

Managing liveability in regards to visitor pressure of public parks

A case study of the Noorderplantsoen

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Abstract

This research examined how the liveability of the community of the Noorderplantsoen, a public park in Groningen, can be safeguarded in regard to the visitor pressure of the Noorderplantsoen. To answer this research question, a survey was conducted among 16 residents of the community. The survey showed that most people like living next to the Noorderplantsoen and that they find it an important factor of the community. However, the survey also showed that people experience various forms of disturbance from visitors. The municipality of Groningen has various measures in place to reduce the visitor pressure and to create a balance. The survey showed that the carrying capacity of the area is not sufficient to allow the highest level of liveability. The research has also shown that displacement can occur due to the visitor pressure. The research concluded that community resilience can be the tool to get to a balance and create a liveable environment for the community of the Noorderplantsoen. Further research is suggested to confirm the occurrence of displacement and to deepen the understanding of the effects of active measures.

Keywords:

Visitor pressure, public parks, Noorderplantsoen, liveability, displacement, crowding, carrying capacity, community identity, community resilience

Picture frontpage by: Siebrand H. Wiegman (2020)

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Introduction

Research background

Public parks are able to enhance the livability of people, especially those living in close proximity to these parks. There are various benefits for living close to a public park. People living near public parks are more occupied in physical activities and mental health is positively stimulated by the parks (Wood et al., 2017). Furthermore, public parks bring significant economic benefits and support wider social and cultural development (Koens and Postma, 2017). This creates communities near the public parks whose members share similar values and experiences. The park therefore has potential positive socio-cultural impacts including; building community pride, enhancing the sense of identity of a community and enhancing local and external appreciation (Robinson, 1999).

However, there are also potential negative impacts of public parks. Often public parks see a high amount of visitors and experience high visitor pressure levels. Visitor pressure gives an indication about disturbance created by visitors to the local community (Henkens et al., 2010). These high visitor pressure levels are disadvantageous to the liveability of the local community. The potential negative socio-cultural impacts for the local community are displacement and alienation (Rli, 2019; Robinson, 1999), the necessary sharing of facilities and public spaces (Ministerie van Landbouw, Natuur en Voedselkwaliteit, 2005), overcrowding (Koens and Postma, 2017) and disturbance in the sense of nuisance and pollution (Ministerie van Landbouw, Natuur en Voedselkwaliteit, 2005; Koens and Postma, 2017). A high level of visitor pressure is the result of various factors such as having a large number of residential areas in relatively close proximity to the park (Arnberger and Brandenburg, 2007; Langers 2018), a great attractiveness to tourists (Rli, 2019) and the large amount of recreational activities partaken by the population (Langers, 2018). There needs to be a healthy balance between both the positive and negative impacts of a public park towards adjacent communities.

In addition to creating this healthy balance, public parks need to be prepared for future visitor pressure levels. Several trends show that creating a healthy balance is becoming more challenging. The first trend is an increasing number of leisure activities partaken in natural environments (Krijgsveld et al., 2022; Provincie Utrecht, 2020). The second trend is urbanisation in the Netherlands. Urbanisation results in an increase in demand for leisure activities in the public green areas near or within the city (Krijgsveld et al., 2022). This can be seen in the example of the province of Utrecht. Provincie Utrecht (2011; 2020) states that the shortage of local recreational areas and the prospective increasing recreational demand is seriously threatening local communities. The final trend is the growing tourism sector. Domestic tourism as well as inbound tourism is growing exponentially (Rli, 2019) which contributes to higher visitor pressure in public parks. All in all, it is a major challenge to prevent negative impacts on communities caused by visitor pressure.

Research objective and research questions

The objective of this research is to find out how communities can cope with visitor pressure while maintaining or, even better, enhancing its liveability. This research is relevant to provide an

answer to how to respond to the ongoing trends of increasing visitor pressure. It will guide communities in forming a response towards visitor pressure. To investigate how communities can cope with visitor pressure a case study is used. The case study focuses on the influence of the visitor pressure of the Noorderplantsoen towards an adjacent community. The Noorderplantsoen is a park located in the city of Groningen, Netherlands (see figure 1). It is one of the most popular parks in the city and serves all kinds of functions.

According to a college letter from the Gemeente Groningen (2022), signed by the alderman and mayor of the municipality of Groningen, the balance between liveability and recreation in the Noorderplantsoen Area has worsened over the period of four years. It states various sources of nuisance which contributed to this imbalanced situation: noise pollution, public urinating, waste pollution and public drinking appear as sources of nuisances. The growing visitor pressure and the decrease in liveability makes the Noorderplantsoen a relevant case study. To research the impacts of visitor pressure towards the liveability of communities neighbouring public parks the following research question is formulated.



Fig 1. Location of the Noorderplantsoen in Groningen

“How can the visitor pressure of public parks be managed to mitigate the impact on the liveability of the adjacent communities?”

To provide an answer to this research question the following secondary research questions are asked:

- What effects of visitor pressure can be felt in communities adjacent to public parks?
- At what point is there an imbalance between visitor pressure and liveability in such a way that communities adjacent to public parks are impacted negatively?
- How can the case of the Noorderplantsoen help to understand how to deal with visitor pressure to enhance liveability?

This paper will answer those questions by doing empirical research. Before the empirical research the concepts behind visitor pressure, community resilience and perceived liveability will be presented in the theoretical framework.

Theoretical framework

Community identity

Each community has its own identity. A community can be defined as a place-based group of people who have some meaningful ability to influence their basic common needs given their particular social and political context (Zhou et al., 2022). Community identity are the characteristics of a specific community that arise over time and are influenced by sociocultural, economic and political processes (Ministerie van Landbouw, Natuur en Voedselkwaliteit, 2005). The built environment provides the physical structure of the community's identity and is shaped by many things in particular economics, culture (including social norms, law, and politics), and resources (PCI., 2017). A community's identity exists also out of non-touchable elements such as the social-cultural aspect of perception or development of recreation and tourism (Ministerie van Landbouw, Natuur en Voedselkwaliteit, 2005).

