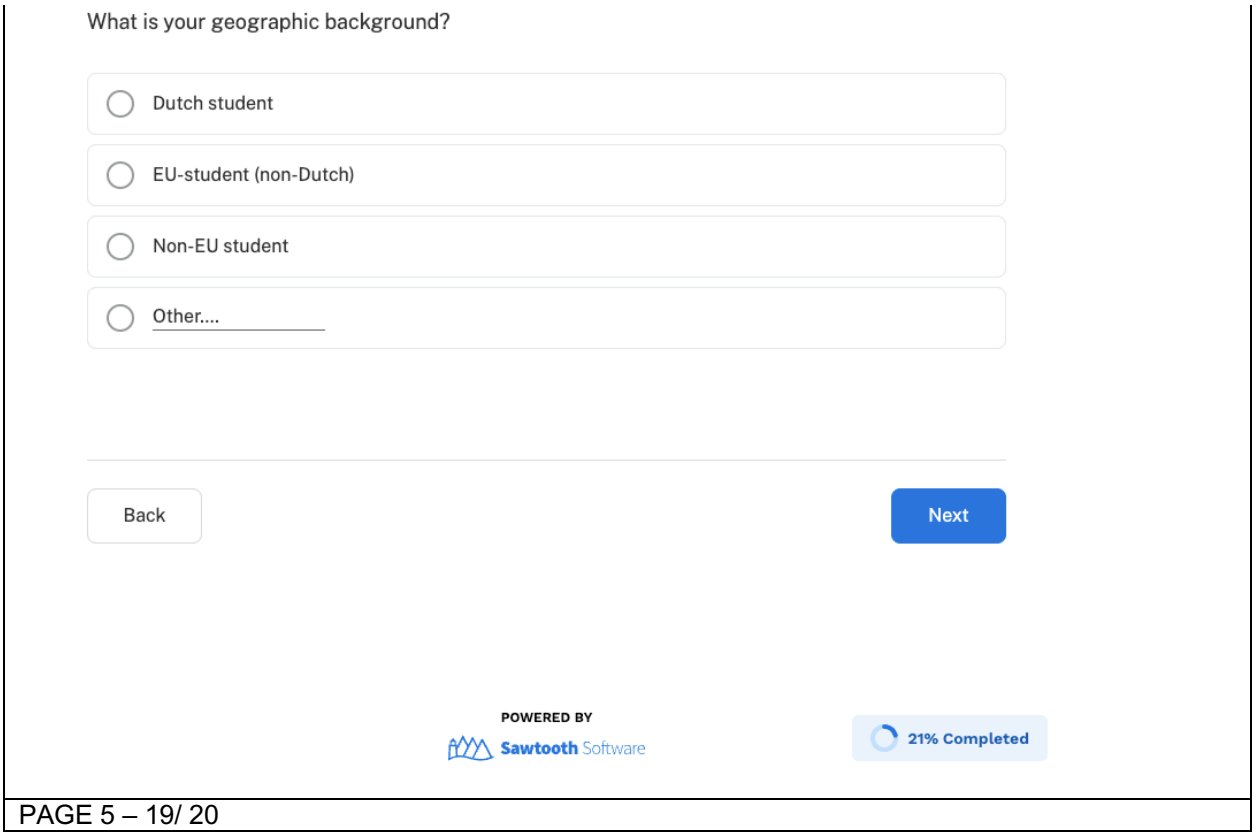
