Exploring Spatial Distribution:
A Study of Factors Influencing Students' Housing Choices in Groningen

Bachelor thesis

Figure 1. University of Groningen (RTV Noord, 2022)

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SUMMARY

This study investigates the spatial distribution of student populations in Groningen, Netherlands, highlighting housing choices and the main factors influencing student concentrations in different neighborhoods. The main question is "*What are the key factors contributing to the spatial distribution of the student populations in neighborhoods in Groningen?*". A mixed-methods approach is used, analyzing both quantitative data and qualitative data with surveys. Additional attention is paid to three selected neighborhoods: Schildersbuurt (high student concentration), Selwerd (balanced student concentration), and De Held (low student concentration). In addition, it examines how factors such as amenities, proximity to educational institutions, and housing costs influence the housing choices of students.

The study found that these factors influence student concentrations in Groningen's Schildersbuurt, Selwerd and De Held neighborhoods. The study identified the main factors that influence students' housing choices in Groningen illustrating that not all factors are of equal influence on students' housing choices. While it was researched that proximity to the university would be a major influence, one of the most important factors, it appears that for most students it has the least influence on making a housing choice. The most important factor is proximity to amenities, as this is where students prefer to go to the nearest supermarket, want good accessibility by bike and like to spend time at social activities, and prefer to live close to this. In addition, housing costs also have a significant influence as students do not want to be above their budget and take this into account with the type of housing and neighborhood.

Keywords: spatial segregation, gentrification, travel accessibility, housing scarcity, Central Place Theory, 15-Minute City Concept

Contents

1. INTRODUCTION

1.1 Background

This study examines the factors influencing student distribution in the city of Groningen, looking at which neighborhood has a higher share of students and which neighborhood has a lower share of students. The relevance of this study is underscored by the fact that nearly 16% of Groningen's population consists of students, dispersed through the city (Gronometer, 2023). Not only does this study contribute theoretically by shedding light on the spatial patterns of student concentrations in different neighborhoods and providing students' reasons behind their preferences for residing in certain areas, but it is also contributing on a societal level. The information provides an initial indication of the knowledge required on a much broader level such as spatial planning and quality of life. Given the housing shortages for students in Groningen, examining factors that play into students' housing choices is crucial for making the right choices regarding the allocation of additional student housing. This is exemplified by the creation of residential spaces at Zernike Campus, which has been under consideration for many years (Gemeente Groningen, 2019).

The citywide distribution of students varies from neighborhoods with a high and low density of students. This is all mapped in this study with the corresponding characteristics. To comprehend the distribution of students in particular neighborhoods, several factors regarding housing choices are investigated. Starting with an examination of the importance of proximity to educational institutions. The next factor for indicating students' housing choices is the influence of housing costs. Lastly, the relevance of amenities such as public transport, supermarkets, and social activities in students' housing choices is investigated. This study may provide insight into similar spatial patterns of students in other cities with large student populations, assisting in the planning and needs of student housing in other cities. With a better understanding of students' housing preferences and the spatial distribution of students, better plans for building new houses can be made as solution to the housing crisis. Current studies focus primarily on individual factors affecting student dispersion in Groningen but leave a gap in the integration of various factors such as spatial characteristics, amenities, proximity to institutions, and housing costs

1.2 Research problem

Academic literature focuses on the individual factors, neglecting a holistic view of the combined factors on the student distribution in Groningen. The study focuses on: amenities such as public transport, supermarkets and social activities, proximity to educational institutions, and costs of housing. These factors are combined in the study by survey responses from students clarifying the influence of these factors.

The main research question will be '*What are the key factors that contribute to the spatial distribution of the student populations in neighborhoods of Groningen?*'
This will be answered by the following sub-questions:
1. *What are the spatial characteristics of neighborhoods with high, balanced, and low student concentrations in Groningen?*
2. What role do amenities such as public transport, supermarkets, and social activities play in students' housing choices and their impact on spatial distribution?
3. *To what extent does proximity to educational institutions affect students' housing choices*

and spatial distribution?
4. How do the costs of housing affect students' housing choices and spatial distribution?

1.3 Structure of the thesis

This research encompasses several elements essential for a comprehensive study. Firstly, in Chapter 2, the theoretical framework is discussed, delving into concepts that relate to the research on student distribution in the city of Groningen. This includes concepts like spatial segregation, gentrification, travel satisfaction, and housing scarcity. Additionally, central place theory and the 15-minute concept broaden the insights into students' preferences for residing in specific locations. Expectations of the research are also expressed. In Chapter 3, the methodology of the study is discussed with the associated data collection. The study comprises primary data, focused on survey conduction, and secondary data mainly collected from the municipality of Groningen, along with key theories and concepts. This is followed by survey results and figures on different neighborhoods in Chapter 4. The discussion includes interpreting findings, comparison with literature, methodology evaluation, broader implications, and answering research questions in Chapter 5. Finally, in Chapter 6, a conclusion is drawn and strengths and weaknesses of the study are discussed.

2. THEORETICAL FRAMEWORK

2.1 Spatial segregation

Spatial segregation refers to the distribution of residents within an area contributing to possible inequality and noticeable patterns. According to White (1983), spatial segregation can be viewed in two ways. In a sociological way, segregation is the lack of interaction between social groups. Geographically, it is the inequality in distribution between social groups in a physical space. Both these types of segregation are closely interrelated with each other and can explain spatial segregation among students in the city of Groningen. Spatial segregation can be measured in different ways, for example, a dissimilarity index can be used which looks at the ratio per parcel, but in the case of this study, the spatial proximity index is more useful. The index considers spatial structures and looks at the amount of segregation in different regions. The research by Cordova, Fernandez-Maldonado, and Pozo (2015) examines socio-spatial segregation in terms of concentration and diversity, arguing that segregation comes from the tendency that people from the same groups who want to create their own space in an area create inequality between groups. This can be both inequality through differences but also hierarchy. A similar scenario could occur in Groningen, where students may tend to congregate in specific areas to distinguish themselves from dissimilar work groups, the elderly, or other demographic groups.

