sustainability

MDPI

Article

Explorative Study on Urban Public Space Renovation during COVID-19: Test of a Visual Web-Based Survey about the City of Saint German en Laye, France

Maddalena Buffoli, Silvia Mangili *, Stefano Capolongo and Andrea Brambilla

Design & Health Lab, Department of Architecture Built Environment Construction Engineering (DABC), Politecnico di Milano, Via G. Ponzio, 31, 20133 Milan, Italy
* Correspondence: silvia.mangili@polimi.it; Tel.: +39-0223995140

Abstract: Background: The complex socio-epidemiological situation caused by the COVID-19 pandemic forced cities to rapidly adapt to new prevention distancing measures. Several interventions have been made but specific tools are needed to rapidly verify the suitability of such design proposals. This study aims to describe the process of development and testing of a visual web-based survey to assess potential user feedback on Urban Public Space renovation for the city of Saint Germain-En-Laye (SGL), France during the pandemic. The renovation included pedestrianization strategies for the city center and the design and installation of new street furniture. **Method:** After an exploration of the literature and stakeholder interaction, an online survey composed of three sections and seven questions evaluating the project was developed to rapidly validate the design solution before its actual installation and compare the pre- and post-situation trough visual insights on a 5-point Likert scale. Data was collected through a Google Form and analyzed with descriptive statistics. **Results:** We received 371 full replies from Italian and French respondents. The survey results showed that the Urban Public Space proposal improved the baseline situation for different reasons, such as safety, sustainability, and accessibility. In fact, Solution A (the existing situation) obtained an average score of 2.08 while Solution B (the design solution) obtained 4.13. **Conclusions:** The features identified allowed for timely comparisons and possible insights, and the approach can be implemented in other medium-sized European cities dealing with Urban Public Space transformation during COVID-19.

Keywords: web-based survey; community-based survey; cities' accessibility; urban design; COVID-19 needs; COVID-19 challenges

Citation: Buffoli, M.; Mangili, S.; Capolongo, S.; Brambilla, A. Explorative Study on Urban Public Space Renovation during COVID-19: Test of a Visual Web-Based Survey about the City of Saint German en Laye, France. *Sustainability* **2022**, *14*, 12489. https://doi.org/10.3390/su141912489

Academic Editor: Vincenzo Torretta

Received: 22 July 2022
Accepted: 27 September 2022
Published: 30 September 2022

1. Introduction

1.1. Background

The COVID-19 pandemic brought new challenges and demands to cities for urban renewal around the world. Cities and Urban Built Environments must be adapted in order to identify urgent solutions, such as infrastructure and Urban Public Spaces, that are able to respond to the new distancing measures necessary for living together with the virus [1,2]. The need to reflect and act immediately on the modification of mobility demands, and on the offer of safe alternatives, seeks a new balance that allows citizens to adopt healthy behaviors and lifestyles with functional, effective, safe, and sustainable mobility in response to both new emergencies and criticalities in cities [3–6]. The pivotal role of the Urban Built Environment in health and well-being has already been historically defined by the Urban Public Health discipline [7,8]. Even before the pandemic, due to rapid urbanization around the world, scholars and institutions agreed that there is considerable focus on achieving sustainability outcomes within cities and that there are a number of theoretical frameworks or operative tools developed to measure the sustainability of built environments. In particular, a common reference was the Agenda 2030 SDG goal number

11: Making cities and human settlements inclusive, safe, durable, and sustainable with tight connections to health and wellbeing aspects [9,10].

The pandemic that we have faced can be seen as a reminder of the role of urbanization in changing our way of life and how we work, move, and interact; for this reason, cities must be resilient, able to adapt to the changing needs of citizens, and limit the spread of viruses [11]. These actions could be (a) immediate, performed during the acute part of the emergency to reduce risks in the fastest way possible, or (b) medium–long term, actions that require more time and more structural interventions [3]. Since the COVID-19 outbreak, there has been renewed attention on the links between cities, urban planning, and the pandemic, which has forced urban planners and policy makers to question themselves about the future of urban built environments that have been experienced [8,12,13].

One key challenge was related to mobility. The traditional debate about public and private vehicles accessibility (i.e., emergencies, logistics, walking difficulties or impairments) was enhanced by distancing measure regulations. Compensation strategies for the reduction in the offer of public transport, in particular for those who have no alternatives, include: saving movement, favoring agile work, intervening on city timetables, reducing distances, rediscovering neighborhoods' dimensions, and encouraging shorter daily travels. If the idea of promoting pedestrians and cycling in the city was already true in "normal times", today, in the "new ordinary phase" that we are living in, it has become even more important and strategic [14–16].

In the early stage of COVID-19, it was necessary to act promptly to provide an alternative to cars in response to the mobility needs of citizens, in safety, and in the face of the quota measures envisaged for public transport, which encouraged active mobility as an alternative or integration for the displacements on an urban and territorial scale. In fact, rapid and ad-hoc solutions have been implemented in terms of pedestrianization and the creation of new urban furniture.

Several Public Administrations are open to those challenges and specific strategies and have been implemented at a local level [17,18], but indications about the measurement of possible user perception of such architectural interventions are still unexplored.

1.2. Research Gap and Study Aim

The need for built environment evaluation is always more urgent and relevant for contemporary cities: public Administration, Policy, Decision Makers (DM), and different Stakeholders need rapid and reliable instruments to compare and assess urban transformations and design proposals for implementation.

Several studies are available on overall city urban quality and sustainability assessment trough complex multicriteria systems [19,20]; however, a limited number of experiences have been launched on urban furniture design during the COVID-19 pandemic without dedicated evaluation protocols or surveys [21,22].

The research gap addressed in this study is related to the increasing need to establish methods and techniques for the evaluation of the characteristics of interventions, or their impact on certain parameters both at the urban and building scales. Starting from the 1970s, and with the recent birth of the green building concept, this approach incorporated the Building Performance Evaluation (BPE) methodologies along with spreading attention to environmental sustainability and ecology [23–26]. This has also led to the development and international diffusion of tools such as LEED, BREEAM, and many others, with a specific focus on urban built environments and communities. Several tools and methodologies have been developed to assess the qualities of the physical environment because of the growing awareness of the benefits that a good physical setting can give to occupants and stakeholders regarding sustainability and health [25]. To the best of our knowledge, rapid surveys that target COVID-19 urban redevelopment in mid-sized European cities are not available yet. Among different tools, a very effective and well-structured approach is Post Occupancy Evaluation (POE), which is defined as the process of systematically comparing actual building performance after completion and occupation [24]. This approach of

obtaining feedback about a building's performance looks at the architecture not only from the aesthetic point of view, but also with concerns from the social and behavioral fields by comparing building performances with explicit human needs [16]. It can be used for several reasons, such as to verify if the results meet the intended organizational goals and user-occupant expectations. POE can also be seen as a strategy to make built environments more sustainable [27].

The aim of this study was to develop and apply a web-based survey capable of collecting the opinion of users of the space and evaluate the effectiveness of an urban renovation project for the city of Saint Germain-En-Laye (SGL), France during the pandemic.

2. Materials and Methods

2.1. Case Study Setting and Overview of the Methodological Process

As with many other similar cities, to face COVID-19 challenges, SGL wanted to react rapidly with pedestrianization strategies and with the creation of new urban furniture to be installed. Thanks to a research project by the European Institute of Innovation and Technology, a series of applied strategies for the pedestrianization and renovation of Urban Public Spaces have been proposed as well as actions to gather data on possible user opinions. The research has been conducted by a multidisciplinary working group composed of experts in Urban Public Health, Architectural design, Industrial design, Transport engineering, and Technological and environmental design. The activities began in July 2020 with preliminary analyses and continued in August 2020 with the formulation of the first solutions for a new walkable project for a specific portion of the city center of SGL and the design of new urban modular furniture to be installed in select dedicated locations. The setting of this study, SGL, is a medium sized city of about 40,000 inhabitants in the Île-de-France region. The city is located near Paris, in the western suburbs, an average of 20 km from the city center. It has a density of around 860 ab/km^2 with an extension of 51.94 km^2.

The population is diverse, with 37% between the ages of 0–29, 41% 30–59, and the remaining 22% over 60.

The activity has been severely limited by the lockdown established by the French authorities due to the COVID-19 pandemic, which still affects the city of SGL, and none of the urban furniture prototypes have been built. Consequently, it was not possible to test the effectiveness of the furniture project in the actual experimental installation areas. Nevertheless, an alternative strategy has been adopted to proceed with the validation of the urban furniture design. A specific virtual validation of the urban installation was implemented and applied by defining a cross-sectional visual web-based survey [28,29] with direct comparison through virtual images of the experimental areas of SGL before and after the new urban furniture installation rendered and illustrated via Adobe® Photoshop version CC2018.

