

Article

Public Perceptions of the Socioeconomic Importance of Urban Green Areas in the Era of COVID-19: A Case Study of a Nationwide Survey in Greece

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Abstract: Considering the emerging challenges posed by the spread of COVID-19, this study was designed to evaluate citizens’ perceptions of the role of urban green areas in the era of COVID-19 in Greece. The evaluation was based on the implementation of an electronic questionnaire survey through the Google Forms platform, which was conducted nationwide. The survey was conducted in 2020 and 735 responses were collected in total based on 14 structured questions. Among the key findings of the study, of notable importance is that citizens considered urban green areas as an important means of improving public health, while citizens were willing to accept an increase of EUR1 to EUR20 in their municipal taxes for improving the services offered by the urban green areas. Results indicate that in a period of both climatic and public health crises, healthy and green urban environments can play a seminal role for alleviating and mitigating different challenges and impacts, while at the same time ensuring sustainability of urban ecosystems. A certain necessity arises for investigating the socioeconomic importance of urban green areas both from an ecosystemic and public health perspective considering the novel challenges of COVID-19 to public policy and decision making.

Keywords: urban green areas; socioeconomic welfare; COVID-19 pandemic

1. Introduction

The interdependence and interconnection of the urban and natural environment of the city can be observed in urban green areas [1]. This connection is of the utmost importance for life in cities and for their inhabitants, and therefore the importance of urban green spaces for the well-being of city dwellers should be recognized [1].

The association of urban green areas (UGAs) with public health is highly acknowledged in global policies and reports, indicating that urban green spaces can provide important socioeconomic and health benefits [2,3]. The recent COVID-2019 pandemic further underlined the significance and the role of UGAs and urged the need for rethinking the design and organization of modern cities to more resilient and sustainable schemes. The WHO’s manifesto for a healthy recovery from COVID-19 [4], outlines “Building healthy and liveable cities” as one of the six main prescriptions for a green and healthy recovery from COVID-19. Specifically, recommendations relate to “pedestrianizing streets and massively expanding cycle lanes—enabling “physically distant” transport during the crisis, and enhancing economic activity and quality of life afterwards,” which outlines the tandem

socioeconomic and health benefits that can arise from sustainable UGAs, also in line with the recent recognition of the “right to a healthy, clean and sustainable environment” of the COP27 decision [5].

However, the positive effects of urban green spaces on citizens’ well-being cannot be fully acknowledged and expressed in monetary terms. This is due to the fact that the existence of urban green space does not provide direct economic benefits to the citizens. Urban green infrastructure has positive effects on citizens’ well-being through the provision of essential ecosystem services, i.e., “the benefits people obtain from ecosystems” [6] thus increasing their quality of life. Ecosystems services such as carbon sequestration (regulating ecosystem service) or even the aesthetic pleasure (cultural ecosystem service) are factors that indirectly influence the citizens’ well-being and should be taken into consideration. However, it will be also illustrated that the existence of urban green spaces is seen as an amenity and contributes to the increase of property values that are located in the vicinity of those areas [6].

It is characteristic that in the many case studies, where the effect of urban green spaces on citizens’ well-being is estimated, the “hypothetical market” method is employed. The reason is obvious, since there is no real market for goods and services those spaces may provide. Therefore, the economic value of such urban spaces is extracted through the creation of hypothetical market conditions and is expressed through the willingness to pay or other indirect positive effects, such as carbon sequestration, are also estimated, as these contribute to an ameliorated quality of life in urban areas [7]. Additionally, the increased value of properties located near the area of green urban spaces can be regarded as an indirect monetary indicator that highlights the need for such spaces.

Such estimation is of primary importance. With the help of monetary valuation, the main challenges regarding the governance of the urban green space can be identified. More specifically, these challenges include the increase in development pressure due to population growth and economic constraints on the municipal budget, the loss of expertise and the low awareness of the green benefits to various factors through insufficient communication [8,9].

Several studies have been carried out throughout the last years that attempted to underline the critical importance of UGAs by highlighting the positive effects these areas can have on citizens’ well-being [2,3,10,11]. Nevertheless, it is often an arduous task to codify those benefits to human welfare by devising one single metric or indicator that will be based on monetary values [12]. Undoubtedly, UGAs’ positively influence human well-being, as they provide specific ecosystem services. Some of those ecosystem services have an indirect impact on citizens’ well-being. However, their role should not be undermined at any circumstance and they should be carefully researched and adequately assessed [13]. Additionally, the multidimensional role of UGAs has been underlined in the research, stressing their importance in urban areas [14]. Obviously, important aspects of citizens’ well-being such as health preservation and recreation can be influenced by the planning, realization and maintenance of UGAs, such as parks and forests [14].

