

Have a seat!

The influence of seating arrangements on the sense of community. A case study of the Noorderplantsoen, Groningen



Figure 1: The central pond in the Noorderplantsoen (Author)

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Abstract

In an increasingly digital era, social interactions in public spaces are declining. The research problem identifies a research gap in the relationship between seating arrangements and the feeling of community for this specific location, the Noorderplantsoen. The research aims to explore this relationship between seating and the feeling of community through a mixed research method consisting of a literature review, online survey, and on-site observations. A multiple linear regression is performed, using the survey output. The findings show that there is a significant relationship between the frequency of seating usage the quality of seating, and the perceived sense of community. Further research is needed to explore how different kinds of seating can influence the sense of community.

Introduction

Background

By closely examining public space design, this study aims to provide an understanding of the way seating arrangements act as a stimulant for the formation and strengthening of communities in Groningen. In specific in the Noorderplantsoen, a public park in the north of the city of Groningen. Public spaces, ranging from parks and squares to sidewalks and recreational areas, serve as the connective tissue of a neighborhood, supporting social interactions, improving the quality of life, and shaping the identity of the community. Moreover, the design of these spaces can influence the perceived sense of community among residents and visitors.

Site overview

The Noorderplantsoen is a park in the Northern part of Groningen. Between 1879 and 1882 the Noorderplantsoen was constructed. Since that time the Noorderplantsoen has been used as a green space and a place for social interaction. The shape of the park still gives away its history and former use of space as a defense wall (Dijkstra and Overbeek, 2014).

The Noorderplantsoen was designed by Jan David Zocher Jr, and it was officially opened in 1868. Café Zondag This building was commissioned by the municipality in 1930 and was designed by municipal architect Siep Bouma. Before that, a kiosk stood on this spot, selling refreshments to spectators of Sunday concerts in the gazebo located on the lawn next to the café.

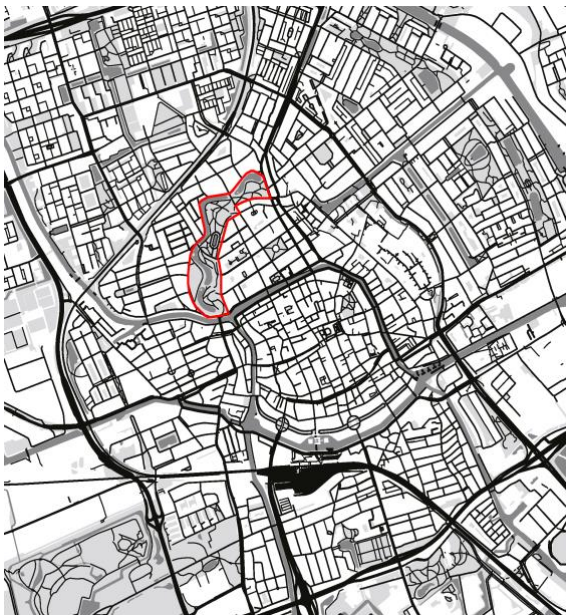


Figure 2: Location Noorderplantsoen in Groningen (Author).

In recent years, more rules have been introduced to keep the Noorderplantsoen green and peaceful. For instance, non-electric scooters (also known as mopeds) are no longer allowed to drive through the park. Cars have been prohibited since 1993, after decreasing the traffic in phases. As of now only electric scooters and bicycles are allowed to pass through. This is part of a measurement the municipality took in 2022, it prohibits mopeds from driving on bicycle paths that are next to a nature area (*Snorfietsen met benzinemotor niet meer welkom op fietspaden*, 2022).

The Noorderplantsoen is also used for music festivals and sports activities during the summer months. Visiting these events is an important driving force to visit the Noorderplantsoen for 67% of the participants of research done by the municipality (Van der Werff and De Jong, 2015).

But overall the most important function of the Noorderplantsoen is found to be a recreational area (Van der Werff and De Jong, 2015). This is confirmed by research of Knolstein (2019), here the majority (46%) of the respondents again found the Noorderplantsoen being a recreational area the most important function of the park.

Research problem

Existing studies focus on the way public green spaces influence the quality of life and the connectivity with the neighborhood. Others investigate the different seating arrangements in public spaces and what kind of seating users prefer. However, there is a gap in the literature regarding how seating arrangements contribute to the sense of community in the Noorderplantsoen. According to Recep et al. (2016) most of the time spent on outdoor activities is spent in one place, seating plays a crucial role in this. By providing enough seating people can spend more time in one place and this gives opportunities for social interactions. The feeling of community arises from the feeling of belonging, having an influence, fulfillment of needs, and shared emotional connection (McMillan and Chavis, 1986).

This research aims to explore if there is a relationship between seating arrangements and the feeling of community in the Noorderplantsoen. For this a mixed research approach is applied, using a literature review, an online survey to collect data on how the seating and the feeling of community is perceived by visitors, and on-site observations to see how busy the Noorderplantsoen is at different times of the day and weather conditions. The influence of seating arrangements on the feeling of community is of interest because this can help increase the quality of life. The feeling of community plays a big part in how well people feel rooted in their neighborhood and city. This research can help planners with planning for more and more diverse seating arrangements.

The following sub-questions will be used to find an answer to the research question:

How do seating arrangements influence the sense of community perceived by visitors of the Noorderplantsoen, Groningen?

1. What types of seating arrangements in green spaces are most useful for fostering social interactions and a sense of community among individuals?
2. How are comfort, accessibility, and aesthetics of seating arrangements in green spaces perceived, and how do these perceptions influence the likelihood of visiting and engaging with these spaces?
3. To what extent do the location and placement of seating within green spaces affect the sense of community, and how does this relate to factors like privacy, visibility, and natural surroundings?

This research aims to provide insights into the specific dynamics of seating arrangements in public green spaces, with a focus on their role in shaping the sense of community in the unique context of the Noorderplantsoen in Groningen.

Research structure

In this thesis, firstly the theoretical framework will be explained. This includes all concepts and theories behind the terms used. Here the definitions of the terms are explained and defined. Secondly, the conceptual model visualizes the interactions and relationships of different variables that lead to a sense of community. This is followed by the hypothesis, where the expected outcome is discussed. The methodology explains how the research has taken place, what the requirements were, and how data has been filtered and analyzed. In the result section, all raw results are visualized, which are thoroughly discussed in relation to the sub-research questions in the discussion. Finally, the conclusion will give a summary of the results and answer the research question.

Theoretical framework

Green space

Green space is defined as a piece of land mostly covered by vegetation, such as parks and sports fields (Rasidi, Jamirsah and Said, 2012). Green spaces can be private as well as public, this depends on the rules and regulations of the owner of the place. In this research green space is defined as a public place mostly covered by vegetation. According to Rasidi, Jamirsah and Said (2012), urban green spaces could be seen as a stimulating space for social interaction. Most interactions will take place within social groups and not with strangers. Some people would go to green spaces to be alone; they would enjoy observing others from a distance. What makes a certain location a popular seating spot? When people sit, they like to have something to watch, such as the fountain in the Noorderplantsoen, or people passing by, or playing football. Mumcu (2002) found out that seating with a wide view and looking at the street where human activity takes place were occupied for longer times than the others. According to De Haas, Hassink and Stuiver (2021) green public space itself does not contribute to more interaction between different population groups. However, the quality of the park and its facilities do influence the interactions. This is in line with Knolstein (2019), who states that 35% of local residents go to the Noorderplantsoen for its nature, and 30% of frequent visitors do (Knolstein, 2019).

Activities

When visiting green spaces there are two types of activities people can do outside, these are active and passive activities. Active activities include running, dancing, or cycling. Passive activities are sitting, watching people or nature, reading, and meeting friends. Most frequent activities in public green spaces are passive activities (Woolley, 2003). According to (Lockwood, 2017) the presence of the following three characteristics increases the presentence of social interaction: restaurant or café, entertainment area, and shelter from wind/ sun and seating arrangements. These factors provide a comfortable environment and entertainment.

89% of the time spent on outdoor activities is spent while staying in one place. If you want a public space to be a successful hub for social activities, providing enough seating options plays a crucial role (Recep et al., 2016). In this research, seating is defined as objects that are designed to sit on such as benches and chairs. But apart from that also ridges, stairs, grass fields in summer, and other surfaces that can be used as seating.

Seating arrangements

To accommodate everyone, different seating arrangements should be included in green spaces. Conclave seating provides more possibilities for social interaction than convex seating. Conclave seating is seating that is turned to each other, so talking in groups is easier. Convex seating is turned outwards and therefore provides fewer possibilities for social interaction (Recep *et al.*, 2016). Visitors of green spaces who want to sit alone and avoid eye contact that occurs when benches are placed directly opposite each other might prefer linear seating arrangements. Here you can sit near people but have no eye contact and remain in your own space (Recep *et al.*, 2016).