In this way, a virtual test of the new installations was possible to verify the effectiveness of the prototype in advance according to the stakeholder requirements. On-site visits, semi-structured interviews with shopkeepers, and scoping literature reviews identified important features to be verified. The development of such a survey and its application followed five different steps exemplified in the flowchart reported in Figure 1 and described below.

2.2. Assessment Framework Development

First, the recent literature was explored in order to create the basis of the research. By using some of the most relevant databases, such as Scopus and Web of Science, a brief analysis was conducted to collect evidence about urban strategies and their role in disease prevention, such as for COVID-19.

Some papers have been collected through a review of the literature highlighting additional specific aspects to be considered in order to plan sustainable and resilient cities and neighborhoods in light of Public Health, Urban Health, Universal Design, and COVID-19 resiliency with specific regards to safety, perceived comfort, livability of spaces, nighttime lighting, physical distancing, shelter from atmospheric agents, increase in rest

areas, cultural heritage, and accessibility [3,4,9,10,30]. Architecture and Urban Design, both in education and practice, due to their deep relationship with Public Health can play a key role in making citizens healthier both physically and mentally [31,32].

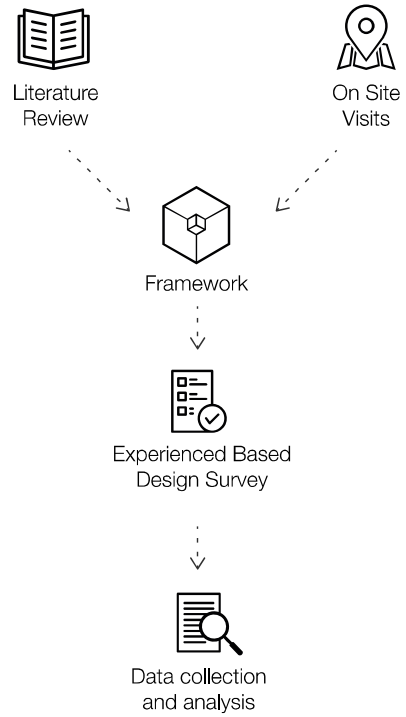

Figure 1. Flow chart of the methodological process that were followed; original image made by the authors.

The analysis of the literature and the requirements highlighted by the different stakeholders informed which of the needs and the main characteristics should be considered to create a healthy, safe, and sustainable city. Some web-based surveys have been developed and applied during the first wave of COVID-19, which highlights the importance of spending time in green spaces to regenerate people, especially in times of stressful health emergencies [33,34].

Despite the framework being built in the early stages of the COVID-19 pandemic, the final set of criteria is consistent with recent in-depth literature reviews on the topic [35].

Six criteria composed the framework of the analysis, as reported and described below:

(a) DESIGN FEATURES. In an urban project, design features, such as furniture and quality of spaces, play a key role [4,36]. For example, providing shaded seats within the city can encourage people to stay in open air for longer. The insertion of accessories like cabled workstations to encourage the open air life and charging areas for electric vehicles and bikes can similarly increase the use of low-impact transport. The use of specific elements, such as urban seats, can contribute to the spreading of viruses [37].

(b) LOCAL AND CULTURAL IDENTITY. The city of SGL is strongly linked with its traditions. To maintain and increase this aspect, the project will have some connections with the history of the city. Cultural identity is fundamental in passing on traditions to new generations [38].

(c) ENVIRONMENTAL SUSTAINABILITY. Every urban project should preserve and increase sustainability. This can be done with the use of sustainable and recycled materials or guaranteed complete energy independence. It should also stimulate a sustainable way of life.

(d) SAFETY AND SECURITY. In a smart and healthy city, safety and security should be a priority in order to give a better perception to the users and reduce risks. Perceived safety can be improved by using urban lights along the streets and active video surveillance [39].

(e) ACCESSIBILITY AND UNIVERSAL DESIGN. Every high-quality urban space must be fully accessible to all users. The COVID-19 pandemic has brought a problem to light that often remains invisible: the "everyday emergencies" that people with disabilities experience every day. Proper space planning that is inclusive and universal is needed in cities to make them accessible to all people, regardless of their degree of ability [40,41].

(f) HEALTH AND COVID-19. Due to the COVID-19 pandemic, urban spaces must be able to reduce risks. The use of outdoor spaces could be an important chance to create new safe spaces that cannot otherwise be guaranteed in the city [36].

Public spaces are also important from a mental health perspective, and some studies underline the idea that physical and visual contact with natural elements, such as urban green areas, allows for positive feedback regarding the health and well-being of users and citizens [42–44].

2.3. Web-Based Survey Definition

Stakeholders and public engagement methods have been used throughout the different iterative design processes, allowing for the active incorporation of structured stakeholder feedback into the various proposals, which gradually improves and deepens the urban furniture and public space solutions. This solution exploits an approach that is widely used in the field of evidence-based design research with specific regard to the design of complex facilities such as healthcare environments [45–47]. Indeed, the healthcare process often involves choosing between multiple design alternatives. Physical mock-ups have traditionally been used to garner subjective feedback from end users during the design process to support design decision-making with multiple stakeholders. However, the use of physical mock-ups to compare multiple design options, especially in early design stages, can be cost-prohibitive in an era of cost containment where organizations are being challenged to do more with less. More cost- and time-effective methodologies have thus been designed, including virtual mock-ups, simulations, and virtual reality usage [48].

It is recognized that people interact with their surrounding environments using multiple senses, but the predominant source of input in most situations is the sense of sight and therefore visual simulations are considered good nonverbal environmental evaluation [49]. Today, the capacity of technology to create realistic simulations supports this type of methodology. Those approaches are designed in a way that multiple scenarios or alternatives are proposed, and the different stakeholders are required to evaluate their specific preferences through a comparative approach. This comparison is not just led by subjectivity, but also surveys and methodologies based on structured scales that are exploited to define the qualities that are going to be assessed in a precise way. A simplified version of the post occupancy evaluation survey has been designed to rapidly validate the design solution before its actual installation. While starting the production, this approach allows for work in parallel and collective feedbacks from general citizens and possible future users resulting in an efficient and time-saving solution. The Web-based Survey is the result of a mitigation strategy that allows for the creation of a simplified and user-friendly version of the public engagement methods.

The survey is composed of three sections:

I. The first one is an introductory section, where the general aim of the project is declared and instructions for the participants are provided. It is clarified that the survey is anonymous and that the results are used for research purposes only. This section also includes two descriptive diagrams to clarify to the respondent the exact features of the intervention.

II. The second section is the core of the survey and includes seven questions. Each question is structured with a statement, a comparative virtual visualization of the city of SGL before and after the intervention, and a ranking scale. The pictures are edited with the graphic editing software Adobe Photoshop version CC 2018 and the two options are named Solution A and Solution B. The former is the current

situation without the urban furniture installation and the latter is the situation with the urban furniture and some urban intervention, such as pedestrianization or street layout modification. The ranking scale is based on a Likert scale with scoring from 1 (meaning "absolutely disagree") to 5 (meaning "absolutely agree"). This psychometric scale has been chosen because it gives more granular information about perception rather than a classical binary yes/no scale. Each statement requires taking a clear position on some specific feature of the urban environment that might be impacted by the new solution. This method allowed for the isolation of target design features, while eliminating the potential confounding variables [49].

The questions were related to the six criteria previously identified in the Assessment Framework Development:

(a) Design features, with specific regard to the creation of covered spaces and to the creation of space for sitting, resting, chatting, or working on a laptop (2 questions);
(b) Local and Cultural Identity, with specific regards to the creation of iconic and recognizable elements (1 question);
(c) Safety and Security, with specific regards to the creation of bright and safe places (1 question);
(d) Sustainability, with specific regards to the creation of a place that is comfortable for slow mobility usage (i.e., bicycle, electric scooters) (1 question);
(e) Accessibility and Universal Design, with specific regards to the creation of a place comfortable for different users (1 question);
(f) Health and COVID-19 prevention, with specific regards to the creation of public space that is comfortable for uses by shopkeepers, clients, and citizens in case of restrictions or indoor social distancing limitations (i.e., in shops) (1 question).

III. The third and last section includes basic demographic information such as gender and age for statistical purposes and questions that were not mandatory.

The full version of the survey is available in Supplementary Materials section.