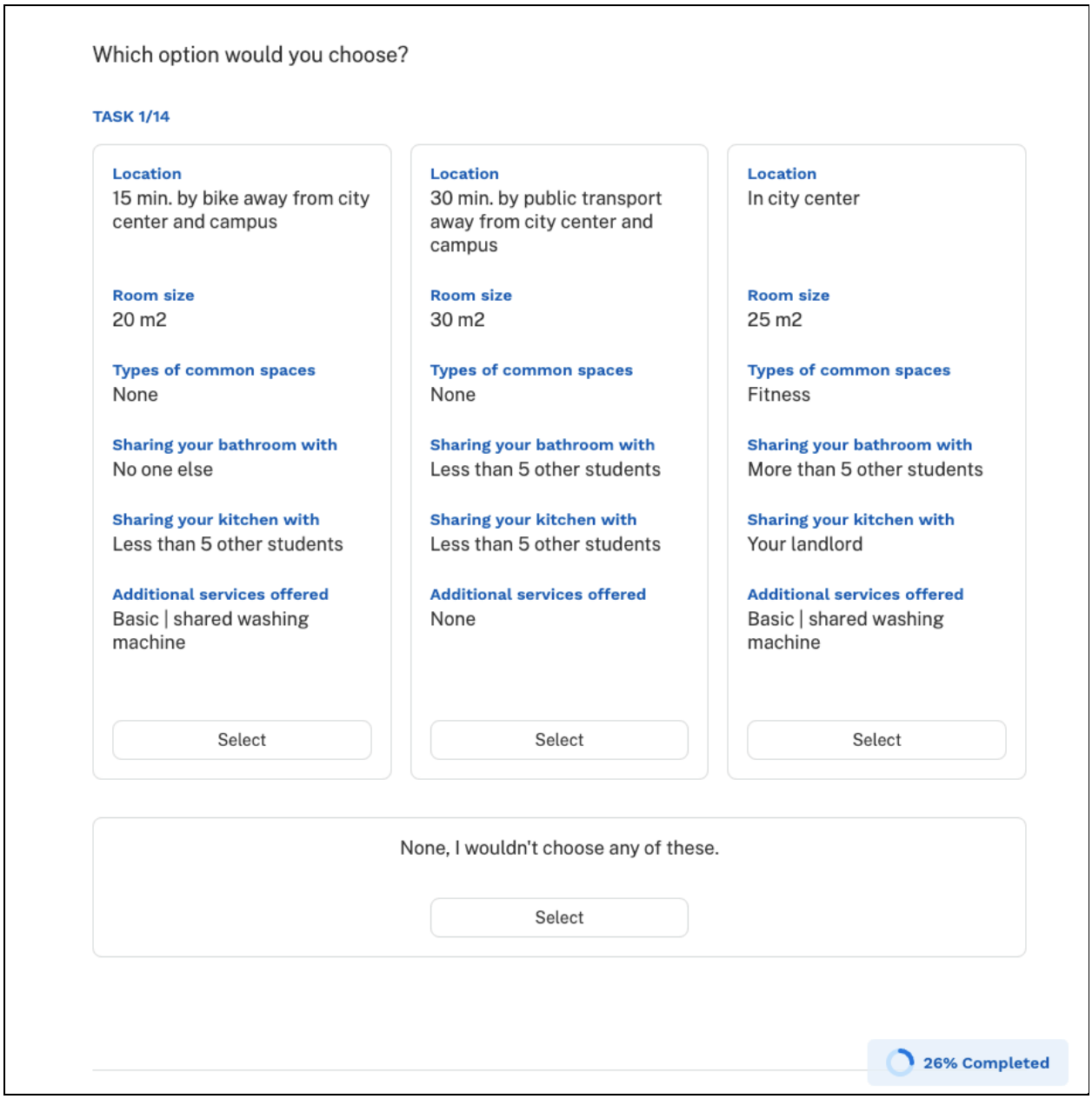
What is your age?