Concerning the Greek peninsula, the recent rapid warming trends have been shown to have an impact on the viability and growth of vegetation on urban and natural settings [15]. In addition, recent studies have evaluated the changes in aridity in the last century in Greece and identified that the recent climatic period is characterized by more arid conditions compared to the past, suggesting also reduced water availability for the natural and urban vegetation, with significant impacts on plant growth, which is also supported by other studies on Greece [16,17]. The warming trends and the changes to more arid conditions are even rapidly occurring in Greek cities [18–24]. Under such climate conditions, the green infrastructure in Greek cities is already coping with climate change and are considered a regulatory tool to mitigating urban climate and the urban heat island (UHI) phenomenon imposing an urging need for sustainable urban planning. However, in Greek cities, the availability of green spaces is generally scarce, especially in densely populated and built-up areas such as Athens. Specifically for the city of Athens, Giannopoulou et al. [25] and Livada

et al. [26] explored the UHI phenomenon in 25 sites inside the city during the summer period and suggested the division of the city in five geographical zones considering their thermal balance characteristics. Both studies identified that the industrial western and central parts of the city had higher air temperatures compared to the northern and eastern parts, underlining the positive cooling effect of green spaces, which is also addressed in other studies conducted in Athens, either in urban parks [27–29], small courtyards [30,31], or single trees [32].

According to recently conducted studies on the impact of the COVID-19 pandemic in cities [33], the main findings indicate that overall, the health and well-being in cities worsened due to the COVID-19 pandemic, while the built environment has contributed to COVID-19-related changes in health and well-being, with denser neighborhoods being particularly linked to lower well-being during COVID-19 [34,35]. In a study conducted in Mexico City, it was highlighted that UGA use has served as an option to decrease the effects of stress and isolation caused by COVID-19. More specifically UGAs have served as a “coping mechanism” that has increased citizens’ physical and mental well-being [36]. Nevertheless, in low- and middle-income neighborhoods where there is a lack of UGAs, the problem of access has been highlighted as a crucial factor that has hampered citizens’ well-being in those areas [36].

Furthermore, a general trend concerning visits to UGAs has been observed. In an extreme case, a threefold increase in recreational use of outdoor spaces in and around Oslo, Norway has been found [37,38]. A similar but considerably lower trend can be found in other European cities. In Bonn, Germany, visitors’ visits to urban forests nearly doubled during March 2020 [39]. In the UK, researchers found evidence of a radical substitution of leisure time for recreation in available UGAs coupled with a drastic decrease of car use by 47% [40]. On the contrary, a 13.1% decrease in visits to UGAs has been observed in Poland, which was merely the result of a regulation banning the use of UGAs. However, over 50% of the respondents admitted that visits to UGAs have a considerable positive effect on their well-being [41]. Similarly, a study conducted in six countries (Croatia, Israel, Italy, Slovenia, Lithuania, and Spain) revealed similar conclusions. Characteristically, 64% of the respondents in Spain and in Italy limited their visits due to the government restrictions. This happened to a lesser extent in the other countries. Nevertheless, COVID-19 curfews and access restrictions to UGAs highlighted the physical, cognitive and emotional need that could be fulfilled by UGAs. Characteristically, respondents underlined that during the COVID-19 period they missed their park-related activity, e.g., exercising outdoors, meeting other people observing nature, and breathing fresh air [42].

2. Methods

Considering the emerging challenges posed by the spread of COVID-19, the current study was designed to evaluate citizens’ perception of the role of urban green areas during the COVID-19 pandemic in Greece.

The purpose of this study was to elucidate:

- Citizens’ considerations of urban green areas as an important means for improving public health;
- Citizens’ perception in regard to urban green areas being hotspots for improving public health;
- A trade-off question between different economic preferences of a service in the form of a public good, access to urban green areas vs free access to home internet for each month of lockdown measures;
- Citizens’ ranking of favorite urban ecosystem services in the era of lockdown.