2.4. Data Collection and Analysis

The survey was available in Italian, French and English and was implemented on the Google Form platform to ensure velocity, simplicity, and anonymity during pandemic times, much like other web-based surveys built in that period [50,51]. It was disclosed during December 2020 both in Italy and in France, and to reach as many people as possible it was submitted via mail to several contacts of Italian universities and the municipalities of Saint Germain-en-Laye and Paris. The surveys have also been posted on several social media citizen groups to collect opinions from the residents about the refurbishment as well as personal networks. The analysis of the results has been done using a Microsoft Excel spreadsheet.

The results have been then analyzed in both vertical and horizontal ways. The former approach looked at the main differences in terms of average, median, and mode in each of the seven couples of alternatives to understand whether the new installation and the urban refurbishment increased the perception of urban quality by a general sample of the population. Differences between the existing state (Solution A) and the new proposal (Solution B) have been also discussed. In the latter way of analysis, only the results that referred to the new design (Solution B) have been studied, in which higher and lower scores have been compared and further discussed. The survey's sample size was calculated considering the population of 45,000 inhabitants (population of Saint Germain rounded up and people involved by Politecnico di Milano), a margin of error of 5%, and a standard deviation of 50% with a minimum target of 269 respondents.

3. Results

3.1. Results of the Web-Based Survey of Urban Furniture in SGL

Despite the short time in which the survey has been online, it has received a total of 371 full replies from Italian and French respondents and exceeded the minimum target [52]. Other studies conducted in the same period, using web-based surveys, have obtained a similar number of respondents [53].

The results show that 140 males (38%) and 217 females (58%) responded with a ratio of male:female of about 1:1.5, and 14 respondents preferred not to declare their gender (4%). Of the 371 respondents, the majority were in the age range of 25–45 years old (n = 157; 42%), followed by 46–65 people (n = 104; 28%). Both under-25 (n = 49; 13%) and over-65 people (n = 49; 13%) responded to the questionnaire and 12 preferred not to declare their age. The online accessibility of the survey likely made the filling process easier for younger adults rather than elderly people and, therefore, to catch a significant number of replies from this category, a direct survey with in-presence interviews might be preferred in future studies. Ad-hoc interactive surveys or direct interviews might better catch the needs of more specific age ranges.

3.2. Comparison between Solution A and Solution B

The first set of analyses highlighted the differences perceived by a general sample of the population regarding the public space of SGL before and after the installation of the new urban furniture and the street layout implementation.

3.2.1. Design Features (Covered Spaces)

Concerning design features and, in particular, the possibility of being covered from the sun or rain, the current urban situation/configuration (Solution A) received an average score of 1.98/5 with mode and median equal to 2, which means that most of the respondents feel that Solution A is not able to protect public space users from sun or rain. On the contrary, Solution B received an average score of 4.10 with mode and median equal to 4, which shows that most respondents strongly agree that the new public space is able to offer covered space for city users (Figure 2). This fact is very important because SGL is in a particularly rainy geographical area.

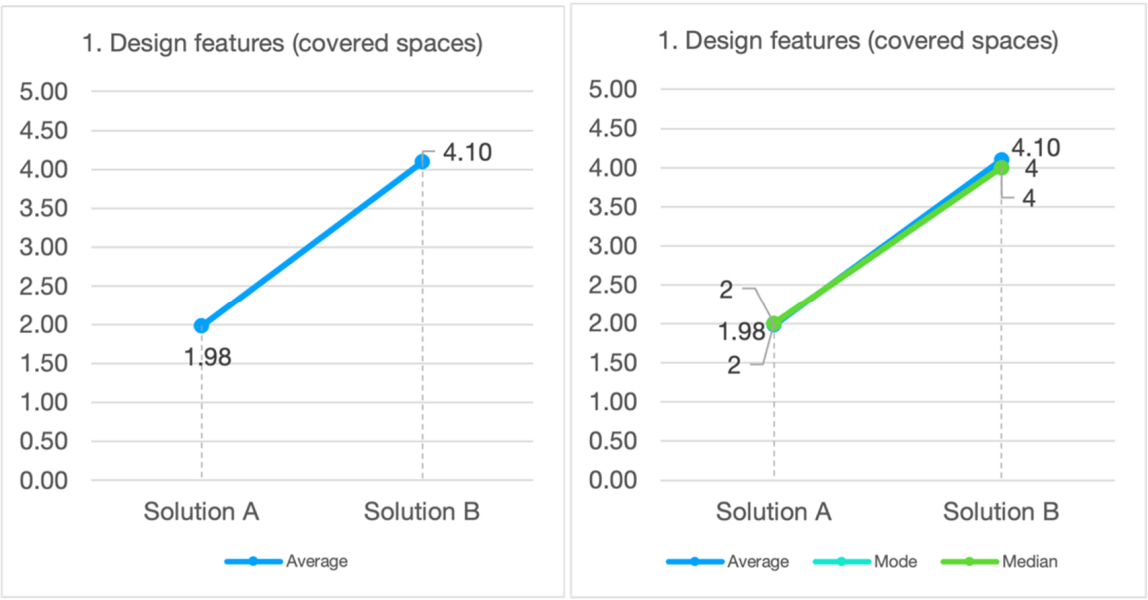

Figure 2. Comparison between Solution A and Solution B from question 1. Design features (covered space): average, mode, median.

3.2.2. Design Features (Sitting Space)

According to the respondents, the existing situation (Solution A) does not provide an occasion for city users for sitting, resting, chatting, or working on the PC, while the new design proposal/renewal project (Solution B) seems particularly appropriate. The first solution scored 1.85 as average (mode = 1; median = 2) while the second scored 4.25 as average (mode = 5; median = 4), which shows that most respondents feel that Solution A was strongly inappropriate and Solution B was strongly appropriate for resting, sitting, chatting, or working on the PC. This area is also the highest in terms of difference (d = 2.40) between the before and after situations, which highlights the fact that Solution B significantly improved the current situation by providing an occasion for multiple uses of the public space that other than being a place of transit (Figure 3).

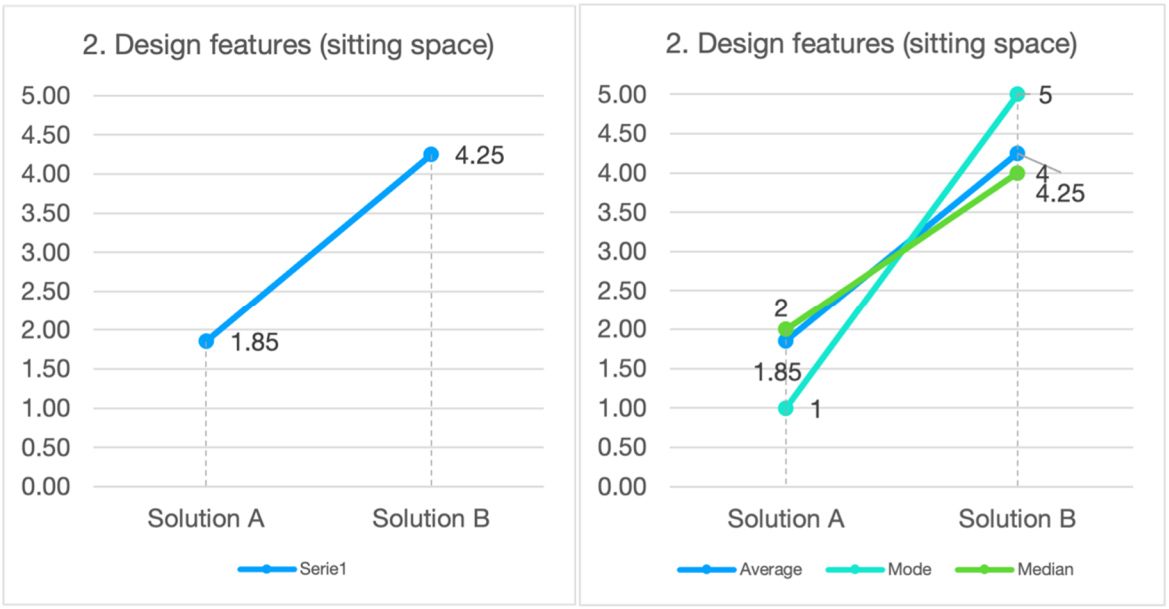

Figure 3. Comparison between Solution A and Solution B from question 2. Design features (sitting space): average, mode, median.

