Article

How Has the COVID-19 Pandemic Affected the Perceptions of Public Space Employees?

Soyoung Han [1], Cermetrius Lynell Bohannon [1] and Yoonku Kwon [2],*

1   College of Architecture and Urban Studies, Virginia Tech, Blacksburg, VA 24060, USA; syhan@vt.edu (S.H.); cbohanno@vt.edu (C.L.B.)
2   Department of Landscape Architecture, Chonnam National University, Gwangju 61186, Korea
*   Correspondence: ykkwon@chonnam.ac.kr

Abstract: The purpose of this study is to derive the subjective perception about COVID-19 of public space employees and to identify the characteristics of COVID-19 related issues. By using the Q-method, 24 workers in four public spaces located in Blacksburg, Virginia, USA were selected as P-Sample and Q-Sorting was conducted. Three types of perceptions were identified; Type 1 (Expansion of Non-Face-To-Face Service), Type 2 (Expansion of Professional Labor), and Type 3 (Expansion of Welfare Service Type). All three types recognized that when a confirmed case occurs in a public space, the right and safety of users or communities to know is important, and accurate information must be provided, because it is necessary to prevent the spread of infection. Above all, these results show another side of the COVID-19 situation, as the participants in this study are currently in charge of various tasks such as quarantine and service provision in public spaces. This study can be used as basic data for policy response and system improvement of public spaces in the event of an infectious disease such as COVID-19 in the future.

Keywords: COVID-19; public space; perceptions; employees; Q-methodology

1. Introduction

Public spaces including urban parks and plazas are universal leisure facilities where people spend a lot of time, and their functions are very diverse. Public spaces play a role in managing the health of people, such as operating various leisure programs, volunteering, and exercising. As the scenery of the public life, these places are of prime significance in various fields of study in urbanism and the history of city planning [1,2]. Various types of public spaces are significant elements of any habitable, sustainable urban development [3–5]. The concept of a public space raises different functions of outdoor public assembly spots [6,7] and neighboring spaces between buildings [8,9]. Key examples of public spaces in urban areas are cafes, retail bazaars, theme parks, streets, and pedestrian walkways [10–12]. Due to these various functions, high-quality public space is positioned as a crucial system in our society in improving the quality of life of people.

However, the COVID-19 pandemic, which has been going on since early 2020, is having a huge impact on our lives. Preventive measures against infectious diseases that have never been experienced, such as social distancing and wearing masks, had to be implemented in daily life. As this situation continues, members of society of all ages are having a hard time enduring various types of difficulties [13]. These difficulties are particularly evident in public spaces. Restrictions on the use of public spaces are one of the key policy measures to reduce the spread of COVID-19 and protect public health [14,15]. In other words, in a pandemic environment, public spaces often limit service provision and are repeatedly closed for a certain period of time. As the media and many scholars have already pointed out, there has been widespread recognition that the COVID-19 pandemic would demand a New Normal and will completely change the flow of world civilization [16].

Most of the preceding research on COVID-19 has been limited to establishing an infectious disease response system in the health sector. These studies mainly related to the quarantine method, monitoring system and information sharing, epidemiological investigation, diagnostic testing, crisis situation determination and response process, preparation and response for infectious disease management in medical institutions, and local responses [17–19]. Moreover, in the medical field, research on infectious disease mechanisms, treatment technologies, vaccines, diagnostic technologies, surveillance epidemiology, and infrastructure construction are being carried out [20,21]. When it comes to infectious diseases, policies aimed at reducing social contact and limiting mobility have been used for centuries [22–24]. Movement has been shown in numerous studies to influence disease transmission and incidence [25,26]. Therefore, most of the studies on the interrelation between the pandemic and spatial aspects aim to measure the level of social interaction and mobility for a large population in a large geographic area and then quantify its transmission rate and impact. To date, various studies worldwide have researched COVID-19 using geographic information systems (GIS), which focused on spatiotemporal analysis, data mining, environmental variables, and health and social geography [27–29].

As social distancing measures are vital part of mitigating pandemics [30], planners, designers, architects, landscape designers, and journalists are already predicting and studying how this crisis will change the interactions between people in public spaces [15,31]. In a pandemic situation, employees of public space are members of organizations who play an important role in providing services in accordance with the government's quarantine guidelines. So far, there have been a few studies regrading employees' physical health, but no concrete studies on the perception of their workspace and the workload for which they are responsible. They may experience various social, psychological, health difficulties, and conflicts as they have to take on the role of supporters in managing visitors on the front line from the risk of an infectious disease they have never experienced before. However, as mentioned above, most of the studies related to infectious diseases have been conducted as large-scale and quantitative studies. Measuring and quantifying the level of social interaction and mobility for large populations over large geographic areas is often not feasible. Thus, the purpose of this study is to derive the subjective perception about COVID-19 of public space employees and to identify the characteristics of COVID-19 related issues. To this end, Q-Methodology, which is a useful analysis method for measuring the subjective perception on a specific topic [32,33], has been used in this study. In particular, we posit the preparation in relation to policy development for public space management by examining the perception of workers in public places about COVID-19 in the process of coping with the pandemic.

2. Public Space and Psychological Distance during the Pandemic

Recent studies have shown that access to urban spaces has positive effects during the situation of social distancing [34,35]. Therefore, in order to accurately predict the user pattern of public spaces in the post-pandemic era, it is necessary to understand the factors affecting outdoor activities due to the pandemic at the level of individuals who are consumers and providers of outdoor activities.

Historically, public spaces have been regarded as timeless, transformative, and elusive entities for a city's urbanism [36]. A public space that reflects a wider society [37] has been perceived as providing different functions to users in different ways; this became a precursor in questioning the public space beyond a concept of singularity [38]. It is critical to first take into account the conscious structuring of places in an attempt to minimize unsettling encounters with people who could threaten the accepted narratives of a specific place [39]. In addition, the ways that public spaces are inclusive and exclusive at the same time presents a paradoxical situation. For example, public spaces can be relatively more accessible while being more closed, depending upon the individual and the associated public.

Before COVID-19, the discussion around the term *public space* led to definitions that captured various characteristics. Definitions of public space evolved around considerations of ownership [39], human behavior [40], the democraticness and responsiveness of places [41], and accessibility [42]. Seemingly shared and accessible public open spaces have been replaced by more orderly places exposed to control, power, exclusion, and inaccessible narratives [39,43–46]. Uncertainty of diversity, urban spontaneity, and captivation of urban flavor have been replaced by expectations and knowledge of the quality of the urban environment. This is a cumulative result of a planning and governance structure that responds (or fails to respond) to deeper structural changes occurring in society [47].

However, COVID-19 has significantly highlighted the lack of accessible and usable public space. Continuous development trends have deprived people of adequate local public spaces or suitable alternatives in their homes, including semi-private or semi-public spaces [48].

The low proximity between social actors in an urban environment is a natural side effect of increasing urban density, and in return, it appears to be associated with the spread of infectious diseases [49]. In this regard, urban morphology has been shown to influence the spread of COVID-19 in a variety of ways, for example, access to open spaces [50]. Obviously, the transmission of COVID-19 has a strong proximal dimension as it requires close personal contact [51]. Therefore, effective policies for social distancing come from changing social norms or limiting activities in public spaces where reduction in personal distance is inevitable.