Movable chairs would be a great solution that can accommodate people with different needs. Being able to move your chair in the sun or shadow, together in a group or alone, gives a sense of autonomy and a feeling that you are sitting in your own perfect place (McMillan and Chavis, 1986). Movable chairs in public spaces are already implemented in the Luxembourg Gardens in Paris but also in Davis, a small university town in the US. According to a case study done in Davis movable chairs 70% of people using seating, chose movable seating instead of fixed seating (Francis, Koo and Ramirez, 2010). According to Francis, Koo and Ramirez, (2010) The movable chairs allowed users to have big group meetings by creating group seating or have some alone time by placing the chair apart from a group.

Different types of seating

Seating needs can differ substantially for different age groups. According to Coman, Caponecchia and Gopaldasani (2021) elderly can also have difficulties getting up from seating that is too low. A way to provide more diverse seating, as is done in Luxembourg Gardens in Paris, could be to provide three different options. For instance, one chair for sitting up straight, one for sitting a bit more slouched, and a lower one. This would give people the option to choose the chair that seems most comfortable for them (Pezeshkpoor, 2020). The Elderly also need more available seating, as they might need more breaks to rest on their walk (Recep *et al.*, 2016).

Another factor that influences the usage of seating is how clean the seating and the surroundings are.

This is confirmed in the research of De Haas, Hassink and Stuiver, 2021, they found that a well-maintained park contributes to a positive image of the neighborhood and therefore increases the use of the park.

Materials

The material impacts the seating comfort, wood is more of a warm material compared to steel or concrete (Recep *et al.*, 2016). Materials that are water repellent or fast drying would be more suitable in rainy climates, materials that do not heat up could be better fitting in warmer climates. By changing the materials seating can be made fitting for different weather conditions.

Sense of community

The term community can have two sides, on the one hand, it refers to a geographical site, such as a neighborhood or city. The geographical side of the community is not taken into account in this research assuming that the Noorderplantsoen is not only visited by people living close by, but by people living all over Groningen. On the other hand, community refers to relationships between people. There are four factors to the relational part of a community according to McMillan and Chavis (1986). The first is membership, which relates to the feeling of belonging, and being part of something or a group. The second factor is influence, this is the feeling of mattering and the feeling that you can make a difference. The third factor is integration and fulfillment of needs, this means how resources from the community are available to you. Lastly shared emotional connection, meaning shared history and shared interests. All four contribute to the feeling of community. Another theory to build a sense of community is by involving citizens in discussion processes. This gives a feeling of responsibility and belonging (Carmona, 2015). This matches part of the definition McMillan and Chavis (1986) give.

Safety

An active community where there are activities during different times of the day can help increase the feeling of safety. The 'eyes on the street' concept of Jane Jacobs is what she explains as a social safety concept. When there are more eyes on the street there will be more social control. Therefore it can be important to keep different activities during different times of the day to ensure that there will always be enough eyes on the street (Jacobs, 1992). Feeling safe has a big influence on the way people use the space, and on how long people use the space. Most people will not want to spend

much time in an area they feel unsafe in. When a space is perceived as unsafe by certain groups this excludes these groups from using the spaces.

Conceptual model

The conceptual model shows the relationships between the different variables that in the end all influence the sense of community in public green spaces. Certain factors, such as sun/shadow, privacy, and type of seating, feed into the design elements and influence how a place looks and feels to the visitor. Visual aspects can influence social behavior, for instance, a very clean park would give visitors the responsibility to keep it clean. A park that has litter everywhere makes it easier to do the same and not clean up after yourself. Social behavior is what makes people feel part of a community and feel the need to be part of that community.

Next to that the location and distance to a green space determine how accessible this place is for someone. And this feeds into the perception of safety as the longer one has to travel this exposes them longer to risks. The eyes on the street concept of Jane Jacobs (1992) increases the feeling of safety. Which in turn influences the sense of community, feeling safe is fundamental to being able to feel part of a community.

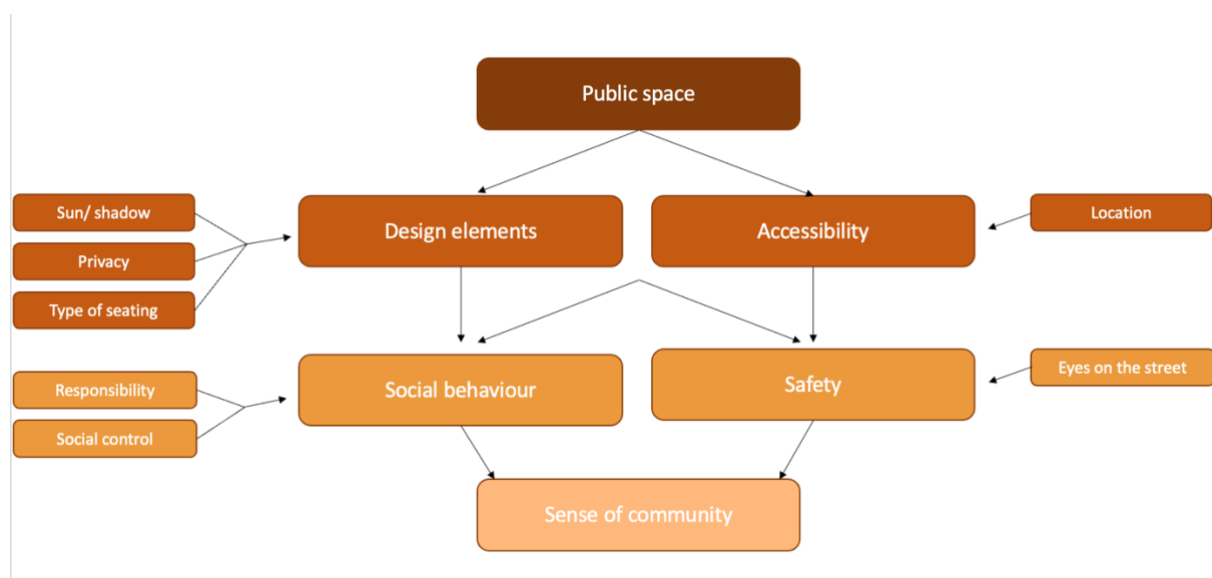


Figure 3: Conceptual model (Author).

Hypothesis

This research expects that there is indeed a relationship between seating arrangements and the sense of community.

For this reason, more seating options can accommodate different groups of people and their needs and wishes. This is one of the factors that helps improve the feeling of community according to (McMillan and Chavis, 1986).

Different types of seating can also make a public green space more dynamic and more interesting to visit. Seating invites people to spend more time in a space and linger around, this increases the chance of meeting more people and having some interaction.

Data safety

All data from the surveys will be stored on the X drive of the University of Groningen. The data will be stored during the research and will be deleted from the drive when the research is done. This is a private secure drive to protect data. All surveys are completely anonymous, and participants are free to withdraw at any point. Participants have been informed about the data safety and their right to withdraw at any point before giving any answers. Participants could decide if they would permit to use their answers for this research. All data used is from participants who gave permission.

Methodology

To understand the relation between the design of seating arrangements and the sense of community, the experience of users of the Noorderplantsoen needs to be understood. The sub-questions seek to answer this. For this, a mixed research approach is used. This method was chosen as both numeric results as well as thoughts and experiences of people are used. Besides literature research has been done on the feeling of community, and how this feeling can be increased, and literature research has been done on what factors influence the quality of seating.

Based on this literature research a digital survey was prepared using Qualtrics, a program accessible through the University of Groningen. The survey included 20 questions, consisting of multiple-choice questions, a map, a rating using a Likert scale, as well as five open questions. The survey has been taken by 78 people, of which 60 results were suitable for this research. The data is gathered through personal social media and by placing eight QR codes on benches and lampposts in the Noorderplantsoen. The QR codes had a text explaining the research in Dutch and English (appendix 8). Participation in the survey was completely voluntary as they could decide themselves if they wanted to join. Before starting the survey participants were informed about what would happen with the data and how it would be stored. As well as the fact that the survey would be completely anonymous. Only after giving consent for the use of the data, the survey could start. When no consent was given, the participant would be redirected to the end of the survey and be thanked for their participation.

The choice to eliminate certain results from the survey stems from the decision to only keep survey results that are complete. All incomplete survey responses have been deleted. Some questions can have more responses than others as the answers of participants influenced whether they got to see certain questions. When said that one never brings own seating, the questions regarding that topic did not get shown to the participant.

Open questions have been analyzed and coded using Atlas.ti. All survey results have been exported to SPSS. The numeric results from the survey have been used to perform a multiple linear regression, using the count of community feeling as the dependent variable and adding variables using the forward method. The other variables used in the regression were age, gender, seating count, and how much time is spent in the Noorderplantsoen when visiting.

Next to this, on-site observations have been done. During two weeks, three site analyses have been conducted. Where the different seating arrangements, their use, and other factors such as accessibility, social behavior, design elements, and safety have been observed. The full list of observations is attached in appendixes 3, 4, and 5. The site analysis is done at three different times of the day to represent the visitors count of the day. One observation in the morning, one during lunchtime, and one in the afternoon.