3.2.3. Identity

The capability of a place to be recognized thanks to proper identification has also been evaluated by respondents. The existing public space is not very identifiable, reaching an average value of 2.14/5 points with a mode and median value of 2; few people thought that Solution A has iconic or recognizable elements. On the contrary, the installation of new urban furniture and the redesign of the public space gives the city of SGL new iconic elements to be recognized and the most frequent value assigned by respondents for Solution B is 5/5 with mode and median of 4 and an average value of 4.05/5, as shown in the Figure 4.

3.2.4. Safety and Security

Perception of Safety and Security is a key issue in public space design and the user perception in this regard is very important. The existing situation of SGL is considered unsafe for the respondents due to scarce brightness. The safety and security issues for Solution A have a score of 2.01/5 (mode and median equal to 2), while when assessing the same environment with the inclusion of the new urban furniture the score is over 2 points higher reaching 4.17 as average, mode value of 5, and median value of 4. The new urban furniture act as an urban lighthouse, which contributes to increasing the perception of Safety and Security of public space during night hours (Figure 5).

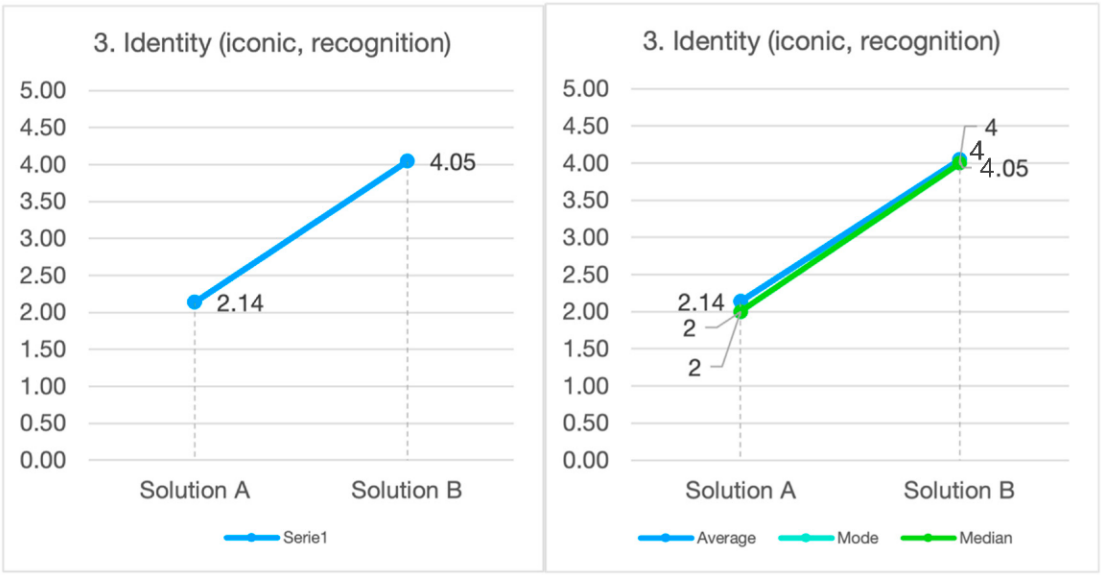

Figure 4. Comparison between Solution A and Solution B from question 3. Identity (iconic, recognition): average, mode, median.

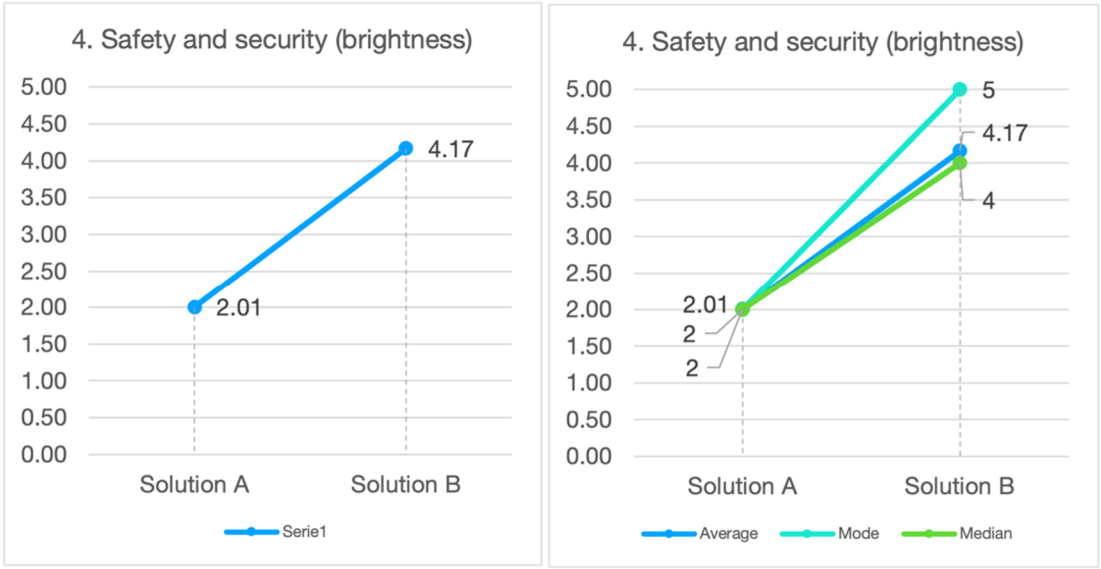

Figure 5. Comparison between Solution A and Solution B from question 4. Safety &Security (brightness): average, mode, median.

3.2.5. Accessibility

According to the respondents, the new intervention allows public space to be more accessible and aligned with the Universal Design principles declared in the project brief and guidelines. Indeed, while the existing situation has an average score of 2.10/5 (mode and median equal to 2), Solution B reached 4.06/5 (mode and median equal to 4) thanks to the new street design, the introduction of sloped areas for wheelchair or stroller users, the definition of slow mobility priority paths, and the creation of sitting space for elderly people or families (Figure 6).

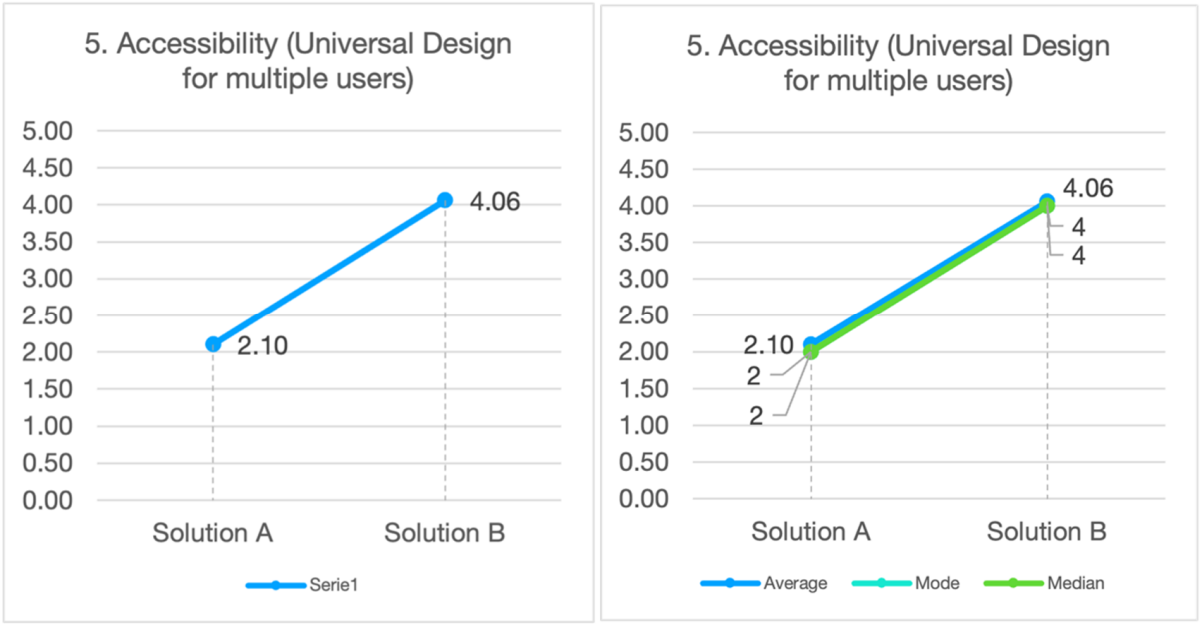

Figure 6. Comparison between Solution A and Solution B from question 5. Accessibility (Universal Design for multiple users): average, mode, median.