During the COVID-19 pandemic, most people isolated themselves from physical contact while working from home, using digital connections, and using digital public spaces to maintain social distancing [52]. Most people have shifted from the traditional way of working to a "do it yourself in the living room" approach, where the home is now a production space where workshops are organized to perform work tasks and duties. Salama [30] maintains that currently we are in a transition period called the 'new normal', which will eventually become a stable condition of the actual normal. However, from a psychological point of view, social distance is classified as a type of psychological distance [53,54]. Psychological distance refers to how close an object is psychologically to the now, here, or self. Types of psychological distance include temporal distance, spatial (or spatial) distance, social distance, and virtual (or probabilistic) distance [53]. In this psychological distance, differences lead to differences in responses to objects. For example, people's perception of global warming was different when they heard that a natural disaster related to global warming occurred in their area. [55–59]. Therefore, examining public space employees' perceptions of COVID-19 could be a way of seeing the psychological distance to COVID-19. In addition, this may provide a clue for the direction of the space operation program in the post-COVID-19 era.

3. Methodology

3.1. Q-Methodology

This study used the Q-methodology to identify and categorize the subjective perceptions of COVID-19 workers in public spaces. The Q-methodology is one of the factor analysis methods in which the unit of analysis becomes a human and groups people with similar response patterns. In particular, this method is suitable for this study in that it is a method for objectively measuring values, beliefs, attitudes, etc., which can be regarded as the subjective domain of human beings, in that a more objective approach to the domain of human subjectivity is possible. In other words, in objectifying subjectivity, it is a method of gathering people who have similar reactions to a specific object or issue and confirming the contents of these people's reactions.

3.2. Q-Statements

The Q-Statement is a statement that is representative of the research topic and functions similarly to the scale of quantitative research. Q-Statements refer to the totality of feelings

and opinions shared within a culture as the sum of all subjective statements that each individual can communicate about a research topic [60,61]. Q-Statements collection can be accomplished by mobilizing various methods, for example, the researcher contacts people related to the research topic and conducts an in-depth interview or reviews various types of literature related to the research topic [60].

In this study, Q-Statements were selected by conducting in-depth interviews and literature research on public space workers. In-depth interviews were conducted with five urban park managements using unstructured open-ended questions. Based on the results of these in-depth interviews and literature review, a total of 98 questions directly and indirectly related to the response of public spaces workers to COVID-19 were derived as the first statement. Among the first statements, similar or duplicate items were deleted and merged, and 55 items were extracted secondly, and after verification by two professors of landscape architecture, 32 items were finally selected as a Q-Statements. The 32 Q-Statements are shown in Table 1 below.

Table 1. Finalized Q-Statements.

No.	Q-Statements
1	I am very concerned about the possibility of infection among employees and users in public spaces.
2	Users are reluctant to use the service due to concerns about the COVID-19 infection.
3	When a confirmed case occurs in a public space, there is concern about it being reported in the media.
4	Users' physical function was greatly reduced due to the closure of public spaces and restrictions on outdoor activities.
5	Psychological anxiety, depression, and feelings of isolation increased due to restrictions on the use of visitors who used public spaces on a regular basis.
6	The closure of public spaces will affect the mental health of users who frequently use periodic activity programs.
7	The most serious problem is that the vulnerable are at risk by closing public spaces or providing non-face-to-face services.
8	Because vulnerable groups have many limitations in using non-face-to-face services, the problem of closure of public spaces cannot be solved with non-face-to-face services alone.
9	In order to be able to provide online services, it is necessary to educate public space employees on the production of related contents.
10	Budget support and infrastructure (Wi-Fi, video production, and editing facilities, etc.) for providing online services in public spaces should be provided.
11	The provision of online services has limitations due to publicity, gaps in users' ability to use, and decreased access to devices.
12	Due to COVID-19, office work such as recording and reporting is overloaded and difficult.
13	Due to COVID-19, disinfection and quarantine work is overloaded.
14	Wearing a mask all the time is difficult.
15	In response to COVID-19, staff in public spaces are well coordinated and controlled.
16	Public spaces are rather safe zones because they are thoroughly controlled and quarantined as much as possible.
17	Currently, local governments are responding relatively well to COVID-19 in consideration of the overall situation of public spaces.
18	It is important to actively cooperate with government policies on quarantine.
19	The operation of public spaces is actively responding well to the prevention of COVID-19.
20	Because public spaces are closed, it's hard because people assume that employees are resting.
21	Education on health and infectious diseases, such as quarantine and disinfection, is sufficiently provided.
22	In public spaced, efforts are being made to develop programs suitable for non-face-to-face situations or services for high-risk groups.
23	In the future, measures should be taken to examine and prepare for various aftereffects on dogs caused by COVID-19.

Table 1. *Cont.*

No.	Q-Statements
24	The minimum face-to-face programs or services that must be operated should be maintained.
25	A response system should be prepared for crises and emergency cases.
26	Support for quarantine items and quarantine should be given priority (for example, daily disinfection support by a professional quarantine company, portable thermal imaging camera, etc.).
27	It is necessary to diversify the working patterns of public space employees (such as telecommuting, flexible, selective work, etc.).
28	When a confirmed case occurs, it is necessary to have a press guideline that reports only the type and area of the welfare center without disclosing the name of the public space.
29	It is also important for each public space to make its own efforts to respond to COVID-19.
30	Replacement labor should be hired for the exclusion of self-quarantining employees.
31	There is also a need for medical personnel who can reside in public spaces.
32	During the COVID-19 period, any program that can maintain the previous daily life should be strengthened.

3.3. P-Sample

The P-Sample means selecting the research subjects who will respond to the Q-Sample. Since the Q-Methodology aims to grasp the subjective perception of a specific topic rather than the generalization of the research, the subjects related to the research purpose are generally composed of the P-Sample [62,63].

In the Q-methodology, the P-sample is based more on the depth of experience and information on the research question than on the representativeness of the population [61,64]. Therefore, in this study, it was considered that the workers related to public space programs were appropriate for analysis in that they had a relatively comprehensive understanding of public space management. The sampling method was snow-balling. This is a strategy mainly used by researchers to increase social access to upper echelon research subjects. On the other hand, the disadvantage of this method is that members in the human network based on friendship can maintain homogeneous values and perspectives. In order to control this, the researcher explicitly revealed these issues to the research subjects during the sampling process and asked them to direct individuals who are connected based on formal-functional relationships rather than acquaintances. The sampling results are presented in Table 2 below. In consideration of the social sensitivity of the research subject, the study subjects were anonymized, and only the minimum identification information meaningful to the study was disclosed. Therefore, this study consisted of 24 workers in four public spaces located in Blacksburg, Virginia in USA as a P-Sample. Although the number of P sets was small, major actors from the public spaces were generally included.

Table 2. Composition of P sets.