Which option best describes your current living situation?

- ◯ Shared housing with less than 5 students
- ◯ Shared housing with more than 5 students
- ◯ Studio
- ◯ Private multi-room apartement
- ◯ Homestay (*NL: hospita)*
- ◯ Living with parents
- ◯ Other...


What is your geographic background?
Dutch student
EU-student (non-Dutch)
Non-EU student
Other....
Back
Next
POWERED BY
Sawtooth Software
21% Completed

PAGE 5 – 19/ 20


Which option would you choose?
TASK 1/14
Location
15 min. by bike away from city center and campus
Room size
20 m2
Types of common spaces
None
Sharing your bathroom with
No one else
Sharing your kitchen with
Less than 5 other students
Additional services offered
Basic | shared washing machine
Select
Location
30 min. by public transport away from city center and campus
Room size
30 m2
Types of common spaces
None
Sharing your bathroom with
Less than 5 other students
Sharing your kitchen with
Less than 5 other students
Additional services offered
None
Select
Location
In city center
Room size
25 m2
Types of common spaces
Fitness
Sharing your bathroom with
More than 5 other students
Sharing your kitchen with
Your landlord
Additional services offered
Basic | shared washing machine
Select
None, I wouldn't choose any of these.
Select
26% Completed

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Thank you for taking our survey!
Your responses have been submitted successfully.

POWERED BY
Sawtooth Software

100% Completed

APPENDIX B: CORRELATION OF INDEPENDENT VARIABLES

Correlations - independent variables					
		Q1	Age_cat	Q3	Q4
Q1	Pearson Correlation	1	.595**	.096	.011
	Sig. (2-tailed)		<.001	.508	.941
	N	50	50	50	50
Age_cat	Pearson Correlation	.595**	1	.002	.022
	Sig. (2-tailed)	<.001		.987	.877
	N	50	50	50	50
Q3	Pearson Correlation	.096	.002	1	-.161
	Sig. (2-tailed)	.508	.987		.264
	N	50	50	50	50
Q4	Pearson Correlation	.011	.022	-.161	1
	Sig. (2-tailed)	.941	.877	.264	
	N	50	50	50	50
**. Correlation is significant at the 0.01 level (2-tailed).					

APPENDIX C: UTILITY VALUES SEGMENTED BY STUDY PHASE

Attribute	Level	N= Total 50 Utility	Standard Error	Bachelor level 19 Utility	Delta	Standard Error	Master level 19 Utility	Delta	Standard Error	PhD 4 Utility	Delta	Standard Error	Graduated less than 3 years ago 8 Utility	Delta	Standard Error
Location	In city center	24,87	4,79	30,94	6,07	9,53	24,29	-0,58	6,74	3,20	-21,67	17,22	22,66	-2,21	7,89
	On university campus	7,40	4,53	6,19	-1,21	5,61	1,90	-5,50	7,36	53,76	46,36	26,59	0,16	-7,24	7,33
