

Exploring the Elements of Public Spaces and its Effects on the Mental Health of Generation Z

Rianne Elzinga



Bachelor Project Spatial Planning and Design

University of Groningen

Student number: s4347501

Supervisor: Christian Lamker

Date: 16-06-2023

Word count: 5530

Abstract

Many people are concerned about the mental health issues of Generation Z. Their stress levels are increasing due to the effects of the COVID-19 pandemic, performance pressure, climate change and technology. Which eventually leads to the rise of mental illnesses, such as anxiety and depression. Tangible and intangible elements of public spaces have the ability to address these problems. This paper aims to find out which elements are able to contribute to the mental health issues of generation Z and how to improve this situation from a planners' perspective. The research question *'How can planners adapt public spaces to contribute to the mental health of generation Z in the city of Groningen?'* is answered. Self-administered questionnaires and observations, based on nine selected elements, are conducted within the city of Groningen and Berlin. The results from Groningen suggest that there is dissatisfaction with greenery, safety and sustainability and an interest in heritage, leisure, technology and social interaction among generation Z. Ideas from Berlin show that street experiments, with public benches and streetscape greenery, are highly valued by generation Z, but also by other generations. This stimulates an increase in adding and maintaining public benches, streetscape greenery, sustainability experiments and (redeveloped) leisure areas.

Key words: Generation Z; public spaces; mental health; Groningen; Berlin.

Table of contents

Abstract	2
Table of contents	3
List of figures and tables	3
1. Introduction	4
2. Theoretical framework	5
3. Methodology	10
3.1 Data collection methods	10
3.2 Data analysis methods	11
3.3 Ethical considerations	11
4. Results	12
4.1 Opinions about public spaces in Groningen	12
4.2 Observations from Berlin	13
5. Conclusion / Policy recommendations	17
6. References	18
Appendix I	21
Appendix II	26

List of figures and tables

Figure 1: Conceptual model	10
Figure 2: Preferred elements to be changed or added in Groningen	13
Figure 3 & 4: Street experiment in the Bergmannstraße, Kreuzberg	14
Figure 5 & 6: Impressions of different streetscape greenery in Kreuzberg	15
Table 1: Satisfaction with elements of public spaces in Groningen	12

1. Introduction

Many people across the world are concerned about the mental health issues of generation Z. Yearly statistical analyses and news reports have stipulated a rise in mental health concerns among college and university students, which has further accelerated since the start of the COVID-19 pandemic. Other factors, such as performance pressure, climate change, technology and future scenarios, also play a big role in the increase of stress levels among generation Z (Kiers et al., 2023; Garnham, 2022).

People are increasingly living in urban areas, exposing them to many influences, such as cultural and environment perspectives. This influences the design of public spaces and its effects on mental health among generations (Larkin, Jancourt and Hendix, 2018). Each generation has new demands, so planners can adapt, but whatever planners design in public spaces (usually) stays for more than one generation and needs to fulfill multiple generation's needs (Sustanti and Natalia, 2018). Generation Z wants to become more unique, relaxed, healthier, flexible, sustainable and accessible through the use of public spaces (Larkin, Jancourt and Hendix, 2018; Chong, 2022; Zhang et al., 2023).

Existing literature provides directions in which planners should adapt cities according to the needs and characteristics of generation Z, however, these are mainly targeted towards workplaces. This paper aims to find out which elements of public spaces contribute to the mental health issues of generation Z and how to improve this situation from a planners' perspective. The main focus of this paper will be on the city of Groningen. Groningen has a large student population due to the higher accessibility of education compared to other cities in the northern part of the Netherlands. A high number of students in the city of Groningen is known to be struggling with their mental health due to performance pressure and high demands for psychological counseling at the university. The end goal of this paper is to provide various policy recommendations for public spaces to the municipality of Groningen that could be implemented in the short term. The researcher will visit the city of Berlin to find inspirational planning practices and ideas for the implementation of certain elements.

The main research question: *'How can planners adapt the public spaces to contribute to the mental health of generation Z in the city of Groningen?'* will be answered. Additionally, the following sub-questions will also be considered:

- What are tangible and intangible elements of public spaces that contribute to the mental health of generation Z?
- What are elements of public spaces that should be changed or added in the city of Groningen?
- How is Berlin adapting its public spaces in order to contribute to the mental health of generation Z?

Chapter 2 provides a framework of nine tangible and intangible elements of public spaces that will be taken into consideration throughout this research. Chapter 3 and 4 discuss the self-administered questionnaire, based on the introduced elements, that is conducted within the city of Groningen in order to find more about the opinions of generation Z on public spaces. In addition, these chapters will also discuss the observations performed within the city of Berlin. Chapter 5 will present policy recommendations based on the combined results from the cities of Groningen and Berlin.

2. Theoretical framework

Generation Z includes everyone who is approximately born between the years 1995 and 2012, which covers roughly 3.3 million people or $\pm 20\%$ of the population in the Netherlands (Larkin, Jancourt and Hendix, 2018; CBS, 2023). A large part of this generation is currently attending college or university. Generation Z has significant differences in preferences when planning urban environments compared to other generations. They want public spaces to be unique, flexible, relaxing, healthy, sustainable and accessible. Uniqueness is defined as a place that provides unusualness, provocativeness and spectacularity. Flexibility is defined as a place that allows people to perform more than one activity (Sustanti and Natalia, 2018). Combined, these elements provide a public space for relaxation, healthy activities, sustainability and improved accessibility.

Other generations have different preferences when designing public spaces. For example, Millennials prefer to prioritize community experience, meeting new people and experiencing the virtual world and technology through the use of public spaces. Public spaces should be transformed into so-called entertainment hubs, including access to a variety of restaurants and enough parking space for cars (Ram, 2017; Sofronov, 2018). On the other hand, baby boomers prefer age-friendly public spaces, with accessibility for disabled, efficient infrastructure and mobility, social inclusiveness and access to information and communication. Public spaces should become 'barrier-free', so every generation can enjoy themselves (Wright et al.).