General Category	Specific Category	Number
Public Park	Program Director	3
	Recreation Coordinator	5
	Recreation Assistant	6
Trail	Program Director	2
	Activities Assistant	4
Park and Natural Area	Conservation Manager	1
	Program Assistant	3
Total		24

All the data for analysis were collected from 13 October to 10 December 2020. The data collection was conducted by visiting each public space directly by the researcher and was conducted in compliance with the quarantine guidelines for the prevention of COVID-19. In order to comply with research ethics, the purpose of the research was fully explained before the investigation, consent to participate in the research was obtained, confidentiality of personal information, free participation in research, and guidance on Q-Methodology were individually implemented.

When examining the characteristics of the P-Sample participating in this study, focusing on gender, age, and work experience, the gender was found to be 61.6% female and 38.4% male. By age group, 21.7% were in their 20s, 43.5% in their 30s, and 30.4% in their 40s.

3.4. Q-Sorting

Q-Sorting is the process of classifying the subjects according to the degree to which they agree or disagree with each Q-statement. This process focuses on how the entire item is distributed to each individual rather than for or against a specific item. One can arrange the samples according to the relative importance of the Q-Statements. There are two types of Q-Statements classification methods: the free distribution method, which is arbitrarily classified by the research subjects, and the forced distribution method, which usually presents the classification framework in the form of a normal distribution [33,65]. This study was classified according to the forced distribution method. First, the subjects of the P sample read each statement card and grasped its contents, and then, in a broad framework, were first classified into three groups: disagree, neutral, and agree. Finally, the Q-Statements were arranged to have a distribution as shown in Figure 1 below, and after classification, the reasons for choosing each of the two statements with the most agreement or the most disagreement were specifically stated.

Card	−4	−3	−2	−1	0	1	2	3	4
(Score)	(2)	(3)	(4)	(4)	(6)	(4)	(4)	(3)	(2)

Figure 1. Distributions of Q-Sorting.

3.5. Q-Analysis

The stage of analysis in the Q-method refers to the stage of categorizing individuals according to the degree of cognitive similarity through the scores surveyed based on the responses of the questionnaire discussed above, and capturing features or finding correlations based on the typed results [61,62,66]. The response values given to the questions were integer values ranging from −4 (most negative) to 4 (most positive). In previous studies, values ranging from –5 to +5 were often used, but since the number of questions (N = 32) used in this study was relatively small, the range of response values was reduced to control outliers in the results.

The PQMethod analysis program (ver 2.35) was used for typing and correlation analysis, and correlations and factors of items were analyzed by varimax rotation. The researcher gave appropriate labels to the clusters of the types that appeared as a result of the analysis to intuitively indicate the classification and characteristics between the groups. Response values corresponding to each type were standardized and replaced with a 'Z-Score', and their intensity was measured as an indicator of the relative distances in which the responses were distributed. Because Z-Scores have a standardized distribution, they provide a standardized framework for comparing the strengths of each response value in comparisons between types. In the interpretation of the results, it was necessary to accompany the process of supplementing the interpretation based on the fact that response results with factor weights of 1.00 or more usually contain singularities. Thus, each comment (follow-up interview) was received from the participants for the statements placed at both ends, and the contents of representative comments were used as quotations if necessary to help the reader understand.

4. Results

4.1. Recognition Types and Structures

As a result of the analysis, the perception of workers in public places about COVID-19 can be divided into three types. Each type was derived based on the significance of uniqueness and correlation between types. The eigen values of each type were 6.6418 for Type 1, 3.5115 for Type 2, and 2.1238 for Type 3. The explanatory variables of each type were 23% for Type 1, 14% for Type 2, and 14% for Type 3, and the total explanatory variance for the three types was 51%. The number of workers belonging to the three types was twelve in Type 1, six in Type 2, and five in Type 3, a total of twenty-three people, and the other one was not included in any of the types (Table 3).

Table 3. Eigenvalues and explanatory variables of types.

	Type 1	Type 2	Type 3
Eigen value	6.6418	3.5115	2.1238
Explanatory variable	23%	14%	14%

As presented in Table 4, the correlation between Type 1 and Type 3 was r = 0.462, Type 1 and Type 2 was r = 0.062, and the correlation between Type 2 and Type 3 was r = 0.221, indicating a relatively low correlation. A low correlation indicates that each type has high independent explanatory power, and it can be interpreted that the subjective perceptions of respondents belonging to each type are different from each other.

Table 4. Correlation between types.

	Type 1	Type 2	Type 3
Type 1	1		
Type 2	0.062	1	
Type 3	0.462	0.221	1

4.2. Characteristics by Type

The analysis of the characteristics of each type is as follows, focusing on the reasons for selecting the statement for each type and the statement with the most agreement or disagreement.

4.2.1. Type 1: Expansion of Non-Face-To-Face Service

The statements with which Type 1 agrees or disagrees at a standard score of +1 or higher are shown in Table 5 below. Participants belonging to Type 1 agreed that making efforts to develop programs suitable for non-face-to-face situations or services for high-risk groups in public spaces is significant. They were also actively responding well to the prevention of COVID-19, and recognized that it was important to actively cooperate with the government's quarantine policy. In addition, they anticipated that regular visitors felt that depression, anxiety, and feelings of isolation increased due to restrictions on the use of public spaces, and they perceived limitations in providing online services due to the gap in visitors' ability to use and access. On the other hand, they did not have any concerns about a confirmed case among public space users being reported to the media, and did not agree with the need for reporting guidelines such as not disclosing the specific name of a public space when a confirmed case occurs. In addition, they disagreed that disinfection and office work were overloaded due to the COVID-19, and that visitors were reluctant to use public spaces due to concerns about COVID-19 infection.

Table 5. Representative Q Statements and Standard Scores of Type 1.

No.	Q-Statement	Z-Score
22	In public space, efforts are being made to develop programs suitable for non-face-to-face situations or services for high-risk groups.	1.724
11	The provision of online services has limitations due to publicity, gaps in users' ability to use, and decreased access to devices.	1.303
19	The operation of public spaces is actively responding well to the prevention of COVID-19.	1.275
18	It is important to actively cooperate with government policies on quarantine.	1.181
5	Psychological anxiety, depression, and feelings of isolation increased due to restrictions on the use of visitors who used public spaces on a regular basis.	1.178
3	When a confirmed case occurs in a public space, there is about it being reported in the media.	−1.806
13	Due to COVID-19, disinfection and quarantine work is overloaded.	−1.788
28	When a confirmed case occurs, it is necessary to have a press guideline that reports only the type and area of the welfare center without disclosing the name of the public space.	−1.780
2	Users are reluctant to use the service due to concerns about COVID-19 infection.	−1.728
12	Due to COVID-19, office work such as recording and reporting is overloaded and difficult.	−1.691

Looking more specifically at the reasons for choosing the statements that the type 1 participants most agreed or disagreed with, first, they said that public space actively copes with the situation; "We are developing and providing a variety of face-to-face and non-face-to-face programs that can be conducted flexibly in accordance with the quarantine guidelines. This has resulted in a positive response from visitors (Respondents 2, 12, 19, and 21)". On the other hand, they also revealed the limitations of providing non-face-to-face or online services; "it is regrettable because we know that online access is very low for the vulnerable group (Respondent 14), most seniors are vulnerable to digital capabilities, and some programs of public spaces are limited in non-face-to-face application to them because social-interaction is essential (Respondents 6 and 21), and that the provision of services using smartphones is limited by region and by class (digital underprivileged) is a problem that is already being discussed in the field (Respondent 22)".