	15 min. by bike away from city center and campus	9,12	2,81	4,69	-4,43	3,60	14,05	4,93	5,89	7,02	-2,10	6,48	8,99	-0,13	5,45
	30 min. by public transport away from city center and campus	-41,39	6,50	-41,82	-0,43	9,79	-40,25	1,15	11,33	-63,98	-22,59	37,12	-31,81	9,58	11,56
Room size	15 m2	-46,53	4,71	-46,91	-0,38	9,14	-49,78	-3,26	7,90	-30,25	16,28	3,80	-46,03	0,50	7,21
	20 m2	-7,82	3,44	-12,57	-4,75	6,80	-4,91	2,91	5,06	-19,55	-11,73	5,79	2,41	10,24	5,93
	25 m2	16,84	3,17	17,07	0,23	6,01	17,58	0,74	4,83	21,69	4,86	11,60	12,08	-4,75	6,52
	30 m2	37,52	6,13	42,41	4,90	12,45	37,12	-0,40	9,46	28,11	-9,40	11,16	31,54	-5,98	10,25
Types of common spaces	Dedicated study space	-1,99	4,11	-7,38	-5,39	5,60	2,53	4,52	6,09	32,60	34,59	26,07	-17,22	-15,23	6,26
	Relaxation room	12,54	2,93	14,28	1,74	4,13	9,94	-2,60	5,51	0,05	-12,49	14,78	20,83	8,29	3,79
	Fitness	-3,46	2,80	-3,77	-0,31	4,57	-3,45	0,01	4,47	-18,80	-15,34	12,04	4,90	8,37	5,94
	None	-7,09	2,35	-3,14	3,95	4,06	-9,02	-1,93	3,59	-13,85	-6,76	8,29	-8,51	-1,42	6,07
Sharing your bathroom with	No one else	48,48	8,04	16,49	-31,99	11,80	62,35	13,87	12,27	56,08	7,60	27,44	87,71	39,23	16,13
	Less than 5 other students	34,84	5,29	31,18	-3,66	9,00	40,83	5,99	8,22	27,18	-7,66	21,80	33,14	-1,70	13,90
	More than 5 other students	-20,54	8,68	7,69	28,23	13,35	-34,75	-14,21	14,67	-33,77	-13,23	25,14	-47,22	-26,68	17,42
	Your landlord	-62,78	8,87	-55,35	7,42	15,89	-68,42	-5,65	14,11	-49,50	13,28	25,01	-73,63	-10,85	22,12
Sharing your kitchen with	No one else	8,23	5,72	-8,06	-16,29	8,85	13,09	4,86	9,70	22,20	13,97	21,06	28,37	20,14	10,65
	Less than 5 other students	28,71	4,13	30,03	1,32	7,69	28,68	-0,03	6,05	15,25	-13,45	19,72	32,35	3,64	7,90
	More than 5 other students	10,64	7,43	28,51	17,87	11,27	1,36	-9,28	12,76	0,61	-10,03	27,68	-4,74	-15,38	17,39
	Your landlord	-47,57	6,39	-50,48	-2,91	11,51	-43,13	4,44	9,75	-38,07	9,51	19,59	-55,98	-8,41	17,04
Additional services offered	None	0,00	3,02	3,46	3,45	4,39	-1,58	-1,58	4,01	12,05	12,05	7,83	-10,47	-10,47	11,77
	Basic | shared washing machine	-5,97	3,57	1,12	7,09	5,74	-9,19	-3,22	4,26	-11,58	-5,60	15,47	-12,35	-6,38	12,88
	Medium | shared washing machine & bi-weekly cleaning	2,33	3,37	-10,14	-12,47	5,32	11,83	9,50	4,88	8,15	5,82	6,55	6,48	4,15	9,01
	Full | private washing machine, weekly cleaning	3,64	3,81	5,57	1,93	5,16	-1,06	-4,70	5,28	-8,63	-12,27	14,01	16,35	12,71	14,79
None Option		-45,13	7,70	-64,13	-19,01	11,90	-35,46	9,67	12,00	-47,02	-1,90	37,26	-22,00	23,13	17,98