3.2.6. Health and COVID-19

The existing public space is considered neither appropriate nor inappropriate for usage during COVID-19 restrictions and social distancing, scoring 2.46 as average with mode and median values equal to 2. Solution B introduces a consistent improvement, which increased the average value toward 3.92 with mode and median equal to 4 and shows that most respondents considered the new public space design comfortable even when social distancing and restrictions are in place. Each pavilion can host a limited group of people and distance is guaranteed. Furthermore, shopkeepers can benefit from additional space outside the shops to exhibit products in a safe and controlled environment (Figure 7).

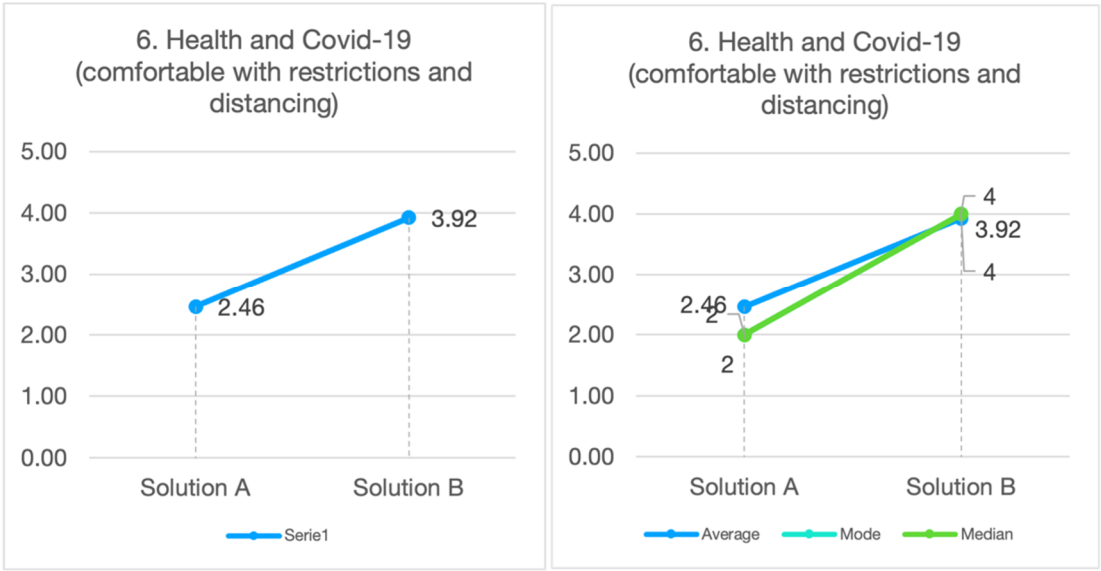

Figure 7. Comparison between Solution A and Solution B from question 6. Health and COVID-19 (comfortable with restrictions and distancing): average, mode, median.

3.2.7. Sustainability

The general perception of respondents is that the new proposal (Solution B) is twice as sustainable than the existing state (Solution A). Indeed, while the former reached an average value of 4.33/5 with mode and median equal to 5, the latter reached 1.99/5 as the average, with mode value equal to 1 and median equal to 2. The new solution provides additional dedicated space for bicycles, e-scooters, and other slow mobility tools (Figure 8).

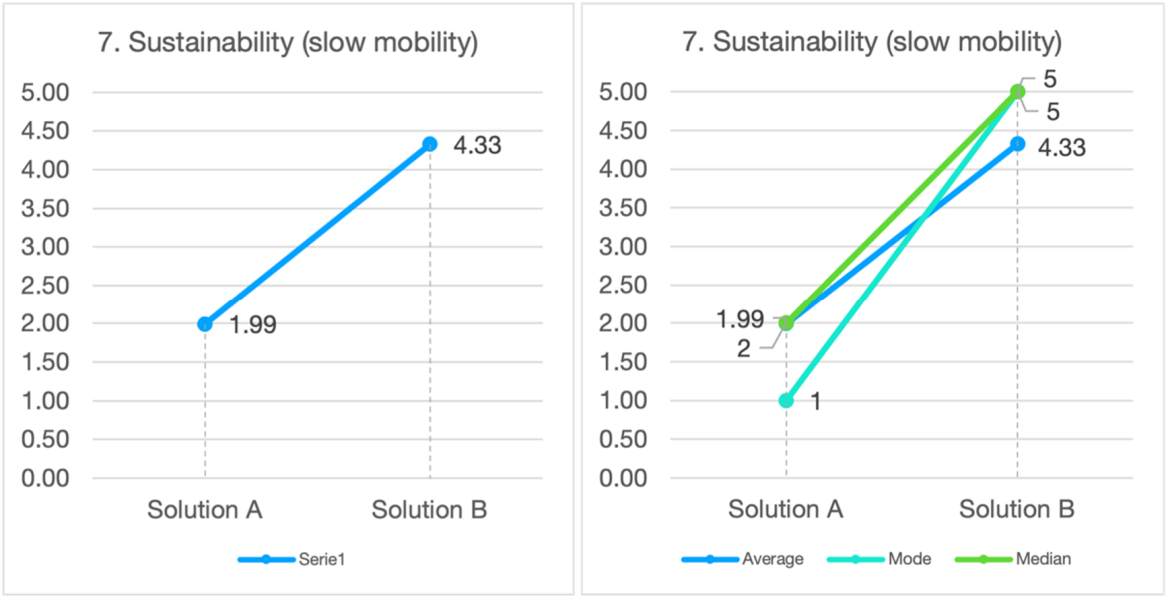

Figure 8. Comparison between Solution A and Solution B from question 7. Sustainability (slow mobility): average, mode, median.

3.2.8. Comparison of the Results

The results show that Solution A (the existing situation) always received a negative rating, less than 3 (Neither agree nor disagree), with a maximum average score of 2.94 in question 6 and a minimum score of 1.85 for question 2. In contrast, Solution B (the design solution) always scored 4 or higher (3.92 for question 6 results in the lowest mean score while 4.33 is the highest for question 7). Solution A obtained an average score among all questions of 2.08, and Solution B obtained 4.13 (Figure 9).

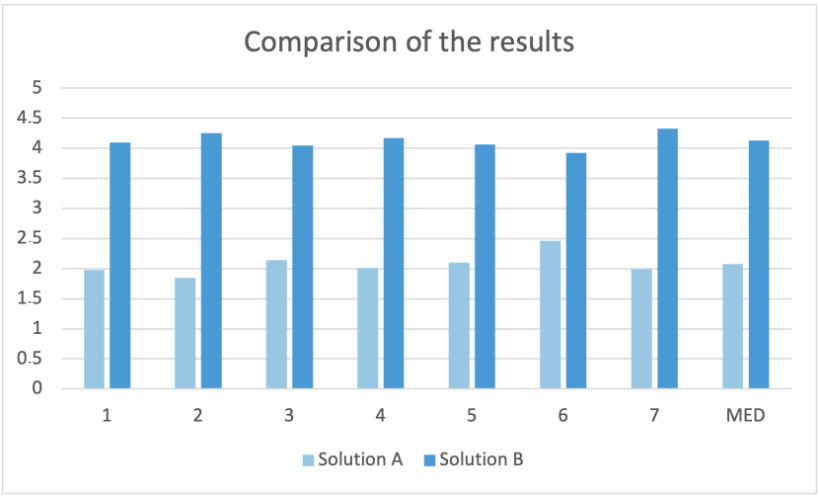

Figure 9. Comparison of the average scores of Solution A and Solution B.

4. Discussion

4.1. Comparison between the Different Features of Solution B

The new proposed public space of SGL (Solution B) appears to be very appreciated by the respondents who mainly assigned values 4 (Agree) or 5 (Absolutely agree) to the seven different statements provided. Indeed, the mode was 5 in three of the statements and 4 in the remaining four, and the median was 5 in one of the statements and 4 in the remaining six (Figure 10).