Meanwhile, "COVID-19 is contagious, so it is important to cooperate with the government guidelines prepared by experts to prevent the spread of infection quickly, and the safety of users with weak immunity is more important than worrying about the news and publicity. It is necessary to be careful (Respondents 11 and 14); if there is a confirmed case, the information should be disclosed that the area is at risk (Respondent 2 and 13)". In addition, "there are many inquiries about the use of public spaces, and users have a lot of opinions that it is better to proceed with the service, and they think that the desire to use the service has rather increased as it has been prolonged (Respondents 2, 5, and 11). They recognized that information about the occurrence of an infected person in the relevant place should be clearly communicated.

4.2.2. Type 2: Expansion of Professional Manpower

Statements in which Type 2 agreed or disagreed at a standard score of +1 or higher are presented in Table 6 below. Workers belonging to Type 2 thought that medical experts who can reside in public spaces are required, and they also recognized that they are making efforts to develop programs suitable for non-face-to-face situations or services for high-risk users. In addition, although the employees are cooperating and controlling the COVID-19 situation well, they also felt difficulties as the disinfection, quarantine, and office work were overloaded due to COVID-19.

On the other hand, they did not agree on the necessity of reporting guidelines, such as not disclosing the name of a public place when a confirmed case occurred. They also felt that local governments were not handling the situation in public spaces well. They disagreed on the necessity of supporting living services for visitors or the importance of the efforts of public places themselves in responding to COVID-19. They recognized that wearing a mask does not feel burdensome to them.

Table 6. Representative Q Statements and Standard Scores of Type 2.

No.	Q-Statement	Z-Score
31	There is also a need for medical personnel who can reside in public spaces.	1.724
22	In public space, efforts are being made to develop programs suitable for non-face-to-face situations or services for high-risk groups.	1.303
13	Due to COVID-19, disinfection and quarantine work is overloaded.	1.275
12	Due to COVID-19, office work such as recording and reporting is overloaded and difficult.	1.181
15	In response to COVID-19, staff in public spaces are well coordinated and controlled.	1.178
28	When a confirmed case occurs, it is necessary to have a press guideline that reports only the type and area of the welfare center without disclosing the name of the public space.	−1.806
17	Currently, local governments are responding relatively well to COVID-19 in consideration of the overall situation of public spaces.	−1.788
32	During the COVID-19 period, a program that can maintain the previous daily life should rather be strengthened.	−1.780
29	It is also important for each public space to make its own efforts to respond to COVID-19.	−1.728
14	Wearing a mask all the time is difficult.	−1.691

Specifically, looking at the reasons why public space workers belonging to Type 2 chose the statements that they most agreed or disagreed with, first of all, regarding the need for medical experts as employees in public spaces, "because many visitors need them (Respondent 1), all employees can learn medical knowledge through education, but their expertise is low, and the current workforce is too heavy (Respondents 3 and 7)". In addition, about the overload of work due to the COVID-19, "I am embarrassed to do things I have never experienced before. The burden and fear of the process are great (Respondent 1), and although it is natural process for disinfection and quarantine to be carried out for visitors, there are situations in which the quarantine task is more important than the actual program (Respondent 17)". In addition, when it comes to reporting guidelines when a confirmed patient occurs, "Basically, in public facilities, users have the right to know, so it is necessary to provide accurate information about the confirmed patient (Respondent 18), the burden is high and each public space has its own characteristics, so guidelines that take into account the situation are needed (Respondent 1), although individual efforts are important at the level of public space, a joint response is needed more (Respondent 1)".

Combining the above analysis, Type 2 was labeled 'Expansion of Professional Labor'. The most prominent characteristic of public space workers belonging to Type 2 is that they recognize that medical experts as employees in public spaces are needed above all else. In addition, this is a type that feels that the work such as disinfection, quarantine, and office work is overloaded due to COVID-19.

4.2.3. Type 3: Expansion of Welfare Service Type

The statements with which Type 3 agree or disagree at the standard score of +1 or higher are shown in Table 7 below. Participants belonging to Type 3 recognized that the most serious problem is that regular visitors who visit for health care are at risk due to the closure of public spaces, which increases psychological anxiety and depression among regular users. For this reason, they believed that non-face-to-face service alone cannot solve the problem of closure, and that online service provision has limitations due to gaps in users' ability to use and reduced accessibility. In addition, they were concerned that an infected person may come out among public space employees and users, but they recognized that public space management is responding well to COVID-19 prevention. They also considered that budget support and infrastructure should be prepared for providing online services within public institutions.

Table 7. Representative Q Statements and Standard Scores of Type 3.

No.	Q-Statement	Z-Score
7	The most serious problem is that the vulnerable are at risk by closing public spaces or providing non-face-to-face services.	1.794
5	Psychological anxiety, depression, and feelings of isolation increased due to restrictions on the use of visitors who used public spaces on a regular basis.	1.566
8	Because the vulnerable group has many limitations in using non-face-to-face services, the problem of closure of public spaces cannot be solved with non-face-to-face services alone.	1.350
1	I am very concerned about the possibility of infection among employees and users in public spaces.	1.293
19	The operation of public spaces is actively responding well to the prevention of COVID-19.	1.183
11	The provision of online services has limitations due to publicity, gaps in users' ability to use, and decreased access to devices.	1.119
10	Budget support and infrastructure (Wi-Fi, video production, and editing facilities, etc.) for providing online services in public spaces should be provided.	1.047
31	There is also a need for medical personnel who can reside in public spaces.	−1.808
26	Support for quarantine items and quarantine should be given priority (for example, daily disinfection support by a professional quarantine company, portable thermal imaging camera, etc.).	−1.324
30	Replacement labor should be hired for the exclusion of self-quarantining employees.	−1.297
28	When a confirmed case occurs, it is necessary to have a press guideline that reports only the type and area of the welfare center without disclosing the name of the public space.	−1.253
32	During the COVID-19 period, a program that can maintain the previous daily life should rather be strengthened.	−1.216
13	Due to COVID-19, disinfection and quarantine work is overloaded.	−1.159
27	It is necessary to diversify the working patterns of public space employees (such as telecommuting, flexible, selective work, etc.).	−1.145
14	Wearing a mask all the time is difficult.	−1.074

On the other hand, they do not agree with the necessity of medical personnel residing in public spaces, priority support for quarantine, and replacement of staff for self-quarantine. In addition, they do not agree with the strengthening of daily life services, the diversification of work patterns for public space employees in the future, the confidentiality of the public space name in case of a confirmed case. Wearing a mask while working is not as uncomfortable for them as Type 2.