Community resilience

Another non-touchable element of the community identity is community resilience. Community resilience refers to a community's ability to successfully respond to disasters before, during, and after they occur, with the purpose of decreasing current and future disaster impacts (Cutter et al., 2014; Lam et al., 2015). These disasters happen when the capacity is exceeded. When a community has an adequate resilient level it can handle high visitor pressure levels without experiencing negative impacts for the community (Rli, 2019) and can protect the community's identity from damage (PCI., 2017). However, a resilient community focuses on a more holistic and comprehensive approach to proactive find human-centred opportunities to adapt and to thrive amidst changing conditions (Baja, 2021; Lew, 2014). The community resilience approach will enhance the liveability of the community the most.

With regard to the resilience approach, a framework can be created to understand and improve the resilience of communities. Lam et al. (2015) use a framework to express the level of resilience with resilient scores. This is done on the basis of three dimensions: exposure, damage and recovery. These dimensions can be linked with values and factors. This is done by Powell et al. (2018). They measured community resilience based on perceptual factors. Those factors particularly addressed the economic, environmental and social resilience domains. When looking at community resilience towards visitor pressure other specific factors need to be taken into account. A framework which properly includes the social factor, the perceptions within the community and the three dimensions will allow a good understanding on how community resilience can influence the impact of visitor pressure.

To further construct the resilient framework, several steps follow. Firstly, the main factors of the community's identity are determined. Secondly, these factors need indicators to make them measurable. Thirdly, there must be agreement on the desired condition of these factors and the desired level (Lindberg et al., 1997). This agreement, or better said consensus, will set standards for each indicator. Fourthly, monitoring of the indicators needs to happen. This monitoring data as well as the effect of existing measures should be analysed. Authorities need to take action

according to this analysis. They can, for example, extend measures or implement new measures. This with the task to guide towards the set standards or, even better, above the standards.

Liveability of a community

Liveability is the main factor of establishing a healthy balance between the visitor pressure of public parks and the residents living adjacent to these parks. Liveability lacks a precise or universally agreed-upon definition (Ovieda et al., 2022). Therefore, this paper describes liveability as the accumulation of all the social, economic and physical factors in an environment which affect the local community. Living in a neighbourhood with an adequate livability means that the average of all the factors impacting a community are positive. The impact on liveability is relatively straightforward when it comes to factors associated with basic needs, such as food and housing. However, as one moves from basic needs to other determinants of livability, subjective judgments of what constitutes liveability are introduced (Ruth and Franklin, 2014). Therefore, perceived liveability is used to analyse the experienced quality of the environment of a local community. Perceived liveability is a concept and factor being used by urban planners and designers to better understand how people perceive the places they live in and how this perception affects their life choices (Namazi-Rad et al., 2016).

This can be seen in a public park, where natural and social environments are associated with specific life choices. The closer citizens live to a public park with green spaces, the more frequently they participate in the minimum recommended physical activity levels and the less likely they are to be overweight (Coombes et al., 2010). This participation in outdoor activities encourages relaxation and enhances both the physical and mental health of park users (Aerts et al., 2018; Beck, 2009; Manley, 2004). Even more, public spaces play a significant role in improving the social life of a community since they are considered the backbone of the urban systems (Moulay et al., 2018). However, visitor pressure has certain characteristics that make it possible that these positive effects are no longer felt by the community.

Visitors and carrying capacity

Visitors are leaving an impact on the physical and social aspects of the community identity. This impact can be positive as well as negative to the liveability of the community. People visit public parks to partake in leisure activities. In 2018, Dutch people collectively engaged in more than 3.6 billion leisure activities (NBTC-NIPO, 2018). Outdoor recreation is common with 926 million performed activities, of which 424 million times includes a walk for pleasure. However, excessive leisure influence leads to degradation of a landscape and the loss of the characteristics determining its recreational value (Astashin et al., 2019). This can cause severe damage to the physical aspects of a community's identity and can severely affect the perception of the local community towards their place of residence. A key perception studied in safeguarding liveability is the perception of crowding (González et al., 2018). Local residents see crowding in public spaces and recreation areas as a factor reducing their quality of life (Brunt and Courtney 1999; Teye et al., 2002), and hence the liveability.

Crowding can be seen as an indicator of liveability. In conditions of crowding, humans activate compensatory measures, which are coping mechanisms (Arnberger and Brandenburg, 2007). Displacement is one of the coping mechanisms which are applied to reduce stress (Manning 1999). The affected perceived liveability caused by visitor pressure has the ability to cause displacement in the community (Lankford and Howard 1994; McCool and Martin 1994, Williams and Lawson 2001). According to Schneider and Hammitt (1995) there are three types of coping mechanisms: rationalisation, product shift and physical avoidance. Rationalisation is tricking the mind into believing to be on a higher level of satisfaction than reality. Product shift, also called

activity displacement, means to alter the definition of sought activity. Physical avoidance, or spatial displacement as Manning and Valiere (2001) call it, occurs when visitors shift their use to other locations within the same area (intraspatial) or move away to other areas (interspatial). Temporal displacement occurs when visitors change the time of their visits (Hall and Shelby, 2000).

To find a healthy balance between visitor pressure and liveability the capacity level needs to be determined. Capacity of a place is defined by Glasson (1994) as the number of visitors a place can absorb without hindrance of the other social and economic urban functions it performs. Over the years capacity is extended to also incorporate specific factors associated with the visit, such as timing, location, type of activity, and visit or behaviour (Lindberg et al., 1997). The concept of carrying capacity takes all these factors into account. UNWTO (1981) defines carrying capacity as allowing visitors without causing destruction of the physical, economic, socio-cultural environment and an unacceptable decrease in visitors' satisfaction. Extending the carrying capacity results in negative impacts of the living environment and the society (Rli, 2019). This can be in the form of degradation of facilities, overuse of natural resources and crowding (Pullman and Rodgers, 2010). The capacity level is the set standard, which means that in the desired condition this level is not exceeded.

Capacity management ensures that sufficient capacity exists to meet the demand (Klassen and Rohleder, 2002). In regards to visitor pressure and community an appropriate conceptual basis for carrying capacity is social carrying capacity (Massiani and Santoro, 2012; Simón et al., 2004). Social carrying capacity uses attitudes and tolerance levels of the host population to set limits for social carrying capacity (Getz, 1987; Saveriades, 2000). In other words, the impact of visitor pressure may not extend the set standard of the perceived liveability and this can be managed. Social carrying capacity management can be done by implementing management actions and strategies and adjusting them based on monitoring and evaluation (IVUMC, 2016).