2.2 Gentrification

Gentrification, as defined by Lees, Slater, and Wyly (2008) is the process of 'the replacement of an existing population by a gentry'. Gentrification involves a change in the social and physical characteristics of the neighborhood. The neighborhood changes as more middle-class people move in and commercial uses increase. Gentrification could therefore also play a role in students' housing choice to live in a particular neighborhood, where more upper-class people live together. Moreover, Atkinson and Bridge (2005) indicate a connection between gentrification and studentification, with studentification often occurring in gentrified neighborhoods where the working-class and middle-class are located. This process of studentification does not necessarily occur in the city center but also suburban areas. In Groningen, gentrification may affect students' housing choices by attracting or deterring students from residing in neighborhoods that undergo gentrification.

2.3 Travel accessibility

In addition, travel accessibility is important to investigate as it affects the choice of whether students can live close or further away from the university and whether other amenities are easily accessible from the place of residence. Sprumont's et al. (2016) research illustrates that higher travel satisfaction can result from short travel times, comfort while traveling, and low travel costs. Consequently, people choose their residential location based on the possibility of carrying out their journey through a mode of transport of their preference. The decision in which neighborhood an individual will reside is related to the accessibility of different transportation options which is referred to by Nurlaela and Curtis (2012) as self-selection. For example, students can easily travel within Groningen by bicycle or bus to the university, but travel time, comfort, and cost play a role here, so this may also influence their residential choice.

2.4 Housing scarcity

Housing scarcity affects students' housing choices through price increases and the necessity of getting a room. For students, a single accommodation like a studio or apartment is preferable but many students still choose a student room due to the lower costs. The student house scarcity in Antwerp causes that there is an index for the student housing density and no new student housing is created when this reaches 20% in a particular area (Verhetsel, et al., 2016). According to the study of Scholten (2023), there is also a scarcity of houses for students in the city of Groningen, causing prices to only continue to rise. For example, when students are forced to get a room in the city because they live far from Groningen, these students might be forced to pay a lot for a room that often also has poor facilities.

2.5 Central Place Theory

The central place theory explains why students may want to live closer to the city center. It explains that economic activities in particular often take place in a central place, with not only many businesses setting up here but also many shops, banks, supermarkets, restaurants, and entertainment venues. The research by King (2020) therefore illustrates that people are more likely to want to live closer to this central spot simply because most facilities can be found in the center of a city. Christaller's hexagonal market area proposes an optimal spatial structure of central places, maximizing service coverage for the whole population (Fischer, 2011). This configuration, illustrated in Figure 1, ensures efficient access to amenities such as supermarkets, public transport, and social activities. By examining the location of amenities in students' housing choices, insights into the factors shaping the spatial distribution of student populations in Groningen can be gained.
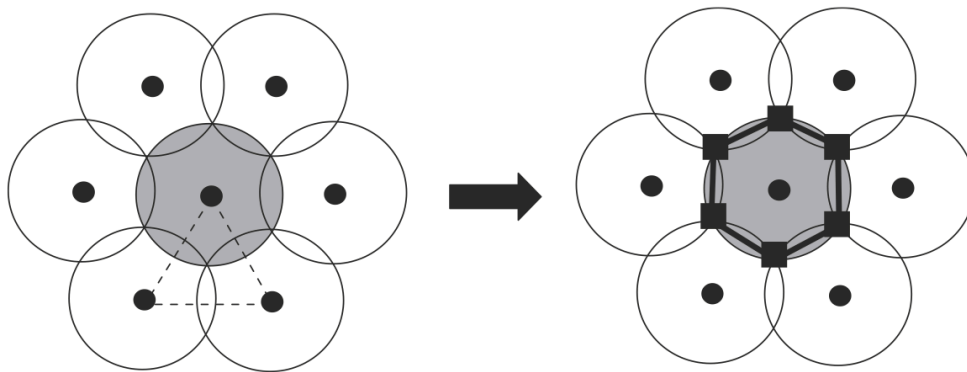

Figure 1. A hexagonal market area (Fischer, 2011).

2.6 15-minute City Concept

The 15-minute City Concept is an urban structure where all basic needs and amenities can be reached in no more than 15 minutes of walking or biking from the place of residence. This creates a higher quality of life as living, working, commerce, healthcare, education, and entertainment are important urban social functions to experience a high quality of urban life (Moreno, et al., 2021). Sustainability and quality of life are important factors in the creation of a 15-minute City. Groningen is an example where the 15-minute City concept can be applied because more than 60% of its inhabitants use a bike as the primary mode of transportation. The city is relatively small and can therefore the distances can be easily covered on foot or by bicycle within 15 minutes. In addition, the municipality of Groningen has more plans to

enhance accessibility and improve the quality of life as sustainably as possible (Gemeente Groningen, 2024).
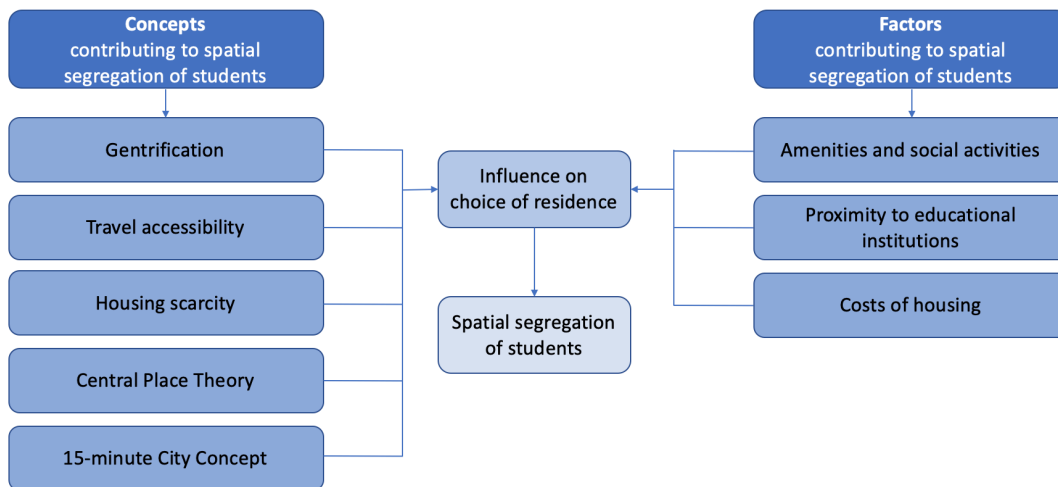
2.7 Conceptual model

Figure 2. Conceptual model (Wendel, 2023).