Specifically, looking at the reasons why workers belonging to Type 3 chose the statement that they most agreed or disagreed with, first, regarding the vulnerable group in the context of the suspension of public space operation, "Since the meaning of public space is very significant in the daily life of the elderly of the vulnerable class, it is appropriate to say that daily life has collapsed, and proper services are not provided to them at present. (Respondents 16 and 23), I am feeling and witnessing it (respondents 4, 16, and 24), in the era of the COVID-19 pandemic, face-to-face and non-face-to-face services must be conducted together, so prepared infrastructure for environment is essential (Respondent 24)". Also, regarding the need for medical experts in public spaces, "currently, medical personnel are resident (Respondent 15); employees are well-trained, and it is more burdensome for more medical personnel to come (Respondent 4)". On the other hand, there were opinions about the quarantine tasks such as "as it is a necessary and natural task, I do not feel that the quarantine tasks are excessive, it must be done unconditionally to the extent possible and all employees share the task (Respondents 16 and 24)".

Combining the above analysis, the Type 3 were named 'Expansion of Welfare Service Type'. Public space workers belonging to Type 3 perceived that the health of visitors deteriorates due to closure of public spaces and the increase in vulnerable groups at risk are the most serious problems. While they felt that welfare services should be expanded in preparation for this, they also had a negative perception of the need for medical personnel or substitute personnel in public spaces.

4.3. Comparison between Types

First of all, Type 1 and Type 2 had different perceptions of work overload due to COVID-19. Type 2 thought that work was overloaded due to COVID-19, whereas Type 1 disagreed (see Table 8).

Table 8. Comparison between Type 1 and Type 2.

Q-Statement		Z-Score		
		Type 1	Type 2	Difference
13	Due to COVID-19, disinfection and quarantine work is overloaded.	−1.788	1.608	−3.396
12	Due to COVID-19, office work such as recording and reporting is overloaded and difficult.	−1.691	1.484	−3.175

There was no significant difference between Type 1 and Type 3. On the other hand, Type 2 and Type 3 had conflicting perceptions about the need for resident labor in public spaces, as shown in Table 9. In other words, Type 2 recognized the need for medical personnel to reside in public spaces, whereas Type 3 did not.

Table 9. Comparison between Type 2 and Type 3.

Q-Statement		Z-Score		
		Type 1	Type 2	Difference
31	There is also a need for medical personnel who can reside in public spaces.	1.987	−1.808	−3.795

Meanwhile, the three types of common perception are shown in Table 10. All three types actively supported the disclosure of the names of public spaces in the event of a confirmed case in common. This suggests that all three types comply with the local residents' right to know by providing accurate information and agree with the community's safety and infection prevention policy.

Table 10. Common items between the 3 types.

Q-Statement		Z-Score
28	There is also a need for medical personnel who can reside in public spaces.	−1.654

5. Discussion

All three types recognized that when a confirmed case occurs in public space, the right and safety of users or communities to know is crucial, and accurate information must be provided as it is necessary to prevent the spread of infection. Above all, these results show other sides of the COVID-19 situation as the participants of this study are currently in charge of various tasks such as quarantine and service provision in public spaces. In seeking specific countermeasures based on these types of perceptions of workers, it is necessary to first consider the common perceptions of each type. On the other hand, for the part that shows contradictory perceptions, it is necessary to examine the regulations and circumstances surrounding public space more precisely. Based on this, specific policy recommendations for the operation of public spaces when an infectious disease such as COVID-19 spreads in the future are presented as follows.

First of all, due to the closure of public spaces and the limitations of service provision due to COVID-19, users who regularly visit public spaces for the purpose of exercise face various difficulties such as physical, psychological, and daily life. In particular, since this deteriorates the health and quality of life of the vulnerable, such as the elderly [67,68], it is necessary to establish a safe and stable service provision system even in the case of an infectious disease. In other words, in the event of an infectious disease outbreak, specific

measures should be prepared so that the service can be safely and stably provided, rather than a total service cessation. In particular, since the elderly gain vitality from meeting and talking in public spaces and checking each other's safety, face-to-face services as small as possible should be provided while complying with infectious disease-related regulations. For this, it is necessary to consider how to organize operating costs, subdivide labor, or restructure staffing as needed.

Secondly, the current operating guidelines for public spaces do not presuppose the situation of infectious diseases. Therefore, taking into account the opinions of the medical community who are concerned about the continued occurrence of infectious diseases [69,70], it is necessary to prepare operational guidelines and evaluation guidelines suitable for the situation and conditions of public spaces that can respond to infectious diseases in the future. In an existing study, an Australian case presented a manual on procedures, education and worker training, and a monitoring system to provide care to clients at the time of MERS [71], and the elderly at home in response to this COVID-19 As in the case of the publication of rules for providing meal services for children [72], specific operational guidelines and appropriate public space evaluation guidelines should be prepared so that public spaces can provide services even in an infectious disease situation. In addition, as the provision of non-face-to-face services such as phone safety checks increases, work standards for telecommuting, etc., should be revised together.

Thirdly, it is necessary to prepare an integrated face-to-face and non-face-to-face welfare platform to respond more actively to COVID-19. One of the methods of providing services in public spaces in response to infectious diseases is the provision of non-face-to-face services using IT technology [72–74]. To this end, access to media should be strengthened for users and workers in public spaces, and not only equipment and facilities for online education should be reinforced, but also online utilization capabilities should be improved. In particular, since digital access is weak in the case of the elderly, it is necessary to prepare an education program to bridge the gap. In addition, it is necessary to strengthen the capacity of workers to produce and edit online videos or operate equipment, so that video production is possible in the public space itself. Therefore, it is necessary to secure the budget for these changes and to flexibly reorganize the institution.

Fourthly, programs that should be operated as face-to-face services and tasks to discover and manage target audiences must be combined. The occurrence of infectious diseases is more dangerous in vulnerable groups [75,76], and it is necessary to demonstrate expertise in case management for the vulnerable to minimize the negative impact of infectious diseases on the vulnerable [75,77,78]. In addition, as a result of this study, some cognitive types (Type 2) suggested the need to expand physical and mental health professionals such as nurses and mental health experts from the existing social worker-centered human resources structure in public spaces. This provides a clue that it may be necessary to provide services in public spaces to reorganize the workforce structure to constantly respond to infectious diseases in the future.

Fifthly, according to the research of Northwestern University in the USA, in the correlation between vitamin D and the death rate of COVID-19, patients in countries with high mortality rates such as Italy had lower vitamin D levels compared to countries that did not. These results show the importance of outdoor programs where people can be in sunlight. Therefore, in preparation for the post-coronavirus era, it is necessary to prepare various public space programs that are not limited to indoor public space programs, but expand outdoor programs such as walking on outdoor trails taking social distancing into consideration.

Finally, to prepare for the post-COVID-19 era, a big data management system to overcome the crisis should be established. In order to properly intervene by time, target, high-risk person, and project while considering the infectious disease warning stage and the distancing stage [79], some data on public space users must be established. This should provide individual customized services by building data on users, such as whether emergency measures are necessary according to the status of general visitors of public spaces.