Results

The primary data gathered in this research is found by doing on-site observations and an online survey.

Site observations

During the on-site observations data has been gathered on the visual characteristic of the Noorderplantsoen. Such as the positioning of seating, how paths connect, and where artworks are placed. As well as observing how much seating is used and how people make use of this. From this data, multiple maps have been made to visualize these findings. At the center of the park is a pond characterized by two fountains. Surrounding the pond are many benches that are frequently used, especially in summer. The canals that follow the shape of the former defenses also lend themselves well as vantage points for benches. Most of the benches are therefore facing the water, some are facing into the park. Next to the central pond is Cafe Zondag (Figure 5), this restaurant appears to be busy at all times of the day and seasons. It's an important landmark and meeting place. On the field next to café Zondag the gazebo is a place that functions as a place for sports, such as boxing, and dancing. However, this is also a place where a group of men linger around, which affects the perceived safety.

'During the day very safe except near the gazebo. There are often shady types hanging there.'



Figure 4: Gazebo (Author).



Figure 5: Café Zondag (Author).

Through the park there is an art route, the placement of the art is shown in Figure 6. The pictures and details are in Appendix 9. The Noorderplantsoen contains two playgrounds as well as two basketball fields, that provide a place to play and sport that is open for everyone (Figure 7). However, from the signs placed next to the basketball fields, it becomes clear that local residents can experience nuisance from the basketball players (Figure 7).



Figure 6: Noorderplantsoen (Author).

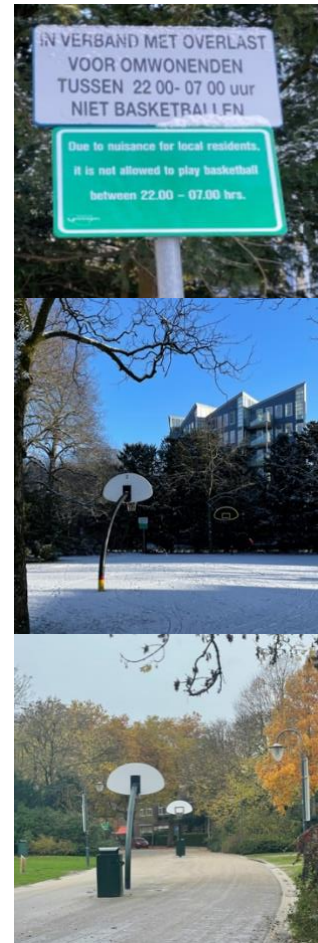


Figure 7: Basketball fields Noorderplantsoen (Author).



Figure 8: Water tap point and public toilets (Author).

There are two public toilets in the Noorderplantsoen, one next to café Zondag, and the other next to the basketball field on the south side of the park (Figure 8). As can also be seen in Figure 6. There is also a urinal placed on the south of the central point, on the road crossing the Noorderplantsoen. The urinal was under construction during the site observations. Two water tap points are placed in the Noorderplantsoen and provide visitors with free tap water (Figure 8).

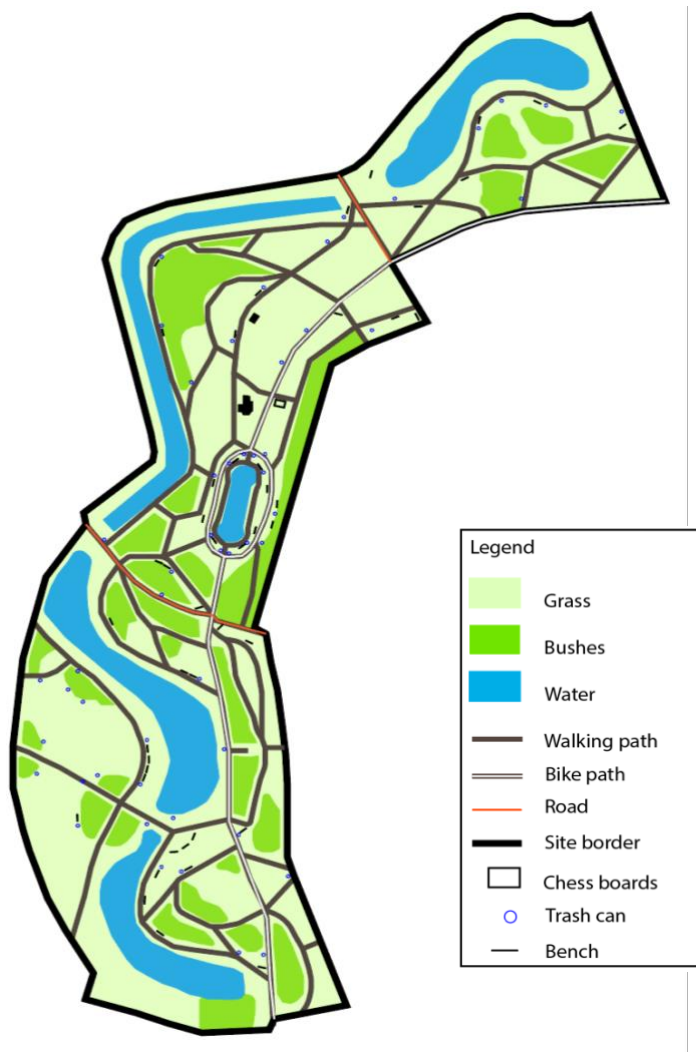


Figure 9: Distribution of benches and trash cans (Author).



Figure 10: Chess boards, trash can, and bench (Author).

In Figure 9 the placement of benches and trash cans is visualized. It shows the distribution of in total 46 benches and 52 trash cans. Figure 10 shows the bench design, trash cans, and the chessboard seating. The benches in the Noorderplantsoen are made of wood and have a metal frame, they are very simplified and there are no decorative details. The wood is comfortable to sit on, however remains wet when it has rained. The benches can seat three to four people. The chess boards are placed opposite Café Zondag and have place for four players at a time. The top layer of the seats is made from wood to have a more comfortable seating area. The trash cans have two designs that are used throughout the park, as can be seen in Figures 8 and 10.

Survey

The survey got 60 usable responses, of which 60% were female and 40% were male respondents. Most of the respondents are between 18-24 years old, about 58% of the respondents. The complete distribution of age and gender of the respondents can be found in Table 1.

Age/ Gender	Male	Female	Prefer not to say	Cumulative
<18	0	0	0	0
18-24	12	23	0	35
25-34	7	8	0	15
35-44	0	2	1	3
45-54	1	1	0	2
55-64	1	2	0	3
65-74	1	1	0	2
75-84	0	0	0	0
>85	0	0	0	0
Cumulative	22	37	1	60

Table 1: Age and gender distribution respondents of survey (Author).

The survey consisted of 4 open questions; the answers have been coded using Atlas.ti. The results from the other questions have been used to perform a multiple linear regression. In this study, a multiple linear regression analysis was employed to show the potential correlation between the perception of community, the frequency of seating utilization within the Noorderplantsoen, and the perceived quality of seating amenities. The investigation involved computing the cumulative scores representing the top 20% of the survey responses related to both the sense of community and the evaluation of seating quality and usage frequency. The multiple linear regression model was constructed with the sum of the sense of community scores as the dependent variable. This regression incorporated the sum of seating variable, alongside demographic factors such as age, gender, and the duration of time spent in the Noorderplantsoen during visits. The analysis showed statistically significant outcomes, indicating a relationship between seating characteristics, demographic variables (age and gender), the duration of park visits, and the perception of community within the Noorderplantsoen. (Appendix 7)



Figure 11: Heatmap of places where respondents of the survey sit most often (Author).



Figure 12: Bench with graffiti (Author).

Regarding seating utilization within the Noorderplantsoen, 66% of respondents indicate occasional use, while a mere 11.6% claim never to use the provided seating. Among those who never utilize the park's seating, all say to consistently bring their personal seating arrangements, such as blankets or chairs. Furthermore, 76% of respondents express the practice of occasionally providing their own seating.

'Also, the benches are only located on walking isles. I would really like the idea of seating under the trees, on the grass! It gives you a much more intimate experience of nature, and more privacy.'

This can be confirmed when looking at the heatmap of where people sit most often when visiting the Noorderplantsoen (Figure 11). Here it can be seen that the two most popular places to sit are around the central pond or at the grass field near the playground.

'Meer losse zitplekken die je overal kan neer zetten' ('More flexible seating that you can place anywhere').

The grass field does not provide enough benches, therefore people that sit here most often bring their own seating. The reason for bringing own seating, as some people wrote in the survey, can be that there is no provided group seating, therefore when a group wants to sit together, they will have to bring their own seating.

'You can sit with more people on the grass in a circle, than on a bench or ledge'.

Examining design preferences, the height of seating emerges as the most favorable design element, while issues like broken, wet, or dirty seating surfaces rank highest among sources of discomfort. Between two on-site observations, five benches got graffitied. No benches were broken during the observations.

