

Towards more healthy cities: Analysing the relationships between well-being, COVID-19 pandemic, and public spaces.



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1. Introduction

1.1 Background

Public spaces are Access to public spaces is directly correlated with the quality of life, human relations, and spontaneous interactions. As Szczepańska and Pietrzycka stated, people are highly socially active, and they are frequent users of public spaces (2021). That is why public spaces play a fundamental role in catering to the citizens' basic needs such as socialisation or a need to exercise. In the future, public spaces will have to adapt to more and more challenges, also influenced by the current world health crisis as well as climate change. Therefore, the coronavirus pandemic is one of these challenges which had major negative impacts on people's psychological and physical health, partly caused by the restriction of outside interactions (Askarizad & He, 2022).

After almost two years of the COVID-19 pandemic, there is no doubt that the mental well-being of society has irreversibly changed. In various parts of the world, lockdown measures brought negative externalities to mental well-being due to the harsh isolation approaches. While the hard period of isolation due to general restrictions due to the coronavirus pandemic, we could have seen a tendency of people to linger in public spaces, parks, and other socially important spots such as plazas or squares (Zandieh et al., 2020).

According to Sepe (2021), the COVID-19 pandemic should be seen as an ideal moment to redesign our environment to be more inclusive for all, healthy, and vibrant. This reflection can lead to a healthier usage of public spaces, with more benefits and positive outcomes for the mental health of citizens. During this period, we could have observed how outdoor public spaces became hot spots for human interactions. It is important to underline that unfortunately, society was underestimating the importance of how their surrounding environment shapes their lifestyle. This moment gives a historical opportunity to learn from activities occurring within these public spaces, and how these areas can adapt to our new lifestyles and social interactions. Therefore, it is an ideal time to redefine public space design and call for an urban transformation corresponding to

post-pandemic needs (Galluzo, 2021). This is the reason why exploring the phenomenon of public spaces' influence on the mental health of adults has societal relevance, especially focusing on how the built environment influences people's quality of life. Furthermore, this phenomenon during a COVID-19 pandemic in Poland is not yet well studied. Therefore, this research aims to minimise the gap in knowledge regarding this issue.

1.2 Selected site and societal relevance

An incentive to research Bulwary Wiślane lies in multiple reasons. Warsaw, the capital of Poland with almost 4 million inhabitants (with surrounding suburban areas) is the biggest city in Poland and therefore, a city with the most opportunities to develop (Urząd Statystyczny w Warszawie, 2020). The subject of mental health in Poland is still underestimated and not always crucial. The system of treating mental diseases is outdated and lacks finances as well as enough suitably qualified staff. (Szukalska, 2020). As we can read from the Hanna Szukalska article "In Poland, therefore, it is not only possible but extremely common, for a person experiencing symptoms of anxiety or depression whose condition is not severe to be admitted to a psychiatric hospital to be left alone for weeks or even months." (2020). It is a big problem, especially during a pandemic when malfunctioning health care clinics and isolation can lead to tragedies.

Bulwary Wiślane is an ideal public space to investigate due to its central location within the city. Its high accessibility allows inhabitants and tourists to easily approach the site and enjoy the water views. Bulwary Wiślane are located just in between left bank and right bank of the city- it could be considered as a halfway meeting point. You can reach the site by metro, bicycle paths, train, or by foot.



Figure 1. Bulwy Nadwiślańskie area (SISKOM, n.d.)

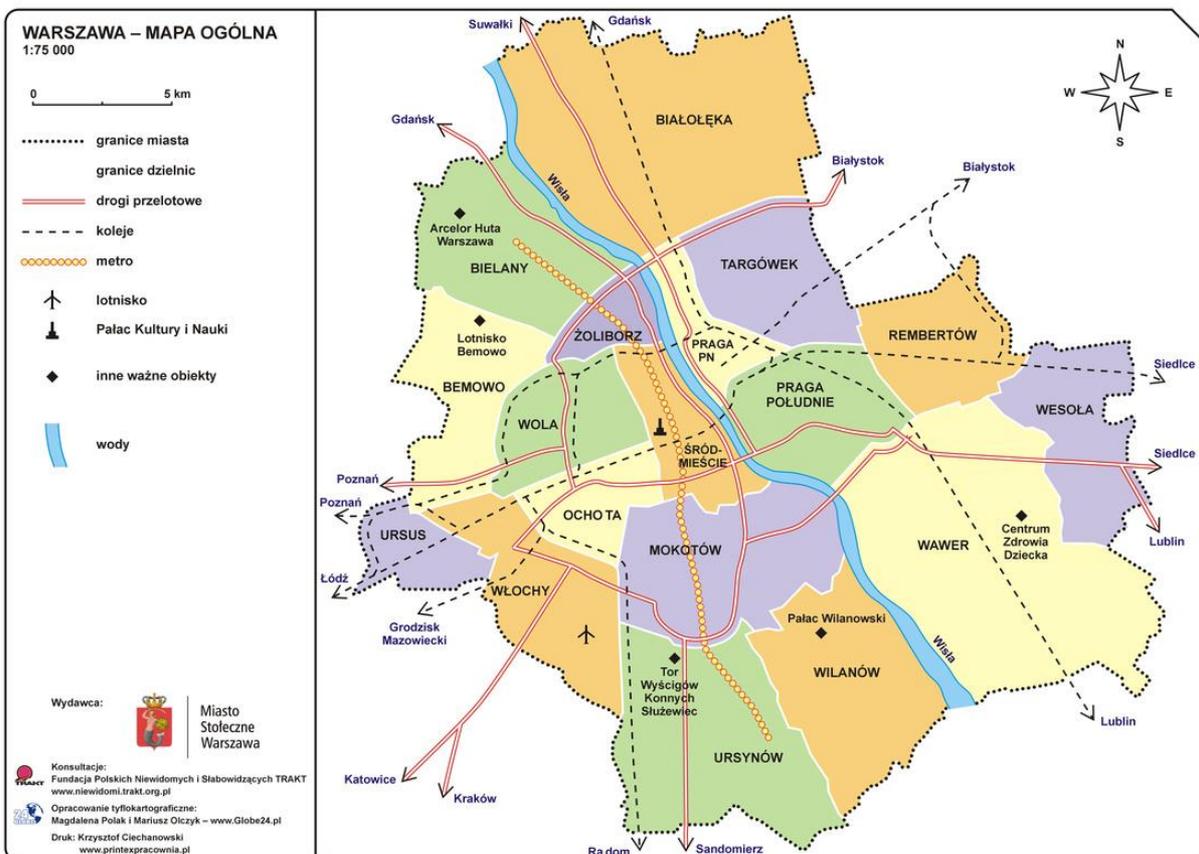


Figure 2. Central map of Warsaw (Fabryka, 2008)

Moreover, Bulwary Wiślane cannot be separated, it is a fully open and accessible space to everyone- which makes it suitable for this research purpose. There are no boundaries, fences, or entrances limiting. People can enter and use this area any time of the day. The Vistula is considered a favourite place of Warsaw residents and tourists due to its summer atmosphere and calming water banks. Surrounding universities, museums, and cultural spots provide a diversity of visitors. Entire families, the elderly, youth, runners, and cyclists meet by the river. (Urząd m.st. Warszawy, 2022). Therefore, this makes this public space suitable for observation as well as an accurate spot for COVID-19 evaluation. The last argument deciding upon the selection of a variety of public spaces is that author was born and raised in Warsaw which makes research more valuable due to knowledge about the city.

1.3 Research Problem

Even though our surroundings are crucial components of how we feel, move, and act in space, as human beings, we pay little attention to how this public environment is influencing our well-being (Gehl, 2018). Public space has proved to improve the well-being and health of communities while boosting social interaction and livelihoods (UN Habitat, 2022). Previous research has shown that high levels of community social cohesion are based on sources of social support (e.g., friendships, visiting, borrowing, and exchanging favours with neighbours)- that are linked to better mental health (Fone et al., 2007). After observing how countries and their citizens struggled with the low quality of public spaces during multiple lockdowns, COVID-19 could be a great opportunity for cities to redefine their agendas and develop a new strategic framework, putting public spaces as a key driver of change. The physical characteristics of a place may also influence the development of neighbourhood social ties and cohesion, with positive effects on community connectedness and mental well-being (Kuo et al., 1998). How users evaluate and subjectively perceive public space could be an accurate demonstration of the health levels of visitors within this public space. Moreover, these observations are a universal help to guide stakeholders to incorporate needed changes to increase the quality of public spaces all over the world. (Gehl, 2018)

Given these gaps in empirical evidence, this study aimed to investigate the association between the social-spatial conditions of Bulwary Wiślane and the mental health of its visitors. The specific objectives were to investigate the relationship between positive mental wellbeing and the:

1. Visitors' perception of this public space design
2. Visitors' experiences of Bulwary Wiślane
3. Visitors' ideas of what can be improved to increase the quality of this public space

This paper tries to answer the following main research question:

“How do the social-spatial conditions of public spaces support the mental well-being of adults in the Bulwary Wiślane, Warsaw, Poland?”