This paper will focus on nine different tangible and intangible elements: space for social interaction; cultural hotspots; access to technology; infrastructure and mobility; connection to the city's character; safety; greenery; sustainability; and space for leisure. These topics are selected from a paper by Larkin, Jancourt and Hendix (2018). In which they explore the shifts in urban design and architecture based on the preferences of generation Z. The selected elements are further elaborated by existing literature.

Space for social interaction

Spaces that open for everyone, such as streets, squares, parks and other shared spaces, are spaces where people with various backgrounds and interests can come together and have a conversation, including generation Z (Wiesemann, 2012). Public spaces stimulate contact between different individuals or social groups. Small-scale socializing brings casual contacts among neighbors which enhances trust and tolerance among inhabitants of a city (Jacobs, 1961). Certain elements, such as seating opportunities, accessibility, surroundings, greenery and the popularity of the areas can have an influence on the way people interact with each other. Generation Z differ in their social interactions from other generations due to their large differences between face-to-face interactions and online interactions. These depend on their personality traits, their shyness, and the convenience and topic of the conversation (Billano et al., 2021). Romantic feelings, academic topics and personal issues prefer to be discussed face-to-face, while sex-related matters prefer to be discussed online. However, these opinions differ per person based on their personal preferences in communication (Billano et al., 2021). In addition, they tend to be closer to friends than to family members. Hinting to the desire for independence, security and validation, however, in reality, this is not always the case (Larkin, Jancourt and Hendix, 2018; Sustanti and Natalia, 2018). Social interactions between friends and family members, physical or online, can have a positive or a negative impact on one's well-being.

Cultural hotspots

Cultural hotspots, such as museums, art galleries, restaurants, the Forum building and other cultural facilities, are tangible elements that could be present within a city. For generation Z, these facilities are often strongly linked to social media and technology. Generation Z personally seeks to gain validation and acceptance through the use of social media as they communicate with their online community and maintain personal and professional relationships through multiple platforms (Larkin, Jancourt and Hendix, 2018). This results in more targeted services that create unique products and experiences to suit their individual preferences. Cultural facilities are changing their exhibitions and services to the preferences of generation Z in order to attract and engage with the audience group. Therefore, often taking social media and technology into account when forming their business strategies (Nikiel, 2019). An example of technological advancements in a cultural facility is the digital art exhibition at the L'Atelier des Lumières in Paris where they project Vincent van Gogh's paintings on the inside walls of the building. This exhibition is very popular, especially among generation Z, due to its large exposure to social media platforms (Nikiel, 2019). Another example is the Forum building in the city of Groningen. This building has many cultural facilities and functions, such as international exhibitions, a museum, a cinema, a public library, a Smartlab, a sky lounge bar and restaurants, a roof terrace and many study and relaxation spots. The fascinating interior and facilities makes it an attractive

place for young people to visit and stay throughout the day (Forum, 2023). These examples show that cultural facilities are adapting their ways in order to meet the needs of generation Z. The satisfaction with cultural facilities and the influences of social media can both have a positive and a negative impact on one's well-being.

Access to technology

Unlike any other generations, the childhood of generation Z is characterized by the high accessibility to technological devices. From their perspective, there is barely any boundary between physical and digital experiences; it is simply how their life has always been. Making it difficult to distinguish if technology should be a tangible or an intangible element of public spaces. For generation Z, devices such as televisions, laptops, desktops, tables and smartphones, are means of connecting to the outside world, entertainment, research tools, shopping and payment (Larkin, Jancourt and Hendix, 2018). Public spaces should always be digitally connected according to the expectations of generation Z (Turner, 2015). This could be by open Wi-Fi connections, charging points at public benches or digital screens in shopping streets. To generation Z, being connected to any form of technology gives a feeling of predictability and safety. Which can have a positive or a negative impact on one's well-being.

Infrastructure and mobility

Infrastructure and mobility are important tangible elements to generation Z, mainly to improve the proximity and accessibility of a place or facility (Larkin, Jancourt and Hendix, 2018). Smart mobility, which includes sustainable transport technologies, allows for the possibility to do multiple things at the same time (Wawer, Grzesiuk and Jegorow, 2022). An example of sustainable transport technologies are paving materials. Advanced paving materials, such as Pavegen, can capture energy and transfer it into light, personal devices or buildings, increasing the safety and accessibility of a particular road. Smart mobility allows for better accessibility and flexible time management that can potentially create compact, mixed-used, amenity-rich neighborhoods within cities. Human scale developments, increased connectivity and engagement between multiple facilities and amenities have the potential to increase proximity and accessibility, which is preferred by generation Z (Larkin, Jancourt and Hendix, 2018). Thus having a positive or a negative impact on their well-being.

Connection to the city's character

The interest in redevelopment projects among generation Z have been growing in recent years due to vacant industrial sites and environmental concerns. This creates an opportunity for cities with a historical and industrial character, such as Groningen and Berlin, to use a sustainable approach in restoring buildings and areas into meaningful and flexible spaces (Sujood et al.,

2023). According to generation Z, these areas should be fun, enjoyable, pleasant and favorable (Sujood et al., 2023). Therefore, the use of certain facilities, such as local restaurants with good coffee and local beer or recreational options with sport events, parks, zoos and plenty of space to socialize, can help increase the popularity of a certain spot. Heritage can be tangible, such as buildings, or intangible, but still present in an area, such as place names and history. Restoration of heritage could result in greater economic opportunities and ethnic diversity within a city (Larkin, Jancourt and Hendix, 2018). Qualities such as these are valued by generation Z and thus have a positive or a negative impact on one's mental well-being and connection to the city.