The study’s structure was based on the following steps:

- Design of the questionnaire by the research team;
- Conducting the survey through a web questionnaire;
- Evaluation and analysis of results by the research team.

The evaluation was based on the implementation of a web survey, uploaded on a Google Forms questionnaire, which was conducted at a national scale and distributed through a frequently visited meteorological website (www.meteo.gr, accessed on 11 October 2022) run by the National Observatory of Athens. This website is a popular meteorological data website with a high number of daily visitors, and for the purposes of the survey a special banner appeared randomly to visitors on the home page, from which visitors followed a link to the web survey. The survey was conducted from 25 November to 15 December 2020, with a total of 735 responses collected within this period from all over the country. It should be noted that during the first year of the COVID-19 outbreak, a set of lockdown measures was imposed by the Greek authorities starting in March 2020, while the measures were gradually eased from May 2020 onward.

The survey was based on 14 questions that were structured on the following main pillars:

- Citizens' considerations and perceptions of urban green areas in relation to the COVID-19 pandemic using different scaling options based on each question;
- Citizens' appraisal of ecosystem services provided by the UGAs in their municipality by using a grade from 1 to 5;
- Citizens' perceived socioecological benefits linked to the importance of UGAs, ranked on a four-point scale;
- Citizens' willingness to pay for selected ecosystem services through an increase in the municipal tax for improving UGAs;
- Demographic data.

The participants were all inhabitants of the Greek peninsula, and during the COVID-2019 quarantine had to follow the limitations in transportation imposed by the Greek government. It should be noted that the climate of Greece is generally mild, allowing visits to parks and green areas most of the days of the year. More specifically, Greece's climate is Mediterranean and according to Thornthwaite's aridity classification [43,44] is humid in most areas, but there are also regions with subhumid or subarid climate [15,45].

3. Respondents' Profile

Regarding the respondents' characteristics (Figure 1), the questionnaire was filled predominantly by males (71%). Furthermore, the respondents' level of education was high or very high, as 48.4% were university graduates and 34.6% had master's degrees or PhDs.

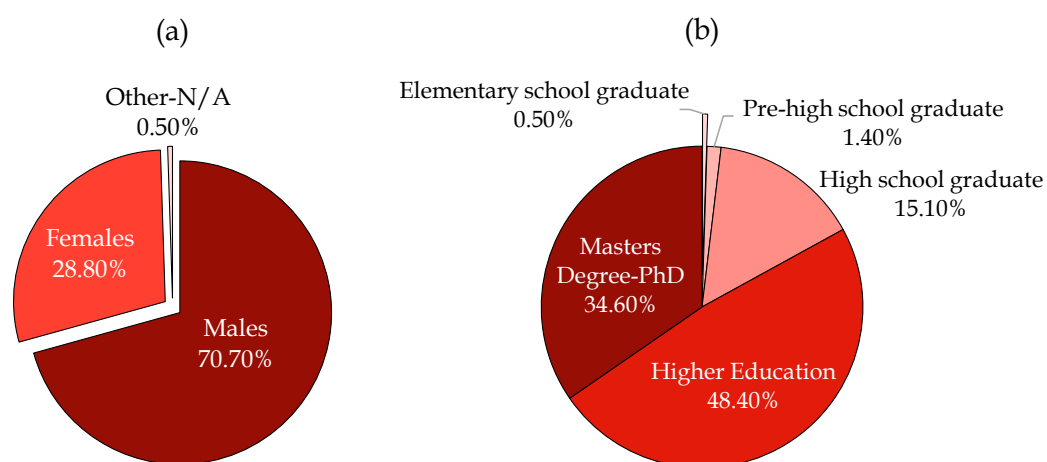


Figure 1. Distribution of the participants by (a) gender and (b) educational level.

As far as occupation is concerned (Figure 2), 33% of the respondents were employed, while 22% were self-employed, followed by civil servants (18%), pensioners (12%) and unemployed (9%).

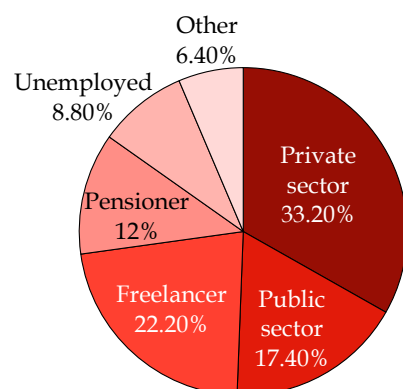


Figure 2. Occupation of the participants.