APPENDIX D: UTILITY VALUES SEGMENTED BY AGE

		Total		Younger than 21 years old			21 or older than 21 years old		
	N=	50		15			35		
Attribute	Level	Utility	Standard Error	Utility	Delta	Standard Error	Utility	Delta	Standard Error
Location	In city center	24,87	4,79	39,51	14,64	9,61	18,60	-6,27	5,21
	On university campus	7,40	4,53	6,38	-1,02	7,15	7,84	0,44	5,77
	15 min. by bike away from city center and campus	9,12	2,81	7,13	-1,99	4,07	9,97	0,85	3,64
	30 min. by public transport away from city center and campus	-41,39	6,50	-53,02	-11,63	9,29	-36,41	4,98	8,33
Room size	15 m2	-46,53	4,71	-36,67	9,85	7,34	-50,75	-4,22	5,86
	20 m2	-7,82	3,44	-10,70	-2,88	6,96	-6,59	1,23	3,95
	25 m2	16,84	3,17	24,39	7,55	5,75	13,60	-3,24	3,72
	30 m2	37,52	6,13	22,99	-14,53	8,66	43,74	6,23	7,77
Types of common spaces	Dedicated study space	-1,99	4,11	0,99	2,98	6,93	-3,27	-1,28	5,11
	Relaxation room	12,54	2,93	10,69	-1,85	5,17	13,33	0,79	3,59
	Fitness	-3,46	2,80	-8,63	-5,17	3,80	-1,25	2,22	3,62
	None	-7,09	2,35	-3,05	4,04	4,82	-8,82	-1,73	2,64
Sharing your bathroom with	No one else	48,48	8,04	10,63	-37,85	13,43	64,70	16,22	8,69
	Less than 5 other students	34,84	5,29	45,76	10,92	7,01	30,16	-4,68	6,84
	More than 5 other students	-20,54	8,68	19,66	40,21	16,26	-37,77	-17,23	8,90
	Your landlord	-62,78	8,87	-76,06	-13,28	18,39	-57,08	5,69	9,95
Sharing your kitchen with	No one else	8,23	5,72	-8,03	-16,26	8,02	15,19	6,97	7,16
	Less than 5 other students	28,71	4,13	34,20	5,50	5,80	26,35	-2,36	5,35
	More than 5 other students	10,64	7,43	38,61	27,97	13,75	-1,35	-11,99	8,14
	Your landlord	-47,57	6,39	-64,78	-17,20	12,59	-40,20	7,37	7,13
Additional services offered	None	0,00	3,02	3,87	3,87	4,93	-1,66	-1,66	3,77
	Basic | shared washing machine	-5,97	3,57	6,61	12,58	4,98	-11,36	-5,39	4,36
	Medium | shared washing machine & bi-weekly cleaning	2,33	3,37	-6,75	-9,08	6,35	6,22	3,89	3,85
	Full | private washing machine, weekly cleaning	3,64	3,81	-3,73	-7,37	3,85	6,80	3,16	5,13
None Option		-45,13	7,70	-49,86	-4,73	11,08	-43,10	2,03	10,00