6. Conclusions

This study attempted to investigate the situation of public spaces due to COVID-19 in more detail by understanding the types of perceptions of COVID-19 workers in public spaces. Based on this, we attempted to explore appropriate countermeasures for public spaces in the outbreak of a large-scale infectious disease such as COVID-19. By using the Q-method, 24 workers in four public spaces located in Blacksburg, Virginia, USA were selected as P-Sample and Q-Sorting was conducted. To summarize the study results, there were three types of subjective perception types of public space workers regarding COVID-19. Type 1 was named as 'Expansion of Non-Face-To-Face Service', and employees in this type perceived that they were actively and flexibly responding to the situations arousing in public space due to COVID-19. In addition, they were concerned about the worsening situation of particularly vulnerable users due to restrictions on the use of the public space. They also recognized that information about the occurrence of an infected person in the public space should be clearly communicated. Type 2 was named as 'Expansion of Professional Labor', and it was found that workers belonging to Type 2 recognized that medical personnel as employees in public spaces were needed above all else. As a type of person who felt that disinfection, quarantine, and office work were overloaded due to the COVID-19, they considered that a government response was necessary in consideration of the overall situation of public spaces. Type 3 was labeled as 'Expansion of Welfare Service Type', and they perceived that the health of visitors deteriorates due to closure of public spaces and the increase in vulnerable groups at risk are the most serious problems. While it is necessary to expand welfare services, they had a negative perception about the need for resident medical personnel or substitutes in public spaces.

This study attempted to make policy recommendations on the perception of infectious diseases for public space workers in the context of infectious diseases and the direction of service provision in public spaces based on this. By doing so, this study can be used as basic data for policy response and system improvement of public spaces in the event of an infectious disease such as COVID-19 in the future. This study also has an implication that the results provide a starting point for public spaces to provide continuous services and programs even in the case of future infectious diseases. The spread of the disease has caused a state of being classified as a new normal due to social distancing measures, and is characterized by separation, isolation, and involvement in the virtual world, which focuses on telecommuting through the use of information and communication technology. As a result of attempts to limit the spread of the disease, the acceptability of the new normal seems to be a stable state in the future, that is, a catalyst for the actual normal. While dealing with health in the post-epidemic virtual world, negative consequences appear for many people around the world to work in public spaces.

However, although this study systematically classifies workers' perceptions of public space services in the context of infectious diseases, there is a limitation in not providing concrete and specific reasons why participants perceive them as they are. Moreover, given the novelty of COVID-19 and other factors that may impede predictions of behavioral changes (age, politics, and necessity), it is difficult to predict whether COVID-19 will lead to long-term changes in human behavior in public places [80]. Therefore, in-depth studies that complement these limitations should be continued in the future. Another strand of qualifying studies examining the influence of infectious diseases on social interaction in our daily life should be conducted to understand the mechanism between social interaction and mobility [81].

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References

1. Bada, Y.; Farhi, A. Experiencing Urban Spaces: Isovists Properties and Spatial Use of Plazas. *Courr. Du Savoir* **2009**, *9*, 101–112.
2. Bada, Y.; Guney, Y.I. Visibility and Spatial Use in Urban Plazas: A Case Study from Biskam Algeria. In Proceedings of the 7th International Space Syntax Symposium, Stockholm, Sweden, 8–11 June 2009.
3. Ancell, S.; Thompson-Fawcett, M. The Social Sustainability of Medium Density Housing: A Conceptual Model and Christchurch Case Study. *Hous. Stud.* **2008**, *23*, 423–442. [CrossRef]
4. Hajjari, M. Improving Urban Life through Urban Public Spaces: A Comparison between Iranian and Australian Cases. *Universitas* **2009**, *21*, 15–20.
5. Németh, J. Defining a Public: The Management of Privately Owned Public Space. *Urban. Stud.* **2009**, *46*, 2463–2490. [CrossRef]
6. Law, L. Defying Disappearance: Cosmopolitan Public Spaces in Hong Kong. *Urban. Stud.* **2002**, *39*, 1625–1645. [CrossRef]
7. Yeoh, B.S.; Huang, S. Negotiating Public Space: Strategies and Styles of Migrant Female Domestic Workers in Singapore. *Urban. Stud.* **1998**, *35*, 583–602. [CrossRef]
8. AbuGhazzeh, T.M. Reclaiming Public Spaces in Space: The Ecology of Neighborhood Open the Town of Abu4Nuseir. *Jordan Landsc. Urban. Plan.* **1996**, *36*, 16.
9. Ford, L.; Trachte, J.A. *The Spaces between Buildings*; JHU Press: Baltimore, MD, ISA, 2000.
10. Chua, B.H.; Edwards, N. *Public Space: Design, Use and Management*; NUS Press: Singapore, 1992.
11. Cybriwsky, R. Changing Patterns of Urban Public Space: Observations and Assessments from the Tokyo and New York Metropolitan Areas. *Cities* **1999**, *16*, 223–231. [CrossRef]
12. Kayden, J.S. *Privately Owned Public Space: The New York City Experience*; John Wiley & Sons: Hoboken, NJ, USA, 2000.
13. Low, S.; Smart, A. Thoughts about Public Space during COVID-19 Pandemic. *City Soc.* **2020**, *32*. [CrossRef]
14. Cheshmehzangi, A. 10 Adaptive Measures for Public Places to Face the COVID 19 Pandemic Outbreak. *City Soc.* **2020**, *32*. [CrossRef] [PubMed]
15. Honey-Rosés, J.; Anguelovski, I.; Chireh, V.K.; Daher, C.; Konijnendijk van den Bosch, C.; Litt, J.S.; Mawani, V.; McCall, M.K.; Orellana, A.; Oscilowicz, E.; et al. The Impact of COVID-19 on Public Space: An Early Review of the Emerging Questions–Design, Perceptions and Inequities. *Cities Health* **2020**, 1–17. [CrossRef]
16. Han, S.; Sim, J.; Kwon, Y. Recognition Changes of the Concept of Urban Resilience: Moderating Effects of COVID-19 Pandemic. *Land* **2021**, *10*, 1099. [CrossRef]
17. Reshetnikov, V.; Mitrokhin, O.; Shepetovskaya, N.; Belova, E.; Jakovljevic, M. Organizational Measures Aiming to Combat COVID-19 in the Russian Federation: The First Experience. *Expert Rev. Pharm. Outcomes Res.* **2020**, *20*, 571–576. [CrossRef] [PubMed]
18. Krstic, K.; Westerman, R.; Chattu, V.K.V.; Ekkert, N.; Jakovljevic, M. Corona-Triggered Global Macroeconomic Crisis of the Early 2020s. *Int. J. Environ. Res. Public Health* **2020**, *17*, 9404. [CrossRef] [PubMed]
19. Lai, K.Y.; Webster, C.; Kumari, S.; Sarkar, C. The Nature of Cities and the COVID-19 Pandemic. *Curr. Opin. Environ. Sustain.* **2020**, *46*, 27–31. [CrossRef]
20. Ranabhat, C.L.; Jakovljevic, M.M.; Kim, C.-B. COVID-19 Pandemic: An Opportunity for Universal Health Coverage? *Front. Public Health* **2021**, *9*, 1057. [CrossRef]
21. Carvalho, K.; Vicente, J.P.; Jakovljevic, M.; Teixeira, J.P.R. Analysis and Forecasting Incidence, Intensive Care Unit Admissions, and Projected Mortality Attributable to COVID-19 in Portugal, the UK, Germany, Italy, and France: Predictions for 4 Weeks Ahead. *Bioengineering* **2021**, *8*, 84. [CrossRef]
22. Cetron, M.; Simone, P. Battling 21st-Century Scourges with a 14th-Century Toolbox. *Emerg. Infect. Dis.* **2004**, *10*, 2053. [CrossRef]
23. Gensini, G.F.; Yacoub, M.H.; Conti, A.A. The Concept of Quarantine in History: From Plague to SARS. *J. Infect.* **2004**, *49*, 257–261. [CrossRef] [PubMed]
24. Tognotti, E. Lessons from the History of Quarantine, from Plague to Influenza A. *Emerg. Infect. Dis.* **2013**, *19*, 254. [CrossRef]
25. Mari, L.; Bertuzzo, E.; Righetto, L.; Casagrandi, R.; Gatto, M.; Rodriguez-Iturbe, I.; Rinaldo, A. Modelling Cholera Epidemics: The Role of Waterways, Human Mobility and Sanitation. *J. R. Soc. Interface* **2012**, *9*, 376–388. [CrossRef] [PubMed]
26. Jang, W.M.; Jang, D.H.; Lee, J.Y. Social Distancing and Transmission-Reducing Practices during the 2019 Coronavirus Disease and 2015 Middle East Respiratory Syndrome Coronavirus Outbreaks in Korea. *J. Korean Med. Sci.* **2020**, *35*, e220. [CrossRef]
27. Andersen, L.M.; Harden, S.R.; Sugg, M.M.; Runkle, J.D.; Lundquist, T.E. Analyzing the Spatial Determinants of Local COVID-19 Transmission in the United States. *Sci. Total. Environ.* **2021**, *754*, 142396. [CrossRef] [PubMed]
28. Franch-Pardo, I.; Napoletano, B.M.; Rosete-Verges, F.; Billa, L. Spatial Analysis and GIS in the Study of COVID-19. A Review. *Sci. Total. Environ.* **2020**, *739*, 140033. [CrossRef] [PubMed]
29. Hu, M.; Roberts, J.D.; Azevedo, G.P.; Milner, D. The Role of Built and Social Environmental Factors in COVID-19 Transmission: A Look at America's Capital City. *Sustain. Cities Soc.* **2021**, *65*, 102580. [CrossRef]