And the following sub-questions:

- How does design shape visitors' use of Bulwary Wiślane?
- What is the relationship between public spaces and mental well-being?
- How do people rate the quality of public space?
- What can be done to adapt visitors' needs to promote mental health?

1.3 Structure of the Thesis

The thesis firstly will provide a theoretical framework and conceptual model, to better understand the phenomenon of public space, its relation to mental health and the chosen case study. Afterwards, methods of analysing, data collection, ethical consideration and data analysis scheme will be introduced in the methodology chapter. This is followed by a sample description, findings based on observations and results of a survey. Subsequently, a discussion on how the results correspond with existing literature and broader context is provided. Finally, the conclusion is followed by a reflection on the data-collection instrument, suggestions for further research, and limitations.

2. Theoretical Framework

2.1 Public Space

Throughout history, the definition of public space has changed significantly depending on which factors scientists were focusing on. Public space is central to political and social life in cities. In the research from Collins and Stadler (2020), the definition of public space emphasises the diversity of experiences people encounter while using them. Authors rightly added that public spaces define “... reputation of cities for vibrancy and liveability, and the well-being of urban residents.” (Collins and Stadler, p. 106, 2020).

For this work, public spaces are defined as those primarily outdoor spaces that do not require special access— such as keys, admission fees, or membership.

As Gehl Institute stated, “Public Space is accessible, shared physical space where people can socialise, exercise, play, relax, volunteer, buy and sell goods and services, make connections, express their political views, appreciate art or architecture, or simply enjoy being outdoors.” (2016, p. 68). This is a unique definition of public space because it focuses on users' experiences and actions rather than physical characteristics. However, these physical amenities create our experiences and therefore, this definition of public space should be reminded of the actors responsible for creating them. For instance, municipalities, stakeholders, NGOs, or even local communities.

That is the reason why in this paper another crucial definition should be brought to the readers' attention. Project for Public Space PPS (2016) claims that successful public spaces in cities play a significant role in building a strong sense of belonging in the community amongst individuals. Citizens often use squares, plazas, parks, or any other form of public space to gather, create communities and come together as neighbours for example. In the case of young adults (below 25 years old), public open spaces can play a more important role in supporting well-being and connection (Allsalomy and Polat, 2021).

One of the Gehl architects, David Sim, released the concept of Soft City (2019). The book was published a few months before the Covid-19 pandemic but includes creative proposals applicable to its challenges. If our cities were more compatible with human physical and mental needs, much suffering caused during lockdown could be alleviated.

Sim defines Soft in Soft Cities, like responsiveness, ease, comfort, sharing, plurality and simplicity, smallness, appealing to the senses, calm, trust, consideration, invitation, and ecology (Mahdavi, 2022). Yet, it is not known how these values correspond with real citizens' needs. To be more specific, this research will zoom in on visitors' experiences of the quality of public space and examine these values.

2.2 Mental Health

According to World Health Organisation (WHO), mental health is “a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well and contribute to their community. It is an integral component of health and well-being that underpins our individual and collective abilities to make decisions, build relationships and shape the world we live in. Mental health is a basic human right. And it is crucial to personal, community and socio-economic development.” (2022)

In new research from (Jackson et al., 2021), participation in outdoor activities leads to decreased stress and other post-COVID-19 symptoms caused by hard lockdown and lack of socialisation opportunities. That is the reason why this study focuses on public spaces accessible to everyone, and those areas are mainly located outside.

2.2.1. Presence of nature

As Jackson et al. (2021) call nature “...key aspect of participation in outdoor activities that provides a range of health benefits, including relief from stress.” (p.18). Nature may promote resilience among adults by facilitating restoration from stress and buffering against negative health outcomes associated with stress. Health benefits associated with exposure to nature include improved physical health, but most of the finding's centre on improved mental well-being. To keep our mental and physical health in good shape it is recommended to spend time in the natural environment. Urban green areas such as parks, green paths, playgrounds, or boulevards are safe spots where people can still interact with each other (while keeping sufficient distance during a pandemic).

2.3 Relationship between public space and mental health

When it comes to promoting inclusion and health in public space, design matters. The quality, sense of safety, and accessibility of and access to a public space influence how a space is used and how people feel in that place (Gehl, 2016). Mews et al. (2018) designated the strong influence of public spaces on mental health which should be inspiring to act, come together with communities and allow to share your true self. The public space should evoke positive emotions towards the city, and be open, inclusive, and democratic. The possibility of sharing opinions in public spaces and being able to feel comfortable and safe make them healthy. Bravo (2017) calls for a common understanding of public spaces and highlights the importance of a right to the city- everyone's fundamental honourable to use. It could be argued that experiencing these values in a public space defines the success of cities and makes them liveable, vibrant, and sustainable for all. CABE, or the Commission for Architecture and the Built Environment, acknowledged that there is an urgent need to adopt a sustainable design strategy that recognizes the value of open public spaces and their impact on human health. According to CABE: "Evidence increasingly suggests that the wider environment can reduce stress, encourage exercise and promote good health" (2009)

To create successful and multifunctional public spaces, we should be able to response to situations which occur globally to strengthen the tie between mental health and surrounding environment. Zandieh et al. (2020) argued that in the future, planners and designers should target more physical characteristics of a place and its amenities such as: public toilets, recreation sites, small architecture, art, provision of safety and inclusivity rather than solving all the issues with greenery. Those actions could fruitfully provide a junction of inclusivity and mental health in cities.

2.4. COVID-19 pandemic and public spaces

There is no doubt that the emergence of COVID-19 has greatly influenced many disciplines, including urban design and architecture. Low and Smart (2020) consider that public spaces "as places where we encounter other people and contact, and connection

occurs in open, democratic, inclusive and yet unpredictable ways” will have to change because of the pandemic, and public spaces may not survive as we know it (p. 2). While Honey-Roses et al. (2020) ask “will 2020 define a before and after in planning and design?” (p. 3); as they seek to highlight a range of emerging questions at the interface of COVID-19 and public space. They argue that globally there is an “unprecedented opportunity to examine the links between urban planning, public space, and wellbeing” (p. 16).

After two years of the pandemic, society started to recognise the importance of place being integral to health. One of the world-famous urbanism concepts which started to underline the importance of well-being, multifunctional public spaces, and increased general health is a 15-minutes city.

The article written by Bocca (2021) describes world examples of this idea (Paris, Milan, and Melbourne) where the mayors and stakeholders focus on solutions that will boost positive mental well-being. Mayors of introduced capitals concentrate on creating mix-function and meaningful spots to the locals. To underline values, buildings, landmarks critical to certain neighbourhoods and promote urban cohesion. However, through the lens of the COVID-19 pandemic, the 15 minutes city concept could be seen as utopian because, an increasing quantity of high-quality public space in an urban, dense environment is rather a challenge. Especially during the pandemic when social distance in public spaces became a norm. This moment has alarmed planners about how to incorporate health in the design of public areas and how we could better maintain these spaces to increase citizens' well-being.

2.5 Inclusive Healthy Places Framework

Based on the Inclusive Healthy Places framework established by Gehl Institute in 2016, we can identify what could better maintain these places - four guiding principles for shaping and assessing public space projects: the context, process, and sustainability associated with public space design.

Within these four pillars, multiple interrelated drivers are distinguished. These themes often overlap. For example, indicators of civic trust, an essential component of inclusion in democratic design, helps to demonstrate the strength of local social networks (Principle 2) and are connected to the level of social cohesion contributing to community stability (Principle 4). Likewise, the quality of public space and level of perceived safety (Principle 3) influence both how it is used (Principle 3) and how much it is used (Principle 2).

In this research, the focus will be put on the public space design dimension. In detail, the quality of the public space and its relation to mental health will be examined based on what could be physically observed within this public space.

The Inclusive Healthy Places Framework



Figure 3. The Inclusive Healthy Places Framework (Gehl Institute, 2016)

It means, this study creates new model based on the Inclusive Healthy Places Framework.