Safety

Safety is an intangible element that influences the amount of physical activities in public spaces (Ghani, Mansor and Zakariya). Neighborhoods become safer when there are more 'eyes on the street' (Jacobs, 1961). These are residents, shopkeepers and passersby that are naturally drawn to life on the streets, and who, in their turn, monitor the streets. Urban neighborhoods with barely to no 'eyes on the street' are avoided as they are perceived as less safe. The level of safety in public spaces gives a level of physical comfort. Generation Z often adapts their behaviors according to the level of safety, which has been influenced by the COVID-19 pandemic (Rončák, Scholz and Linderová, 2021). When the safety of a public space is higher, the level of physical comfort also increases, but it can also go the other way around. Thus having a positive or a negative impact on one's well-being.

Greenery

Greenery can influence public spaces and the mental health of generation Z in many ways. The presence of greenery is a tangible element in public spaces and could be present in and around public spaces and buildings. Generation Z sees an urgent need for better access to nature and green spaces for their daily health recovery and space for social interactions (Larkin, Jancourt and Hendix, 2018; Nieżurawska, 2023; Zhang et al., 2023). It can also play a significant role in the stimulation of active travel. Street greenery provides shading and good landscaping which creates a pleasant environment for walking and cycling. Further stimulating relaxation and social interactions among generation Z. Greenery helps to improve the aesthetic value of cities and improve the quality of life (Bai et al., 2022). Thus having a positive or a negative impact on one's well-being.

Sustainability

Generation Z has been stressed with the concerns of climate change and the need for sustainable solutions since childhood (Bridges). The topic is one of the contributors to rising stress levels among generation Z according to Garnham (2022). This highlights the importance of

sustainability and the pressure to create a climate proof future to generation Z. Many are aware of the risks and are willing to participate in sustainable initiatives (Wawer, Grzesiuk and Jegorow, 2022; Bridges). Examples of tangible sustainable initiatives are local climate resilient solutions, such as streetscape greenery, facade gardens and a water square. An example of an intangible sustainable initiative is awareness raising. As the topic is known to influence stress levels, it can have a positive or a negative impact on one's well-being.

Space for leisure

In order to support the desires of generation Z to become healthier, they need access to outdoor spaces with leisure opportunities, such as sport facilities and sport fields. Leisure activities can contribute to forming self-perceptions, forming an identity, stimulating interactions with others, increase one's health and help decrease problem behavior. These activities should be voluntarily and be carried out comfortably without being constrained. Several factors need to be taken into account when designing leisure space for generation Z. Public spaces should be socially attractive, such as benches and seating areas to meet and hang out with friends and family, and physically attractive, such as attractiveness, aesthetics, clean, comfortable and peaceful (Ghani, Mansor and Zakariya; Larkin, Jancourt and Hendix, 2018). Space for leisure can have an influence on the use and amount of physical activities taking place in public spaces. Thus having a positive or a negative impact on one's well-being.

These elements make up a large part of the daily life and usage of public spaces by generation Z. Therefore, making these elements interesting to further research them. The data collection performed in the cities of Groningen and Berlin will be based on these nine elements. It can be expected that this research will identify specific elements of public spaces that are preferred by generation Z due to their positive and negative affection with the elements and their needs. Elements that have lower satisfaction levels may need to become more prominent in public spaces than elements that have higher satisfaction levels. This creates the possibility to find ways to adapt public spaces according to the mental well-being needs of generation Z within the city of Groningen.

As the capital city of Germany and one of the biggest and influential cities in Europe, Berlin is expected to be up-to-date with current trends surrounding public spaces and generation Z. This provides opportunities to gain inspirations and ideas for planners on how a city could adapt its public spaces according to their needs. Both perceptions of Groningen and Berlin will be combined and create a perspective for planners on how to adapt the public spaces within the city of Groningen. This relationship is shown in the conceptual framework of this paper (figure 1).

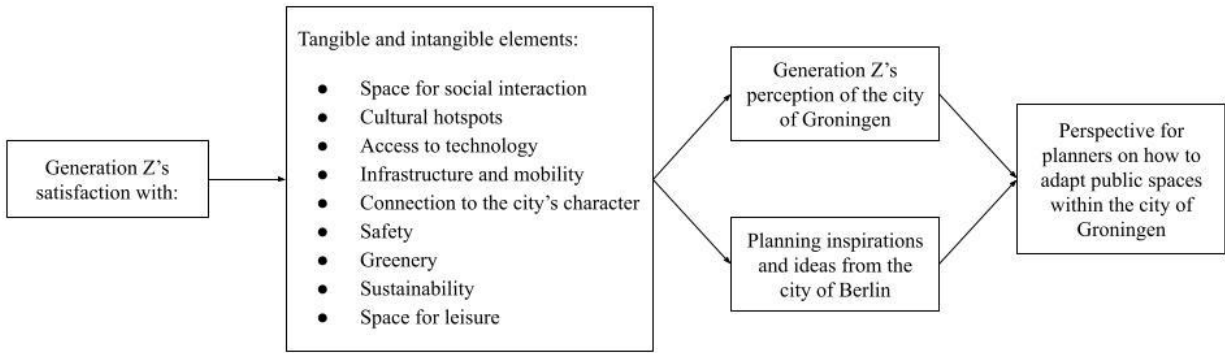


Figure 1: Conceptual model. Source: Author

3. Methodology

This section discusses the data collection and data analysis methods in order to answer the main research question and sub-questions of this paper. Data is collected by using secondary and primary data collection methods within the cities of Groningen and Berlin. The final data results will be analyzed by merging the data gathered from the two cities.