Activity distributions within Noorderplantsoen reveal that biking and walking constitute the most frequent activities, followed closely by social gatherings with friends, seated relaxation, visits to Zondag, and attendance at festivals. Conversely, activities such as playing sports and dog walking demonstrate lower participation rates (Figure 13).

Regarding organized activities within the park premises, 35% of respondents state never to partake in these events, while the remaining 65% indicate varying degrees of involvement, ranging from occasional to regular participation.

Q7: Rate how often you participate in the following activities in the Noorderplantsoen.

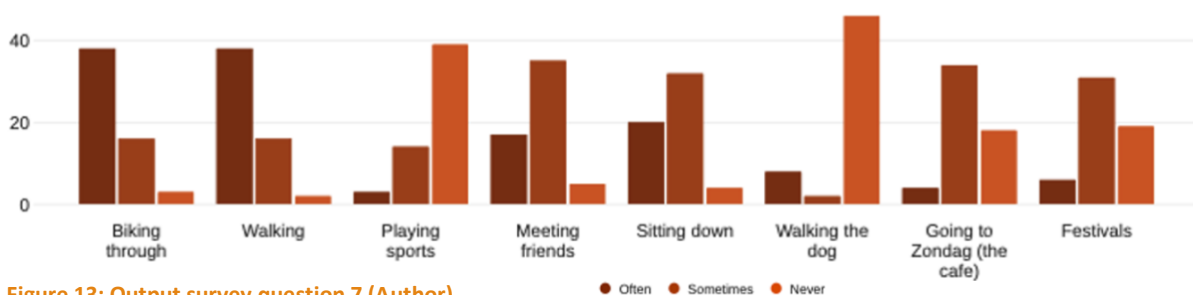


Figure 13: Output survey question 7 (Author).

Survey findings from the 60 respondents reveal that approximately 31 individuals engage with strangers during their visits to Noorderplantsoen. A minor fraction, consisting of only 4 individuals, claims to never engage with strangers while in the park. It was observed that people make easier contact when the interaction involves a dog or a child. This gives an easy opening to engage in social interactions with strangers. From Table 2 it becomes visible that people who mentioned in the survey that they walk their dog in the Noorderplantsoen, whether this was sometimes or often, are more likely to always interact with strangers. When looking at less often interactions with strangers, people who never walk a dog in the Noorderplantsoen are more likely to interact sometimes or never. This could be explained as dog walkers have a shared interest which is immediately visible as they are walking their dog. This is in line with the shared interest factor that can lead to a sense of community according to McMillan and Chavis (1986).

Interaction with strangers	Dog walking	% of total	No dog walking	% of total	Cumulative
Always	3	60%	5	40%	8
Most of the time	1	9,09%	11	90,91%	12
Half of the time	6	40%	15	60%	21
Sometimes	-	-	25	100%	25
Never	-	-	4	100%	4
Cumulative	10		50		60

Table 2: Interaction with strangers dog walkers and non dog walkers (Author).

The Noorderplantsoen is perceived as a safe space by 48,2% of respondents according to the survey output. There are also people that do feel safe during the day but are wary at night, this accounts for 32,1%. And 19,6% feel safe most of the time.

'There are some corners that attract drunk people. They are noisy, rude and it feels unsafe. I would not recommend women to walk in the park by themselves at night (harassment).'

There are no respondents who mentioned a general unsafe feeling in the Noorderplantsoen. However, some factors can give an unsafe feeling, as can be seen in Figure 14. The factor that gives the most unsafe feeling to the respondents is dark areas and/or areas with bad lighting, as this was rated the lowest in the survey. On the other hand, people sporting and people cycling through the Noorderplantsoen were both rated as factors that give a safe feeling.

Rate how safe these factors make you feel

Field	Mean	Responses
Dark areas/ bad lighting	38.02	57
People lingering	47.37	57
People sporting	88.86	59
People cycling past	81.12	58
Thick vegetation	58.58	59

Figure 14: Output survey Question 19 (Author).

The open questions of the survey have been coded into the codes in Figure 15. The open questions were about how safe respondents feel in the Noorderplantsoen if they find the provided seating in the Noorderplantsoen sufficient, and final remarks on seating or how they feel in the Noorderplantsoen. From this, it becomes evident that respondents would appreciate more seating and generally feel safe in the Noorderplantsoen. The code 'flexible' was given to respondents who mentioned how sitting on the grass is more flexible than the provided seating, as well as to respondents saying they would like to have more flexible seating provided in the Noorderplantsoen.

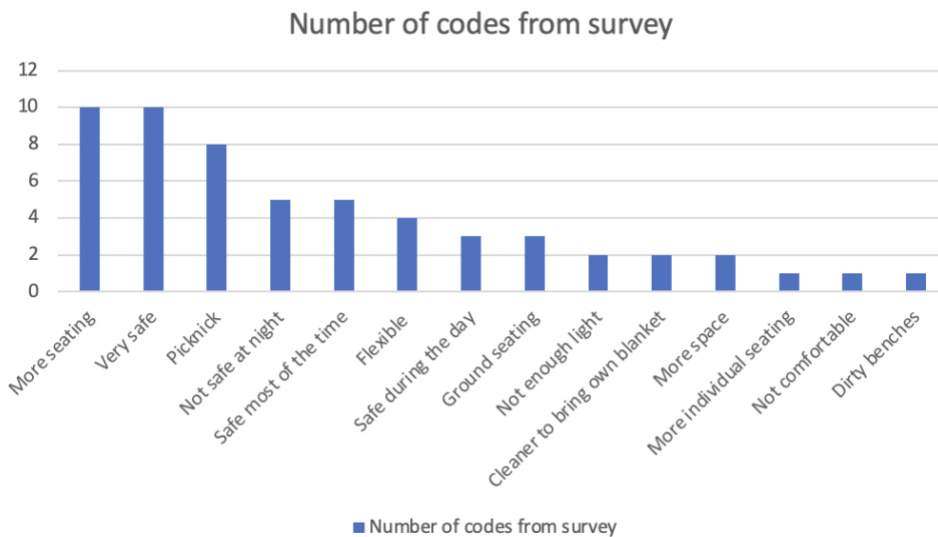


Figure 15: Codes from the survey (Author).

Discussion

The results indicate that there is a relationship between the seating arrangements and the sense of community in the Noorderplantsoen. In this section the results will be linked to the theoretical framework. The results should be interpreted with caution due to limitations of this research. This chapter will reflect on the research process.

As was seen in the results of the perceived safety of respondents, most respondents feel safest when people are sporting nearby or cycling past. This corresponds with the 'eyes on the street' concept (Jacobs, 1992). Having more social activities means more social control, this makes people feel safer. Social activities are also interesting to watch, and the heatmap shows that seating with a view on nature or social activities are the most popular (Figure 11). The popularity of these seating spots can also be explained when looking at the theory of Mumcu (2002). As these spots both have a wide view or looking at human activity, which are in line with Mumcu (2002). However, the popularity of these spots, especially the grass field next to the playground, could also have another explanation. Since there is no provided group seating, groups that want to sit together are forced to bring their own seating. Movable chairs as was done at Davis University, would give flexibility to how the seating is used (Francis, Koo and Ramirez, 2010). As multiple respondents also mentioned they would like to see more flexible seating that you can place where you want to sit.

One of the other activities people do often in the Noorderplantsoen is walking their dog. From the survey output, it became evident that dog walkers are more likely to have social interaction every time they visit the park. This is in agreement with McMillan and Chavis (1986) they state that the sense of community is partly influenced by shared interests. For dog walkers, this shared interest in dogs is visible and therefore could be the reason for an immediate feeling of connection. Having more interaction makes people feel more part of the community.

There are some limitations in this research. Such as the way not all research questions have the same number of respondents as some questions were skipped by respondents. Furthermore, some questions were not shown to respondents as their previous responses indicated they never used seating or never brought their own seating with them.

Next to this, it could also be identified that the survey does not represent the Groningen population completely right. As the Province of Groningen has 41% women and 59% men. In the survey this is the other way around, men are 37% and women 62% of the respondents.

The percentage of the population that is in the age group of 18-24 is 37% in the municipality of Groningen according to the CBS Statline (2023). In the survey, this group is 83,33% of the respondents.

Next to this, a bigger sample size would improve the validity of the research outcomes. However, despite the limitations the findings are in line with previous research in the Noorderplantsoen.

Conclusion

This research has searched for an answer to the question: 'How do seating arrangements influence the sense of community perceived by visitors of the Noorderplantsoen, Groningen?' A multiple linear regression analysis has been employed to explore the potential relationship between the sense of community, seating utilization frequency in the Noorderplantsoen, and the perceived quality of seating amenities. By analyzing the cumulative scores of top-rated survey responses linked to community perception and seating evaluations, the test revealed significant insights. Seating utilization patterns show that while 66% of respondents occasionally use provided seating, 11.6% never use it, relying instead on personal seating arrangements like blankets or chairs. Notably, a substantial 76% occasionally supply their own seating. Preferences in seating design favored heightened seating, contrasting with discomfort linked to broken, wet, or unclean seating.