This conceptual model illustrates which concepts and factors contribute to the spatial segregation of students in Groningen. Spatial distribution can be related to gentrification which can occur in the city when students with higher education levels move in together. Travel accessibility is highly important for students because they spend a lot of time at the university or in social activities. In addition, rooms are scarce for students in Groningen, causing costs to rise increasingly high due to unaffordable rents. Besides, there is an influence of the central place theory as students may base their choice of residence on the facilities available close to the place of residence. Although people do not want to live far away from everything, Groningen is a 15-minute city and all needs and facilities are reachable within 15 minutes. These concepts can be linked to the following factors: amenities and social activities, proximity to educational institutions, and costs of housing. All concepts and factors influence on the choice of residence and are therefore contributing to the spatial segregation of students.

2.8 Hypothesis

The author hypothesizes that housing choices of students in Groningen are expected to be significantly influenced by specific key factors contributing to the spatial distribution of students. These key factors include availability of amenities such as public transport, supermarkets, and social activities, proximity to educational institutions, and housing costs. Student housing location is tied to travel behavior and distance. It is expected that reduced distance to the university result in higher student concentration in closer proximity to the university. Furthermore, the author expects housing prices to play a determined role, as students often have constrained budgets and prefer to live in the most affordable possible environment possible. Students are likely to prefer neighborhoods with an abundance of amenities, possibly near the city center where these are concentrated. A combination of these factors contributes to the distribution and possible spatial segregation occurring in Groningen's neighborhoods. Conducting qualitative research through surveys will clarify these factors and provide an enhanced elucidation of why students chose a particular neighborhood to reside in.

3. METHODOLOGY

This study uses a mix of quantitative and qualitative methods to understand spatial segregation factors among students in Groningen.

3.1 Primary data collection

Surveys are employed to explore students' housing choices in Groningen, using the Maptionnaire platform for location-based data collection. In this study, the factors contributing to the spatial distribution of students in neighborhoods of Groningen are being investigated, creating maps with the survey data. In Maptionnaire, people can provide information about their experiences, preferences, and behavior related to specific geographical locations. In the Economic Geography course in the Bachelor of Spatial Planning and Design, the platform has already been introduced and the results with Maptionnaire were clear. Therefore, Maptionnaire is a suitable tool for this research as it enables students to share experiences about certain facilities, proximity to the university, and costs of housing associated with the location of residence.

The first sub-question examines key spatial information about neighborhoods, including student concentrations, preferences, and challenges.
For the second sub-question, the main focus is on the location of different amenities such as supermarkets, social activities, and public transport. Students can indicate in the survey, which supermarket they go to and why they choose this, but also where the student's main social activities are. The survey also asks which means of transportation the students use to move to the amenities.
Proceeding with the third sub-question, using respondent's geographical data, it is possible to see whether many students live close to the university campus. Combined with this location, questions can be asked about whether the distance to university has a major role in students' housing choices.
The final sub-question examines whether rent plays a significant role for students and whether prices have large differences when compared by neighborhood. The survey assesses students' perception of their rental prices and their impact on housing choices. To provide insights into students' living conditions, the type of housing is asked.

Ensuring students who fill in the survey are living in different neighborhoods in Groningen, a combination of different recruitment strategies will be used. One strategy is addressing students on campus or in public areas. Besides, sharing an online link via WhatsApp, Instagram, or student association platforms is the easiest way to get attention for the survey, enabling every student to fill it in whenever and not bound to a certain time. The aim is to gather at least 40 students residing in different neighborhoods in Groningen. This number is enough to conduct a survey since it is a sufficient amount of at least 30 cases according to the Central Limit Theorem (CLT) (Ganti, 2023). For this amount of cases, students certainly live in different neighborhoods so it gives a clear picture about the distribution of students in Groningen. To protect the rights of survey participants, consent is needed from the participant, but also the option to conduct the survey anonymously, as otherwise unwanted information from participants may be disclosed. This can be done by informing participants of their rights at the beginning of the survey and providing clear information about the survey content. The data is processed securely and stored properly so that data cannot be lost or stolen.

Instrument	Why	How
Maptionnaire	This data collection instrument is a location-based survey, allowing students to mark their location and preferences on a map. The survey link will be shared with the target audience, responses will be collected and the Maptionnaire tool can analyze the data and maps and charts	For this research, Maptionnaire helps merge surveys with geographic data. The survey facilitates the collection of valuable insights regarding students' housing choices, proximity to amenities, and their experiences, enhancing the study's overall quality and results.

Table 1. Data analysis scheme (Wendel, 2024).

3.2 Secondary data collection

For the secondary data in the research, articles will be analyzed about the themes mentioned in the theoretical framework. To give a broader insight into the research questions, concepts and theories such as spatial segregation, gentrification, travel satisfaction, costs of housing and the central place theory can give explanations for the student's choice of residence. Secondary data can also be used to examine for example why students cluster, whether distance to university plays a role at other universities, and differences in housing prices compared to neighborhoods. To illustrate the student concentrations in different neighborhoods, GIS will be used to provide a map of the locations where students live. This data can be drawn from the survey data from Maptionnaire. The municipality of Groningen also has sources with key figures about different neighborhoods in Groningen. Information from previous bachelor theses can be examined and analyzed. However, with these types of sources, it is important to scrutinize the background of the information, including the original sources. This assists in placing the information in proper context so that the researcher assesses the relevance and reliability of the information.