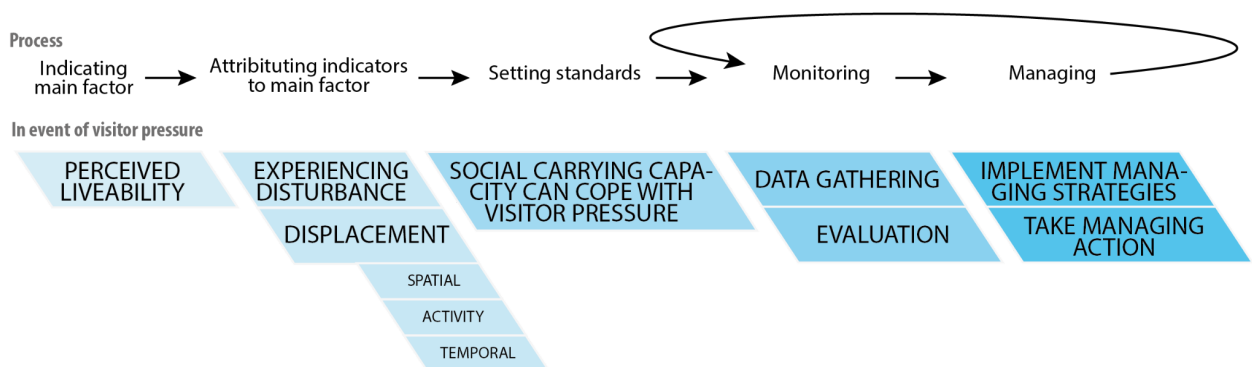


Fig 2. Conceptual framework of a resilient framework against visitor pressure

Methodology

Case study

To investigate how communities adjacent to public parks experience visitor pressure, this research investigates the case of the Noorderplantsoen. To better understand this place the main characteristics and backgrounds of the Noorderplantsoen is given. The Noorderplantsoen is known for its lush greenery. The park was created in the early 19th century, and was originally part of the city's defensive fortifications. It was later developed into a public park and has since become a popular destination for both locals and visitors. The Noorderplantsoen features a variety of landscapes, including grassy meadows, ponds, and wooded areas. It also contains a number of monuments, sculptures, and other attractions. The combination of cultural and natural values makes the Noorderplantsoen one of the crown jewels of the Urban Ecological Structure (Gemeente Groningen, 2009a). The Noorderplantsoen has the role of a recreational attraction of the city (Gemeente Groningen, 2009b). The park facilitates various needs such as: walking, feeding ducks, picnics and barbecues, children's parties, walking the dog and meeting each other (Tiesinga, 2017). This large number of functions requires constant balancing and searching for equilibrium, so that one is not at the expense of the other (Tiesinga, 2017).



Fig 3. The Noorderplantsoen and its direct surroundings

For this reason the case study focuses on the perceived balance of the residents of the Noorderbinnensingel and the Werfstraat and the visitors of the park. In figure 3 the location of those streets in relation to the park can be seen. The Noorderbinnensingel and the Werfstraat form together a street with on the one side housing and on the other side the Noorderplantsoen. It was chosen to select a specific street or area to narrow down the size of the research. The selection of Noorderbinnensingel and Werfstraat was made because of certain characteristics. The housing typology is mostly similar in this street. The most common type of housing typology are row houses or small apartment buildings. They all live directly next to the Noorderplantsoen and in the northern inner city of Groningen. Making it a community whose members share similar living experiences.

Data collection

To provide an answer for the research question primary data is used. This data by a mixed approach of quantitative methods and qualitative methods. This data will focus on the perceived liveability of the community of the case study. The qualitative data was gathered by doing a survey. The survey followed a five-point Likert scale, ranging from “strongly disagree” (1) to

“strongly agree” (5). The survey was held verbally and answers were filled in by the researcher. This not only allowed the researcher to collect data that followed the schedule of the survey, but also allowed the research to accumulate other opinions, experiences and views. This provides a more holistic understanding of the perceived liveability.

To gather the data the research makes use of a data collection instrument. The survey is based on the framework of appendix A and its data is collected with the help of a survey made with ArcGIS Survey123 (see appendix B). It was translated to Dutch to make it match the population. The survey was held on Friday 25 November between 10:20 and 14:00. There were 16 participants of the survey. Those participants had an approachably evenly distributed distribution along the Noorderplantsoen (see figure 4). The participants were found by door-to-door visits. Asking them if they had a few minutes to partake in the survey. Five people said that they didn't want to take part and two persons were underage.

To further improve the holistichness of the research, the existing policies and measures, which are in relation to the visitor pressure of the park, are analysed as well. The analytic research of the existing policies and measures will show opportunities to build resilience towards the visitor pressure. It will use a framework which is abbreviated from Peeters et al. (2018) and RLI (2019). It will use measures which are in places in other areas with high visitor pressure to see what the authorities of the Noorderplantsoen can learn.

Limitations

There are a few limitations which need to be taken into account when analysing the data. Firstly, visitor pressure is not a constant variable. Visitor pressure has a temporal element which occurs in response to concentrated, occasional (e.g. special events), daily or seasonal visitation spikes (Gössling et al., 2016). On hot summer days the Noorderplantsoen is considered a hotspot (Gemeente Groningen, 2022), however on cold winter days the visitor pressure is lower. The survey is held during relatively cold days. Recency bias is a version of the availability heuristic, i.e. the tendency to base thinking disproportionately on whatever comes most easily to one's mind (Phillips-Wren et al., 2022). This means that there is a tendency to think about the visitor pressure on the cold days, rather than the higher visitor pressure of the hot summer days.

Secondly, the survey has a bias. While surveying participants during the day can be a useful strategy for collecting data, it does come with some drawbacks. One of the primary issues is that it can lead to a biased representation of the population being surveyed. This is due to the fact that those who are able to participate in the survey are likely to be limited to those who are home during the day, such as those who are not employed, are retired, or are stay-at-home parents. As a result, the data gathered may not be reflective of the entire population, as it will be skewed towards those who have the ability to participate in the survey.