Interpreting the survey data alongside the heatmap representation and insights on personal seating habits, it becomes evident that while provided seating sees less frequent use, individuals often bring personal seating, especially during busy days in summer when seating may be insufficient. Favorable weather conditions may also contribute to a preference for ground seating.

Survey findings showed that approximately 51,6% engage in interactions with strangers during park visits, while a minority of 6,6% refrain from interactions entirely. From the results of the survey, it became evident that people who walk their dogs in the Noorderplantsoen are more likely to always interact with strangers than people who never walk a dog in the Noorderplantsoen.

Activities within the park, prominently biking and walking, precede social gatherings, relaxation, and event attendance. Moreover, the study shows that 35% of respondents refrain from organized park activities, while the remaining 65% demonstrate varying degrees of participation.

The results from the survey and theoretical framework found that conclave seating, more group seating, and movable seating can help foster social interaction and a sense of community among individuals in the Noorderplantsoen. By giving people more different seating options, people have more options to fit their personal needs and wishes. These options can vary from different seating heights to being able to change the placement of the seating. By giving visitors the feeling of having an influence, and fulfillment of needs the feeling of community is improved.

Recommendations

This research can be seen as a step in the research of the influence of seating arrangements on the sense of community. Due to the small sample size this research should be treated with caution.

Future research could further investigate the influence of seating arrangements on social interactions

with strangers. This could give a deeper understanding of how much influence the placement of seating has on sense of community.

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Appendix 1: On site observation form

Location:

Observer:

General Information:

- Date and Time:

- Date:

- Start Time:

- End Time:

Weather Conditions:

- Temperature: °C

- Weather (e.g., sunny, cloudy, rainy):

2. Number of people using seating:

4. How are the seats arranged? (Clusters, linear, facing each other)

5. Are the seats clean and well-maintained? (Clean, dirty, damaged)

6. Types of Interactions:

- Social conversations

- Group gatherings

- Alone with a mobile device

- Other (specify):

7. Number of People Engaged in Social Interactions:

8. Observations on Interactions:

9. The presence and condition of plants, trees, and landscaping in the area.

10. Is there any public art or decorative elements in the space?

11. Assess the quality and effectiveness of lighting in the area (natural light, streetlights).

12. The movement of people through the space (e.g., pedestrian pathways, foot traffic patterns).

13. Any specific activities or events taking place within the public space.

14. Noise Level (quiet, moderate, noisy)

Seating in the Noorderplantsoen

Start of Block: Consent form

Q1

Welcome to the research study!

I am interested in understanding how seating arrangements in the Noorderplantsoen can have an influence on the sense of community. You will be presented with information relevant to the seating arrangements and how you feel in the Noorderplantsoen and asked to answer some questions about it. Please be assured that your responses will be kept completely confidential, and the data is stored on a secured drive of the University of Groningen.

The study should take you around 3-5 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you have any questions, feel free to reach out on: n.e.van.der.veur@student.rug.nl

By clicking the button below, you acknowledge that your participation in the study is voluntary, anonymous, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

- I consent, begin the survey (1)
- I do not consent, I do not wish to participate (2)

Skip To: End of Survey If Welcome to the research study! I am interested in understanding how seating arrangements in t... = I do not consent, I do not wish to participate

End of Block: Consent form

Start of Block: Default Question Block

Q1 What is your age?

- Under 18 (1)
 - 18 - 24 (2)
 - 25 - 34 (3)
 - 35 - 44 (4)
 - 45 - 54 (5)
 - 55 - 64 (6)
 - 65 - 74 (7)
 - 75 - 84 (8)
 - 85 or older (9)
-

Q2 What is your gender?

- Male (1)
 - Female (2)
 - Non-binary / third gender (3)
 - Prefer not to say (4)
-

Q3 In what neighbourhood in Groningen do you live?

Q4 How often do you visit the Noorderplantsoen?

- Never (1)
- Once a week (2)
- 2-4 times a week (3)
- 5-7 times a week (4)
- Every day (5)
- Other (6)

Skip To: End of Survey If How often do you visit the Noorderplantsoen? = Never

Q5 How much time do you spend in the Noorderplantsoen when you visit?

- Less than 30 minutes (1)
- 30 minutes to an hour (2)
- 1-2 hours (3)
- 3-4 hours (4)
- > 4 hours (5)
- Other (6)

Q7 Rate how often you participate in the following activities in the Noorderplantsoen

Often	Sometimes	Never
_____ Biking through (1)	_____ Biking through (1)	_____ Biking through (1)
_____ Walking (2)	_____ Walking (2)	_____ Walking (2)
_____ Playing sports (3)	_____ Playing sports (3)	_____ Playing sports (3)
_____ Meeting friends (4)	_____ Meeting friends (4)	_____ Meeting friends (4)
_____ Sitting down (5)	_____ Sitting down (5)	_____ Sitting down (5)
_____ Walking the dog (6)	_____ Walking the dog (6)	_____ Walking the dog (6)
_____ Going to Zondag (the cafe) (7)	_____ Going to Zondag (the cafe) (7)	_____ Going to Zondag (the cafe) (7)
_____ Festivals (8)	_____ Festivals (8)	_____ Festivals (8)

End of Block: Activities in the Noorderplantsoen

Start of Block: Seating

Q9 Click the place on the map, where you sit most often when visiting the Noorderplantsoen



Q10 How often do you use the provided seating in the Noorderplantsoen? (Think of the benches, stairs, ridges you can sit on)

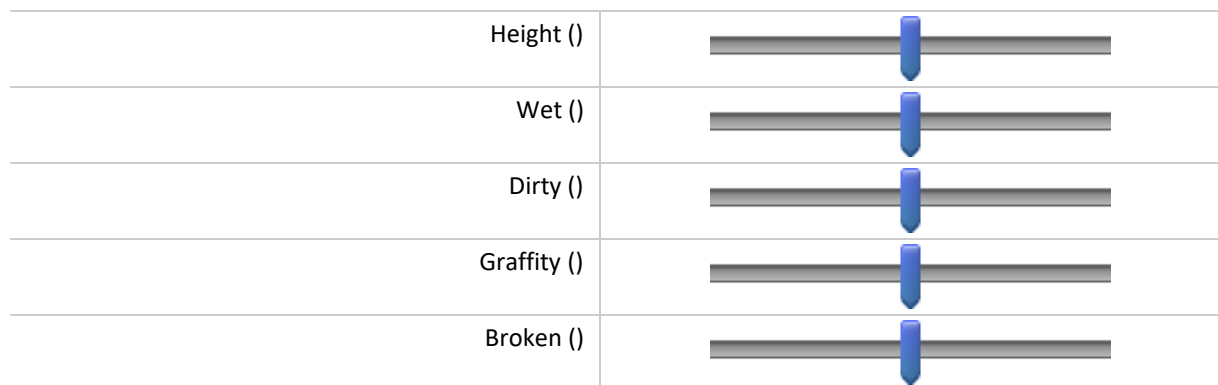
- Never (1)
- Sometimes (2)
- About half the time (3)
- Most of the time (4)
- Always (5)

Skip To: Q12 If How often do you use the provided seating in the Noorderplantsoen? (Think of the benches, stairs,... = Never

Q11 How would you rate certain design elements of the provided seating in the Noorderplantsoen?

Extremely Somewhat Neither Somewhat Extremely
 uncomfortable uncomfortable comfortable comfortable comfortable
 nor
 uncomfortable

0 10 20 30 40 50 60 70 80 90 100



Q21 Do you find the provided seating in the Noorderplantsoen sufficient? If not, what should be improved according to you?

Q12 Do you ever provide you own seating, such as a picknick blanket or chairs?

Yes (1)

No (2)

Skip To: End of Block If Do you ever provide you own seating, such as a picknick blanket or chairs? = No

Q13 How often do you bring your own seating?

Never (1)

Sometimes (2)

About half the time (3)

Most of the time (4)

Always (5)

Skip To: End of Block If How often do you bring your own seating? = Never

Q14 Why do you decide to bring your own seating?

End of Block: Seating

Start of Block: Community

Q15 Do you feel like the amenities in the Noorderplantsoen fullfil your needs? Think of sport facilities, seating, toilet, trash cans, chess boards, etc.

- Definitely not (1)
 - Mostly not (2)
 - Might or might not (3)
 - Mostly yes (4)
 - Definitely yes (5)
-

Q16 Do you interact with strangers in the Noorderplantsoen? Think of nodding, smiling, saying hello, petting a dog, playing sports together, etc.

- Never (1)
 - Sometimes (2)
 - About half the time (3)
 - Most of the time (4)
 - Always (5)
-

Q17 Do you participate in activities organised in the Noorderplantsoen? Think of Noorderzon, the Plantsoen loop, and workout groups.