The composition of the respondents' households varied principally between 2–4 persons (79.2% of the responses). The annual household income (Figure 3) was divided between those having an income more than EUR20,000 (44%) and those on less than EUR20,000 (56%). It should be noted, however, that the participants were almost equally distributed between the different household income classes, presenting percentages within a small range (from 16% with household income of EUR5,000–10,000 to 26% with household income greater than EUR25,000). This distribution indicates that the interest of the citizens in UGAs is independent of their financial status.

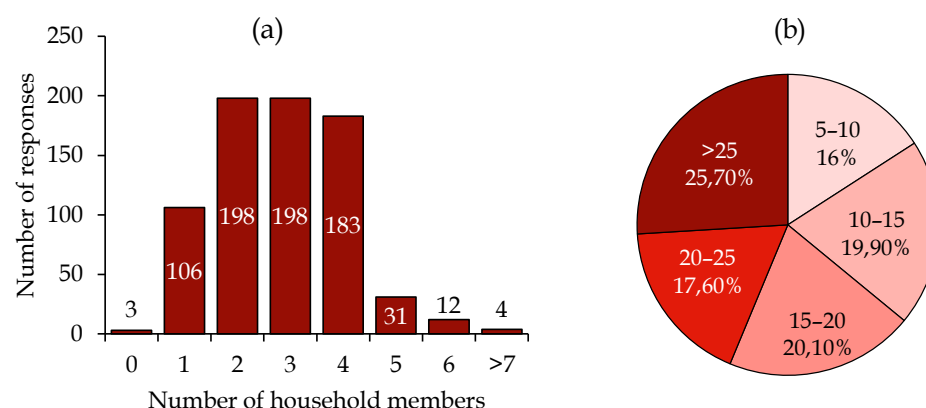


Figure 3. (a) Household members and (b) annual household income (in EUR1000s) of the participants.

Concerning the participants' origins, it should be noted that all were citizens with permanent residence in Greece. Their distribution in the 13 Greek prefectures indicated that all prefectures were represented. The great majority of the responders (65.3%) were living in the broader area of Athens (prefecture of Attica), whereas the prefecture of Central Macedonia (hosting the second-largest city of the country, i.e., Thessaloniki) also showed a high percentage (10.5 %). All other prefecture percentages were significantly smaller, varying from 0.5% for the Ionian Islands to 5.2% for Crete.

4. Results

4.1. Willingness to Pay for Ecosystem Services Related to Urban Green Spaces

The 735 participants of the survey were asked to appraise different ecosystem service functions provided by the UGAs in their municipality using a grade from 1 to 5. The average scores for each service function are depicted in Figure 4. The participants valued most (4.36, sd: 1.00) the upgrade of the aesthetic value of the urban landscape and to a similar degree (score 4.35, sd: 1.05) the climate regulation services and the noise and air pollution reduction (score 4.28, sd: 1.09) that the green infrastructures provide in the city. The score of the landscape aesthetic values presented no statistical difference in

scores for the services of climate regulation ($p = 0.696$) and the noise and air pollution reduction ($p = 0.089$), but were significantly different ($p < 0.001$) for all other services. The recreation activities and the conservation/enhancement of the biodiversity appear to be less important for the participants with scores 3.76 (sd: 1.20) and 3.87 (sd: 1.25), respectively, which presented no significant difference ($p = 0.116$). Citizens evaluated the recreation activities and also the function of UGAs as a play space for children with lower scores (3.76 and 4.02, respectively) compared to landscape aesthetics or the UGAs' ability to regulate the local urban climate, suggesting that the average participant indicated an environmentally sensitive profile. The relatively low score for the function of UGAs as biodiversity hotspots in the city is probably explained by the fact that the citizens' idea for a UGA is that it should provide security and enhanced aesthetic surroundings to the visitors and that a great variety of floristic or fauna species would probably not be a priority.