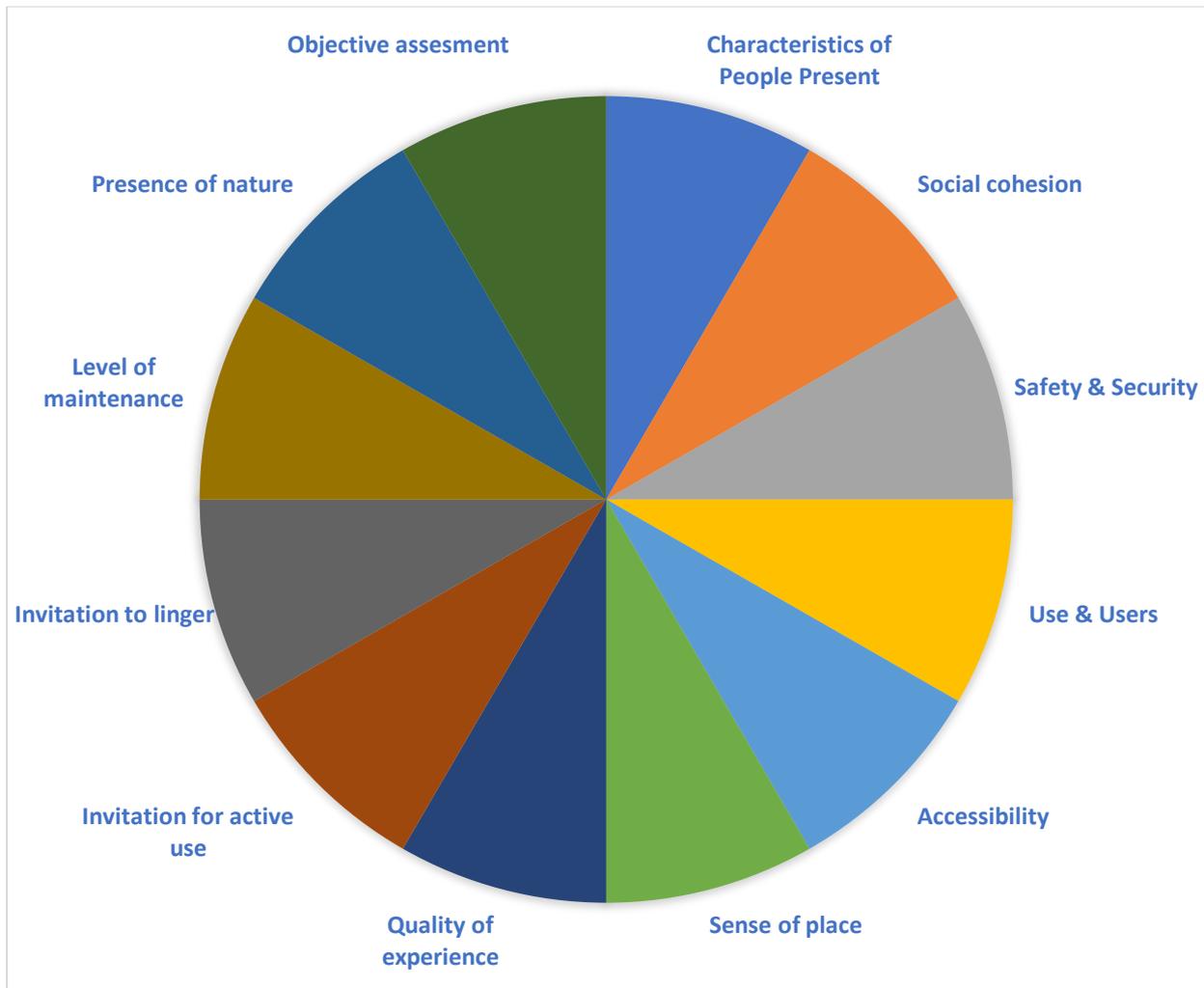


Figure 4. Healthy & High-Quality Public Space (Author, 2022)

This framework is meant to be flexible, however, is highly advisable to be enforced in densely populated areas or with a larger number of inhabitants. It may be used to address spaces of all sizes and scales—from squares to full neighbourhoods or regional parks in urban as well as rural contexts.

As defined by Gehl Institute, “Quality is a driver of use and a factor contributing to how much time people spend in a place, including for social and physical activities, as well as their level of comfort in and enjoyment and ownership of a space.” (2016). Quality of public space is influenced by the following indicators: the presence of nature, level of maintenance, welcoming edges and entrances, capital investment, sense of place, quality of experience, an invitation to linger, and presence of amenities and site furnishings that invite people to actively use space. Therefore, this study aims to measure these

indicators through a mix of observational and survey-based indicators to capture user experience in The Netherlands.

By conducting this research, author aim to emphasise how public spaces design, social experience, accessibility, safety, quality of experience influence well-being and could promote better health outcomes.

2.6 Conceptual Model:

Based on the studied literature and Inclusive Healthy Places Framework, I came up with a conceptual model to visualise the relationship between mental health and public space. This study can be used as a guide for inclusion to advance mental health equity through public spaces using a set of drivers, indicators, and metrics. Readers may use the framework to plan, design, implement, and evaluate the context, process, and outcomes and effects of interventions and programs in public spaces. Interventions and programs mentioned above range from new park designs to citywide health evaluations. What is worth to underline, is that analysing inclusion and health in public spaces through this model could be possible at variety of scales. (Gehl, 2018). Below, conceptual model is presented where the relationship between the theories and different concepts is visualised.

2.6.1 How to read this conceptual model

This conceptual model represents a process of how public space drivers directly influence mental health and at the same time, are indicators of it.

As mentioned in theoretical framework and model by Gehl (2018), public space relationship with mental health could be determined on different levels and layers. This framework evaluates indicators that are observable by an author on the site and through questionnaire investigation which supports health in public spaces. In this study, what is observable and perceived by visitors is considered as drivers. In this case, drivers are physical conditions that can determine how visitors of this public space perceive their

mental health over there (black boxes). Namely: presence of nature, quality of experience, physical conditions of a place, accessibility, perceived safety, and social inclusion. At the same time, these variables equally influence the quality of the public space as well as indicate the mental health status of visitors. Because of that, people present at the site subconsciously and/or consciously evaluate the area which can be vital and fruitful for parties responsible for those places such as municipality, multiple stakeholders, and other private owners. This evaluation triggers potential reflection about current state of the site of the public space we are investigating. Experiences of visitors are therefore a crucial component and a lens through which public spaces characteristics could be assessed. Outcome of this assessment gives space for possible adaptation methods to ensure the site is more comfortable and welcoming. That is why conceptual model shows strong and tangible factors defining space with metrics serving as a tool for architects and urban designers as well as for researchers investigating correlations between place and behavioural health outcomes. This process could be replaced and applied at any public space (preferably in urban areas).

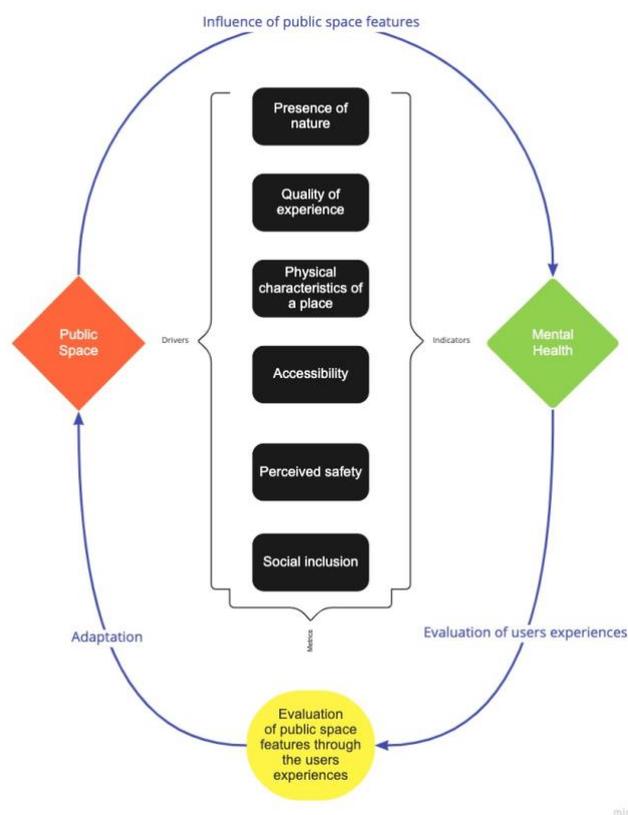


Figure 5. Conceptual Model (Author, 2022)

3. Methodology

3.1 Case study

Since this is the most used public space in the city, this study was undertaken at Bulwary Wiślane in Warsaw, capital of Poland. Those boulevards are located on the left side of the Vistula River, through three districts: Mokotów, Śródmieście and Żoliborz.

Its beginning is in Żoliborz, at the height of the Citadel, it runs through the entire Śródmieście up to the Czerniakowski Port area. The boulevard is directly adjacent to the Wisłostrada (main road), which effectively passes from the city buildings in those parts where the route is not hidden in a tunnel. An important tool for the boulevard is also a system of bicycle paths as part of the Vistula Bicycle Trail. It is a well-known place for Varsovians and tourists to linger, walk around and participate in cultural activity. On the banks of the river, the Copernicus Science Centre, the Museum on the Vistula River, and the Multimedia Fountain Park are located which makes Bulwary Wiślane even more popular place in Warsaw (and in Poland too).