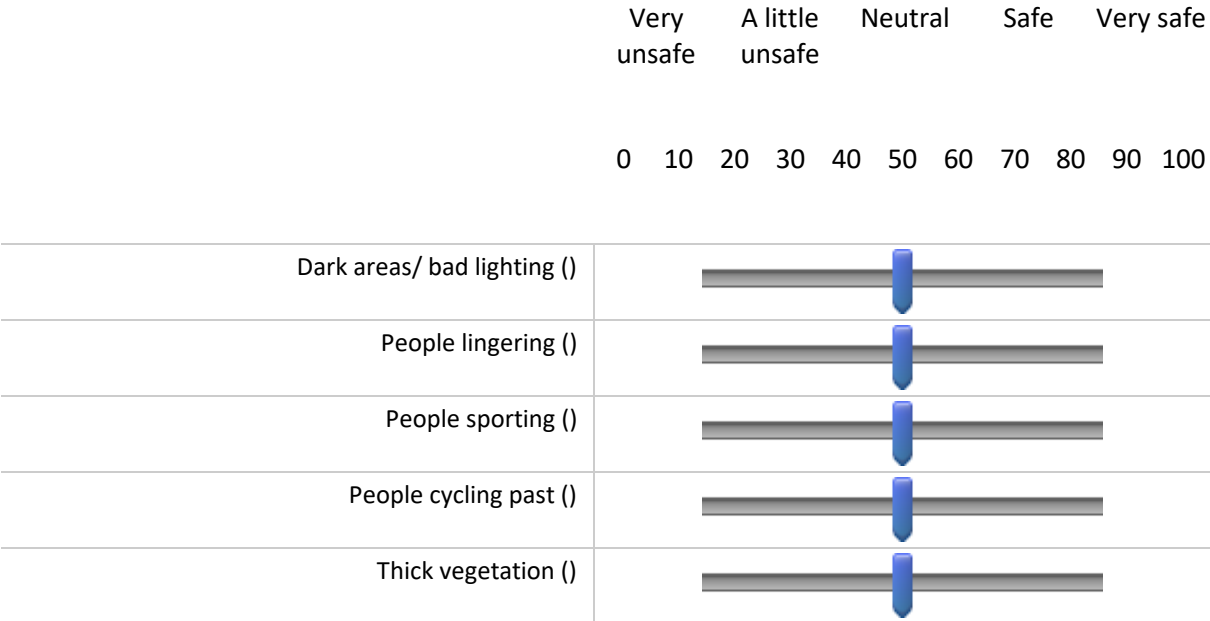
- Never (1)
- Sometimes (2)
- About half the time (3)
- Most of the time (4)
- Always (5)

End of Block: Community

Start of Block: Safety

Q18 How safe do you feel in the Noorderplantsoen? This can be during the day or at night.

Q19 Rate how safe these factors make you feel



End of Block: Safety

Start of Block: General

Q20 Do you have any other remarks on the seating or how you feel in the Noorderplantsoen?

End of Block: General

Appendix 3: On site observation 1

Date: 8 November

Start time: 13:00

End time: 13:25

Weather conditions: Cloudy, bit of sun, started drizzling

Temperature: 10 degrees

1. Number of people using seating: 12

2. How are the seats arranged?

- Around the pond benches are placed facing the pond, going all around. Through the rest of the park most benches are placed facing outwards, looking over the water. Other benches, such as next to the gazebo, are facing the park.

3. Are the seats clean and well-maintained?

- Most benches were clean, some were a bit wet from the rain. But the benches seem to be designed to let the rainwater roll off. Only one bench with graffiti spotted. No broken benches.

4. Types of Interactions:

- Social conversations: 25

- Group gatherings: -

- Alone with a mobile device: 5

- Other (specify):

5. Number of People Engaged in Social Interactions: 32 interactions

6. Observations on Interactions: interactions ranging from saying hello to meeting friends, sporting, eating lunch together, walking the dog. People sitting at the gazebo.

7. The presence and condition of plants, trees, and landscaping in the area.

- - Just newly planted flowers, plants seemed well maintained

-

8. Is there any public art or decorative elements in the space?
 - Yes, is some artwork, there are some statues. There are 5 artworks in the Noorderplantsoen, all part of an art route.
9. Assess the quality and effectiveness of lighting in the area (natural light, streetlights).
 - Natural light is pleasant, bit of a gray day.
10. The movement of people through the space (e.g., pedestrian pathways, foot traffic patterns).
 - Cyclists use the cycle path through the park, quite busy at this time, people go home for lunch or getting to work or university. Pedestrians use paths all through the park.
11. Any specific activities or events taking place within the public space.
 - Not at this time
12. Noise Level (quiet, moderate, noisy)
 - Low noise level, some chatting but other than that quiet

Appendix 4: On site observation 2

Date: 16 November

Start time: 17:00

End time: 17:23

Weather conditions: cloudy, getting dark

Temperature: 7 degrees

1. Number of people using seating: 12
2. How are the seats arranged?
 - Around the pond benches are placed facing the pond, going all around. Through the rest of the park most benches are placed facing outwards, looking over the water. Other benches, such as next to the gazebo, are facing the park.
3. Are the seats clean and well-maintained?
 - Graffiti on 5 benches, no benches broken. Benches are dry.
4. Types of Interactions:
 - Social conversations: 3
 - Group gatherings: -
 - Alone with a mobile device: 6
 - Other (specify):
5. Number of People Engaged in Social Interactions:
6. Observations on Interactions: People sitting together on benches, walking around together, sporting together.
7. The presence and condition of plants, trees, and landscaping in the area.
 - Just newly planted flowers, plants seemed well maintained
 -

8. Is there any public art or decorative elements in the space?
 - Yes, mentioned in first site observation.
9. Assess the quality and effectiveness of lighting in the area (natural light, streetlights).
 - Getting dark
10. The movement of people through the space (e.g., pedestrian pathways, foot traffic patterns).
 - Busy with people getting home from work or University.
11. Any specific activities or events taking place within the public space.
 - Not at this time
12. Noise Level (quiet, moderate, noisy)
 - Low noise level

Appendix 5: On site observation 3:

Date: 24 November

Start time: 10:00

End time: 10:20

Weather conditions: Cloudy, some sun through the clouds

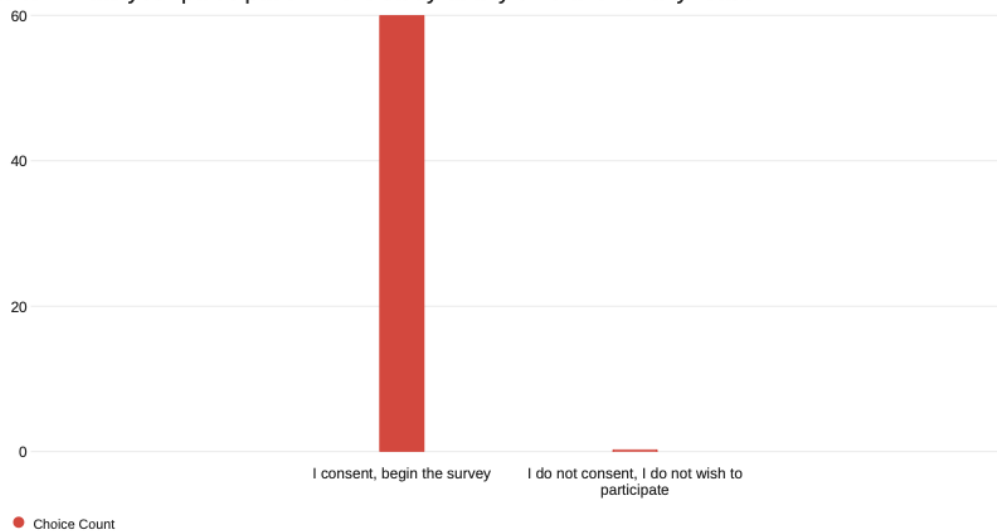
Temperature: 6 degrees

1. Number of people using seating: 6
2. How are the seats arranged?
 - Around the pond benches are placed facing the pond, going all around. Through the rest of the park most benches are placed facing outwards, looking over the water. Other benches, such as next to the gazebo, are facing the park.
3. Are the seats clean and well-maintained?
 - Graffiti on 5 benches, no benches broken. Benches are dry.
4. Types of Interactions:
 - Social conversations: 6
 - Group gatherings: 1 (sportgroup)
 - Alone with a mobile device: 3
 - Other (specify):
5. Number of People Engaged in Social Interactions: 14
6. Observations on Interactions: People sitting together on benches, walking around together, sporting together.
7. The presence and condition of plants, trees, and landscaping in the area.
 - Plants seemed well maintained
8. Is there any public art or decorative elements in the space?
 - Yes, mentioned in first site observation.