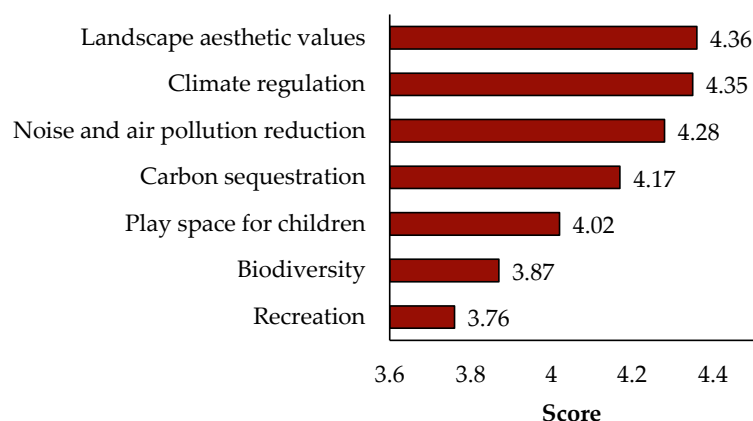


Figure 4. Average scores for the appraisal of the UGA services based on the evaluation of the participants ($n = 735$), using a 5-degree scale.

The participants also ranked the importance of UGAs on enhancing socioecological benefits based on four given options, and the average scores are presented in Figure 5 using a 4-degree ranking scale. In all cases, the score differences were statistically different ($p < 0.001$). Securing public health and natural environment gained the highest score (3.52/4.00) among the benefits of UGAs, whereas the production of food, drinking water or other basic materials had the lowest score, i.e., 2.48. This was expected, considering the impact of COVID-19 in public health and local communities. However, the relatively low score for enhancing social relations and social networks is notable, especially during the restrictions imposed for restraining the spread of COVID-19.

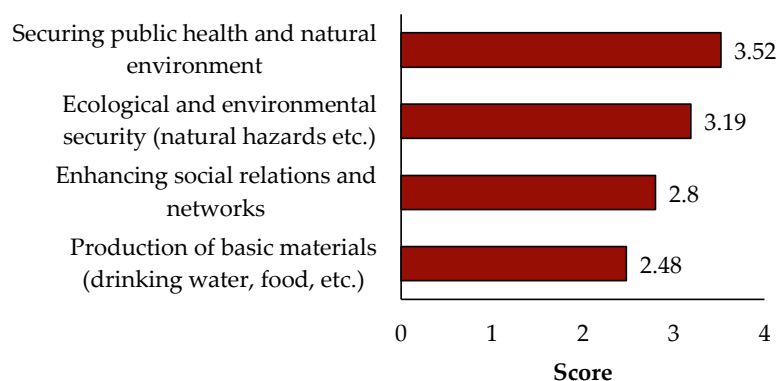


Figure 5. Average scores for assessing UGA importance for specific benefits using a 4-degree scale.

The question on the respondents' willingness to accept an increase in municipal taxes for specific services (Figure 6) revealed that 27% would be willing to pay for the amelioration

and enhancement of green urban spaces for public health purposes. Surely, this question was greatly influenced by the COVID-19 restrictions, i.e., curfews, as well as the discussions regarding a lower spread of COVID-19 in open spaces. Interestingly, a fair share of the respondents would be willing to accept an increase in taxes for urban green spaces as a measure against climate change (20%) or for environmental conservation (18%). Then, taking into consideration the fact that urban green spaces are mainly dedicated to recreation activities, only 16% of the respondents were willing to additionally pay for that service.

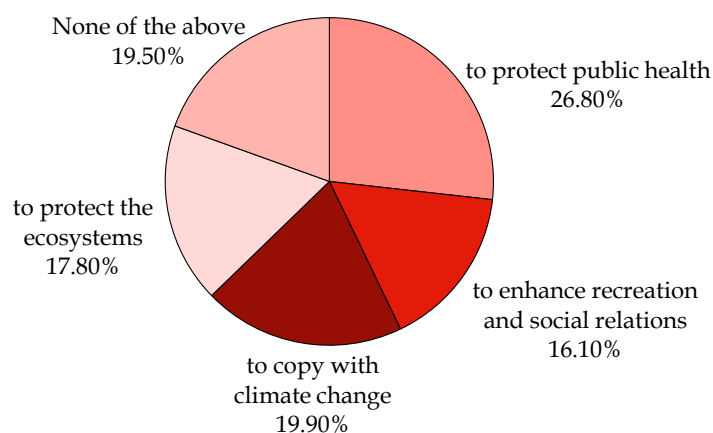


Figure 6. Responses on services accepted for an increase in the municipal tax for improving UGAs.