Figure 2. Bulwary Wiślane water bank (Vistula Boulevards by RS Architektura Krajobrazu, 2018)



Figure 7. View from stairs next to Copernicus Planetarium (Glinianowicz, 2021)



<p>8</p>	<p>Rezbudowa Centrum Nauki Kopernik – Pracownia Przewrotu Kopernikańskiego ul. Wybrzeże Kościuszkowskie 20 Autorzy: Heinle Wiescher und Partner o. Wrocław Investor: Centrum Nauki Kopernik Planowana realizacja: 2020</p> <p>9</p>	
<p>Pawilon Muzeum Sztuki Nowoczesnej („A-m” 05/2017) ul. Wybrzeże Kościuszkowskie Autorzy: Architekt Kriscchanitz Autorzy adaptacji: Kalata Architekti, Mazerant Studio Investor: Muzeum Sztuki Nowoczesnej w Warszawie Realizacja: 2016-2017</p>	<p>Budynek biurowo-handlowo-mieszkalowy EC Powiśle kwatera ulic Wybrzeże Kościuszkowskie, Dobrej, Zajęczy, Leszczyńskiej Autorzy: APA Wojciechowski Investor: White Star Real Estate i Tristram Capital Partners Planowana realizacja: 2018</p> <p>10</p>	
<p>II linia metra („A-m” 07/2015) odcinek od ronda Daszyńskiego do Dworca Wileńskiego Autorzy: G.P. Metroprojekt i AMC – Andrzej M. Choldziński Investor: Urząd m.st. Warszawy Realizacja: 2010-2015</p> <p>11</p>	<p>Zagospodarowanie bulwarów Wisły – wodna kaskada oś ul. Tamka, rejon pomnika Syreny Autorzy: RS Architektura Krajobrazu Projekt architektoniczny: Architecture Investor: Urząd m.st. Warszawy Planowana realizacja: 2019</p> <p>12</p>	
<p>13</p>	<p>14</p>	<p>Kładka pieszo-rowerowa pod mostem Kazimierzskim Autorzy koncepcji: Transprojekt Warszawa Autorzy projektu budowlanego i wykonawczego: Mosty-Warszawa i Intop Warszawa Investor: Urząd m.st. Warszawy Realizacja: 2017</p> <p>15</p>
<p>Zagospodarowanie bulwarów Wisły – etap 3 odcinek od mostu Świętokrzyskiego do Portu Czerniakowskiego Autorzy: WXCA Investor: Urząd m.st. Warszawy Projekt: 2017 Planowana realizacja: od 2020</p>	<p>Siedziba Warszawskiego Towarzystwa Wioślarskiego i budynek hotelowo-biurowy The Tides („A-m” 10/2017) ul. Wioślarska Autorzy: Kuryłowicz & Associates Investor: WTW i The Tides Realizacja: 2017</p>	<p>Przystań Warszawa Cypel Czerniakowski, ul. Żaruskiego Autorzy: tomcat arch.design Tomasz Olszewski Investor: Zarząd Zieleni m.st. Warszawy Projekt: 2014/15 Planowana realizacja: koniec 2017</p> <p>16</p>

Figure 8. Architecture of Bulwary Wiślane (Zylski, 2017)

3.2 Data collection

3.2.1 Mixed method

To answer the central research question, a qualitative research approach is implemented. It stimulates the creation of knowledge of the current situation, by researching the encounters of people and their opinions of experiences (Punch, 2014). The qualitative method is suitable as a measure of different variables' perceptions. It creates reliable interpretations of the relationships between experiences and perceptions (Punch, 2014).

In this case, a mixed-method approach is used to gather information consisting of literature review, observations, and a survey in which different visitors of Bulwary Wiślane were approached in-person. The reason behind choosing this method of research is that the survey will enable a greater number of respondents regarding well-being in public spaces than in-depth interviews. Furthermore, surveys were conveyed in person having the opportunity to fully explain the questions and resolve any doubts

appearing while filling in the document. Deeper understanding of the subject ensures and increase the representative of the sample.

The investigation aims to explore residents' feedback about how they could practise their different daily life and routines at public space, if Bulwary Wiślane played important role during the COVID-19 pandemic and if that public space allows to accommodate everyone with their required activities.

3.2.2 Observation

The empirical material was collected at the Bulwary Wiślane throughout multiple days and different time of the day to ensure diversity of the outcomes. It was necessary to observe the public open space by the researcher to understand the social interactions and physical features in the case study area. Observation does not create the option to ask questions, as this can influence participants, by for example pretending they are more active than they are. During the observations, information on the day-to-day situation at Bulwary Wiślane was collected. A semi-structured observation was carried out at different locations in this area, to make sure that the overall location was represented (Saunders, Lewis, & Thornhill, 2009). Data as collected on 13th, 14th, 15th of June 2022 in the afternoon due to work, school, and other responsibilities of citizens. Through the conceptual model author has created, the site was evaluated and ensured the variables are operationalised.

3.2.3 Questionnaire

As mentioned above, both quantitative and qualitative data are collected using questionnaires, which consist of both open and closed questions. Survey contains of 29 questions, mainly closed ones with basic information regarding demography (sex, zip-code, monthly salary, country of origin, level of education and their association with Bulwary Wiślane. Questions were formulated in such a way that they capture the relationship between the quality of space and mental health, visitors' experiences, and their needs. The total of 30 people who fall into the age cohort of 18-45 responded to the questionnaire making it representative. A survey offers a good way to make general

statistical inferences about a broad range of matters which may affect adults, like health conditions. The survey is useful to understand what truly interests the respondents, what developments visitors would like to implement on the site, if they are satisfied with a current state or not. Survey can be found in the Appendix – both in Polish and English.

3.2.4 Data Analysis

After the completion of observations and the filled-in questionnaire, codes were established. Since surveys were collected on the site, codes were highlighted manually on paper. In addition, this research does not contain in-depth interviews. Open questions from the surveys immediately give a sign of the code – since in answers only couple words description was asked. (Q9, Q10, Q21). By coding qualitative data, a variety of patterns can be deducted. This method is used to answer the first, second and fourth sub questions comprehensively.

The results and discussions were summarised based on primary data collection (observations and questionnaire) applied to variables from conceptual model derived from Inclusive Healthy Places Framework by Gehl (2016) - principles which are physically able to observe. Namely, presence of nature, quality of experience, physical characteristics of a place, accessibility, perceived safety, and social cohesion. However, firstly the sample characteristics would be described. Later in the discussion, findings analysis will apply the theoretical framework represented above.

3.2.3 Ethics

As mentioned at the beginning quality of public spaces and its inclusivity might have several negative consequences on the mental health of individuals and their possible stigmatization or social exclusion. Therefore, making the topic of this research sensitive. Meaning that special research ethics needs to be taken into consideration to make sure that they are not subjects of any detrimental consequences caused by this research. Data that is needed to answer the research objective was collected anonymously. This ensures that the identity of the research participant is impossible to discern. Collected data is stored concerning The General Data Protection Regulation (GDPR). Special care was taken that no personal data such as names and locations of the research participants

is published or shared in other forms by the authors of this research and their supervisors from the University of Groningen.

4. Results

Within this section, the results of the performed observational studies and the quality of public space with its relation to mental health analysis will be discussed. The results of observations and interviews are summarized based on categories defined previously in conceptual model (black boxes). Each category treats a sub-question and discusses the results for Bulwary Wiślane. Subsequently, the results will be compared to authors model derived from Inclusive Healthy Places Framework by Gehl (2016).

4.1 Characteristics of people present

A total of 30 participants were included in the analysis (not counting the observed sample). Because of this, the gathered sample is sufficiently diverse. While filling in a survey, respondents and at the same time visitors of the site, were asked to provide basic information about themselves. Namely: age, sex, zip code, education level, country of origin, and monthly household income.

Respondents were mainly woman (57%), students (22-24 years old) (83,3%), inhabitants of Warsaw (96,6%), with average monthly income ratio from 8, 000 PLN to 12,000 PLN (2,600 - 3,400 €) (53%) per household.

Figure 9 shows the relationship of visitors to this area- 40% of the visitors are students and 26% are attendees of cultural events. Education level varied between finished high school or obtaining a bachelor's degree. Additionally, the observations, showed that Bulwary Wiślane is encouraging people of all ages, backgrounds, and sex. Moreover, visitors tend to spend more than an hour at the site. While walking around the boulevards, children, as well as the elderly, have been seen at the place. Both groups have a purpose to be there- playgrounds as well as a gentle view of the Vistula River allowing to relax.