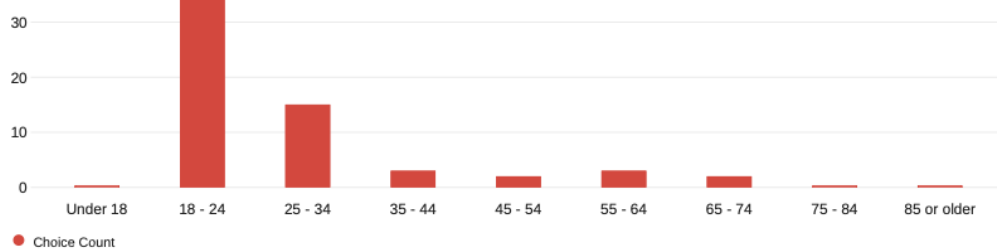
9. Assess the quality and effectiveness of lighting in the area (natural light, streetlights).
 - Good lighting, not a lot of leaves on the trees so all light gets to the ground.
10. The movement of people through the space (e.g., pedestrian pathways, foot traffic patterns).
 - Not very busy, apart from people cycling to class or walking the dog, sporting.
11. Any specific activities or events taking place within the public space.
 - No.
12. Noise Level (quiet, moderate, noisy)
 - Low noise level

Appendix 6: Output survey

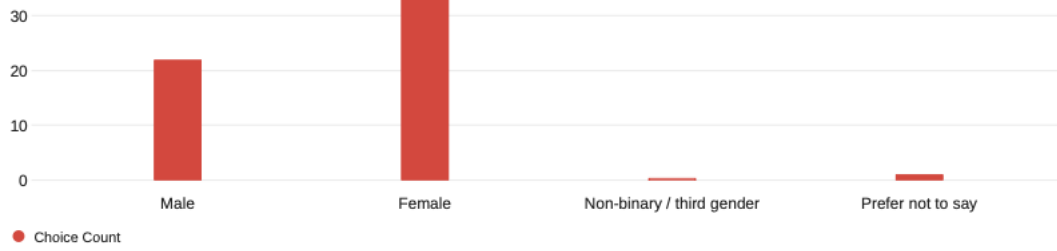
Q1 - Welcome to the research study! I am interested in understanding how seating arrangements in the Noorderplantsoen can have an influence on the sense of community. You will be presented with information relevant to the seating arrangements and how you feel in the Noorderplantsoen and asked to answer some questions about it. Please be assured that your responses will be kept completely confidential and the data is stored on a secured drive of the University of Groningen. The study should take you around 3-5 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you have any questions, feel free to reach out on: n.e.van.der.veur@student.rug.nl By clicking the button below, you acknowledge that your participation in the study is voluntary, anonymous, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.



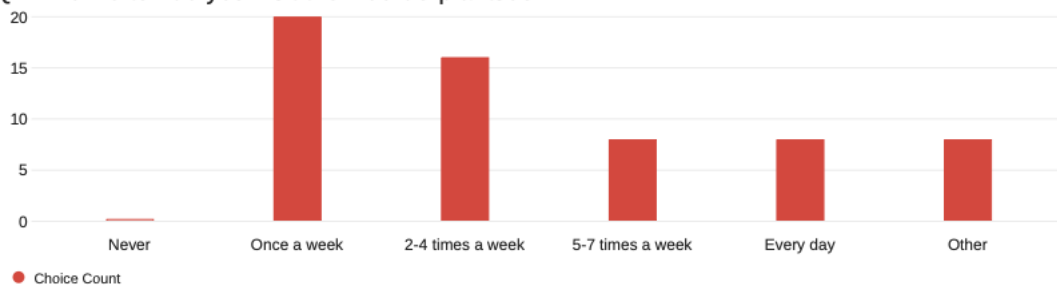
Q1 - What is your age?



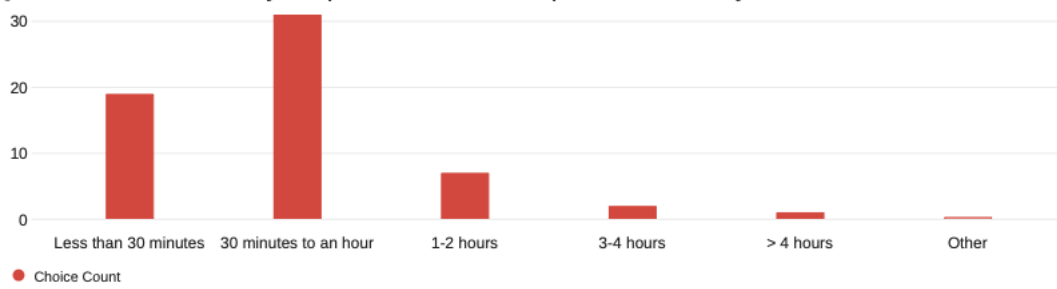
Q2 - What is your gender?



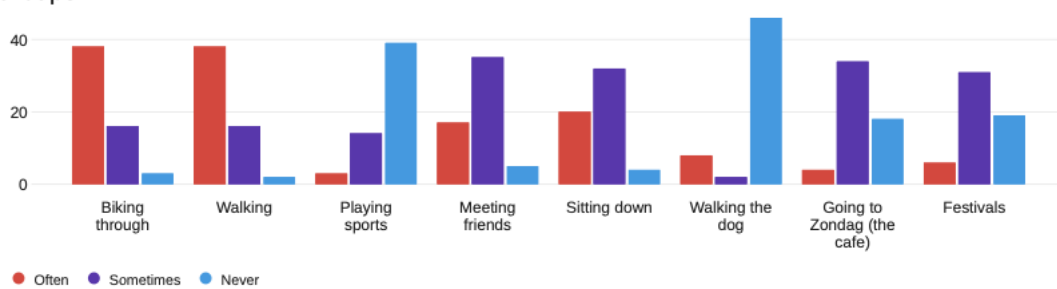
Q4 - How often do you visit the Noorderplantsoen?



Q5 - How much time do you spend in the Noorderplantsoen when you visit?



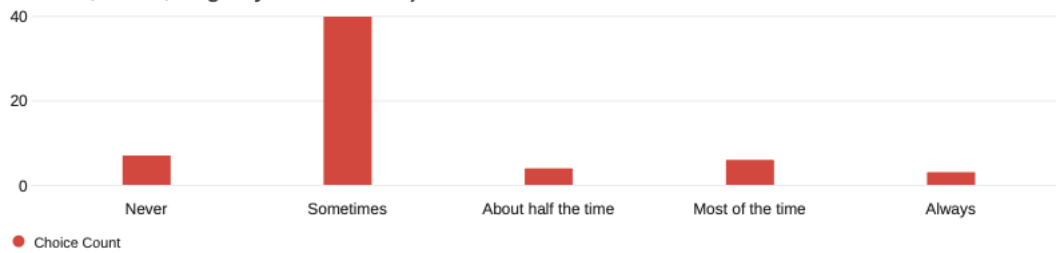
Groups



Q9 - Click the place on the map, where you sit most often when visiting the Noorderplantsoen



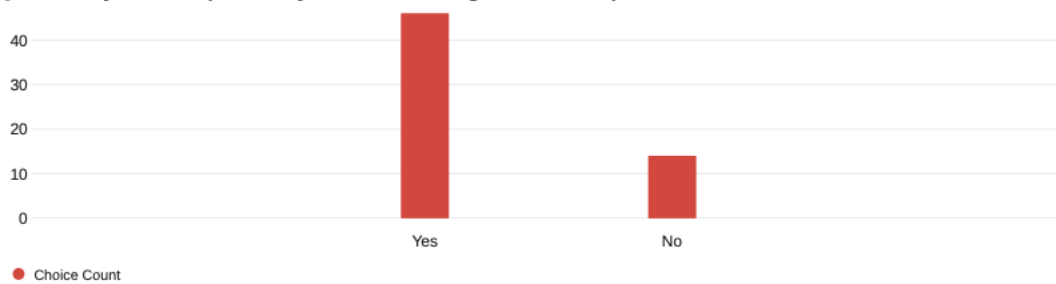
Q10 - How often do you use the provided seating in the Noorderplantsoen? (Think of the benches, stairs, ridges you can sit on)



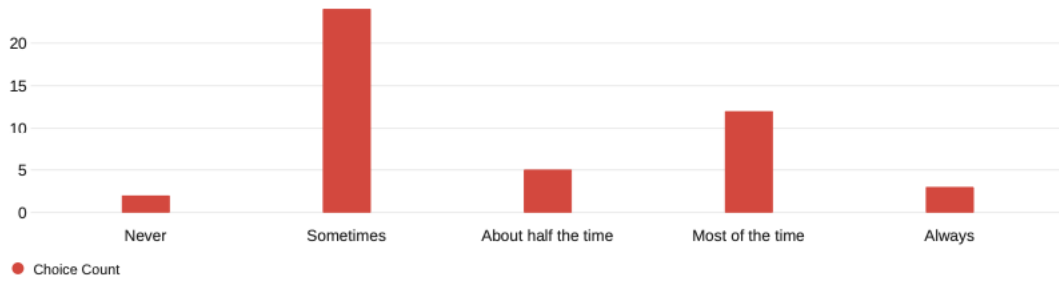
Q11 - How would you rate certain design elements of the provided seating in the N...