4. RESULTS

Spatial characteristics of Groningen neighborhoods were obtained through statistics from the Municipality of Groningen and through survey data completed by students via Maptionnaire. Out of 88 students surveyed, 46 submitted complete responses; 26 engaged but did not submit the survey. All responses from engaged participants were incorporated to ensure a comprehensive representation of diverse perspectives on housing choices. This data is used to create maps and graphs.

4.1 Spatial characteristics

Three neighborhoods were selected for analysis based on their high, balanced, and low student concentrations in Groningen. The choice of which neighborhoods are relevant was made by comparing the survey results (Figure 4) with the data via Gronometer (2023) (Figure 3). From this, the conclusion was drawn that the Schildersbuurt has a high, Selwerd a balanced, and De Held a low concentration of students in the neighborhood.
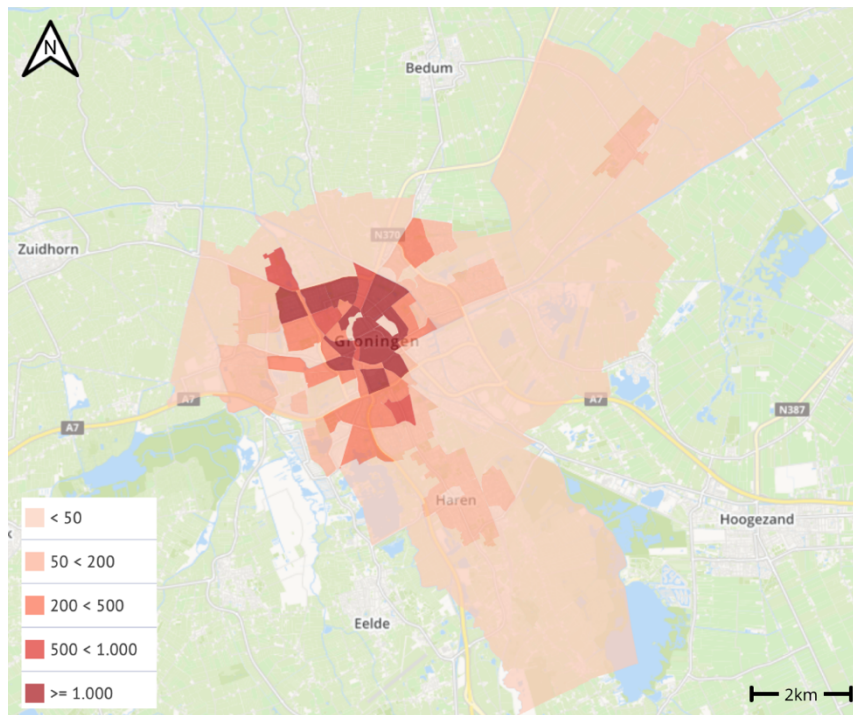

Figure 3. The total amount of students residing in Groningen (Gronometer, 2023)
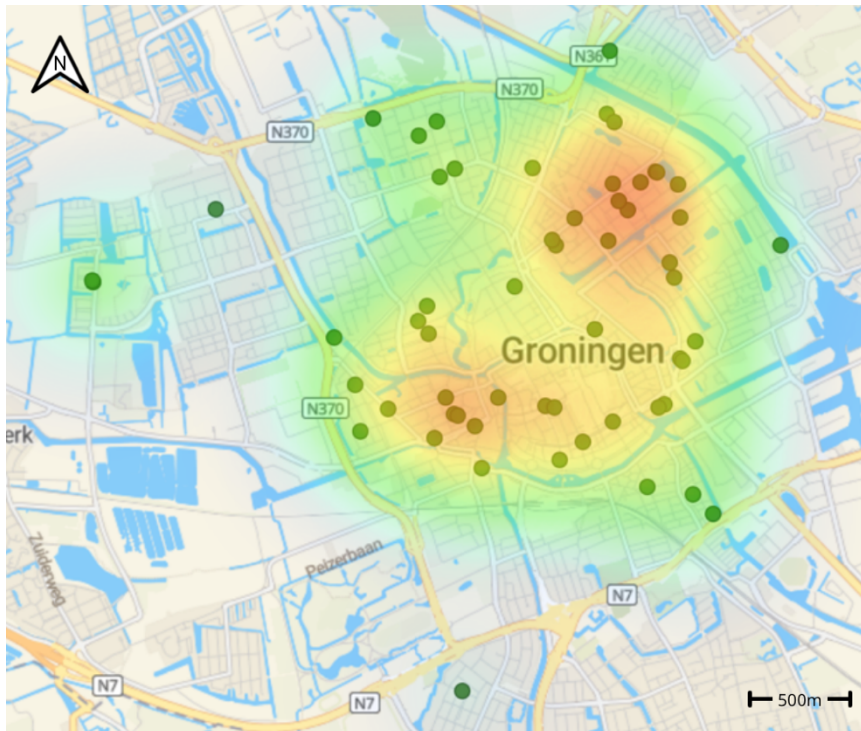
Figure 4. Distribution of students in Groningen (Wendel, 2023).

4.1.1 Schildersbuurt

According to the Gronometer (2023), around 1,800 students live in the Schildersbuurt. The total population of the neighborhood is 5.400 people, which means that about 33% of the inhabitants are students. Looking at the survey data (Figure 5), 4 out of 5 students living in the Schildersbuurt indicate that the neighborhood has a high concentration of students. The Schildersbuurt is a suburb of the city center making downtown easily accessible. The residential ownership of houses in the Schildersbuurt is 53% through rental houses owned by companies, individuals, and investors, with successive 36% being owner-occupied houses and the remaining 11% through rental corporations, after which the 73% are apartments with an additional 20% of intermediate houses. The largest group of residents are 15 to 25 years old, followed by the group aged 25 to 45 years old, with a relatively low proportion of people aged 45+ living there. 53% of the residents are highly educated, 41% are medium educated, and remarkably few low educated residents with 5% (Alle Cijfers, 2023).