30. Salama, A.M. Coronavirus Questions That Will Not Go Away: Interrogating Urban and Socio-Spatial Implications of COVID-19 Measures. *Emerald Open Res.* **2020**, *2*. [CrossRef]

31. Bereitschaft, B.; Scheller, D. How Might the COVID-19 Pandemic Affect 21st Century Urban Design, Planning, and Development? *Urban. Sci.* **2020**, *4*, 56. [CrossRef]

32. Watts, S.; Stenner, P. Doing Q Methodological Research. In *Theory, Method & Interpretation*; SAGE Publications Ltd.: Thousand Oaks, NY, USA, 2012.

33. Zabala, A.; Sandbrook, C.; Mukherjee, N. When and How to Use Q Methodology to Understand Perspectives in Conservation Research. *Conserv. Biol.* **2018**, *32*, 1185–1194. [CrossRef]

34. Aktay, A.; Bavadekar, S.; Cossoul, G.; Davis, J.; Desfontaines, D.; Fabrikant, A.; Gabrilovich, E.; Gadepalli, K.; Gipson, B.; Guevara, M.; et al. Google COVID-19 Community Mobility Reports: Anonymization Process Description (Version 1.1). *arXiv* **2004**, arXiv:2004.04145.

35. Samuelsson, K.; Barthel, S.; Colding, J.; Macassa, G.; Giusti, M. Urban Nature as a Source of Resilience during Social Distancing amidst the Coronavirus Pandemic. *DiVA* **2020**. [CrossRef]

36. Sengupta, U. Ruptured Space and Spatial Estrangement: (Un)Making of Public Space in Kathmandu. *Urban. Stud.* **2017**, *55*, 2780–2800. [CrossRef]

37. Madanipour, A. *Whose Public Space. Whose Public Space?: International Case Studies in Urban Design and Development*; Routledge: London, UK, 2010; p. 237.

38. Webster, C. Property Rights, Public Space and Urban Design. *Town Plan. Rev.* **2007**, *78*, 81–101. [CrossRef]

39. Kohn, M. *Brave New Neighborhoods: The Privatization of Public Space*; Routledge: London, UK, 2004.

40. Gehl, J.; Gemzoe, L. *Public Spaces Public Life*; The Royal Danish Academy of Fine: Copenhagen, Denmark, 1996.

41. Carr, S.; Francis, M.; Rivlin, L.G.; Stone, A.M. *Public Space*; Cambridge University Press: Cambridge, UK, 1992.

42. Carmona, M.; De Magalhaes, C.; Hammond, L. *Public Space: The Management Dimension*; Routledge: London, UK, 2008.

43. Davis, M. Fortress Los Angeles: The Militarization of Urban Space. In *Variations on a Theme Park: The New American City and the End of Public Space*; Sorkin, M., Ed.; Hill & Wang: New York, NY, USA, 1992; pp. 154–180.

44. Davis, M. Fortress Los Angeles: The Militarization of Urban Space. In *Cultural Criminology*; Routledge: London, UK, 2017; pp. 287–314.

45. Mitchell, D. Introduction: Public Space and the City. *Urban. Geogr.* **1996**, *17*, 127–131. [CrossRef]

46. Mitchell, D. *The Right to the City: Social Justice and the Fight for Public Space*; Guilford Press: New York, NY, USA, 2003.

47. Henry, C.; Foss, L.; Fayolle, A.; Walker, E.; Duffy, S. Entrepreneurial Leadership and Gender: Exploring Theory and Practice in Global Contexts. *J. Small Bus. Manag.* **2015**, *53*, 581–586. [CrossRef]

48. Kordshakeri, P.; Fazeli, E. How the COVID-19 Pandemic Highlights the Lack of Accessible Public Spaces in Tehran. *Cities Health* **2020**, 1–3. [CrossRef]

49. Stier, A.J.; Berman, M.G.; Bettencourt, L. COVID-19 Attack Rate Increases with City Size. *arXiv* **2020**, arXiv:2003.10376.

50. Liu, L. Emerging Study on the Transmission of the Novel Coronavirus (COVID-19) from Urban Perspective: Evidence from China. *Cities* **2020**, *103*, 102759. [CrossRef] [PubMed]

51. Iranmanesh, A.; Alpar Atun, R. Reading the Changing Dynamic of Urban Social Distances during the COVID-19 Pandemic via Twitter. *Eur. Soc.* **2021**, *23*, S872–S886. [CrossRef]

52. Ülkeryıldız, E. Transformation of Public and Private Spaces: Instrumentality of Restrictions on the Use of Public Space during COVID 19 Pandemic. In Proceedings of the International Conference of Contemporary Affairs in Architecture and Urbanism (ICCAUA-2020), Alanya, Turkey, 6–8 May 2020; Volume 6, p. 8.