3.1 Data collection methods

Three different data collection methods were used in order to answer the main research question of this paper. Firstly, a desk research was conducted in order to collect background information about the topics and to prepare for the following data collection methods. The secondary data was collected by using the platforms such as Google Scholar, Smartcat and Scopus.

Secondly, a self-administered questionnaire was conducted in order to gain an insight on people's opinions about the current public spaces and what elements should be changed or added within the city of Groningen according to generation Z. This information could not be obtained through secondary sources and is therefore gained by using a primary data collection method. The selected respondents must read each question themselves and answer the questions themselves, with minimal interference from the researcher. The method provides convenience to the researcher as the questionnaires are easier to distribute and the results are quicker to administer. In addition, the method provides convenience to the respondents as they can complete it at the speed that they want to go. However, misunderstandings could be formed by the respondent due to not fully understanding the questions or lack of knowledge about the topics (Bryman, 2016). Therefore, the respondents had the opportunity to ask questions to the researcher when filling in the questions.

The self-administered questionnaire included a total of thirteen structured questions in which the target population would be asked to fill in two exclusion questions, ten likert-scale questions

about their satisfaction with the introduced elements, a multiple choice question with preferred elements and one open question with additional comments or suggestions, see Appendix I. The data is collected by convenience sampling due to the inability to measure the whole target population within the given time span.

Lastly, observations were collected within the city of Berlin in order to obtain inspirations on how Berlin is adapting its public spaces according to the needs of generation Z. The results are used to provide inspirational planning practices and ideas that could be applied within the city of Groningen. During the observations, the researcher took the role of a ‘complete participant’, in which the researcher takes an insider role in the group being studied, in order to gain more accurate observations of the activities taking place (Cohen, Manion and Morrison, 2000). The observations are documented according to the element, the activities/acts/events taking place around the element and the attached feelings of the researcher. The observations are noted in a written diary of field experiences by the researcher, in which field notes are written in the same week as the field trip (Cohen, Manion and Morrison, 2000). An observation list was created in order to analyze the results of the observations, see Appendix II.

3.2 Data analysis methods

The gathered data from the self-administered questionnaires will be analyzed by comparing the mean and standard deviation for each element. The results of the likert scale questions indicate the positioning of the elements. The likert scale ranges from 1 to 5, suggesting that a result below 3 indicates that the respondents are likely to be unsatisfied with the element in question and that a result above 3 indicates that the respondents are likely to be satisfied with the element in question. Secondly, the respondents would be asked to fill in which element(s) they would like to see more in public spaces. The questionnaire ended with an open question, in which the respondents would be asked if they had any additional comments or suggestions on how to improve public spaces. The results of the self-administrated questionnaire indicate the satisfaction with the current elements in public spaces in the city of Groningen and suggest how planners could improve this situation.

The analyzed observations, made within the city of Berlin, serve as an extension on the needs of generation Z in the city of Groningen. The combined results intend to generate a policy recommendation with inspirational planning practices and ideas on how to adapt the public spaces within the city of Groningen in order to contribute to the mental health of generation Z.

3.3 Ethical considerations

Ethical considerations were taken into account when conducting the self-administered questionnaires. Participating was fully voluntary and participants had the right to withdraw any

moment during the survey. In addition, no names or personal information was asked during the questionnaire. Therefore, the data was collected in an anonymous way and the anonymity of all participants will be protected at any stage of the research process. The gathered data is stored on the University's network that only the researcher has access to and will be deleted two months after graduation.

4. Results

4.1 Opinions about public spaces in Groningen

The self-administered questionnaire had a total of 23 respondents, however, only 22 respondents were qualified based on age and location of residence. Table 1 shows the questionnaire results based on the likert-scale questions. The mean results suggest that space for leisure significantly scores the highest and sustainability significantly scores the lowest in terms of satisfaction. Both elements have a low standard deviation, suggesting that most respondents agreed on the average scores. The elements infrastructure and mobility and safety both have a relatively high standard deviation, suggesting that the respondents had significant differences in their opinions. Making it challenging to analyze the satisfaction of these elements and the need for adaptations.

Element	Mean	Standard deviation
Space for social interaction	3.86	0.94
Cultural hotspots	3.95	0.84
Access to technology	3.64	0.73
Infrastructure and mobility	3.41	1.05
Connection to the city's character	3.41	0.67
Safety	3.59	1.10
Greenery	3.36	0.85
Sustainability	3.05	0.72
Space for leisure	4.09	0.61

N = 22 (95.7%)

Table 1: Satisfaction with elements of public spaces in Groningen. Source: Author

Figure 2 shows the results with elements that could be added to public spaces within the city of Groningen. Streetscape greenery, local climate resistant solutions and a watersquare both score relatively high, which might be expected due to the relatively low score of greenery and

sustainability in table 1. In addition, the maintenance of heritage scores are relatively high as well, suggesting that there might not always be a relation between dissatisfaction and preferred elements.