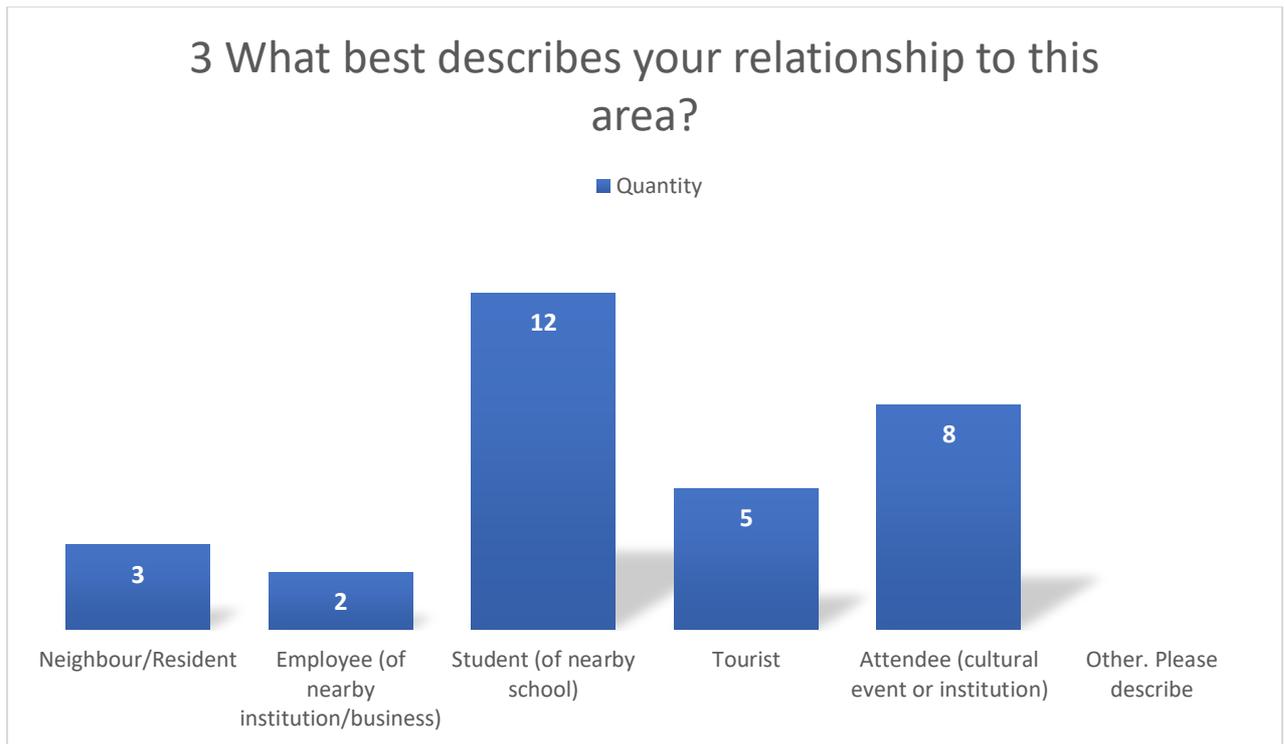


Figure 9. Question 3 from survey: results

4.2 Presence of nature

As mentioned earlier, green areas greatly influence our both mental and physical health. This study has proven so, by revealing that all respondents by answering to question number 21. “What would make you feel better in this place?” answered with “vegetation, more grass, trees, more greenery, less concrete”. One of the respondents indicated:

“In my opinion, higher volume of greenery as well as spaces in a shadow. I believe, that in Bulwary there is too much concrete which vastly warms up during summer”.

That is, access to greater numbers of nature within the public space was significantly associated with positive mental health. Moreover, question number 18 underlined the importance of presence features and amenities that encourage lingering and physical activity.

4.3 Physical characteristics of a place

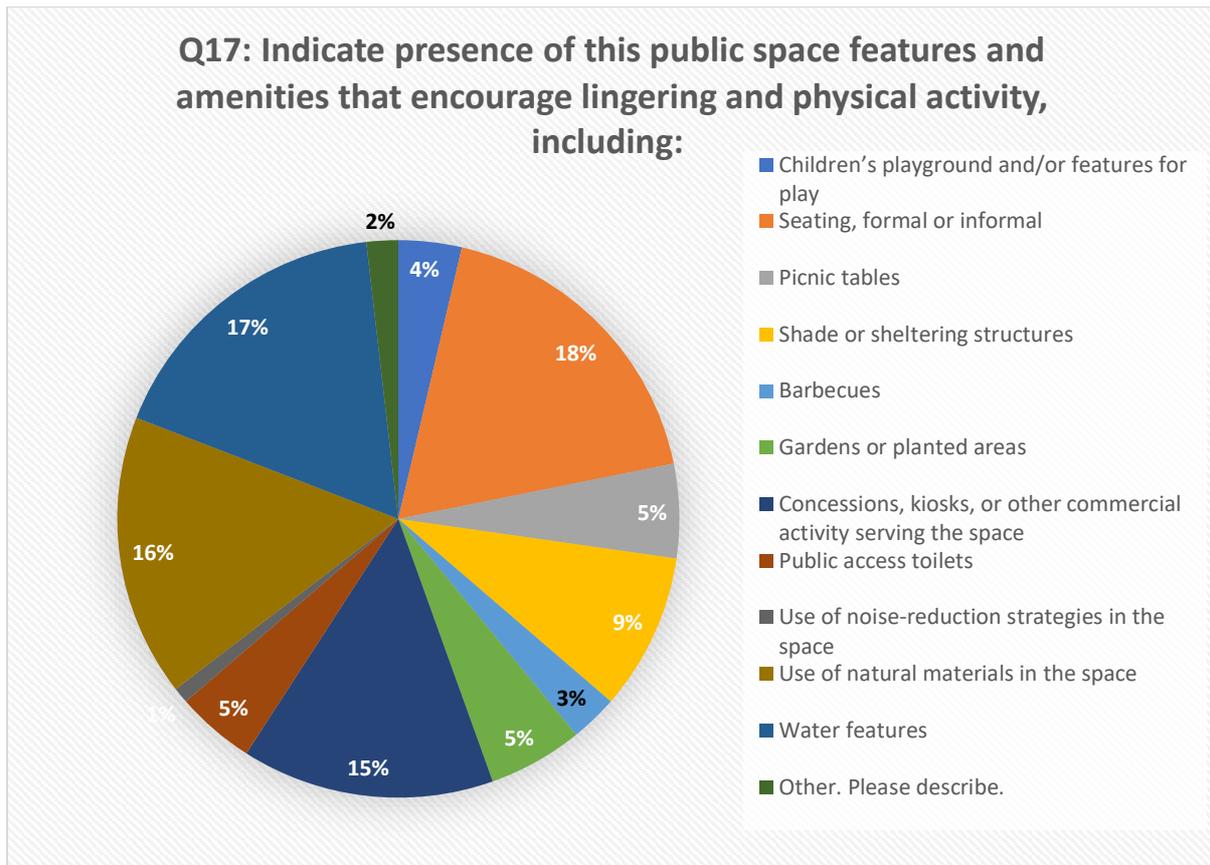


Figure 10. Question 18 survey results

Adequately, 17% and 16% of the respondents chose that presence of water and natural materials such as sand, grass, and vegetation would make them feel calmer and more active within Bulwary Wiślane. Moreover, 9% of respondents appreciate shadow structures and 15% of people admit that restaurants and bars encourage them to visit the site and linger.

Surprisingly, only 5% of all answers consider public toilets as an enhancing feature of public space.

4.4 Social Cohesion

According to the participants' as well as authors' observations, people at Vistula boulevards tend to spend time with their friends. They do so by walking, sitting on informal stones, and stairs near the water. Referring to the relationship with this area, participants come there to participate in cultural events such as concerts as it turned out via the question number 4. In addition to answers about greenery from question number 21, respondents would like to attend more concert, listen to music, and socialise more in clubs and restaurants. At the same time, groups of people drink their booze and

organise picnics. It is important to mention, museum of Contemporary Art and the Copernicus Planetarium are located nearby.

4.5 Accessibility

Due to its location, Bulwary Wiślane is easily approached by respondents. As the questionnaire declares (Question 12) precisely 70% of respondents claim that it is easy to get to this public space. Figure 11 shows an analysis of question number two.