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Height	20.00	100.00	66.42	20.01	400.36	53	3520.00
Wet	0.00	100.00	41.15	23.01	529.44	52	2140.00
Dirty	0.00	100.00	49.81	27.09	733.93	53	2640.00
Graffiti	0.00	100.00	50.59	33.69	1134.95	51	2580.00
Broken	0.00	100.00	45.51	33.57	1126.78	49	2230.00

Q12 - Do you ever provide you own seating, such as a picknick blanket or chairs?



Q13 - How often do you bring your own seating?



Q14 - Why do you decide to bring your own seating?

Why do you decide to bring your own seating?

Hamerooids ass collapse

Because we wanted to sit in a group and there was not really any space for that

Picnic

More flexibility

Lamzac from Fatboy

Choose my own spot

For a picknick i prefer to sit on the ground, more space

When BBQ ing

I rarely do - would be for a picnic.

For picnicks

I only sit down in the Plantsoen when I have a picnic, which I always do on the grass. Therefore, I need my own blanket, because there is, logically so, no fixed seating in the middle of the fields

Because the seats are taken

Because there is dogpoo in the grass

Picknick reasons mainly.

Then you can pick where to sit yourself

In summer when sitting on the field

In the summer

Picknick in the summer.

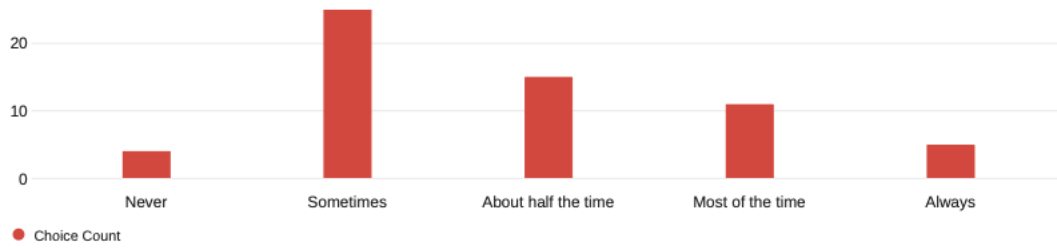
if i sit down in the grass my own seating keeps my pants clean and dry

Dan ben je flexibeler kwa plek waar je wil zitten

Q15 - Do you feel like the amenities in the Noorderplantsoen fulfil your needs? Think of sport facilities, seating, toilet, trash cans, chess boards, etc.



Q16 - Do you interact with strangers in the Noorderplantsoen? Think of nodding, smiling, saying hello, petting a dog, playing sports together, etc.



Q17 - Do you participate in activities organised in the Noorderplantsoen? Think of Noorderzon, the Plantsoen loop, and workout groups.



Q18 - How safe do you feel in the Noorderplantsoen? This can be during the day or at night.

How safe do you feel in the Noorderplantsoen? This can be during the day or at night.

Extremely Safe

During the days I do feel safe but at nights I don't because there are just not enough lights for a park with such dense trees.

During night not that safe

Really safe

altijd

Really safe

Most of the times

Oke

Depends on where I walk. Some areas are occupied by homeless people (mostly men) where I feel unsafe

Safe but wary at night

Safe

Totally safe

Very safe

Pretty safe wouldnt walk alone at night though

Safe

Depends, the better the weather, the more people, the more unsafe I feel

As an adult man I mist say very safe, but I can imagine people not feeling safe there at night

Not always

Not very safe at night, during they day I feel very safe!

Safe

Q19 - Rate how safe these factors make you feel

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Dark areas/ bad lighting	0.00	99.00	38.02	29.78	886.61	57	2167.00
People lingering	1.00	100.00	47.37	29.36	862.09	57	2700.00
People sporting	25.00	100.00	88.86	14.78	218.59	59	5243.00
People cycling past	12.00	100.00	81.12	19.39	375.97	58	4705.00
Thick vegetation	10.00	100.00	58.58	25.93	672.62	59	3456.00

Q20 - Do you have any other remarks on the seating or how you feel in the Noorderplantsoen?

Do you have any other remarks on the seating or how you feel in the Noorderplantsoen?

Need more space to fuck around

No.

Nope

ieder bankje heeft haar eigen "bewoners"!!!!

It would be nice if it has an sonar panel so you can charge your phone

No

The homeless people who sit at the Muziekkoepeel make me feel unsafe. They often talk to me when I walk past them, making sexual remarks.

Get rid of the noisy and polluting leaf blowers! Go back to raking.

The seating is pretty good, but there isnt much seating where a group of people can talk facing each other or share a meal.

-

Some questions are unclear

Usually I love it, but approximately 1 out of 15 times I encounter an unsafe or uncomfortable situation

A couple of the seats used in the Noorderplantsoen are used mainly by alcoholics and other drug users. They do cause me to feel somewhat unsafe because these people occasionally react unpredictable whenever I walk by with my dog.

There are some corners that attract drunk people. There are noisy, rude and it feels unsafe. I would not recommend woman to walk in the park by themself at night (harrasment)

No

nah

No

Generally its a very safe park, and the main road is ok at night. I would really enjoy some 'lying' chairs, like Zondag also has. It would make chilling in the park more easy. Also the benches are only located on walking isles. I would really really like the idea of seating under the trees, on the grass! It gives you a much more intimate experience of nature, and more privacy. That would be so cool and innovative!

Love our little nature Space next to the inner city <3

More toilets

Q21 - Do you find the provided seating in the Noorderplantsoen sufficient? If not, what should be improved according to you?

Do you find the provided seating in the Noorderplantsoen sufficient? If not, what should be improved according to you?

Ofcourse

Maybe a few more seating areas or benches where groups can sit together

No there should be more seating, and maybe ccommunal spaces as well where you can sit with a bunch of friends

Sufficient as I prefer to lay on the grass

Some more benches at nice spots

The seatings very wheat and cold at wintertime

It is oke

Yes

More family and picknick tables

Yes

More would be nice on sunny days most seatings occupied

More benches

-

Sometimes the benches are very dirty (joints, cigarettes, trash)

More places to sit as individual

No there can be more.

I don't understand the sliders above at ALL, sorry. Why are there both a 5 point scale AND a 100 point scale? Does a 0 for wetness mean the seating is always dry, or that it's wet and it makes me horribly uncomfortable? I'm lostttttt.

Everything is sufficient to me, maybe a 1-2 more benches in the area I pointed

Its fine, but I would really like more benches/seating. Some places are always 'taken'

The back of the benches are often too low.

Appendix 7: SPSS output

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.591	1	19.591	9.238	.004 ^b
	Residual	122.993	58	2.121		
	Total	142.583	59			
2	Regression	32.447	2	16.223	8.396	<.001 ^c
	Residual	110.137	57	1.932		
	Total	142.583	59			
3	Regression	44.618	3	14.873	8.502	<.001 ^d
	Residual	97.965	56	1.749		
	Total	142.583	59			
4	Regression	52.842	4	13.210	8.096	<.001 ^e
	Residual	89.742	55	1.632		
	Total	142.583	59			

a. Dependent Variable: Community_count

b. Predictors: (Constant), What is your age?

c. Predictors: (Constant), What is your age?, Seating_count

d. Predictors: (Constant), What is your age?, Seating_count, What is your gender?

e. Predictors: (Constant), What is your age?, Seating_count, What is your gender?, How much time do you spend in the Noorderplantsoen when you visit?

Appendix 8: QR codes



Hallo,

Ik ben Nore, en voor mijn studie Spatial Planning and Design doe ik onderzoek naar de zitgelegenheden in het Noorderplantsoen en de invloed daarvan op het gevoel van community.

Als u een momentje heeft, zou u mijn ontzettend helpen door mijn vragenlijst in te vullen. Hiervoor hoeft u alleen de [QR code](#) hierboven te scannen, dit duurt ongeveer 3-5 minuten.

Alvast bedankt!






Hello,

My name is Nore, and for my study Spatial Planning and Design I am doing research to the influence of seating arrangements in the Noorderplantsoen on the sense of community.

If you have a moment, you [would](#) help me very much by using the QR code above to fill in my survey, this will take 3-5 minutes.

Thanks in advance!

Appendix 9: Art route Noorderplantsoen

A	<p>Picture made by Bas Lugthart/ Maree Blok (Kunstpunt Groningen, 2023)</p> 	<p>No title (fountain), Bas Lugthart, made in 1991. (Kunstpunt Groningen, 2023)</p>
B	 <p>Picture made by Jenne Hoekstra (Kunstpunt Groningen, 2023)</p>	<p>Lepelaar, Jan van Baren, made in 1977. (Kunstpunt Groningen, 2023)</p>
C		<p>Wisent, Wladimir de Vries, made in 1982. (Kunstpunt Groningen, 2023)</p>

D		<p>Mannetje, Gjal Blaauw, made in 1975. (Kunstpunt Groningen, 2023)</p>
E		<p>Zonaanbidster, Mattheus Meesters, made in 1951. (Kunstpunt Groningen, 2023)</p>

Appendix 10: Timetable