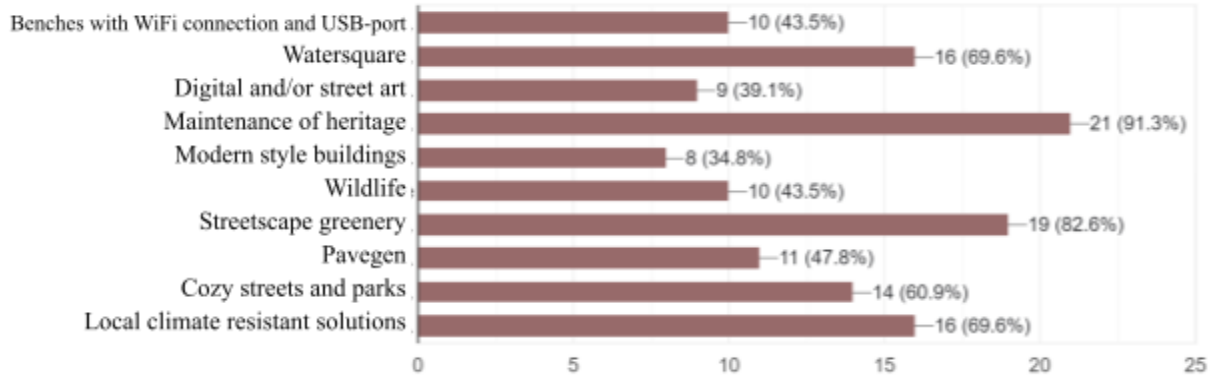


Figure 2: Preferred elements to be changed or added in Groningen. Source: Author

Additional comments indicate that there is a demand for extra public benches, increased safety at night, better accessibility for disabled and allowing more dogs into parks and green areas. These comments suggest that generation Z's needs and preferences are similar to previous generations, such as Millennials and baby boomers. Based on these results, it can be concluded that planners should focus on implementing new elements, such as greenery, sustainable solutions and maintaining old heritage sites, in addition to the current planning practices in the city of Groningen. If accomplished, they will meet the needs of generation Z, as well as of other generations.

4.2 Observations from Berlin

As the capital city of Germany and one of the biggest and most influential cities in Europe, Berlin is expected to be up-to-date with current trends surrounding public spaces and generations. Observations were recorded according to the observation list in Appendix II. The observations will be explained per element, in which the activities/acts/events and attached feelings of the researcher are analyzed.

Space for social interaction

Social interaction is an important aspect of the daily lives of people in Berlin, including generation Z. People value spaces because of their ability for relaxation or having interactions, drinks or food with friends, family and colleagues. Berlin is doing several street experiments and redevelopment projects in order to create more space that allows for social interaction. An example of a street experiment is the Bergmannstraße in the neighborhood of Kreuzberg, see figure 3. This experiment has various public benches and is partially closed off for cars. Well

maintenance and greenery makes this area attractive to many people from different ages. Some parts of the experiment are less well maintained, containing litter and less greenery, making them less attractive and unsafe to use, see figure 4. The observations conclude that seating, greenery and safety are important elements for social interactions.



Figure 3 & 4: Street experiment in the Bergmannstraße, Kreuzberg. Source: External Works Index (2019) & Author

Cultural hotspots

The cultural hotspots are mainly used by tourists and can mostly be seen as tourist attractions. The tourists include people from various ages and backgrounds. The landmarks, such as the Reichstagsgebäude, Brandenburger Tor, East Side Gallery and the TV-tower, are heavily influenced by social media. When more people post about an artwork or landmark on a particular spot, it will be more popular than other pieces of artwork or landmark at a similar spot.

Access to technology

Technology is not very visible in public spaces, apart from the various digital screens in shopping streets. Therefore, it has probably yet to take off or has yet to further develop within the city.

Infrastructure and mobility

The city is well connected through various forms of public transport and it is widely used by many people from different backgrounds. Biking is getting more popular by many generations, including generation Z. However, there are still safety concerns and poorly maintained bike lanes throughout the city. The city government is trying to improve this situation by implementing the street experiments, such as the Bergmannstraße, in which bikes are separated from the cars by the use of public benches or by closing the street off for cars.

Connection to the city's character

Heritage is important for the people in Berlin. This is visible in the many citizen initiatives and referendums that have taken place to preserve historical sites, museums and important landmarks that remember the history of the city.

Safety

Various people were asked about their safety perceptions on the streets throughout the week. People felt safer during daytime as there were many people on the street. Highlighting that the 'eyes on the street' concept of Jane Jacobs is still relevant in today's urban environment. Not well lit areas in the city were avoided at night due to their unsafe feeling.

Greenery

Many green areas and parks are well maintained and highly used during nice weather conditions, both by locals and tourists. Some parks had multiple facilities, such as sport facilities or dedicated areas for barbecuing, making the park attractive for different types of people. Most of these facilities were used by young or middle aged people.

Many neighborhoods had street trees, some even having small gardens around them. Some were well maintained and others were less well maintained/deteriorated, see figure 5 and 6. The streetscape greenery has an influence on the outsider's perception of the street, making it inviting or not.



Figure 5 & 6: Impressions of different streetscape greenery in Kreuzberg. Source: Author

Sustainability

The city of Berlin is trying to have more sustainable initiatives throughout the city. An example of this is urban farming. However, these initiatives are located in unfortunate areas. They are not well maintained, not attractive, not functioning, and sometimes even misused.

Space for leisure

Parks, green areas and redeveloped areas include various types of sport and leisure facilities. During nice weather, these areas are highly used and valued by people from different ages. Making these areas very attractive.

As the capital city of Germany and one of the biggest and most influential cities of Europe, Berlin has the opportunity to develop and experiment with new planning practices and ideas. A great example is the street experiment in the Bergmannstraße, in which the public benches increase the space for social interaction and relaxation, streetscape greenery and safety in the streets. It can be concluded from these experiments that space for social interaction, greenery and safety have an impact on the attractiveness and usage of a public space. Making these elements important to take into consideration when designing new or redeveloping public spaces. Maintenance of the elements also plays an important factor in this. In addition, public spaces are designed for all generations and not specifically for generation Z. Making them useful for everyone residing within the city of Berlin.

5. Conclusion / Policy recommendations

This paper aims to find out which elements of public spaces can contribute to the mental health issues of generation Z and how to improve the current situation from a planners' perspective. Generation Z's stress levels are increasing due to the effects of the COVID-19 pandemic, performance pressure, climate change and technology, which leads to a rise in mental health issues, such as depression and anxiety. A selection of nine tangible and intangible elements in public spaces is presented that have the potential to improve this situation in the city of Groningen.