53. Trope, Y.; Liberman, N. Construal-Level Theory of Psychological Distance. *Psychol. Rev.* **2010**, *117*, 440. [CrossRef]

54. Boothby, E.J.; Smith, L.K.; Clark, M.S.; Bargh, J.A. Psychological Distance Moderates the Amplification of Shared Experience. *Personal. Soc. Psychol. Bull.* **2016**, *42*, 1431–1444. [CrossRef]

55. Brügger, A.; Dessai, S.; Devine-Wright, P.; Morton, T.A.; Pidgeon, N.F. Psychological Responses to the Proximity of Climate Change. *Nat. Clim. Chang.* **2015**, *5*, 1031–1037. [CrossRef]

56. Chu, H.; Yang, J.Z. Emotion and the Psychological Distance of Climate Change. *Sci. Commun.* **2019**, *41*, 761–789. [CrossRef]

57. McDonald, R.I.; Chai, H.Y.; Newell, B.R. Personal Experience and the 'Psychological Distance' of Climate Change: An Integrative Review. *J. Environ. Psychol.* **2015**, *44*, 109–118. [CrossRef]

58. Richards, G. The European Cultural Capital Event: Strategic Weapon in the Cultural Arms Race? *Int. J. Cult. Policy* **2000**, *6*, 159–181. [CrossRef]

59. Schuldt, J.P.; Rickard, L.N.; Yang, Z.J. Does Reduced Psychological Distance Increase Climate Engagement? On the Limits of Localizing Climate Change. *J. Environ. Psychol.* **2018**, *55*, 147–153. [CrossRef]

60. Armatas, C.A.; Venn, T.J.; Watson, A.E. Applying Q-Methodology to Select and Define Attributes for Non-Market Valuation: A Case Study from Northwest Wyoming, United States. *Ecol. Econ.* **2014**, *107*, 447–456. [CrossRef]

61. Chapman, R.; Tonts, M.; Plummer, P. Exploring Perceptions of the Impacts of Resource Development: A Q-Methodology Study. *Extr. Ind. Soc.* **2015**, *2*, 540–551. [CrossRef]

62. Bartlett, J.E.; DeWeese, B. Using the Q Methodology Approach in Human Resource Development Research. *Adv. Dev. Hum. Resour.* **2015**, *17*, 72–87. [CrossRef]

63. Brown, S.R. Q Methodology and Qualitative Research. *Qual. Health Res.* **1980**, *6*, 561–567. [CrossRef]

64. Stephenson, W. Q-Methodology, Interbehavioral Psychology, and Quantum Theory. *Psychol. Rec.* **1982**, *32*, 235.

65. Cross, R.M. Exploring Attitudes: The Case for Q Methodology. *Health Educ. Res.* **2005**, *20*, 206–213. [CrossRef] [PubMed]

66. Addams, H.; Proops, J.L. *Social Discourse and Environmental Policy: An Application of Q Methodology*; Edward Elgar Publishing: Cheltenham, UK, 2000.

67. Greenberg, N.; Docherty, M.; Gnanapragasam, S.; Wessely, S. Managing Mental Health Challenges Faced by Healthcare Workers during COVID-19 Pandemic. *BMJ* **2020**, *368*. [CrossRef] [PubMed]

68. Koh, D. Migrant Workers and COVID-19. *Occup. Environ. Med.* **2020**, *77*, 634–636. [CrossRef] [PubMed]

69. Chan, K.H.; Poon, L.L.; Cheng, V.; Guan, Y.; Hung, I.; Kong, J.; Yam, L.Y.; Seto, W.H.; Yuen, K.Y.; Peiris, J.S.M. Detection of SARS Coronavirus in Patients with Suspected SARS. *Emerg. Infect. Dis.* **2004**, *10*, 294. [CrossRef] [PubMed]

70. He, F.; Deng, Y.; Li, W. Coronavirus Disease 2019: What We Know? *J. Med Virol.* **2020**, *92*, 719–725. [CrossRef]

71. Felemban, O.; John, W.S.; Shaban, R.Z. Infection Prevention and Control in Home Nursing: Case Study of Four Organisations in Australia. *Br. J. Community Nurs.* **2015**, *20*, 451–457. [CrossRef]

72. Middleton, A.; Simpson, K.N.; Bettger, J.P.; Bowden, M.G. COVID-19 Pandemic and beyond: Considerations and Costs of Telehealth Exercise Programs for Older Adults with Functional Impairments Living at Home—Lessons Learned from a Pilot Case Study. *Phys. Ther.* **2020**, *100*, 1278–1288. [CrossRef]

73. Godwin, K.M.; Mills, W.L.; Anderson, J.A.; Kunik, M.E. Technology-Driven Interventions for Caregivers of Persons with Dementia: A Systematic Review. *Am. J. Alzheimers Dis. Other Dement.* **2013**, *28*, 216–222. [CrossRef] [PubMed]

74. Somerville, C.; Coyle, C.; Mutchler, J. *Responding to COVID-19: How Massachusetts Senior Centers Are Adapting*; UMASS Boston: Boston, MA, USA, 2020.

75. Arango, C. Lessons Learned from the Coronavirus Health Crisis in Madrid, Spain: How COVID-19 Has Changed Our Lives in the Last 2 Weeks. *Biol. Psychiatry* **2020**, *88*, e33. [CrossRef]

76. Nikolaidis, A.; Paksarian, D.; Alexander, L.; Derosa, J.; Dunn, J.; Nielson, D.M.; Droney, I.; Kang, M.; Douka, I.; Bromet, E.; et al. The Coronavirus Health and Impact Survey (CRISIS) Reveals Reproducible Correlates of Pandemic-Related Mood States across the Atlantic. *Sci. Rep.* **2021**, *11*, 8139. [CrossRef]

77. Hunter, P. The Spread of the COVID-19 Coronavirus: Health Agencies Worldwide Prepare for the Seemingly Inevitability of the COVID-19 Coronavirus Becoming Endemic. *EMBO Rep.* **2020**, *21*, e50334. [CrossRef] [PubMed]

78. Walter-McCabe, H.A. Coronavirus Health Inequities in the United States Highlight Need for Continued Community Development Efforts. *Int. J. Community Soc. Dev.* **2020**, *2*, 211–233. [CrossRef]

79. Lai, J.; Ma, S.; Wang, Y.; Cai, Z.; Hu, J.; Wei, N.; Wu, J.; Du, H.; Chen, T.; Li, R.; et al. Factors Associated with Mental Health Outcomes among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Netw. Open* **2020**, *3*, e203976. [CrossRef] [PubMed]

80. James, A.C. Don't Stand so Close to Me: Public Spaces, Behavioral Geography, and COVID-19. *Dialogues Hum. Geogr.* **2020**, *10*, 187–190. [CrossRef]

81. Gholami, A.; Shekari, T.; Aminifar, F.; Shahidehpour, M. Microgrid Scheduling with Uncertainty: The Quest for Resilience. *IEEE Trans. Smart Grid* **2016**, *7*, 2849–2858. [CrossRef]