The survey asked what students liked about the Schildersbuurt and what was found inconvenient. These results illustrate that most students think it is a beneficial location because it is close to the city center. In addition, students indicated that there is a student atmosphere making the district lively. However, it is also indicated that students live fairly anonymously in the neighborhood and do not know their neighbors well. Due to the large number of students, there is a separation between the original residents and students.

4.1.2 Selwerd

Selwerd, with around 1.300 students among a total population of 6.200 residents, maintains a balanced concentration with approximately 20% of the residents being students (Gronometer, 2023). Derived from the survey, 2 out of 5 students stated that there is a high concentration of students and 3 out of 5 students indicated that there is a balanced concentration (Figure 5).

Selwerd is a neighborhood located north of the city, close to Zernike Campus but farther from downtown. Here, the homeownership of the houses in the neighborhood is 54% through a rental corporation, 25% through rental houses owned by companies, individuals, and investors, and only 20% owner-occupied housing. 70% of the homes are apartments. The largest group of residents here is the age of 15 to 25 years where followed by the age group of 25 to 45 years, which illustrates that the residents are quite young. The residents are 40% medium educated and the low and high-educated residents are about equally distributed around 25% for both (Alle Cijfers, 2023).

Students indicated in the survey that appreciated characteristics are that it is quiet in Selwerd, it is walkable, and especially that Zernike, Station-North, and the shopping center including the supermarket are close by. There are also several student flats to be found in Selwerd, contributing to a conducive student environment in proximity to Zernike. However, the streets are dark at night and students are indicating that there are many vagrants, junkies, and crime. It was also noteworthy that students mentioned that it is relatively far from the city center.
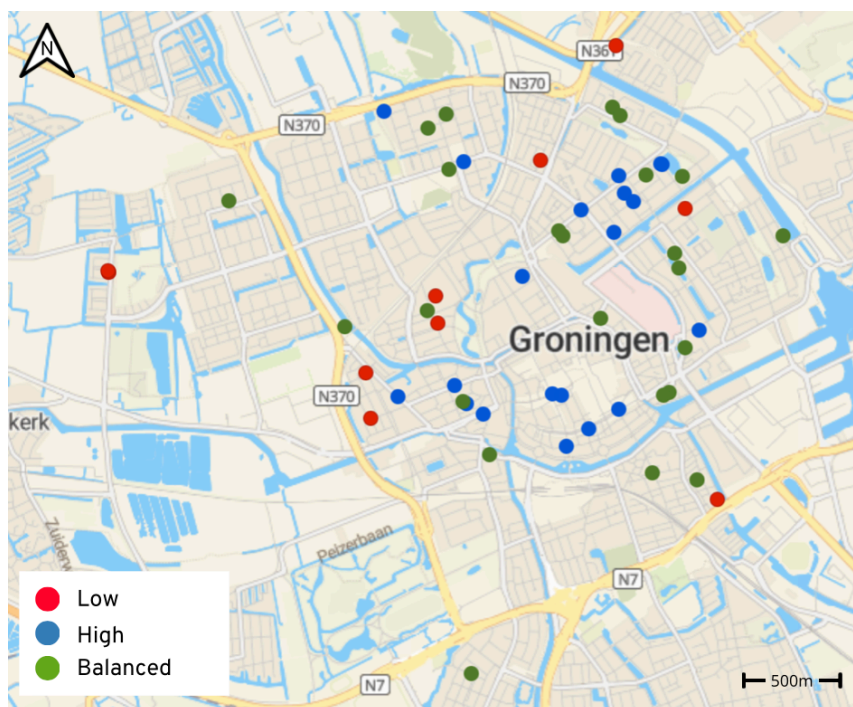

Figure 5. High, balanced, and low student concentrations in Groningen (Wendel, 2023).

4.1.3 De Held

De Held exhibits a low student concentration, with around 100 students residing in a population of about 2.500, constituting approximately 4% of the residents (Gronometer, 2023). In the survey, 3 out of 3 students agreed and stated there is a low concentration of students in the neighborhood (Figure 5).

In Selwerd, almost 90% of the owner-occupied houses and the remaining 10% are owned by rental corporations, 47% of which are mid-terrace houses, and the rest of the houses are roughly evenly distributed between 10% and 15% with semi-detached, flats, detached and corner houses. The majority of residents are 45 to 65 years of age, followed by the 25 to 45 age group. Here, 45% are highly educated, 35% medium educated, and 20% low educated (Alle Cijfers, 2023).

The students who live in De Held like the quiet and rural feel the most because having a garden and residing on the outskirts of town gives a liberating feeling and there is a good connection to the highway. On the other hand, the great distance from the city center and sparse student occupancy is seen as a significant disadvantage, as the majority of students choose to live in other neighborhoods.

4.2 Availability of amenities

Research was conducted to determine whether amenities such as public transportation, supermarkets, and social activities play a role in student's housing choices and how this can be noticed in spatial distribution. The main reason that plays into the choice of supermarket is closeness to the residence. The second reason is that it should, preferably, be the most affordable supermarket possible. A student stated '*Because this one is the closest. I also sometimes go to the LIDL because this supermarket is cheaper than the Albert Heijn.'*. Almost all students use bicycles as a means of transportation and a portion of students walk. Public transportation and car usage among students in Groningen are minimal. The majority of students have their social activities in the city center, on Zernike, or in the Noorderplantsoen.