Data is collected through the self-administered questionnaires and observations in the cities of Groningen and Berlin. The results collected in Groningen indicate that there is a demand for the increase in public benches, streetscape greenery, sustainable solutions, (redeveloped) leisure areas and maintenance of heritage. Planning practices from Berlin encourage the implementation of street experiments to increase the space for social interactions, streetscape greenery and safety on the streets. It can be concluded that policy recommendations for the municipality of Groningen include the implementation of a watersquare, street experiments, local climate resilient solutions and streetscape greenery, and seating areas at streets, squares and parks according to generation Z. In addition, there should be a focus on the translation of technological advances and connection to the city's character into public spaces. Maintenance plays an important factor in the success of the implementation.

The results add a new view on existing literature on preferences of generations for designing public spaces. According to literature, it is expected that each generation has its own specific needs and preferences that are eventually combined together in public spaces. However, the results show that certain preferences of generation Z are similar to other generations as well. For example, generation Z suggested better accessibility for disabled across the city, which is similar to the preferences of baby boomers. In addition, older concepts, such as 'eyes on the street' by Jacobs, are still relevant in today's urban environment. It can therefore be concluded that public spaces should be designed for every generation, including inputs of newer generations.

Further research could be performed on the quality and usage of the elements in order to maintain and improve the proposed situation. Aiming to further contribute and increase the relevance of existing planning practices concerning the mental health of generation Z.

6. References

Bai, Y., Cao, M., Wang, R., Liu, Y. and Wang, S. (2022). How street greenery facilitates active travel for university students. *Journal of Transport & Health*, 26, p.101393.

doi:<https://doi.org/10.1016/j.jth.2022.101393>.

Billano, G., Cogollo, J.J., Dela Cruz, E.M., Manahan, M.L., Romualdo, S.N., Rizaldo, T.J., Abusama, S.H. and Onia, S.M. (2021). Preference of Generation Z Towards Social Interaction. *Indonesian Journal of Community and Special Needs Education* , 1(1), pp.41–46.

doi:<http://dx.doi.org/10.17509/xxxxt.vxix>.

Bridges, T. (n.d.). *5 Ways the Workplace Needs to Change to Get the Most Out Of Generation Z*.

[online] Available at: <https://professionals.wrha.mb.ca/old/education/files/5Ways.pdf>.

Bryman, A. (2016). *Social research methods*. Fifth edn. Oxford: Oxford University Press.

Chong, J. (2022). Public Spaces, Health and Well-being. [online] Available at:

<https://www.uia-architectes.org/wp-content/uploads/2022/04/UIA-HealthyCities-Jose-Chong.pdf>

Cohen, L., Manion, L. and Morrison, K. (2000). *Research methods in education*. 5th edn.

London: Routledge.

External Works Index (2019). *Modular PARKLETS transform city parking spaces in Berlin*.

[online] Available at: [https://www.externalworksindex.co.uk/entry/148199/Vestre-Ltd/](https://www.externalworksindex.co.uk/entry/148199/Vestre-Ltd/Modular-PARKLETS-transform-city-parking-spaces-in-Berlin/)

[Modular-PARKLETS-transform-city-parking-spaces-in-Berlin/](https://www.externalworksindex.co.uk/entry/148199/Vestre-Ltd/Modular-PARKLETS-transform-city-parking-spaces-in-Berlin/).

Forum (2023). *Our story*. [online] Available at: <https://forum.nl/en/our-story>.

Garnham, C. (2022). *The Gen Z Mental Health wave - what is causing the surge?* [online]

HealthMatch. Available at:

<https://healthmatch.io/blog/the-gen-z-mental-health-wave-what-is-causing-the-surge>

Ghani, N., Mansor, M. and Zakariya, K. (n.d.). *Patterns of Gen Zs' Leisure Time Behavior and*

Their Needs towards Urban Recreational Park: A Review. Available at:

http://www.ipsas.upm.edu.my/dokumen/IISS_021_kidin.pdf.

Jacobs, J. (1961). *The death and life of great American cities*. New York: Random House.

Kiers, A.H., Nishimura, K.M. and Dewa, C.S. (2023). Leveraging Campus Landscapes for

Public Health: A Pilot Study to Understand the Psychological Effects of Urban Sheep Grazing on

College Campuses. *International Journal of Environmental Research and Public Health*, [online] 20(2), p.1280. Available at: <https://www.mdpi.com/1660-4601/20/2/1280>.

Larkin, C., Jancourt, M. and Hendrix, W. (2018). The Generation Z world: Shifts in urban design, architecture and the corporate workplace. *Corporate Real Estate Journal*, [online] 7(3), pp.230–242. Available at: <https://www.hga.com/wp-content/uploads/2018/05/The-Generation-Z-World.pdf>.

Niezurawska, J. (2023). Motivation of Generation Z. In: *Managing Generation Z*. [online] New York: Routledge, pp.x–125. Available at: <https://library.oapen.org/bitstream/handle/20.500.12657/61148/9781000867824.pdf?sequence=1#page=22>.

Nikiel, S. (2019). New business models for Cultural and Creative Institutions. *Management*, 23(2), pp.124–137. doi:<https://doi.org/10.2478/manment-2019-0022>.

Ram, S. (2017). *Meeting millenials where they shop: Shaping the future of shopping malls*. [online] Available at: <https://www.inovaconsulting.com.br/wp-content/uploads/2017/03/Meeting-millennials-where-they-shop-Shaping-the-future-of-shopping-malls.pdf>.

Rončák, M., Scholz, P. and Linderová, I. (2021). Safety Concerns and Travel Behavior of Generation Z: Case Study from the Czech Republic. *Sustainability*, 13(23), p.13439. doi:<https://doi.org/10.3390/su132313439>.