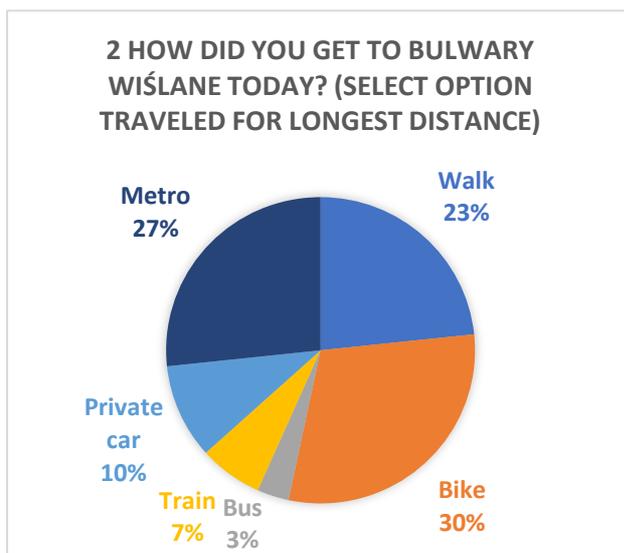


Figure 11. Question 1 from the survey: results

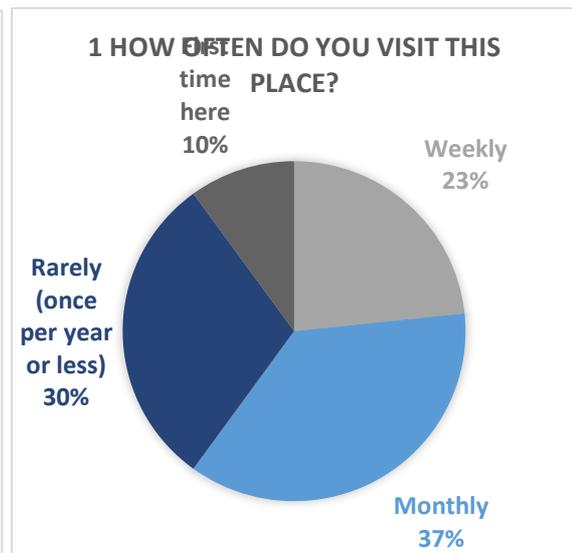


Figure 12. Question 2 from the survey: results

From the graph, we can see that 30% of the respondents commuted there by bike, 27% by metro, and 23% by foot. This gives a positive perspective on how this place can be reached by all and makes it sustainable. 37% of respondents visit the place monthly and 30% once per year or less. This could be caused by the seasonal use of the boulevards. By investigating the frequency of use, this study gained information about possible access to that place, and if it is welcoming and curious to spend time in.

4.6 Quality of experience

People who were present at the site while data collection confidently claimed that they do enjoy being in this space and their experiences are mainly positive. Respondents considered this place as cosy, busy, active, with high potential and keen to party. Young people usually come there to illegally drink alcohol and relax. Below, Figure 13 shows that respondents usually have a chance to relax while lingering at the site.



Figure 13. Question 19 from the survey: results

Moreover, question number 15 (What is your experience of Bulwary Wiślane?) was an additional investigation and trail to understand the subjective experiences of visitors. Significantly, most of the respondents have positive experiences at this public space.

- *“Somewhat neutral or nice, mainly cosy walks”*
- *“Very positive experience”*
- *“Positive: concerts, parties, meetings with friends”*
- *“Meetings with friends, cycling and drinking beer during warm days”*
- *“Positive atmosphere”*
- *“Somewhat positive”*
- *“A nice and friendly atmosphere was present”*

Of course, there were also negative answers to these questions. Mainly regarding the amount of people present at the site, loud noises, and different type of people.

For instance,

“If I am visiting Bulwary Wiślane, I am there by accident, or with someone not from Warsaw. It isn't a spot which I like to visit, and it does not allow me to relax. Not my vibe”

Another question which analyses the quality of experience is question 17 from survey.

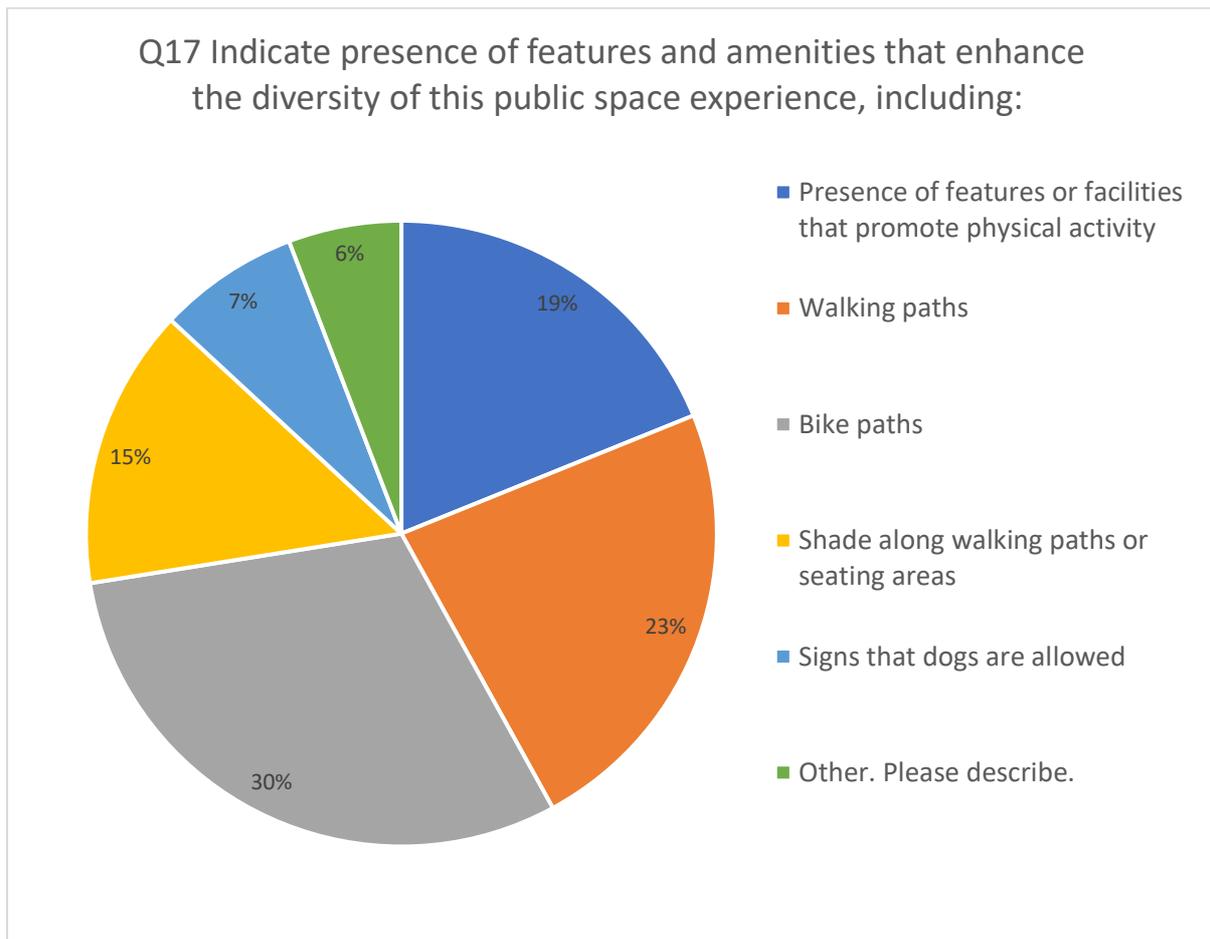


Figure 14. Question 17 from survey results

As we can see in Figure 14, one third of the visitors indicate that bicycle paths add diversity of their experiences while being at Bulwary Wiślane. 23% of all answers highlighted walking paths and 19% appreciate presence of features that promote physical activity.

Respondents who selected “other” proposed to implement more interactive small architecture, vegetation, bars and restaurants and stairs.

4.7 Perceived Safety and Mental Health at Bulwary Wiślane

Figure 15 visualise if and how Bulwary Wiślane influence mental well-being of people present on the site.