It appears that there is a higher concentration of bus stops in student neighborhoods, although accessibility to public transportation differs between the three previously mentioned neighborhoods. In the Schildersbuurt there are for example 10 bus stops in 500m^2, in Selwerd 8 bus stops in 745m^2, and in De Held 4 bus stops in 1,5km^2 (Qbuzz, 2023).

Proximity to supermarkets, social activities, and accessible public transportation are crucial factors for students in their housing decisions. Residing in proximity to amenities and good accessibility are mentioned as preferable. Moreover, the perception of distance varies among students, as most places in Groningen can be reached within 10-15 minutes by bicycle. The top three reasons for students whose amenities do not impact housing choices include: *'Groningen is pretty small so everything would be close-by either way'*, *'I live here because I like the house and my roommates, but for the location I would choose something else'* and *'I just want to have a room and because there is a shortage you are just happy that you have a place at all.'*

The three most frequently cited reasons by students whose amenities do influence housing choice are: *'I like that I can walk to any restaurant/bar/cafe if I want. Also, there are bus stops on my street and the bus and train station is within walking distance'*, *'most social activities are nearby'*, or *'must be close to uni and city center'*. Another respondent mentioned that other factors as quietness and seclusion of the neighborhood are important for the housing choice.

4.3 Proximity to educational institutions

In addition, research was conducted on whether proximity to educational institutions contributes to student's housing choices and how this can be noticed in spatial distribution. The varied locations of classes and exams provide an individualized experience for university students. Mapping may not clearly show students' proximity to educational institutions, but 73% indicated living close to the university in the survey (Figure 6). The locations where most students have classes are at Zernike, in the city center, and the UMCG. Comparing the 3 relevant neighborhoods with different student concentrations, it can be seen that for the Schildersbuurt several locations are between 5 and 10 minutes of

biking, for Selwerd also 5 to 10 minutes, and from De Held it is on average 15 minutes to the different locations (Google, 2023).

Figure 6. Closeness to the University of Groningen (Wendel, 2023).

For those students influenced by proximity to the university, it was primarily due to the convenience of minimizing travel time to attend classes. In contrast, there are more students for whom this factor did not influence student's choice of residence. Often students reallocate from the parent's residence to Groningen, reducing the distance to the university. In this context, the primary focus is on finding housing within the city, availability is prioritized. In addition, students indicated *"I have classes at different locations so it does not matter where I live for university"* and *"I decided I could move further away from the university as I have less on-site education in the coming time."*

4.4 Costs of housing

The study also examined how the cost of housing affects students' housing choices and, subsequently, spatial distribution. In Groningen the average rental price for a room in 2022 was €440,22, for a studio the average was €705,81 and for an apartment, the average was €980,90 which, compared to the rest of the Netherlands, is reasonably affordable (Kamernet, 2023). Not only is there a significant price variation in the country, but also within the city of Groningen. Seventy-seven percent of students who filled in the survey are living in a student house 16% of them are living in an apartment and 6% in a studio. The average disposable budget that students living in Groningen had in the 2019-2020 academic year was about 1,050 euros per month which means that a large part of their budget is spent on rent. In addition, study costs, healthcare costs, living costs, and leisure costs have to be paid from this budget (Hooft van Huijsduijnen, et al., 2020).

The survey asked students whether the cost of living and housing affects their housing choices. For 58% of students, this does influence the choice with the main reason being that students do not want to pay too much for a certain number of square meters. It is important

to save money for other activities. For example, several students indicate a budget of €400 or €450 because this is around the average rent. In addition, students give reasons *"The room is relatively cheap compared to, for example, the city center so I would sooner live a little more remote"* or *"I didn't go into a studio but into a student house.'*

The remaining 42% of students indicated that it did not influence the choice with the main reason being that the roommates and quality of the house or neighborhood were worth living in. In addition, some students mentioned being left with little choice due to the limited availability of accommodation within the city of Groningen. Other reasons given are *'I can simply borrow more from duo to bridge the gap'* and *'because it's the house of my parents'*.

All students residing in the Schildersbuurt mentioned their rental price in their neighborhood as average. Three out of four students residing in Selwerd mentioned they perceive their rental price in their neighborhood as average. However, there was also one student saying it was cheap. In De Held there is a dichotomy in the opinions of students, one student found the rental price high and one student found it average (Figure 7).
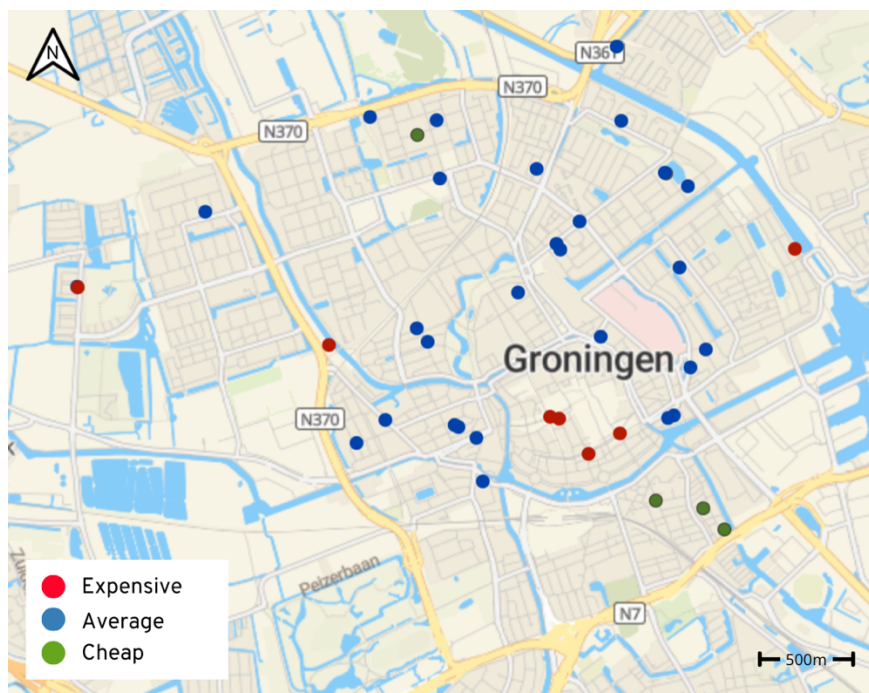

Figure 7. Rental prices for students in Groningen (Wendel, 2023).