APPENDIX E: UTILITY VALUES SEGMENTED BY CURRENT HOUSING TYPOLOGY

		Total		Shared housing with less than 5 students			Shared housing with more than 5 students			Studio			Private multi-room apartement			Homestay (NL: hospita)			Living with parents		
	N=	50		15			9			10			5			10			10		
Attribute	Level	Utility	Standard Error	Utility	Delta	Standard Error	Utility	Delta	Standard Error	Utility	Delta	Standard Error	Utility	Delta	Standard Error	Utility	Delta	Standard Error	Utility	Delta	Standard Error
Location	In city center	24,87	4,79	25,57	0,70	11,59	28,52	3,65	4,39	5,13	-19,74	5,54	-6,72	-31,59	14,07	59,78	34,91	15,59	34,21	9,33	8,63
	On university campus	7,40	4,53	5,31	-2,09	7,73	2,23	-5,17	4,30	11,67	4,27	11,30	32,56	25,16	22,34	16,59	9,19	34,82	-8,21	-15,61	9,60
	15 min. by bike away from city center and campus	9,12	2,81	8,60	-0,52	4,11	11,04	1,92	5,61	12,90	3,78	6,20	6,04	-3,08	4,75	12,43	3,31	3,53	0,22	-8,90	10,88
	30 min. by public transport away from city center and campus	-41,39	6,50	-39,48	1,91	11,67	-41,78	-0,39	10,67	-29,69	11,70	13,20	-31,88	9,52	27,64	-88,79	-47,40	22,75	-26,22	15,17	18,09
Room size	15 m2	-46,53	4,71	-51,21	-4,68	8,94	-37,52	9,01	7,60	-41,17	5,36	7,96	-66,75	-20,22	21,47	-48,01	-1,48	11,72	-57,12	-10,59	13,82
	20 m2	-7,82	3,44	-6,30	1,52	6,93	4,26	12,09	5,85	-5,95	1,87	5,48	-15,35	-7,53	13,24	-26,90	-19,08	3,48	-4,80	3,02	10,06
	25 m2	16,84	3,17	18,23	1,40	4,28	21,23	4,39	7,89	5,46	-11,38	9,02	15,31	-1,53	7,67	45,08	28,24	7,69	18,86	2,03	7,99
	30 m2	37,52	6,13	39,28	1,77	8,85	12,02	-25,49	10,88	41,66	4,15	6,72	66,79	29,27	33,35	29,83	-7,68	0,55	43,05	5,54	20,44
Types of common spaces	Dedicated study space	-1,99	4,11	-2,24	-0,25	7,54	-0,04	1,95	6,18	-11,13	-9,15	7,49	17,47	19,46	26,40	-8,62	-6,63	1,60	3,74	5,73	7,68
	Relaxation room	12,54	2,93	9,52	-3,02	5,74	12,14	-0,40	6,39	16,99	4,45	5,35	5,63	-6,91	12,86	32,47	19,93	29,83	8,20	-4,34	5,39
	Fitness	-3,46	2,80	2,00	5,47	6,07	-2,20	1,27	4,93	2,02	5,48	5,39	-10,47	-7,01	8,23	-31,37	-27,91	14,40	-0,26	3,20	6,60
	None	-7,09	2,35	-9,28	-2,19	3,77	-9,91	-2,82	5,06	-7,88	-0,79	4,85	-12,64	-5,55	11,41	7,52	14,61	17,03	-11,68	-4,59	5,49
Sharing your bathroom with	No one else	48,48	8,04	40,45	-8,03	10,31	37,90	-10,58	20,55	80,86	32,39	19,16	36,94	-11,54	20,60	-17,27	-65,75	54,75	45,82	-2,66	22,73
	Less than 5 other students	34,84	5,29	37,09	2,25	11,14	50,24	15,40	13,32	27,78	-7,07	9,85	17,23	-17,61	20,96	43,67	8,83	0,95	27,96	-6,88	9,95
	More than 5 other students	-20,54	8,68	-8,72	11,82	13,32	14,98	35,52	23,95	-48,46	-27,92	22,59	-32,22	-11,67	19,09	-49,71	-29,17	26,99	-12,81	7,73	20,11
	Your landlord	-62,78	8,87	-68,82	-6,04	16,32	-103,12	-40,34	18,36	-60,18	2,60	17,27	-21,95	40,82	23,07	23,31	86,08	80,78	-60,97	1,81	18,15
Sharing your kitchen with	No one else	8,23	5,72	0,78	-7,44	9,85	-2,83	-11,05	13,77	15,89	7,67	17,38	22,85	14,63	14,01	-15,02	-23,25	16,00	9,22	0,99	12,18
	Less than 5 other students	28,71	4,13	28,36	-0,35	7,24	34,16	5,46	9,09	40,65	11,95	9,41	6,71	-22,00	20,59	10,80	-17,90	10,95	21,66	-7,04	6,27
	More than 5 other students	10,64	7,43	22,95	12,31	11,69	40,75	30,11	20,01	-9,26	-19,90	19,84	-10,63	-21,27	19,98	-22,63	-33,27	3,82	20,61	9,97	15,27
	Your landlord	-47,57	6,39	-52,09	-4,52	11,74	-72,08	-24,51	11,67	-47,28	0,29	12,58	-18,93	28,64	20,09	26,84	74,42	30,77	-51,50	-3,93	15,05
Additional services offered	None	0,00	3,02	-5,03	-5,03	4,50	-6,45	-6,45	6,43	10,56	10,56	5,51	-0,39	-0,39	10,03	3,25	3,25	18,30	-11,99	-11,99	9,62
	Basic | shared washing machine	-5,97	3,57	-8,06	-2,08	7,54	1,65	7,62	4,30	-3,04	2,93	3,03	-21,31	-15,34	8,19	-22,88	-16,91	29,51	-16,43	-10,45	11,77
	Medium | shared washing machine & bi-weekly cleaning	2,33	3,37	4,49	2,16	6,06	1,20	-1,13	5,81	-4,87	-7,20	5,50	9,44	7,11	8,82	23,78	21,45	21,10	14,21	11,88	11,09
	Full | private washing machine, weekly cleaning	3,64	3,81	8,59	4,96	7,62	3,60	-0,04	7,12	-2,65	-6,28	4,85	12,27	8,63	9,79	-4,15	-7,79	26,71	14,21	10,57	13,02
None Option		-45,13	7,70	-47,34	-2,22	13,30	-27,55	17,57	10,70	-36,13	8,99	14,04	-75,77	-30,64	22,92	-101,39	-56,27	21,84	-40,67	4,45	27,88