Sofronov, B. (2018). “Millennials: A New Trend for the Tourism Industry.” *Annals of Spiru Haret University. Economic Series*, 18(3), 109-122, doi: <https://doi.org/10.26458/1838>

Sujood, Siddiqui, S., Bano, N. and Al Rousan, R. (2023). Understanding intention of Gen Z Indians to visit heritage sites by applying extended theory of planned behaviour: a sustainable approach. *Journal of Cultural Heritage Management and Sustainable Development*. doi:<https://doi.org/10.1108/jchmsd-03-2022-0039>.

Sustanti, A. and Natalia, T.W. (2018). Public space strategic planning based on Z generation preferences. *IOP Conference Series: Materials Science and Engineering*, 207(012076). doi:<https://doi.org/10.1088/1757-899X/407/1/01207>.

Turner, A. (2015). “Generation Z: Technology and Social Interest,” *The Journal of Individual Psychology*, 71(2), pp. 103–113.

Wawer, M., Grzesiuk, K. and Jegorow, D. (2022). Smart Mobility in a Smart City in the Context of Generation Z Sustainability, Use of ICT, and Participation. *Energies*, 15(13), p.4651. doi:<https://doi.org/10.3390/en15134651>.

Wiesemann, L. (2012). Public spaces, social interaction and the negotiation of differences. [online] Available at: https://pure.mpg.de/rest/items/item_1496010/component/file_1496009/content.

Wright, D.L., Buys, L., Vine, D., Xia, B., Skitmore, M., Drogemuller, R., Kennedy, R. and Li, M. (n.d.). *EUTOPIA 75+: Exploratory Futures Scenarios for Baby Boomers' Preferred Living Spaces*. [online] Available at: https://eprints.qut.edu.au/79809/32/79810_Redacted.pdf.

Zhang, P., He, Q., Chen, Z., Li, X. and Ma, J. (2023). An Empirical Study on the Promotion of Students' Physiological and Psychological Recovery in Green Space on Campuses in the Post-Epidemic Era. *International Journal of Environmental Research and Public Health*, 20(1). doi: <https://doi.org/10.3390/ijerph20010151>.

Appendix I

Survey Publieke Ruimtes in Groningen / *Public Spaces in Groningen*

Hi!

Super leuk dat je wilt deelnemen aan deze survey! Bekijk de onderstaande informatie goed voordat je begint. Dit onderzoek wordt uitgevoerd door een derdejaars Spatial Planning and Design student aan de Rijksuniversiteit Groningen. Het invullen duurt ongeveer 5 minuten.

Deze survey onderzoekt de effecten van openbare ruimtes op de mentale gezondheid van generatie Z in Groningen. Generatie Z is geboren tussen 1995 en 2012 en veel van de huidige studenten in Groningen vallen onder deze generatie. Het doel van dit onderzoek is om meer inzicht te krijgen in de tevredenheid van generatie Z over aanwezige elementen in openbare ruimtes en hoe planologen een bijdrage kunnen leveren aan deze omgeving. Uw mening is hierbij belangrijk.

Deelname aan deze survey is vrijwillig. Deelnemers hebben het recht om zich op elk moment terug te trekken tijdens hun deelname.

Gegevens worden op een anonieme wijze verzameld en de anonimiteit van de deelnemers wordt in elk stadium van het onderzoek beschermd. De gegevens worden opgeslagen op het beveiligde netwerk van de Rijksuniversiteit Groningen waartoe alleen desbetreffende student toegang tot heeft. De gegevens zullen twee maanden na de diploma-uitreiking worden verwijderd.

Laat me weten wanneer er vragen zijn. Bij voorbaat dank voor uw deelname aan dit onderzoek!

Hi there!

Thank you for participating in this survey! Please take a close look at the information below before starting. This survey is conducted by a third year Spatial Planning and Design student from the University of Groningen. Filling in the survey takes about 5 minutes.

This survey aims to study the effects of public spaces on the health of generation Z in the city of Groningen. Generation Z includes everyone who is born between the years 1995 and 2012 and includes many of the current students' generation in the city of Groningen. The research aims to understand the satisfaction of generation Z on elements of public spaces in the city of Groningen and how planners can help change the environment. Your opinion is valuable to me.

Participating in this survey is voluntary. Participants have the right to withdraw any moment during the survey.

Data will be collected in an anonymous way and anonymity of all participants will be protected at any stage of the research. The data will be stored on the University's secure network that only the student can access. Your data will be removed two months after graduation.

Please notify me when any question arises. Thank you for participating in this survey in advance!

1. Ben je geboren tussen 1995 en 2012? / Are you born between the years 1995 and 2012?

Ja / Yes

Nee / No

2. Ben je op dit moment woonachtig in Groningen? / Do you currently live in the city of Groningen?

Ja / Yes

Nee / No

3. Hoe tevreden ben je met de mogelijkheden en de ruimte voor sociale interactie in Groningen? / How satisfied are you with the provided possibilities and space for social interaction within the city of Groningen?

Erg ontevreden / Very unsatisfied 1 2 3 4 5 Erg tevreden / Very satisfied

4. Hoe tevreden ben je met de hoeveelheid culturele hotspots in Groningen? Denk bijvoorbeeld aan het Forum gebouw, restaurants en kunst / How satisfied are you with the amount of cultural hotspots in the city of Groningen? Think of the Forum building, restaurants and art

Erg ontevreden / Very unsatisfied 1 2 3 4 5 Erg tevreden / Very satisfied

5. Hoe tevreden ben je met het aanbod van technologische ondersteuning in de openbare ruimtes van Groningen? Denk bijvoorbeeld aan openbare WiFi, oplaadpunten en digitale schermen / How satisfied are you with the range of technological support present in public spaces within the city of Groningen? Think of open WiFi connections, charging points and digital screens

Erg ontevreden / Very unsatisfied 1 2 3 4 5 Erg tevreden / Very satisfied

6. Hoe tevreden ben je met de huidige infrastructuur en mobiliteitsmogelijkheden in Groningen? / How satisfied are you with the current infrastructure and mobility opportunities in the city of Groningen?