4.5 Factors combined
Amenities and social activities have the greatest influence on students' housing choices in Groningen, and the costs of living and housing are almost equally influential. However, only a small proportion give proximity to educational institutions as the factor that has the most influence on housing choice (Figure 8). Students whose amenities and social activities have the greatest influence on their housing choices indicated that social life is considered the most important because it plays an important role in students' happiness and the most time spent doing these activities. For those who chose costs of living and housing, the main reason was that these respondents have limited financial resources to spend and Groningen is otherwise very accessible, so prefer to pay less because the distance does not matter to them. Finally, the students who chose proximity to educational institutions indicated that it is

preferable to cycle not too far because students go to the university daily and want the possibility to go home in between lectures. Some students indicated the importance of the three factors combined. Students mainly live outside their homes and thus are often found in the city or at the university making the distance to this a significant influence on most student's housing choices (Wintraeken, 2013).

From the survey, the Schildersbuurt and Korrewegwijk come out as the most favorite neighborhoods that people would like to live in as both neighborhoods are close to the Noorderplantsoen and maintain an optimal distance from the city center. The most important reason for many students, however, is that many other students live there.
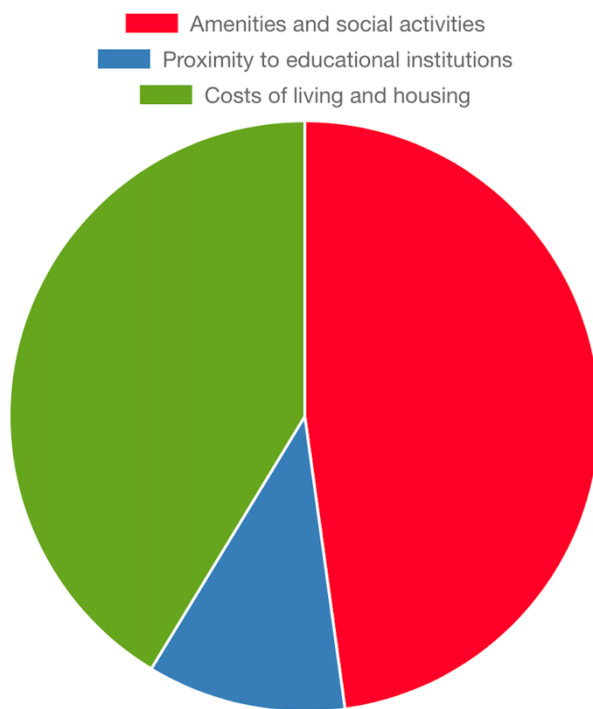

Figure 8. Factor with the most influence on student's housing choice in Groningen (Wendel, 2023).

5. DISCUSSION

This thesis examined factors influencing students' housing choices, leading to a distribution of students in Groningen. Here, both theoretical relevance and social relevance are considered including spatial planning, policy-making, and quality of life considerations. To evaluate the rationale behind student distribution over specific neighborhoods, factors such as proximity to educational institutions, housing costs, and amenities such as social activities, supermarkets, and public transportation are addressed. The study aims to fill the research gap by examining different factors which provides a holistic view of the housing choices of students in Groningen allowing this information to be compared to other cities. To assess the spatial characteristics of neighborhoods and factors of the student distribution, statistical information from the Municipality of Groningen was used in combination with a survey through Maptionnaire. In doing so, 88 students engaged of which 46 were submitted and used for comprehension insights. Many students did complete the initial questions but dropped out halfway through. Potential reasons are the survey length, question complexity, or loss of interest.

To examine the neighborhoods with high, balanced, and low student concentrations, the Schildersbuurt, Selwerd, and De Held were selected. The Schildersbuurt with a high student concentration has mostly young people living there and a large number of highly educated residents, with characteristically many renting houses. The neighborhood is popular with students due to it being close to the city center, but do notice a division between students and original residents in the neighborhood. For Selwerd with a balanced student concentration, there is a mix of rental and owner-occupied houses and a more average age of residents. It is close to Zernike Campus and other facilities however it is far from the city center and there are safety issues. For De Held with a low student concentration, there are mostly owner-occupied houses with older residents. The rural is appreciated by students but it is far from the city center and there are few students. For students, amenities appear to be the most influential factor in their choices. Whereby students choose the nearest supermarket to go to, most social activities have the city center, in the Noorderplantsoen or at Zernike, and mainly bicycle is used as a means of transportation. Accessibility is highly important to students and seeking therefore proximity to educational institutions also influences housing choice, but for the majority of students, this factor weighs the least heavily. In addition, costs of housing affect house choice through affordability, size, and scarcity of rooms. Notably, the Korrewegwijk and Schildersbuurt are chosen as favorite neighborhoods due to their proximity to the Noorderplantsoen, the city center, and higher student concentration.

The study highlights distinct student preferences and reasons for housing choices across Groningen. In addition, proximity to amenities is found to be of great influence on housing preferences with residing close to the city center playing a significant factor. Regarding the influence of housing costs, affordability is an important aspect where the differences in prices per neighborhood affect students' housing choices. To another part of the students, house quality and having pleasant roommates are worth more than distance to university. The survey reveals that various factors interact, emphasizing the significance of their combination.