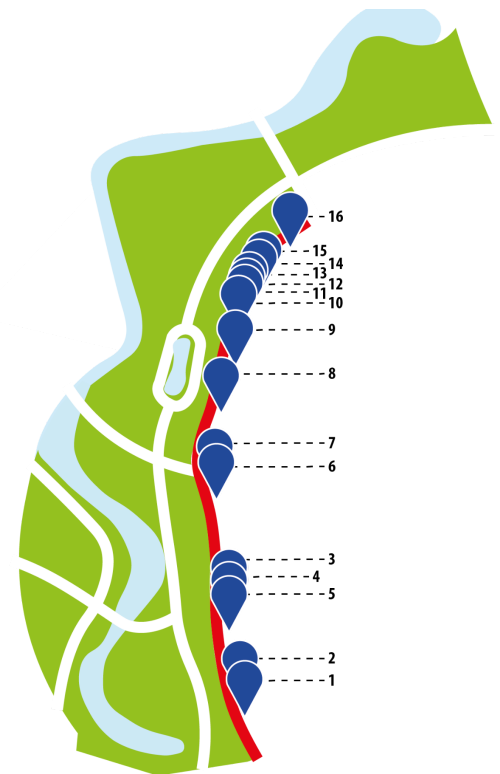


Fig 4. Indication of the residential places of the participants of the survey

Thirdly, the impact of visitor pressure is unequal among the community. The activities partaken in the Noorderplantsoen by its visitors are not spread evenly over the park. This means that some part of the community is more impacted by disturbance of the visitors than others. Furthermore, the experience of living on different levels of a building can be vastly different in terms of disturbance. For example, those living on the ground floor of a building may find that their living experience is more prone to noise from outside sources than those living on higher levels. This is because noise from outside sources, such as people, has difficulty travelling upwards. Therefore, those living on higher levels of a building may have a more peaceful and quieter experience.

Lastly, the selection and use of a case study makes it hard to make generalisations for the whole population. It is not determined if the residents of the Noorderbinnensingel and the Werfstraat are representative of other residents adjacent to the Noorderplantsoen. This makes it even harder to use the results of the Noorderplantsoen in other public parks which experiences visitor pressure. Overall, case studies provide valuable insights into a particular subject, but the limitations of the methodology should be taken into consideration. By understanding the limitations of a case study, researchers can ensure that their results are more accurate and reliable.

Research ethics

The research builds on the “5 codes of conduct of research integrity”. The five codes are: honesty, scrupulousness, transparency, independence and responsibility. Honesty: during the primarily data collection there is no forge to give incorrect or deceitful statements. Scrupulousness: the answers of the surveys are carefully processed, without the opportunity to allow misinterpretation. Transparency: an honest representation is made of the research. Independence: the paper represents authentic phrases and ideas. These are guided by scientific resources. There is no plagiarism involved, since citations make clear which phases are original and which phases are not. Responsibility: as author of the research I have no particular interest to direct the findings of the research in a particular direction. As author I take the liability that I have the responsibility for this research. Before each interview and survey the participants are asked to give permission that the data may be used for research of this paper. Anonymity is used to protect the participants.

Data analysis

The survey was designed using a pre-established framework (refer to appendix A) and included several questions aimed at exploring the impact of visitor pressure on liveability. The questions were designed to serve specific purposes. The first question aimed to validate if the respondents were part of the target group. The second question focused on collecting data about the length of time the respondent had lived in the community. The third question was more general, asking about the respondent's satisfaction with their place of residence. This question was posed at the beginning of the survey in order to avoid any potential influence by introducing subsequent questions. The following two questions addressed the concept of community identity, inquiring about the respondent's frequency of visits to the Noorderplantsoen and the importance of the Noorderplantsoen in the community. The survey then went on to investigate other indicators, beginning with experiences of disturbance, followed by the three forms of displacement. Finally, the survey inquired about carrying capacity and the expected future developments in relation to the challenge. During the survey notes were made on relevant topics, ideas or opinions of the surveyees.

After conducting the survey, the collected data underwent a thorough examination for missing values, outliers, and inconsistencies, with none being identified. The data was then prepared for analysis by creating graphical representations, utilising quantitative methods to analyse the qualitative data. The notes were viable to gain a deeper understanding of the community and the area's dynamics. To provide a comprehensive overview of the case of the Noorderplantsoen, a policy analysis was performed, yielding insight into the strategies for building and managing carrying capacity in public parks. An overview of various potential measures and existing measures can be found in appendix C. Additionally, an analysis report of the Gemeente Groningen was examined, which included interviews and information collected from housing corporations, residents, entrepreneurs, the disturbance reporting point, city maintenance, enforcement, and the police. Subsequently, a discussion will be held to interpret the situation at the Noorderplantsoen, followed by a more general discussion focused on creating an environment that balances visitor pressure and adequate liveability.

Results

The data analysis of the survey and the associated notes brought several results. In appendix D the results of the survey, focused on the perceived liveability of the community, can be found. The first question of the survey asked participants if they were living at the residence where the survey was taken. All participants said they were living at the place of the survey. This meant that they all were part of the target group. The second question asked the duration of the years they have been living next to the Noorderplantsoen. The results can be seen in figure 5. Many people have lived at the Noorderplantsoen for a long time. The experiences of living next to the Noorderplantsoen varied between less than a year till sixty years.

In figure 6 the results in regard to the statement "I like living here" can be found. While most respondents said they liked living near the Noorderplantsoen, one respondent was negative in regards to perceived liveability. The perceived liveability of most of the respondents is great, since the largest group of respondents indicated that they totally agree with the statement.

The place of Noorderplantsoen in the community

To see the role of the Noorderplantsoen for the community several statements were given. In figure 7 the answers to the statement "I am often found in the Noorderplantsoen" can be found. While some elderly mentioned they were dependent on others to get outside, no surveyee disagreed with the statement. In figure 8 the answers to the statement "the Noorderplantsoen is important for the community" can be found. The surveyees indicated that the Noorderplantsoen is important to the local community. Only one person would consider the Noorderplantsoen as not important for the community. One person was neutral in considering the Noorderplantsoen as an important factor of the community.