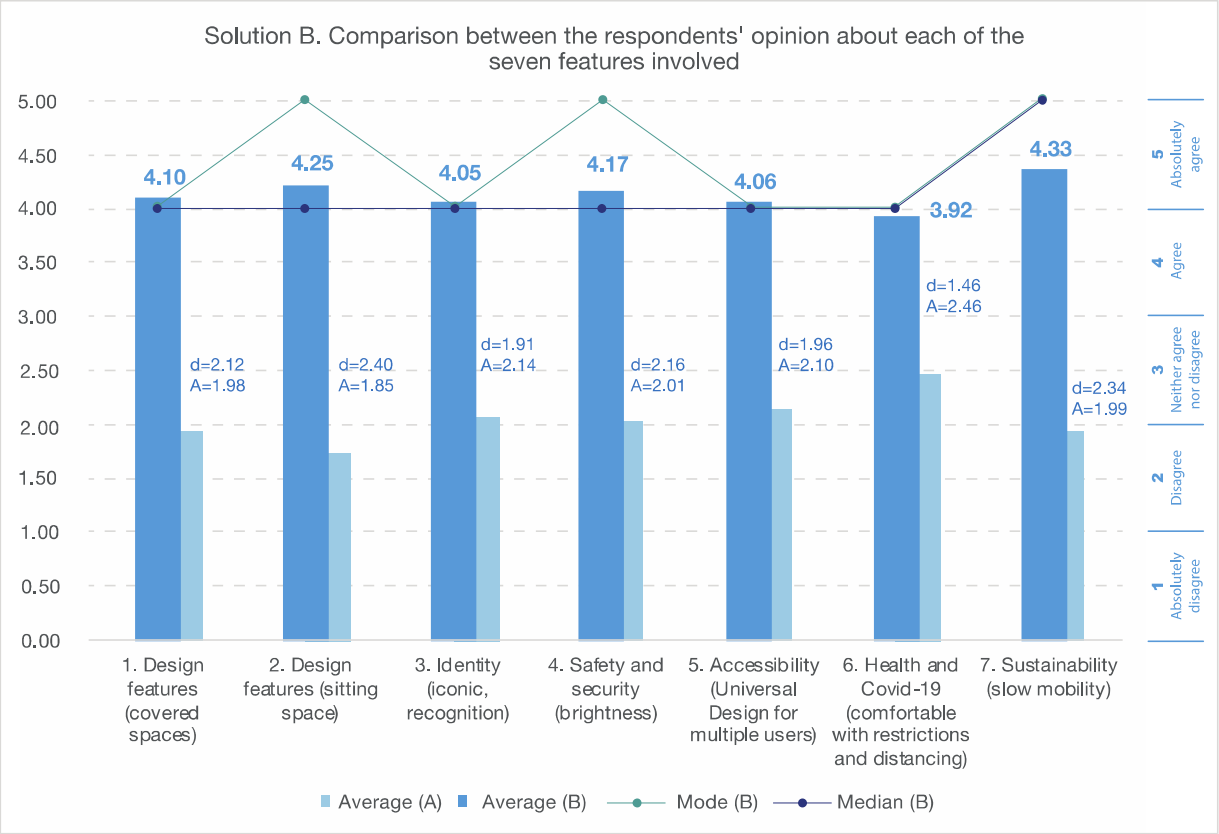

Figure 10. Comparison between the respondents' opinion about each of the seven features involved, with reference to the existing state (A) and the difference with the new solution (d).

Although all received a high score, it is interesting to compare the averages and see which features are appreciated by the respondents to identify possible areas of excellence or of further improvements. Additionally, highlighting the relative improvements in each area compared to the current state provides a more detailed understanding of the design solution. Figure 8 describes those factors, and a detailed explanation is provided below.

The highest average value was obtained by 7. Sustainability (slow mobility), with a score of 4.33/5, followed by 2. Design features (sitting space), with a score of 4.25/5, and 4. Safety & Security (brightness), with a score of 4.17/5. Generally, those aspects are also the ones that improved the most in comparison with the existing situation; there are 2.34, 2.40, and 2.16 points of improvement between Solution A and Solution B, respectively, which moves from a general area of disagreement to an area of absolute agreement with the specific statements. On the contrary, the lowest areas, which scored slightly lower on average, are: 3. Identity (iconic, recognition) with a score of 4.05/5 and 6. Health and COVID-19 (comfortable with restrictions and distancing) with a score of 3.92/5. Nevertheless, it is interesting to notice that, compared to Solution A, both the aforementioned areas improved respectively by 1.91 and 1.96 points, which moved the perception of people closer to an

agreement with the specific statements. The results are consistent with the existing studies on Urban Public Health and COVID-19 resiliency of Urban Public Spaces [54].

The results obtained with the survey are in line with the trend of pedestrianization and implementation of "slow mobility" in another context. For example, strategies that have been applied during COVID emergencies in cities like Seattle, Washington and Vancouver, British Columbia to reduce the spread of the virus using street reallocation programs become permanent due to the citizens' will [55].

The research findings can be a starting point for transferring safe and sustainable strategies from research to public administration application.

4.2. Strenghts and Limitation of the Web-Based Survey Usage

The long lockdown period due to the worsening of the contagion resulted in delays in the physical realization of the urban furniture; therefore, the validation of the solutions was carried out through the visual web-based survey. This decision allowed us to overcome the actual limitations caused by the COVID-19 pandemic whilst still obtaining valid results for the purposes of the experiment. In addition to a significant saving in construction costs, the online practice allowed us to obtain a more effective and homogeneous administration of questions, as well as very short response times [56].

The results are consistent with the statements that several areas of research related to the built environment are proposing at the different urban and building scales: there is an increasing need to establish methods and techniques for the evaluation of the characteristics of interventions or their impact on certain parameters in terms of building performance evaluation, sustainability, and ecology [23–26] and in terms of reliable tool development and diffusion [25,57]. It is now clear that urban and outdoor environments and features can have an impact on the health and wellbeing of citizens and be health-promoting elements [58].

The findings of the present web-based survey application highlight the need for a holistic view of urban planning, which takes account of urban health and sustainability from the early stages of the design process [41]. Too often, projects have not reached their objectives because citizens were not correctly involved in them [59]. This survey is a way to both involve stakeholders in the decision-making process and be aware of their needs.

5. Conclusions

Proper planning of projects on the urban environment is the way to make cities enhance outdoor living conditions, as well as urban and public health [35]. In conclusion, we can assume that the urban environment acts as an influence on the lives of citizens in terms of both health and the behaviors they may engage in, encouraging or discouraging activity and the adoption of proper lifestyles.

5.1. Final Considerations

The study presented the development and test of a visual web-based survey to collect possible users' perceptions about a specific Urban Public Space redesign during COVID-19. The results showed that, according to the survey respondents, the proposal met the design objectives and overperformed in all seven areas of analysis with excellent outcomes in Sustainability, Safety, and Design features and good results in terms of Identity and COVID-19 restrictions, which consistently improved the existing situation of public space within the city of SGL. This explorative study envisioned possibilities for scalability and implementation in other similar medium-sized European cities. The simple tool presented can offer several possibilities for complementary decision-support instruments for the public administration in the city of SGL and any other city that wishes to incorporate such concepts into the redesign of urban public space and test them in short timeframes before the construction phase.

Starting from the specific results, the significance of this study involved the possibility of improving the adoption of evaluation models by public administration to base further

urban interventions on specific data and users' preferences. The survey proposed in this study is a first step, and the preliminary results showcased can be the starting point of further research and more structured analyses on the topic.

5.2. Research Limiations and Future Developments

The research had limitations that started from the need to conduct most of the activities online. This allowed us to test it through a visual web-based survey that may not represent the entire population. One of the main goals for future development will be to increase the sample size of answers and include as many people and stakeholders as possible. For example, the use of paper-based surveys to reach elderly people and those who do not an internet connection or do not use social media would be beneficial to further research. Starting from these preliminary findings, a multiple-criteria decision problem can be formulated and expanded to the entire city complexity; further evaluation about specific cost benefit, criteria interaction, or further statistics-based analysis may be conducted in future studies.

The use of such web-based surveys should be encouraged and may become a commonly used practice for Public Administration to collect data and the citizen opinion of the different project proposals for Urban Public Space.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/su141912489/s1, Full Survey Used in the Study.

Author Contributions: Conceptualization, M.B., S.M. and A.B.; methodology, A.B. and M.B.; validation, S.C.; investigation and analysis, S.M. and A.B.; writing—original draft preparation, S.M. and M.B.; writing—review and editing, S.C. and A.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the European institute of Innovation and Technology (EIT) Urban Mobility, Project ID 20269, Project name: "Safely Connected: Sustainable Common Accessibility of Lively Downtowns for Healthy People".