APPENDIX F: UTILITY VALUES SEGMENTED BY GEOGRAPHIC BACKGROUND

Attribute	Level	Total N= 50 Utility	Total Standard Error	Dutch student 30 Utility	Dutch student Delta	Dutch student Standard Error	EU-student (non-Dutch) 13 Utility	EU-student (non-Dutch) Delta	EU-student (non-Dutch) Standard Error	Non-EU student 6 Utility	Non-EU student Delta	Non-EU student Standard Error
Location	In city center	24,87	4,79	25,57	0,70	5,45	31,00	6,13	12,01	6,36	-18,51	13,27
	On university campus	7,40	4,53	5,31	-2,09	4,69	10,17	2,77	11,41	9,31	1,91	18,66
	15 min. by bike away from city center and campus	9,12	2,81	8,60	-0,52	3,86	5,12	-3,99	4,20	18,95	9,83	9,52
	30 min. by public transport away from city center and campus	-41,39	6,50	-39,48	1,91	8,10	-46,29	-4,90	13,50	-34,62	6,77	23,24
Room size	15 m2	-46,53	4,71	-51,21	-4,68	6,94	-45,61	0,91	5,48	-29,46	17,07	12,37
	20 m2	-7,82	3,44	-6,30	1,52	4,44	-6,35	1,47	4,66	-19,08	-11,26	15,80
	25 m2	16,84	3,17	18,23	1,40	3,67	12,36	-4,48	8,28	19,45	2,61	7,85
	30 m2	37,52	6,13	39,28	1,77	9,31	39,61	2,09	8,71	29,09	-8,42	10,56
Types of common spaces	Dedicated study space	-1,99	4,11	-2,24	-0,25	4,72	0,54	2,53	10,40	-7,38	-5,39	12,52
	Relaxation room	12,54	2,93	9,52	-3,02	3,80	15,95	3,41	5,95	18,36	5,82	8,55
	Fitness	-3,46	2,80	2,00	5,47	3,88	-13,37	-9,91	3,40	-4,01	-0,55	6,16
	None	-7,09	2,35	-9,28	-2,19	2,95	-3,12	3,97	4,99	-6,98	0,11	7,10
Sharing your bathroom with	No one else	48,48	8,04	40,45	-8,03	9,75	57,13	8,65	18,04	63,73	15,25	25,27
	Less than 5 other students	34,84	5,29	37,09	2,25	7,17	29,40	-5,44	9,65	28,92	-5,92	15,25
	More than 5 other students	-20,54	8,68	-8,72	11,82	11,49	-35,37	-14,83	17,47	-43,29	-22,75	19,29
	Your landlord	-62,78	8,87	-68,82	-6,04	11,18	-51,16	11,61	18,53	-49,36	13,42	28,12
Sharing your kitchen with	No one else	8,23	5,72	0,78	-7,44	7,38	16,58	8,35	10,88	19,15	10,92	16,96
	Less than 5 other students	28,71	4,13	28,36	-0,35	5,23	29,52	0,82	9,71	24,99	-3,71	9,58
	More than 5 other students	10,64	7,43	22,95	12,31	9,44	-7,15	-17,79	14,71	-6,51	-17,15	20,26
	Your landlord	-47,57	6,39	-52,09	-4,52	8,45	-38,95	8,62	12,75	-37,63	9,94	17,43
Additional services offered	None	0,00	3,02	-5,03	-5,03	4,00	10,25	10,25	5,23	-1,01	-1,01	6,95
	Basic | shared washing machine	-5,97	3,57	-8,06	-2,08	5,00	0,52	6,49	5,55	-12,67	-6,70	10,68
	Medium | shared washing machine & bi-weekly cleaning	2,33	3,37	4,49	2,16	4,54	-0,72	-3,05	7,23	-0,24	-2,57	6,75
	Full | private washing machine, weekly cleaning	3,64	3,81	8,59	4,96	5,23	-10,05	-13,69	4,88	13,92	10,28	10,38
None Option		-45,13	7,70	-47,34	-2,22	10,26	-47,22	-2,10	14,52	-46,31	-1,18	18,65