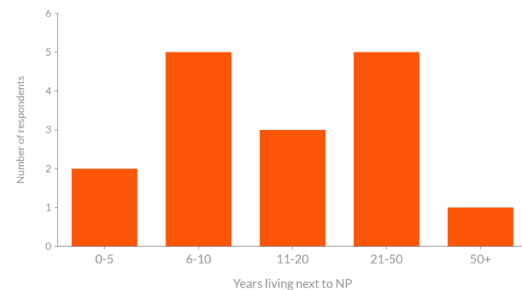


Fig 5. Years living next to the Noorderplantsoen

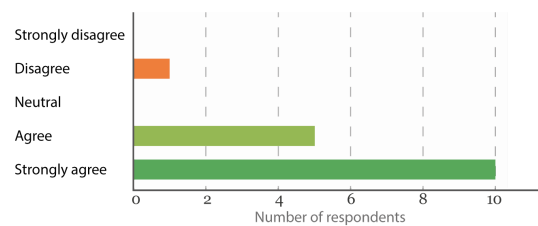


Fig 6. Answers to Q3 (perceived liveability)

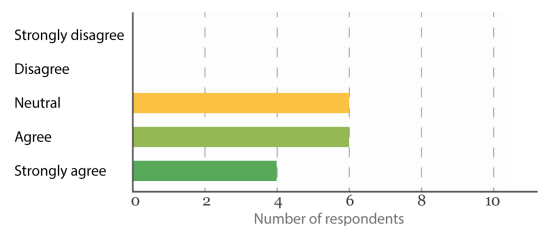


Fig 7. Answers to Q4 (regular in Noorderplantsoen)

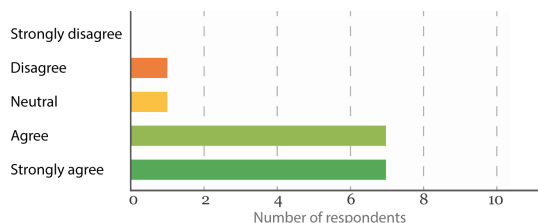


Fig 8. Answers to Q5 (NP important for community)

Whereas the previous 2 statements are more focussed on the advantages of the Noorderplantsoen, the statement of Q6 is focused on the negative aspect, namely the impact of visitor pressure. The answers of the statement "I experience disturbance of the visitors of the Noorderplantsoen" can be found in figure 9. The results are assorted in the different scales. Half of the surveyees chose either the option agree or the option strongly agree. However, there is also a quarter of the surveyees which strongly disagrees with the statement. This makes the results of this question nonuniformly.

Displacement among community

Feedback of the surveyees in regards to the questions of displacement highlighted the fact that the questions were hard to answer. This was stated various times during the surveys. In figure 10 the answers of the statement "the visitors of the Noorderplantsoen alter what kind of activities I do" can be found. The surveyees who strongly disagree are part of the dominant group since this answer was eminently the most frequently given. An example of someone who strongly agrees embodies the concept of activity displacement. The surveyee talked about how the perception of crowding favoured going to the gym over his former activity jogging in the park.

Another form of displacement was investigated by the eighth statement of the survey: "The visitors of the Noorderplantsoen alter the place where I do my activities". The perception of the surveyees can be found in figure 11. The most dominant group strongly disagree they have experienced spatial displacement. Three people strongly agree, with one of them representing a particular case. The surveyee said that they used to walk through the Noorderplantsoen but on warm summer days they found it too crowded and decided to walk through other closeby parts of Groningen.

The last form of displacement was temporal displacement. In figure 12 the answers of the statement "The visitors of the Noorderplantsoen alter the time when I do my activities" are visible. Once again the category of strongly disagree is appointed by most of the surveyees. Another category which stands out is the neutral category, which was chosen by four people.

Carrying capacity and future challenge

The last two statements of the survey were focussed on the current carrying capacity and if they think they need to enlarge this capacity. In figure 13 the answers of the statement "There is a lack of guidance towards the impact of visitors of the Noorderplantsoen on our community" can be

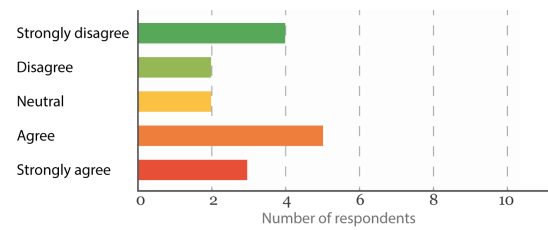


Fig 9. Answers to Q6 (experience disturbance)

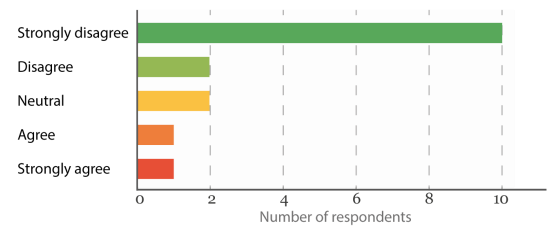


Fig 10. Answers to Q7 (experience activity displacement)

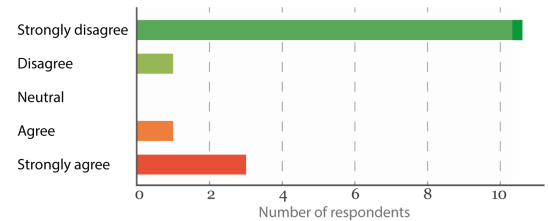


Fig 11. Answers to Q8 (experience spatial displacement)

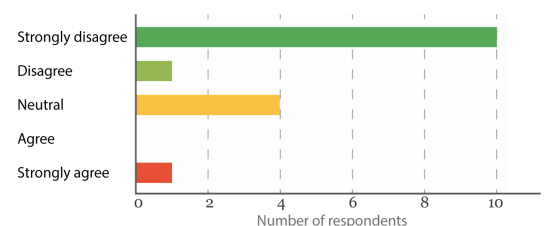


Fig 12. Answers to Q9 (experience temporal displacement)

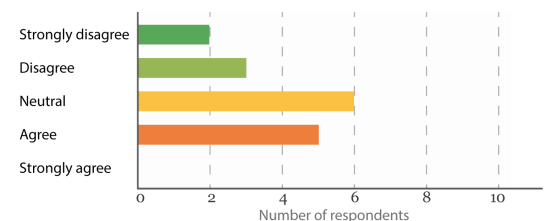


Fig 13. Answers to Q10 (perceived lack of policy)

seen. Neutral was the most popular option in the survey. Comments of people were that it was hard to give an answer since they weren't really familiarised with local policies and measures for visitor pressure. However, since the survey was focused on perception of the local community this question is valuable. The last statement focused on the problematic impacts towards the community if the Noorderplantsoen gets even more crowded. In figure 14 the results can be seen referring to the statement "(more) problems will arise if the Noorderplantsoen gets busier".