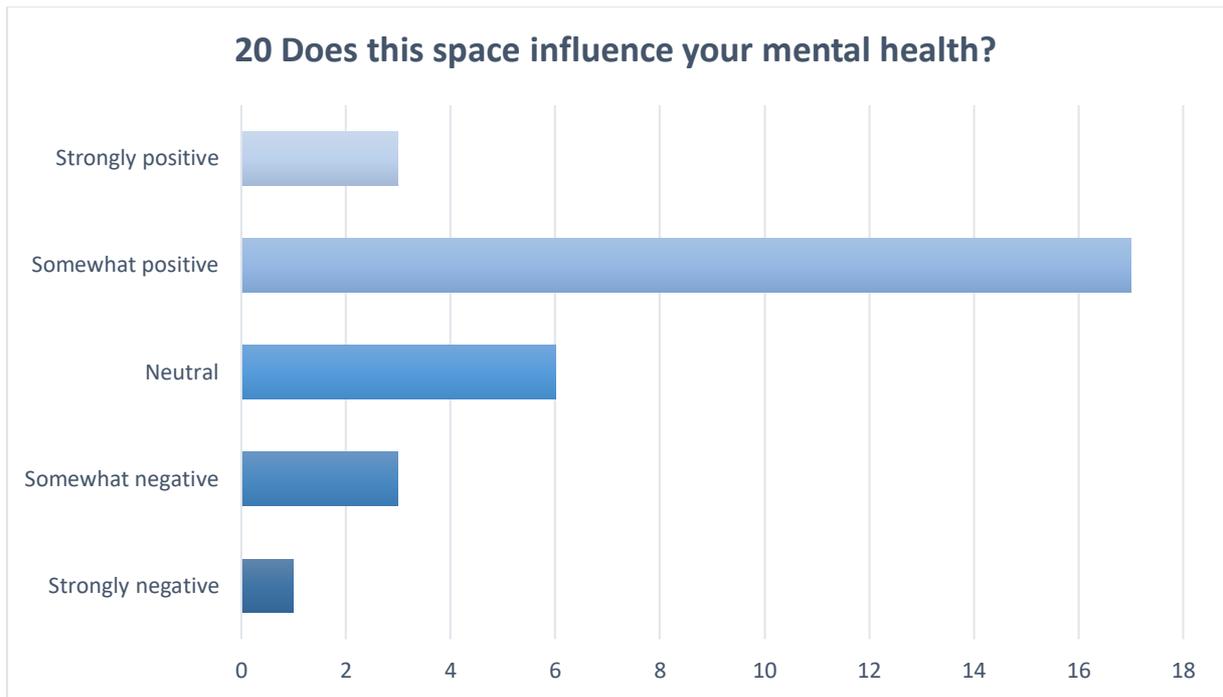


Figure 15. Question 20 from survey: results

17 people out of 30 confirmed that public space does positively influence their mental health. 6 respondents have not had an opinion (were neutral to this issue) and 4 respondents perceived boulevards as a negative factor influencing their mood. In addition, Bulwary Wiślane is considered a safe spot within the city. These results give us hope and an idea of how stakeholders could potentially make their citizens' life more colourful and valuable. With no surprise, after the open question number 16 regarding “what is your experience with Bulwary Wiślane?” it was expected that most of the visitors would be satisfied and positively influence by presence there.

5. Discussion

5.1 Generalisation

This study investigated the potential for public open spaces to positively impact mental health, with a particular focus on what can be easily observable within this space, the experiences of respondents, and the physical characteristics of this space. The analysis has shown that there is a strong relationship between public space features and the mental health of the visitors. More precisely, public spaces with present amenities such as greenery, spaces to sit in a shadow, a variety of gastronomy locals and bars, and cultural events with high accessibility by bike and walking are more likely to positively influence the mental health of the visitors. Zandieh et al. (2020) by their research were correct- rather than only greenery, we should implement features. This finding corresponds with previous studies which discovered that physical conditions of space influence mental well-being (Kuo et al., 1998). Therefore, this research supports the claim that design shape visitors' use and purpose of being in certain public space- in this case, Bulwary Wiślane. Bulwary Wiślane is built for multiple purposes at the same time, making people present there confused. However, Varsovians as well as tourists rated this place high in the hierarchy of quality, with a positive atmosphere and pleasure of spending time at the boulevards. If we compare these findings with Inclusive Healthy Places Framework by Gehl (2018) Bulwary Wiślane could be considered a healthy place with a lot of possibilities regarding the physical amenities and other events provided by NGOs and the municipality.

Often, young people are present at Bulwary Wiślane due to its high accessibility, open access, and pleasant aesthetics. While asking people "What two things would you like to do in this public space that you can't do now?" I often I heard that there is a need for more cultural events, a legal place for consuming alcohol, richer gastronomy offers, and an increased quantity of public toilets as well as bins. Summer in Warsaw is extraordinary, and it is stunning to see that such a relevant pillar of this city – the river- is highly appreciated and explored by all inhabitants. As Moreno et al. suggested, "stakeholder groups (including service users and families) could update available services, develop new ones, identify, and seek for potential providers to get additional funding to

expand services, and establish evaluation protocols for all novel interventions present in public space to regularly revise or terminate the interventions based on their efficacy.” (2020).

For instance, cultural events, workshops, giving a tool to local communities and NGOs to promote positive mental health in public settings. From the analysis, the author can suggest implementing more greenery within this long terrace to provide more shadow during hot, summer days, more public toilets, less concrete, boost local initiatives with street art, concerts, and the emphasis- make this space attractive also during winter. Hopefully, future research will zoom in on these suggestions and add mental health as a foundation for a joyful life.

5.2 Limitations

Due to a limited amount of time and resources, a full evaluation based on the Gehl model (2016) was impossible to convey and not fully representative. Coming up to random people on the streets equals lots of rejections which was a case in this study too. Unfortunately, choosing a specific age cohort is problematic. The reason why so is when it comes to observation because as a researcher you are not able to confront visitors and ask about, their age. They might feel uncomfortable and insecure. In addition, data were collected only during summer days when the weather conditions were not perfect to relax. This research represents only a couple of features from Jan Gehl's model (2018), therefore, it was not enough to fully evaluate the site.

5.3 Suggestions for further research

As mentioned in the limitations, this research does not cover all the components creating Inclusive Healthy Public Space declared by Gehl Institute (2018). Therefore, future research could focus more on deepening the investigation of the process, context of the site and who sustain it. This will require more time, finances, and collaboration with stakeholders but will deepen the understanding if this place is healthy and what could be done more from the government side to improve public spaces in general, what kind of policies make this process slower and look for other challenges deriving from other components mentioned above.

6. Conclusions

Through the analysis this paper was trying to find any answers to the following research questions: How does design shape visitors' use of Bulwary Wiślane; What is the relationship between public spaces and mental well-being; How do people rate the quality of public space, And What can be done to adapt visitors' needs to promote mental health. This was done through observation methods and questionnaires that were aiming to better understand the relationship between socio-spatial features and their influence on mental health in Poland. Subsequently, data analysed findings by comparing the results of the survey with a conceptual model derived from the Inclusive Healthy Places Framework by Gehl (2018). As a result, some relevant patterns were found. For instance, the presence of natural materials and water features were considered as ones that encourage lingering at Bulwary Wiślane. This is interesting, but not fully surprising. On top of that, Bulwary Wiślane is attached with positive memories and pictures, but it is suggested by visitors to implement more greenery and ensure there are enough public toilets as well as bars or restaurants.

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8. Appendix 1. Survey form in English

THANK YOU FOR PARTICIPATING IN MY SURVEY ABOUT QUALITY OF THIS PUBLIC SPACE (BULWARY WIŚLANE). YOUR RESPONSES WILL BE KEPT STRICTLY CONFIDENTIAL.

1 How often do you visit this place?

- Daily
- Weekly
- Monthly
- Rarely (once per year or less)
- First time here

2 How did you get to Bulwary Wiślane today? (Select option traveled for longest distance)

- Walk
- Bike
- Bus
- Train
- Private car
- Taxi
- Metro
- Other. Please describe

3 What best describes your relationship to this area? (check all that apply)

- Neighbour/Resident
 - Employee (of nearby institution/business)
 - Student (of nearby school)
 - Tourist
 - Attendee (cultural event or institution)
 - Other. Please describe
-

4 What brings you to this space today?

- Just passing through
 - Shopping/Market
 - Spending time with my family
 - Meeting up with friends
 - Spending time by myself
 - Sightseeing
 - Recreation/Sports/Exercise
 - Walking my pet
 - Cultural event/Performance
 - Political event/Protest
 - Other. Please describe
-

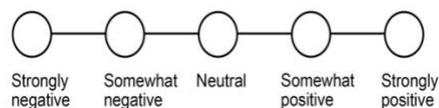
5 If you answered 'just passing through' are you headed anywhere in particular?

- Home
 - Work
 - University
 - Cultural institution
 - Restaurant/Bar
 - Store
 - Another public space
 - Other. Please describe
-

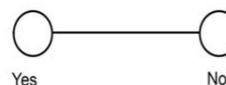
6 How much time do you plan on spending here today?

- Less than 10 min.
- 10 min.
- 20 min.
- 30 min.
- 1 hour or more

7 How do you feel about this particular public space?



8 Have you used Bulwary Wiślane during the COVID-19 pandemic?



9 What three words would you use to describe Bulwary Wiślane?

10 What two things would you like to do in this public space that you can't do now?

_____ & _____

11 In your opinion, is it easy to access Bulwary Wiślane?

- Yes
- Partly
- No
- Don't know

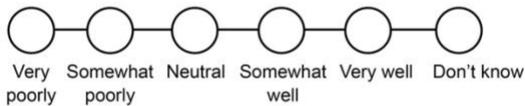
12 Are there enough places to sit? Are seats conveniently located? Do people have a choice of places to sit, either in the sun or shade?