Erg ontevreden / Very unsatisfied 1 2 3 4 5 Erg tevreden / Very satisfied

7. Hoe tevreden ben je met de zichtbaarheid van het karakter van Groningen in openbare ruimtes? / How satisfied are you about the visibility of the city's character in public spaces?

Erg ontevreden / Very unsatisfied 1 2 3 4 5 Erg tevreden / Very satisfied

8. Hoe tevreden ben je met de veiligheid op straat in Groningen? / *How satisfied are you about the safety on streets in the city of Groningen?*

Erg ontevreden / Very unsatisfied 1 2 3 4 5 Erg tevreden / Very satisfied

9. Hoe tevreden ben je met de initiatieven van de gemeente en de uitwerking ervan voor de verduurzaming van Groningen? Denk bijvoorbeeld aan de thema's klimaatadaptatie en energietransitie / *How satisfied are you with the initiatives of the municipality and the resulting outcomes to make the city of Groningen more sustainable? Think of topics like climate adaptivity and the energy transition*

Erg ontevreden / Very unsatisfied 1 2 3 4 5 Erg tevreden / Very satisfied

10. Hoe tevreden ben je met de hoeveelheid groen in straten en openbare ruimtes in Groningen? / *How satisfied are you with the amount of greenery in streets and public spaces in the city of Groningen?*

Erg ontevreden / Very unsatisfied 1 2 3 4 5 Erg tevreden / Very satisfied

11. Hoe tevreden ben je met de hoeveelheid ruimte voor recreatie en/of sporten in Groningen? / *How satisfied are the available spaces for leisure and/or to play sports in the city of Groningen?*

Erg ontevreden / Very unsatisfied 1 2 3 4 5 Erg tevreden / Very satisfied

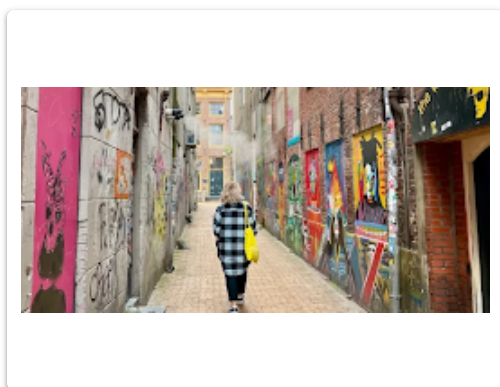
12. Geef aan welke elementen je graag meer zou willen zien in Groningen. Je kunt meerdere antwoorden aanvinken. / Please indicate which elements you would like to see more in the city of Groningen. You can select multiple answers.



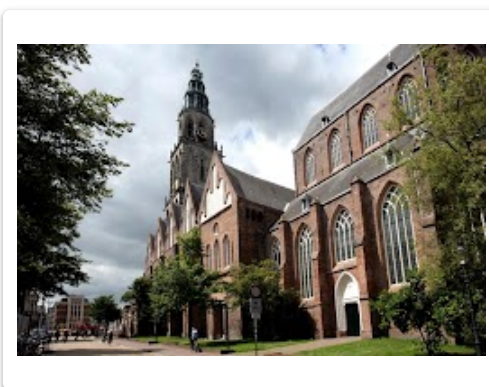
Bankjes met WiFi connectie en USB-poort / Benches with WiFi connection and USB-port



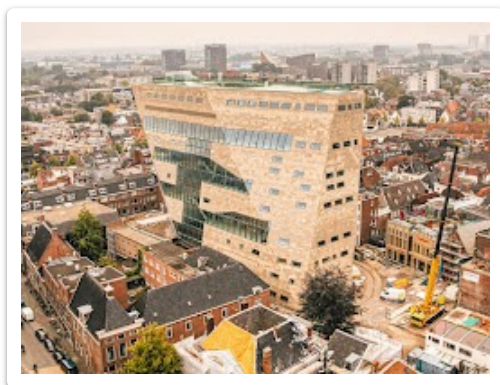
Waterplein: biedt de mogelijkheid om te sporten en water op te vangen tijdens heftige regenbuien / Watersquare: offers people to play sports when dry and can collect rainwater during heavy storms



Digitale en/of straat kunst / Digital and/or street art



Behoud van erfgoed / Maintenance of heritage



Moderne gebouwen (bijvoorbeeld het Forum gebouw) / Modern style buildings (for example the Forum building)



Parkdieren / Wildlife



Een groener straatbeeld: meerdere soorten planten die ervoor zorgen dat een straat er groener uitziet / Streetscape greenery: all kinds of vegetation that give the street a green appearance



Pavegen: een stoep die energie van voetstappen omzet in licht / Pavegen: pavements or sidewalks that convert energy from people's footsteps into light



Gezellige straatjes en parken met cafes en zitplaatsen / Cozy streets and parks with cafes and nice seating areas



Lokale klimaatbestendige oplossingen / Local climate resistant solutions

13. Heb je nog suggesties aan planogen om dingen toe te voegen of te veranderen in openbare ruimtes in Groningen? / Do you have any other suggestion(s) that planners can add or change to public spaces in the city of Groningen?

Appendix II

Space:

Time period:

Actors:

Element	Activities/acts/events	Attached feeling
Space for social interaction		
Cultural hotspots		
Access to technology		
Infrastructure and mobility		
Connection to the city's character		
Safety		
Greenery		
Sustainability		
Space for leisure		