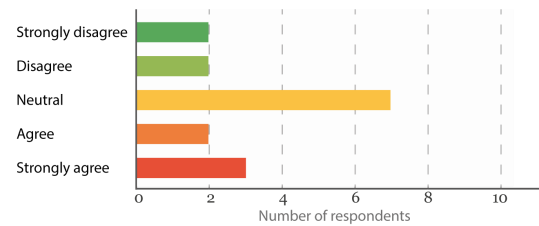


Fig 14. Answers to Q11 (expected problem increase)

Result of the notes

The participants of the survey provided insight into the various aspects of the Noorderplantsoen, both positive and negative. One of the commonly cited positive features was the natural setting of the park, which was considered highly valuable by several respondents. Additionally, the inclusiveness of the park was praised. Surveyees believed it was ethical to provide outdoor spaces to citizens. This was exemplified by statements embracing the idea that students, residing in small, poorly ventilated rooms, need a location where they can seek relief from the heat. The Noorderplantsoen facilitates this desired location. However, this inclusiveness also contributed to several problems. With overcrowding on a level that, according to a surveyee, every inch of the Noorderplantsoen is utilised. Other problems resulting from the inclusiveness of the Noorderplantsoen is the presence of problem groups like intoxicated individuals and drug users, nuisance caused by loud and rowdy behaviour, waste management issues including litter and excrement in the bushes and instances of social misconduct such as harassment of women.

The several problem groups identified by the survey participants which are frequenting the Noorderplantsoen include individuals who were intoxicated (referred to as "drinkebroeren" by one participant), youth who had recently transitioned out of parental control, homeless individuals, and drug users. Although each survey participant was impacted differently by these problematic groups, several common issues were mentioned by multiple respondents. The most frequently cited issue was the presence of these groups during the evening hours, which caused nuisance and sleep deprivation among members of the community. This nuisance was characterised by loud and inebriated individuals, as well as the sounds of blasting music.

The participants held mixed opinions on topics such as information provision and the festivals held in the park. While some residents say they are satisfied with the level of information concerning the crowdedness of the park surrounding festivals, some residents feel that the information provision falls short of reaching a clear point. Similarly, while some viewed the festivals as a positive contribution to the community, others expressed concerns about the park becoming a popular location for such events. As one respondent mentioned that the Noorderplantsoen should not be used as the go-to place for food truck festivals and comparable events. Furthermore, some participants expressed frustration with the lack of effective problem-solving measures taken by the local authorities, citing the ineffectiveness of the no-drinking zone policy as a prime example. This policy only allocates the problem to a different place in the Noorderplantsoen.

Policy analysis

The report of Gemeente Groningen (2022) indicated a growing imbalance between the quality of life and recreation in the Noorderplantsoen area over the past four years. The report provides concrete data on the number of police registrations in the Noorderplantsoen area between July

16th and September 19th, 2021, which totalled 190. Additionally, there were 13 written fines for urination in public, noise nuisance, possession or consumption of alcohol in public spaces. Although measures have been implemented to address these issues, the report indicates that they have fallen short of their intended purpose. These measures include real-time information, enforcement and supervision, intensified park management during peak days, and community participation, as can be seen in Appendix C. Notable measures include a reporting point for disturbances and a community participation project. The project is called the "Happy Plantsoen, Together Doen" (happy park, do it together). The project gathers input from the community and develops strategies to improve the perceived liveability of the area.

Discussion

The Noorderbinnensingel and Werfstraat can be considered a community, as its members share a common identity characterised by shared experiences and values. The survey results indicate that the Noorderplantsoen is considered an integral component of the community, and residents hold a positive view of their neighbourhood's liveability, with some participants expressing their strong attachment to the area by stating they would not trade their homes for gold. However, despite the generally positive view of the community, it also has its drawbacks, as the inclusive nature of the park leads to high levels of visitor pressure. The survey results reflect this, with half of the respondents reporting disturbances from visitors. Additionally, the high levels of visitor pressure contribute to a perception of crowding, which in turn causes small-scale displacement within the park.

However, it is crucial to acknowledge that the impact of visitor pressure on perceived liveability can vary greatly between individuals. This complexity arises from various factors that contribute to perceived liveability. As a result, it becomes challenging to comprehensively analyse the phenomenon. The unequal consequences of visitor pressure among the members of the community can be due to personal circumstances. For example, elderly individuals who have hearing loss can conveniently turn off their hearing aid when nuisance occurs. Furthermore, the unequal consequences can also be a result of factors associated with housing. Bedrooms facing the Noorderplantsoen are more sensitive to noise and a house with poor insulation is more susceptible towards nuisance. Even when all relevant factors are similar among two individuals, the impact towards perceived liveability still differs as people have subjective interpretations of their experiences. This variability can result in certain groups within the community perceiving their livability as subpar, which may prompt them to move out of the area and create a more homogenous population.

Establishing and managing a healthy balance between visitor pressure and liveability is crucial in ensuring the creation of liveable urban spaces that are equipped to handle future challenges. To achieve this balance, it is necessary to continually monitor the perceived liveability through various means. In the Noorderplantsoen Area this is done with measures such as a reporting point, stakeholder participation projects, and performance analysis of policy measures. With the information the carrying capacity of a place can be determined. Currently, measures such as participation projects, campaigns, zoning and intensified maintenance during peak days are deemed insufficient by the surveyees. This is because inadequate management of visitor pressure leads to an imbalance. To prevent this imbalance, it is imperative to establish an appropriate carrying capacity.

For this reason, the process of enhancing community resilience needs to be integrated in the community. This can be achieved through the implementation of the Lindberg et al. (1997) framework for resilience. To give a suggestion how this can be constructed, the framework of resilience is tailored to meet the specific requirements of the community. First the most important factors of liveability are determined. In this case that is visitor pressure and perceived liveability. The indicators of these factors are qualitative and can be gathered from the reporting point and the output of the participation project. It should strive to a set standard, which is a consensus. The consensus made for the Noorderplantsoen is that the balance of visitor pressure against liveability should favour the latter. Continuous monitoring of these indicators is

necessary to generate data. Using this data a strategy can be made in collaboration with relevant stakeholders and authorities to steer towards an enhanced liveability.