Institutional Review Board Statement: Ethical review and approval were waived for this study due to not collecting personal and sensible data of participants.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Acknowledgments: The study was conducted during a research project won by Politecnico di Milano, namely "Safely Connected: Sustainable Common Accessibility of Lively Downtowns for Healthy People" funded by the European institute of Innovation and Technology (EIT) Urban Mobility. The authors would like to acknowledge Daniele Fanzini and his team, Fondazione Politecnico di Milano, and Saint Germain-En-Laye (SGL) municipality for their important contributions in the research project development.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Greenslade, G.E.; MacGregor, C.G.; Chang, A.C. Pedestrian Physical-Distancing Strategies During COVID-19. In Proceedings of the 21st Congress of the International Ergonomics Association (IEA 2021), Commerce, CA, USA, 13–18 June 2021; Black, N.L., Neumann, W.P., Noy, I., Eds.; Lecture Notes in Networks and Systems; Springer International Publishing: Cham, Swizterland, 2021; Volume 222, pp. 580–585, ISBN 978-3-030-74610-0.
2. Mohammadi, A.; Chowdhury, M.T.U.; Yang, S.; Park, P.Y. Developing Levels of Pedestrian Physical Distancing during a Pandemic. *Saf. Sci.* **2021**, *134*, 105066. [CrossRef]
3. Capolongo, S.; Rebecchi, A.; Buffoli, M.; Appolloni, L.; Signorelli, C.; Fara, G.M.; D'Alessandro, D. COVID-19 and Cities: From Urban Health Strategies to the Pandemic Challenge. A Decalogue of Public Health Opportunities. *Acta Biomed. Atenei Parm.* **2020**, *91*, 13–22. [CrossRef]
4. Capolongo, S.; Buffoli, M.; Brambilla, A.; Rebecchi, A. Healthy Urban Planning and Design Strategies to Improve Urban Quality and Attractiveness of Places. *TECHNE J. Technol. Archit. Environ.* **2020**, *19*, 271–279. [CrossRef]
5. Cartenì, A.; Di Francesco, L.; Henke, I.; Marino, T.V.; Falanga, A. The Role of Public Transport during the Second COVID-19 Wave in Italy. *Sustainability* **2021**, *13*, 11905. [CrossRef]

6. Gargiulo, C.; Sgambati, S. Active Mobility in Historical Centres: Towards an Accessible and Competitive City. *Transp. Res. Procedia* **2022**, *60*, 552–559. [CrossRef]
7. Rodger, R. Urban Public HealthA Historical Perspective. In *Urban Health*; Oxford University Press: Oxford, UK, 2019; pp. 169–178, ISBN 978-0-19-091585-8.
8. Mouratidis, K.; Yiannakou, A. COVID-19 and Urban Planning: Built Environment, Health, and Well-Being in Greek Cities before and during the Pandemic. *Cities* **2022**, *121*, 103491. [CrossRef]
9. Krellenberg, K.; Koch, F. Conceptualizing Interactions between SDGs and Urban Sustainability Transformations in COVID-19 Times. *Polit. Gov.* **2021**, *9*, 200–210. [CrossRef]
10. WHO. *World Health Statistics 2018: Monitoring Health for the SDGs: Sustainable Development Goals*; World Health Organization: Geneva, Switzerland, 2018; ISBN 978-92-4-156558-5.
11. Lee, V.J.; Ho, M.; Kai, C.W.; Aguilera, X.; Heymann, D.; Wilder-Smith, A. Epidemic Preparedness in Urban Settings: New Challenges and Opportunities. *Lancet Infect. Dis.* **2020**, *20*, 527–529. [CrossRef]
12. Alhusban, A.A.; Alhusban, S.A.; Alhusban, M.A. How the COVID 19 Pandemic Would Change the Future of Architectural Design. *J. Eng. Des. Technol.* **2022**, *20*, 339–357. [CrossRef]
13. Jasiński, A. COVID-19 Pandemic Is Challenging Some Dogmas of Modern Urbanism. *Cities* **2022**, *121*, 103498. [CrossRef]
14. Awad-Núñez, S.; Julio, R.; Moya-Gómez, B.; Gomez, J.; Sastre González, J. Acceptability of Sustainable Mobility Policies under a Post-COVID-19 Scenario. Evidence from Spain. *Transp. Policy* **2021**, *106*, 205–214. [CrossRef]
15. Amerio, A.; Bertuccio, P.; Santi, F.; Bianchi, D.; Brambilla, A.; Morganti, A.; Odone, A.; Costanza, A.; Signorelli, C.; Aguglia, A.; et al. Gender Differences in COVID-19 Lockdown Impact on Mental Health of Undergraduate Students. *Front. Psychiatry* **2022**, *12*, 813130. [CrossRef]
16. Morganti, A.; Brambilla, A.; Aguglia, A.; Amerio, A.; Miletto, N.; Parodi, N.; Porcelli, C.; Odone, A.; Costanza, A.; Signorelli, C.; et al. Effect of Housing Quality on the Mental Health of University Students during the COVID-19 Lockdown. *Int. J. Environ. Res. Public Health* **2022**, *19*, 2918. [CrossRef]
17. Barbarossa, L. The Post Pandemic City: Challenges and Opportunities for a Non-Motorized Urban Environment. An Overview of Italian Cases. *Sustainability* **2020**, *12*, 7172. [CrossRef]
18. Ahsan, M.M. Strategic Decisions on Urban Built Environment to Pandemics in Turkey: Lessons from COVID-19. *J. Urban Manag.* **2020**, *9*, 281–285. [CrossRef]
19. Zhang, L.; Xu, Y.; Yeh, C.-H.; Liu, Y.; Zhou, D. City Sustainability Evaluation Using Multi-Criteria Decision Making with Objective Weights of Interdependent Criteria. *J. Clean. Prod.* **2016**, *131*, 491–499. [CrossRef]
20. Chen, Y.; Zhang, D. Evaluation of City Sustainability Using Multi-Criteria Decision-Making Considering Interaction among Criteria in Liaoning Province China. *Sustain. Cities Soc.* **2020**, *59*, 102211. [CrossRef]
21. Askarizad, R.; He, J. Post-Pandemic Urban Design: The Equilibrium between Social Distancing and Social Interactions within the Built Environment. *Cities* **2022**, *124*, 103618. [CrossRef]
22. Carli, P. Risposte Urbane Rapide per Nuovi Spazi Inclusivi e Habitat Durante La Pandemia. *Territorio* **2021**, *97*, 138–146. [CrossRef]
23. Chew, M.Y.L.; Conejos, S.; Asmone, A.S. Developing a Research Framework for the Green Maintainability of Buildings. *Facilities* **2017**, *35*, 39–63. [CrossRef]
24. Hardy, A.E.; Preiser, W.F.E.; Schramm, U. (Eds.) *Building Performance Evaluation: From Delivery Process to Life Cycle Phases*, 2nd ed.; Springer International Publishing: Cham, Swizterland, 2018; ISBN 978-3-319-56862-1.
25. Li, P.; Froese, T.M.; Brager, G. Post-Occupancy Evaluation: State-of-the-Art Analysis and State-of-the-Practice Review. *Build. Environ.* **2018**, *133*, 187–202. [CrossRef]
26. Meir, I.A.; Garb, Y.; Jiao, D.; Cicelsky, A. Post-Occupancy Evaluation: An Inevitable Step Toward Sustainability. *Adv. Build. Energy Res.* **2009**, *3*, 189–219. [CrossRef]
27. Bee Woon, N.; Mohammad, I.S.; Baba, M.; Zainol, N.N.; Nazri, A.Q. Critical Success Factors for Post Occupancy Evaluation of Building Performance: A Literature Analysis. *J. Teknol.* **2015**, *74*, 41–49. [CrossRef]
28. Callegaro, M.; Lozar Manfreda, K.; Vehovar, V. *Web Survey Methodology*; Sage: Los Angeles, CA, USA; London, UK; New Delhi, India; Singapore; Washington, DC, USA; Boston, MA, USA, 2015; ISBN 978-0-85702-860-0.
29. Rebecchi, A.; Boati, L.; Oppio, A. Measuring the Expected Increase in Cycling in the City of Milan and Evaluating the Positive Effects on the Population's Health Status: A Community-Based Urban Planning Experience. *Ann. Ig. Med. Prev. E Comunità* **2016**, *28*, 381–391. [CrossRef]
30. Jevtic, M.; Bouland, C. Sustainable Development Goals as a Framework of Education for Healthy Cities and Healthy Environments. In *Lifelong Learning and Education in Healthy and Sustainable Cities*; Azeiteiro, U.M., Akerman, M., Leal Filho, W., Setti, A.F.F., Brandli, L.L., Eds.; World Sustainability Series; Springer International Publishing: Cham, Swizterland, 2018; pp. 283–298; ISBN 978-3-319-69473-3.
31. Spano, G.; D'Este, M.; Giannico, V.; Elia, M.; Cassibba, R.; Lafortezza, R.; Sanesi, G. Association between Indoor-Outdoor Green Features and Psychological Health during the COVID-19 Lockdown in Italy: A Cross-Sectional Nationwide Study. *Urban For. Urban Green.* **2021**, *62*, 127156. [CrossRef]
32. Gola, M.; Brambilla, A.; Barach, P.; Signorelli, C.; Capolongo, S. Educational Challenges in Healthcare Design: Training Multidisciplinary Professionals for Future Hospitals and Healthcare. *Ann. Ig. Med. Prev. E Comunita* **2020**, *32*, 549–566. [CrossRef]