- Yes
- Partly
- No
- Don't know

13 Is this space clean and free of litter?

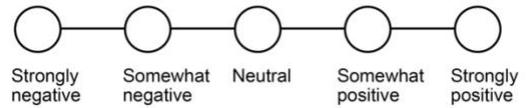
- Yes
- Partly
- No
- Don't know

14 Is this public space inviting to use/linger?



15 What is your experience of Bulwary Wiślane?

16 How do you rate the aesthetics of this public space?



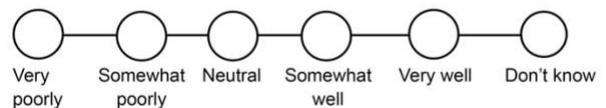
17 Indicate presence of features and amenities that enhance the diversity of this public space experience, including:

- Presence of features or facilities that promote physical activity
- Walking paths
- Bike paths
- Shade along walking paths or seating areas
- Signs that dogs are allowed
- Other. Please describe.

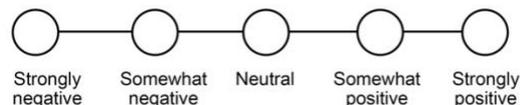
18 Indicate presence of this public space features and amenities that encourage lingering and physical activity, including:

- Children's playground and/or features for play
- Seating, formal (ex. benches) or informal (ex. steps, grass, etc.)
- Picnic tables
- Shade or sheltering structures (from sun and/or wind)
- Barbecues spots
- Gardens or planted areas
- Commercial activity serving the space (ex. clubs, bars, restaurants, cinema, etc.)
- Public access toilets
- Use of noise-reduction strategies in the space
- Use of natural materials in the space (such as sand, grass, stones, vegetation)
- Water features
- Other. Please describe.

19 Does this space allow you to relax? Is it calming?



20 Does this space influence your mental health?



Appendix 2. Translated survey form in Polish

DZIEKUJĘ ZA WYPEŁNIENIE ANKIETY NA TEMAT JAKOŚCI PRZESTRZENI PUBLICZNEJ (BULWARY WIŚLANE). TWOJE ODPOWIEDZI SĄ POUFNE.

1 Jak często odwiedzasz to miejsce?

- Codziennie
- Co tydzień
- Co miesiąc
- Raz na rok lub rzadziej
- Jestem tutaj pierwszy raz

2 Jak udało Ci się dzisiaj dostać na Bulwary? (Wybierz opcję z której najdłużej korzystałaś/eś)

- Pieszo
- Rowerem
- Autobusem
- Pociągiem
- Samochodem
- Taxi
- Metro
- Inne. Proszę opisz poniżej

3 Co najlepiej opisuje Twój związek z tą przestrzenią? (Zaznacz wszystkie które odpowiadają)

- Mieszkaniec dzielnicy Powiśle
- Pracownik (niedalekiej firmy/institucji)
- Student
- Turysta
- Uczestnik wydarzenia
- Inne. Proszę opisz poniżej

4 W jakim celu dzisiaj tutaj przyszedłś/przyszedłś?

- Tylko przechodzę przez
- Zjeść coś / Napić się
- Spędzić czas z rodziną
- Spotykam się ze znajomymi
- Spędzam czas ze sobą
- Zwiedzanie
- Rekreacja/Sport/Ćwiczenia
- Spacer ze zwierzęciem
- Wydarzenie kulturowe
- Wydarzenie polityczne / Protest
- Inne. Proszę opisz poniżej

5 Jeśli odpowiedziałas/eś 'tylko przechodzę przez', czy idziesz w jakieś konkretne miejsce?

- Dom
- Praca
- Uniwersytet
- Instytucja kulturowa
- Restauracja / Bar
- Sklep
- Inne miejsce publiczne
- Inne. Proszę opisz poniżej

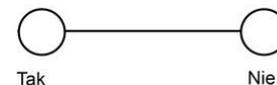
6 Ile czasu planujesz tutaj dzisiaj spędzić?

- Mniej niż 10 min.
- 10 min.
- 20 min.
- 30 min.
- Godzina lub więcej

7 Jakie są Twoje odczucia dotyczące Bulwarów Wiślanych?



8 Czy korzystałaś/eś z Bulwarów Wiślanych podczas pandemii COVID-19?



9 Jakimi trzema słowami opisałabyś/opisałbyś Bulwary Wiślane?

10 Jakie dwie rzeczy chciałabyś/chciałbyś zrobić na Bulwarach, których obecnie nie jesteś w stanie?

_____ i _____

11 Czy Twoim zdaniem łatwo dostać się na Bulwary?

- Tak
- Częściowo
- Nie
- Nie wiem

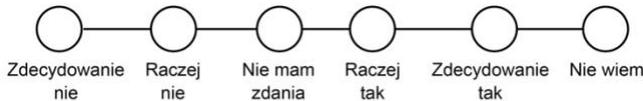
12 Czy Twoim zdaniem Bulwary posiadają wystarczającą liczbę miejsc do siedzenia? Czy te siedzenia są odpowiednio zlokalizowane? Czy ludzie mają wybór siedzenia w słońcu albo w cieniu?

- Tak
- Częściowo
- Nie
- Nie wiem

13 Czy uważasz, że Bulwary są czyste? (Np. od śmieci)

- Tak
- Częściowo
- Nie
- Nie wiem

14 Czy to miejsce zachęca do korzystania z niego?



15 Jakie masz doświadczenia z Bulwarami Wiślanymi?

16 Jak oceniasz estetykę Bulwarów Wiślanych?



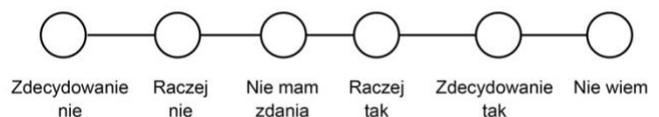
17 Wskaż obecność funkcji i udogodnień, które zwiększają różnorodność doświadczeń związanych z tą przestrzenią publiczną, w tym:

- Obecność obiektów promujących aktywność fizyczną
- Chodniki
- Ścieżki rowerowe
- Cień wzdłuż ścieżek spacerowych lub miejsc do siedzenia
- Znaki, że psy są dozwolone
- Inne. Jakież?

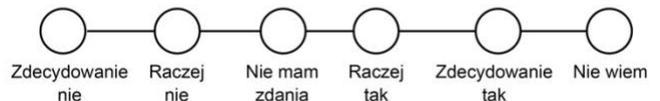
18 Wskaż obecność podstawowych elementów i udogodnień w tej przestrzeni publicznej, które zachęcają do pozostawania w spokoju i aktywności fizycznej, w tym:

- Plac zabaw dla dzieci i/lub funkcje do zabawy
- Miejsca siedzące, formalne (np. ławki) lub nieformalne (np. schody, trawniki)
- Stoły piknikowe
- Struktury zacieniające lub osłaniające (np. od słońca czy wiatru)
- Miejsce na grilla / ognisko
- Ogródki
- Działalności handlowe (np. kluby, bary, restauracje, kina, itp.)
- Toalety publiczne
- Wykorzystanie strategii redukcji hałasu w przestrzeni
- Wykorzystanie naturalnych materiałów w przestrzeni (np. pasku, trawy, roślinności, itd.)
- Obecność wody (np. rzeki, basenu, wodospadów, fontanny)
- Inne. Jakież?

19 Czy to miejsce pozwala Ci odpocząć? Czy jest ono relaksujące?



20 Czy to miejsce wpływa na Twoje zdrowie psychiczne / mentalne samopoczucie?



21 Co spowodowało, że poczujesz się lepiej w tym miejscu?

22 Jak oceniasz swoje poczucie bezpieczeństwa na Bulwarach w tej chwili?



23 Proszę, poświęć kilka chwil, aby spojrzeć na ludzi wokół. Czy rozpoznajesz kogoś, kogo nie planowałaś jeszcze spotkać?

- Nie, nie rozpoznaję nikogo w tej chwili
- Tak, rozpoznaję znajomą twarz, ale jej nie „znam”
- Tak, rozpoznaję kogoś, kogo znam, ale nie planowałam/em się spotkać

24 Jaki jest Twój wiek? _____

25 Jaki jest najwyższy poziom wykształcenia, który ukończyłaś/eś?

- Szkoła Podstawowa
- Szkoła średnia
- Ukończone liceum (Ze zdaną maturą)
- Technikum
- Licencjat / Inżynier
- Magisterka lub Doktorat

26 Czy identyfikujesz się jako

- Kobieta
- Mężczyzna
- Osoba niebinarna
- Wolę nie odpowiedzieć
- Inne. Proszę opisz poniżej

27 Jeśli urodziłaś/eś się za granicą, jaki jest twój kraj pochodzenia?

28 Jaki jest łączny miesięczny dochód wszystkich pracujących dorosłych w twoim gospodarstwie domowym?

- 0 - 4,000 PLN
- 4,000 - 8,000 PLN
- 8,000 - 12,000 PLN
- 12,000 - 16,000 PLN
- 16,000 or more PLN

29 Jaki jest Twój domowy kod pocztowy?

DZIĘKUJĘ!