The findings of the study are compared with existing literature to make the study more powerful. For example, spatial segregation according to White's (1983) geographical

perspective proves that in Groningen there is a distributed pattern of students across different neighborhoods. As indicated by the survey, students are distributed in various neighborhoods in Groningen resulting in neighborhoods with a high, balanced, or low concentration of students. This demonstrates a process of gentrification (Lees, Slater & Wyly, 2008) in which students move to certain neighborhoods due to socioeconomic conditions. Here, it is visible that students would rather live in a neighborhood like the Schildersbuurt than in De Held due to the high concentration of students in de Schildersbuurt. In addition, travel accessibility plays a major role in students' housing choices due to factors mentioned by Sprument et al. (2016) and Nurlaela and Curtis (2012). This research illustrates students prioritize bike accessibility due to their involvement in various university and social activities. Next, it is clear that in Groningen housing prices are rising, and there is a housing scarcity as named in Scholten's (2023) study. Students indicate they have a limited budget and, therefore, seek the most affordable housing options. However due to the housing crisis and rising prices, this is challenging, thus students are already content with any opportunity to secure housing. Moreover, the results are consistent with King's (2020) findings on the central place theory whereby students prefer to live in a location close the city center due to the presence of many amenities. This is indicated by the survey that students prefer to reside in de Schildersbuurt or Korrewegwijk, as these neighborhoods are near to the city center and a lot of supermarkets, options for public transport, and social activities are nearby. Lastly, Groningen is generally a highly accessible city and is seen as a 15-minute city (Moreno, et al., 2022). It has been frequently mentioned by students that everything they need is easily accessible within 10 to 15 minutes by bike. As a result, rental prices become a more crucial factor for students' housing choices, as location is no longer a decisive element.

6. CONCLUSION

The study concludes that student population distribution in Groningen is shaped by combined factors, including amenities, proximity to educational institutions, and housing costs. By analyzing various neighborhoods with a high, balanced, and low student concentration, and the key factors mentioned, the study gained insights into students' housing preferences. Most students prefer neighborhoods with a student atmosphere close to the city center, such as the popular Schildersbuurt. The study adopts a mixed-methods approach, leveraging both quantitative data and qualitative data to gain insights. It also analyzes the various factors combined rather than treating all factors separately for a holistic approach. The findings align with literature about the following concepts and theories: spatial segregation, gentrification, travel accessibility, housing scarcity, Central Place theory, and the 15-Minute City Concept.

Implications of the study include that students' insights into spatial distribution can help urban planners and policymakers as well as strengthen community-building efforts. This combination of students' insights on their housing preferences and urban planning perspectives serves as a foundation for collaborative initiatives for creating a livable and functional urban landscape. However, the sample size may be limited, facilitating more generalized findings. This limitation could be addressed by expanding the sample size and diversity, as well as by adopting broader data collection methods. For future research, the long-term impacts of urban development policies on student distribution can be considered, such as zoning regulation and affordable housing initiatives. Additionally, exploring the influence of external factors on students' housing choices, including the impact of the COVID-19 pandemic, sustainability initiatives in student housing, economic and community building, and gentrification in neighborhoods. Such research can provide even broader insights into the spatial segregation of student populations.

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APPENDIX

Appendix 1: Survey

The survey focuses on exploring your experiences and preferences regarding your current living situation in Groningen. For the survey the tool Maptionnaire is used to get a better understanding of neighborhood characteristics, the accessibility of amenities, proximity to the university, housing costs, and housing choices. Your insights will help to uncover the factors influencing students' housing decisions in the city. The main question for this research is '*What are the key factors contributing to the spatial distribution of the student populations in neighborhoods in Groningen'.*

Spatial characteristics of neighborhoods
What are the spatial characteristics of neighborhoods with high and low student concentrations in Groningen?

1. Please pinpoint the neighborhood in Groningen where you currently live in
   → In the Maptionnaire survey there is an option to set a location on a map.
2. In which neighborhood in Groningen do you currently live in?
   → Name of neighborhood in Groningen
3. How would you describe the student population in your neighborhood?
   → Options: low, high, balanced
4. What do you like most about your neighborhood?
   → Open answer
5. What do you find challenging or inconvenient about your neighborhood?
   → Open answer

Amenities and social activities
What role do amenities such as public transport, supermarkets and social activities play in students' housing choices and their impact on spatial distribution?

1. Please select the supermarket you primary shop at
   → In the Maptionnaire survey there is an option to set a location on a map.
2. Why did you choose this supermarket?
   → Options: close by / known / cheap / other
3. Where do you typically engage in social activities or spend time with friends in Groningen? Mark this location
   → In the Maptionnaire survey there is an option to set a location on a map.
4. What mode of transportation do you use most frequently to get around the city?
   → Options: Bicycle / public transport / walking / car / other
(5. Do supermarkets, social activities and / or public transport play a role in your choice of residence (neighborhood)? Explain which and why.)

Proximity to educational institutions
To what extent does proximity to educational institutions affect students' housing choices and spatial distribution?

1. Is your current residence near the university campus?
   → yes / no

2. If yes, how did the proximity to the university influence your housing choice? If no, did the distance to the university play a role in your choice of residence?
   → Open answer

Costs of living and housing

How do the costs of living and housing vary between neighborhoods with many and few students, and how do they affect the spatial distribution of students?

1. How are the costs of living and housing in your neighborhood comparing to other areas in Groningen?
   → Cheap / average / expensive
2. Does this impact your housing choice?
   → Yes / no
3. What type of housing do you currently reside in?
   → Student house / studio / apartment / other

Closing questions

1. Are you an international or Dutch student?
   → International / Dutch
2. How long have you been living in Groningen as a student?
   → Options: <half a year, 1 year, 2 years, 3 years, >3 years
3. On a scale from 1 to 10, how satisfied are you with your current housing situation?
   → Scale
4. Which of the following factors has the largest influence in your choice of residence?
   → Amenities and social activities / proximity to educational institutions / costs of living and housing
5. Why does this factor have the largest influence in your choice of residence?
   → Open answer
6. If you could choose, what neighborhood do you think is the best neighborhood to live in? And why?
   → Open answer