33. Gola, M.; Botta, M.; D'Aniello, A.L.; Capolongo, S. Influence of Nature at the Time of the Pandemic: An Experience-Based Survey at the Time of SARS-CoV-2 to Demonstrate How Even a Short Break in Nature Can Reduce Stress for Healthcare Staff. *HERD Health Environ. Res. Des. J.* **2021**, *14*, 49–65. [CrossRef]
34. Slater, S.J.; Christiana, R.W.; Gustat, J. Recommendations for Keeping Parks and Green Space Accessible for Mental and Physical Health During COVID-19 and Other Pandemics. *Prev. Chronic. Dis.* **2020**, *17*, 200204. [CrossRef]
35. Faedda, S.; Plaisant, A.; Talu, V.; Tola, G. The Role of Urban Environment Design on Health During the COVID-19 Pandemic: A Scoping Review. *Front. Public Health* **2022**, *10*, 791656. [CrossRef]
36. Jevtic, M.; Matkovic, V.; Paut Kusturica, M.; Bouland, C. Build Healthier: Post-COVID-19 Urban Requirements for Healthy and Sustainable Living. *Sustainability* **2022**, *14*, 9274. [CrossRef]
37. Hassan, A.M.; Megahed, N.A. COVID-19 and Urban Spaces: A New Integrated CFD Approach for Public Health Opportunities. *Build. Environ.* **2021**, *204*, 108131. [CrossRef] [PubMed]
38. Insch, A. Peoplescapes and Placemaking in a Multicultural World: Residents Identity, Attachment, and Belonging. In *Marketing Countries, Places, and Place-Associated Brands*; Edward Elgar Publishing: Cheltenham, UK, 2021; pp. 114–134, ISBN 978-1-83910-737-5.
39. Laufs, J.; Borrion, H.; Bradford, B. Security and the Smart City: A Systematic Review. *Sustain. Cities Soc.* **2020**, *55*, 102023. [CrossRef]
40. Pineda, V.S.; Corburn, J. Disability, Urban Health Equity, and the Coronavirus Pandemic: Promoting Cities for All. *J. Urban Health* **2020**, *97*, 336–341. [CrossRef] [PubMed]
41. Capolongo, S.; Buffoli, M.; Mosca, E.I.; Galeone, D.; D'Elia, R.; Rebecchi, A. Public Health Aspects' Assessment Tool for Urban Projects, According to the Urban Health Approach. In *Regeneration of the Built Environment from a Circular Economy Perspective*; Della Torre, S., Cattaneo, S., Lenzi, C., Zanelli, A., Eds.; Research for Development; Springer International Publishing: Cham, Swizterland, 2020; pp. 325–335, ISBN 978-3-030-33255-6.
42. Wendelboe-Nelson, C.; Kelly, S.; Kennedy, M.; Cherrie, J. A Scoping Review Mapping Research on Green Space and Associated Mental Health Benefits. *Int. J. Environ. Res. Public Health* **2019**, *16*, 2081. [CrossRef] [PubMed]
43. Triguero-Mas, M.; Gidlow, C.J.; Martínez, D.; de Bont, J.; Carrasco-Turigas, G.; Martínez-Íñiguez, T.; Hurst, G.; Masterson, D.; Donaire-Gonzalez, D.; Seto, E.; et al. The Effect of Randomised Exposure to Different Types of Natural Outdoor Environments Compared to Exposure to an Urban Environment on People with Indications of Psychological Distress in Catalonia. *PLoS ONE* **2017**, *12*, e0172200. [CrossRef]
44. Pearson, D.G.; Craig, T. The Great Outdoors? Exploring the Mental Health Benefits of Natural Environments. *Front. Psychol.* **2014**, *5*, 1178. [CrossRef]
45. Brambilla, A.; Morganti, A.; Lindahl, G.; Riva, A.; Capolongo, S. Complex Projects Assessment. The Impact of Built Environment on Healthcare Staff Wellbeing. In *Computational Science and Its Applications—ICCSA 2020*; Gervasi, O., Murgante, B., Misra, S., Garau, C., Blečić, I., Taniar, D., Apduhan, B.O., Rocha, A.M.A.C., Tarantino, E., Torre, C.M., et al., Eds.; Lecture Notes in Computer Science; Springer International Publishing: Cham, Swizterland, 2020; Volume 12253, pp. 345–354; ISBN 978-3-030-58813-7.
46. Brambilla, A.; Lindahl, G.; Dell'Ovo, M.; Capolongo, S. Validation of a Multiple Criteria Tool for Healthcare Facilities Quality Evaluation. *Facilities* **2021**, *39*, 434–447. [CrossRef]
47. Capolongo, S.; Brambilla, A.; Girardi, A.; Signorelli, C. Validation Checklist for Massive Vaccination Centers. *Ann. Ig. Med. Prev. E Comunita* **2021**, *33*, 513–517. [CrossRef]
48. Wingler, D.; Joseph, A.; Bayramzadeh, S.; Robb, A. Using Virtual Reality to Compare Design Alternatives Using Subjective and Objective Evaluation Methods. *HERD Health Environ. Res. Des. J.* **2020**, *13*, 129–144. [CrossRef]
49. Nejati, A.; Rodiek, S.; Shepley, M. Using Visual Simulation to Evaluate Restorative Qualities of Access to Nature in Hospital Staff Break Areas. *Landsc. Urban Plan.* **2016**, *148*, 132–138. [CrossRef]
50. Mayer, B.; Boston, M. Residential Built Environment and Working from Home: A New Zealand Perspective during COVID-19. *Cities* **2022**, *129*, 103844. [CrossRef] [PubMed]
51. Amerio, A.; Brambilla, A.; Morganti, A.; Aguglia, A.; Bianchi, D.; Santi, F.; Costantini, L.; Odone, A.; Costanza, A.; Signorelli, C.; et al. COVID-19 Lockdown: Housing Built Environment's Effects on Mental Health. *Int. J. Environ. Res. Public Health* **2020**, *17*, 5973. [CrossRef] [PubMed]
52. Blair, E.; Blair, J. *Applied Survey Sampling*; SAGE Publications, Inc.: Thousand Oaks, CA, USA, 2015; ISBN 978-1-4833-3433-2.
53. Dushkova, D.; Ignatieva, M.; Hughes, M.; Konstantinova, A.; Vasenev, V.; Dovletyarova, E. Human Dimensions of Urban Blue and Green Infrastructure during a Pandemic. Case Study of Moscow (Russia) and Perth (Australia). *Sustainability* **2021**, *13*, 4148. [CrossRef]
54. El Khateeb, S.; Shawket, I.M. A New Perception; Generating Well-Being Urban Public Spaces after the Era of Pandemics. *Dev. Built Environ.* **2022**, *9*, 100065. [CrossRef]
55. Firth, C.L.; Baquero, B.; Berney, R.; Hoerster, K.D.; Mooney, S.J.; Winters, M. Not Quite a Block Party: COVID-19 Street Reallocation Programs in Seattle, WA and Vancouver, BC. *SSM Popul. Health* **2021**, *14*, 100769. [CrossRef]
56. Evans, J.R.; Mathur, A. The Value of Online Surveys: A Look Back and a Look Ahead. *Internet Res.* **2018**, *28*, 854–887. [CrossRef]
57. Brambilla, A.; Sun, T.; Elshazly, W.; Ghazy, A.; Barach, P.; Lindahl, G. Flexibility during the COVID-19 Pandemic Response: Healthcare Facility Assessment Tools for Resilient Evaluation. *Int. J. Environ. Res. Public Health* **2021**, *18*, 11478. [CrossRef]

58. Gianfredi, V.; Buffoli, M.; Rebecchi, A.; Croci, R.; Oradini-Alacreu, A.; Stirparo, G.; Marino, A.; Odone, A.; Capolongo, S.; Signorelli, C. Association between Urban Greenspace and Health: A Systematic Review of Literature. *Int. J. Environ. Res. Public Health* **2021**, *18*, 5137. [CrossRef]
59. Simonofski, A.; Asensio, E.S.; De Smedt, J.; Snoeck, M. Citizen Participation in Smart Cities: Evaluation Framework Proposal. In Proceedings of the 2017 IEEE 19th Conference on Business Informatics (CBI), Thessaloniki, Greece, 24–27 July 2017; pp. 227–236.