Based on Peeters et al. (2018), recommendations can be made for public parks regarding visitor management and increasing carrying capacity. The authors advocate to involve stakeholders, particularly residents, in visitor planning to monitor the 'sentiments' of both visitors, hosts and (other) residents. This approach will prevent uncontrolled visitor development, which may cause significant damage to the liveability of the community. Involving stakeholders will increase support for implementing measures and policies as well as identifying opportunities. Measures which can be, according to Zancher (2018), actively implemented to sustain carrying capacity as a means of maintaining a resilient destination. It is advisable to periodically evaluate these measures to assess their effectiveness. This can be learned from the Noorderplantsoen, where the evaluation revealed that the measures were not producing the desired outcomes. In such cases, it is recommended to conduct a deeper investigation of the concrete effects of these measures and make appropriate adjustments or consider alternative measures, with the ultimate goal of improving livability. In addition to that, further research can be conducted on other public parks facing high levels of visitor pressure to deepen our understanding of the balance between liveability and visitor pressure.

Conclusion

The liveability of communities adjacent to public parks is susceptible to impacts of visitor pressure, due to the inclusive nature of these parks. Nevertheless, the implementation of community resilience can help to enhance the liveability of these communities. In order to maintain an optimal balance between visitor pressure and liveability, the carrying capacity towards visitor pressure must be adequate to prevent damage to community identity and negatively impacted liveability. This was investigated with the research question, "How can the visitor pressure of public parks be managed to mitigate the impact on the liveability of the adjacent communities?". To monitor the balance between liveability and visitor pressure, indicators of liveability were established, including perceived liveability, experienced disturbance, and occurrence of displacement. Upon analysis of these indicators, measures can be implemented or adjusted to manage visitor pressure and establish a healthy balance.

The study employed a case study approach to gain insight into the perceived liveability of communities adjacent to the Noorderplantsoen, with regards to the high levels of visitor pressure that the park experiences. The case study had certain limitations, such as a small sample group with potential bias, difficulties in generalising the findings of the case to public parks in general and the use of qualitative data that reflects unique individual experiences. The study yielded several important findings. Most of the surveyed residents expressed a positive attitude towards living near the Noorderplantsoen, and viewed the park as a valuable asset to the community. However, the study also revealed that visitor pressure can cause various forms of disturbance for the residents, and there were instances of displacement. These findings indicate an imbalance between visitor pressure and liveability in the area. The municipality of Groningen has implemented various measures aimed at reducing visitor pressure and promoting a healthy balance. However, the results of the study suggest that these measures may need to be improved or modified in order to effectively address the challenges posed by high visitor pressure. Further research is necessary to verify the occurrence of displacement and to deepen our understanding of the effects of potential measures.

In conclusion, the research highlights the importance of monitoring and managing policies in providing livable communities near public parks with high visitor pressure. The findings suggest that enhancing community resilience may be an effective tool for managing visitor pressure and promoting a healthy balance between visitor pressure and liveability in communities located near public parks.

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Appendix A

Framework of the survey

	Question/statement	Data type	Aim of question/statement
Q1	Do you live here?	Binary (yes/no)	To see if they are a resident of the community. Stop if answer is no
Q2	How long have you lived here?	Nominal (numeric)	To see if they have experienced visitor pressure during a full year and to see how long they have seen the Noorderplantsoen evolve
Q3	I like living here	Ordinal (Likert scale)	To see the perceived liveability, before potentially influencing the participants by listing (dis)advantages
Q4	I am often to be found in the Noorderplantsoen	Ordinal (Likert scale)	To see if the Noorderplantsoen is a place where they can be found frequently
Q5	The Noorderplantsoen is important to the community	Ordinal (Likert scale)	To see if the Noorderplantsoen is regarded as important aspect of the identity of the community
Q6	I experience disturbance of the visitors of the Noorderplantsoen	Ordinal (Likert scale)	To see if visitor pressure of the Noorderplantsoen is impacting the residents of the community
Q7	The visitors of the Noorderplantsoen alter what kind of activities I do	Ordinal (Likert scale)	To see if activity displacement is happening
Q8	The visitors of the Noorderplantsoen alter the place where I do my activities	Ordinal (Likert scale)	To see if spatial displacement is happening
Q9	The visitors of the Noorderplantsoen alter the time when I do my activities	Ordinal (Likert scale)	To see if temporal displacement is happening

Q10	There is a lack of guidance towards the impact of visitors of the Noorderplantsoen on our community	Ordinal (Likert scale)	To see if they find the carrying capacity is (about to) exceeded
Q11	(more) problems will arise if the Noorderplantsoen gets busier	Ordinal (Likert scale)	To see if they find the need to build more carrying capacity towards visitor pressure

Appendix B

Overview of the format of the survey (made in ArcGIS Survey123)

Gevoel van leefbaarheid door bezoekers Noorderplantsoen

Denk je voor het meedoen aan dit onderzoek. De antwoorden worden gebruikt ten behoeve van het uitvoeren van een scriptieonderzoek. Bij het verder invullen wordt toestemming verleend dat de antwoorden mogen worden gebruikt.

Voor vragen kan je mailen naar d.f.schuur@student.rug.nl

Datum

12/16/2022 06:43 PM

Woonadres

Woon je aan het Noorderplantsoen?*

Ja

Nee

Hoe lang woon je hier al?*

Ik vind het fijn om hier te wonen*

Helemaal niet mee eens Niet mee eens Neutraal Eens Helemaal mee eens

Ik ben vaak in het Noorderplantsoen te vinden*

Helemaal niet mee eens Niet mee eens Neutraal Eens Helemaal mee eens

Het Noorderplantsoen is belangrijk voor de lokale gemeenschap*

Helemaal niet mee eens Niet mee eens Neutraal Eens Helemaal mee eens

Ik ervaar overlast van de bezoekers van het Noorderplantsoen*

Helemaal niet mee eens Niet mee eens Neutraal Eens Helemaal mee eens

Door de bezoekers van het Noorderplantsoen heb ik mijn activiteiten veranderd*

Voorbeeld: eerder liep ik wel eens een wandeling in het Noorderplantsoen nu doe ik dat door de drukte niet meer

Helemaal niet mee eens Niet mee eens Neutraal Eens Helemaal mee eens

Door de bezoekers van het Noorderplantsoen ben ik van plaats veranderd waar ik mijn activiteiten doe*

Helemaal niet mee eens Niet mee eens Neutraal Eens Helemaal mee eens

Door de bezoekers van het Noorderplantsoen ben ik van tijd veranderd wanneer ik mijn activiteiten doe*

Helemaal niet mee eens Niet mee eens Neutraal Eens Helemaal mee eens

Er is een tekort aan beleid tegenover de impact die bezoekers van het Noorderplantsoen veroorzaken in de lokale gemeenschap*

Helemaal niet mee eens Niet mee eens Neutraal Eens Helemaal mee eens

(Meer) problemen zullen plaatsvinden als er nog meer bezoekers naar het Noorderplantsoen komen*

Helemaal niet mee eens Niet mee eens Neutraal Eens Helemaal mee eens

Heeft u nog opmerkingen?
(Optioneel)

Submit

Appendix C

Analysis of measures made with an abbreviation from Peeters et al. (2018) and RLI (2019)

Theme	Measurement category	Example how it can be implemented	In place at the Noorderplantsoen
Accessibility	(Dynamic) caps on access of park	Maximum of visitors	
Marketing	Distributing visitors to other places	Promoting other places	
	Attract high quality visitors	Promotion of the park towards a well behaved group	
	Less/no promotion of the park		
Time distribution	Reduce seasonality	By promoting and new attractions	
	Real time information	Information of crowdedness	Communication with residents about events
Campaign	Awareness campaign	Explain effect of visitor pressure to the visitors	
Enforcement and supervision	Laws and law enforcement directed at visitors	No alcohol permitted	No alcohol after 22.00 whole area, and no alcohol at all at the playground and pond Deployment of boa's (special investigating officers)
	Stop certain development	Zoning systems	Quiet zone after 22.00 and dedicated barbecuing spots
Park management	Increase carrying capacity of the park	Improving management for people, waste, etc.	Addition of facilities of toilets and garbage bins Intensification of maintenance of facilities on warm summer days
	Improved monitoring	Have a place for complains of the community	Reporting point of disturbance (meldpunt overlast)
Compensation	Financial or physical compensation of those affected by visitor pressure	Give a monetary compensation or install better insulation	
Participation	Improve stakeholder involvement		Happy Plantsoen, Together Doen (initiative)

			to gain insight of opinions of stakeholders and to find a common ways to increase liveability)
	Stimulate developments directed at residents	Improve living environment of the community	Collaboration with local residents and entrepreneurs

Appendix D

Results of the survey

ObjectID	Datum	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Heeft u nog opmerkingen?
1	11/25/22 9:33	Ja_	60 jaar	Helemaal mee eens	Neutraal	Helemaal mee eens	Helemaal niet mee eens	Niet mee eens	Niet mee eens	Neutraal	Neutraal	Niet mee eens	
2	11/25/22 9:53	Ja_	43 jaar	Helemaal mee eens	Helemaal mee eens	Eens	Helemaal mee eens	Neutraal	Helemaal mee eens	Neutraal	Neutraal	Helemaal mee eens	drugs, muziek, uitwerpselen,
3	11/25/22 9:59	Ja_	8 jaar	Niet mee eens	Neutraal	Eens	Eens	Helemaal niet mee eens	Helemaal niet mee eens	Neutraal	Eens	Neutraal	veel bezoekers
4	11/25/22 10:11	Ja_	14 jaar	Helemaal mee eens	Neutraal	Eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Niet mee eens	Eens	Eens	
5	11/25/22 10:19	Ja_	sinds september	Helemaal mee eens	Eens	Eens	Niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Niet mee eens	Neutraal	intimidatie naar vrouw
6	11/25/22 10:31	Ja_	5,5 jaar	Eens	Eens	Eens	Neutraal	Neutraal	Helemaal mee eens	Helemaal niet mee eens	Niet mee eens	Neutraal	park soms te vol, afval
7	11/25/22 10:40	Ja_	5,5 jaar	Eens	Eens	Eens	Eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Eens	Niet mee eens	niet meer festivals, piekmomenten zorgen voor overlast
8	11/25/22 10:56	Ja_	26 jaar	Helemaal mee eens	Neutraal	Niet mee eens	Eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Eens	Neutraal	dronken, blowen, niet meer events, iedereen welkom

9	11/25/22 11:06	Ja_	7 jaar	Eens	Eens	Neutraal	Niet mee eens	Niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Neutraal	Neutraal	
10	11/25/22 11:08	Ja_	20 jaar	Eens	Eens	Helemaal mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Neutraal	Helemaal niet mee eens	
11	11/25/22 11:36	Ja_	1 jaar	Helemaal mee eens	Eens	Helemaal mee eens	Eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Neutraal	goed geïnformeerd is fijn
12	11/25/22 11:40	Ja_	35 jaar	Helemaal mee eens	Helemaal mee eens	Helemaal mee eens	Eens	Eens	Helemaal mee eens	Helemaal mee eens	Niet mee eens	Helemaal mee eens	drank, drugs, parkeerruimte
13	11/25/22 11:47	Ja_	16 jaar	Helemaal mee eens	Helemaal mee eens	Eens	Helemaal mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Neutraal	Eens	taks bereikt, goed overleg (wordt alleen te weinig mee gedaan)
14	11/25/22 11:50	Ja_	30 jaar	Helemaal mee eens	Helemaal mee eens	Helemaal mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	
15	11/25/22 11:53	Ja_	31 jaar	Eens	Neutraal	Helemaal mee eens	Helemaal mee eens	Helemaal mee eens	Eens	Neutraal	Eens	Helemaal mee eens	probleemoplossend schiet te kort, zorg voor aanvaardbaar niveau, te vol, balans houden, consistent beleid
16	11/25/22 12:09	Ja_	10 jaar	Helemaal mee eens	Neutraal	Helemaal mee eens	Neutraal	Helemaal niet mee eens	Helemaal niet mee eens	Helemaal niet mee eens	Neutraal	Neutraal	