The level of the additional tax increase varied among the respondents (Figure 7). On the one hand, 26.2% were willing to pay the highest amount possible (EUR10–20 per year) or the second-highest amount (EUR7.5–10 per year). On the other hand, 23.5% were willing to pay the lowest possible amount (EUR1–2.5 per year).

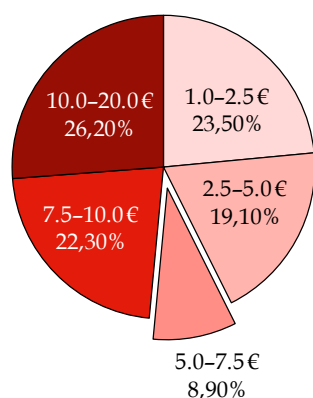


Figure 7. Responses on the monetary level of municipal tax increase (euros per year) citizens accept per year (household level).

4.2. COVID-19 and Urban Green Spaces

Between the “dilemma” among small and numerous or large and few urban green spaces (Figure 8), there is a slight preference towards the first option, i.e., many small urban green areas (56.7%). This is surely based on the fact that the second option of large urban green spaces is not realizable in urban centers in Greece, where open space is limited. Apart from that, due to COVID-19 concerns, the option of many small urban green spaces would facilitate the dispersion of the residents in urban centers and could prevent the spread of the virus.

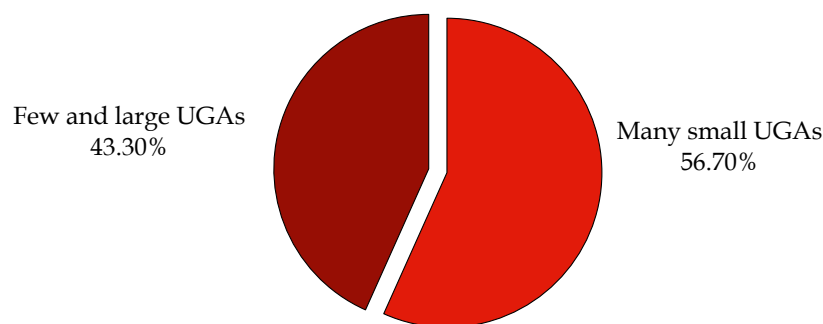


Figure 8. Responses on the perception of safety of small vs. large UGAs in regard to experience from the restriction measures (quarantine) to minimize the spread of COVID-19 (research question: “Based on your experience from the restriction measures (quarantine) to minimize the spread of COVID-19, do you think it is safer to have a lot small UGAs in your municipality, or few and large ones?”).

The visit frequency to urban green areas prior to the COVID-19 outbreak and the subsequent restrictions was varied (Figure 9). In general, 34.5% would visit an urban green space more than once a week, while 23.9% of the respondents would visit it only once a week.

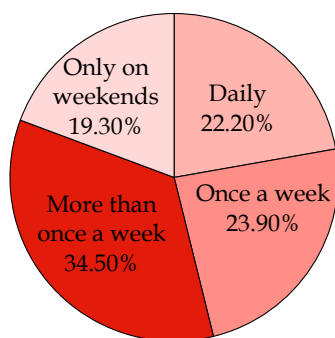


Figure 9. Responses on the frequency of visits of the UGAs before the beginning (March 2020) of COVID-19 restrictions (research question: “How often did you visit the UGAs of your municipality, before the beginning (March 2020) of the COVID-19 restrictions?”).

In general, it is obvious that COVID-19 restrictions had an effect on the visit frequency (Figure 10), as 37.7% answered that these had a moderate effect. Nevertheless, 89% of the respondents underlined that urban green areas are critical for the improvement of public health. By analyzing the answers of all respondents, the average score of 4.85/5.00 also suggests that the citizens’ perception of UGAs is highly associated with public health, further enforcing the strong bond between citizens’ welfare and green infrastructure.

Regarding the perception change due to COVID-19 (Figure 11), 39% of the respondents admitted that this had positively altered their perception in regard to urban green areas being hotspots for improving public health. In general, 78.7% of the respondents acknowledged a moderate (3) to maximum (5) change in their perception of urban green areas. Also, 114 respondents (16% of the total number of participants) answered that their perception of UGAs was less (grade 1) affected regarding the improvement in human public health after the quarantine. It is interesting to note that the great majority (103) of this latest group of citizens also considers that UGAs are of maximum importance for the improvement in human health.

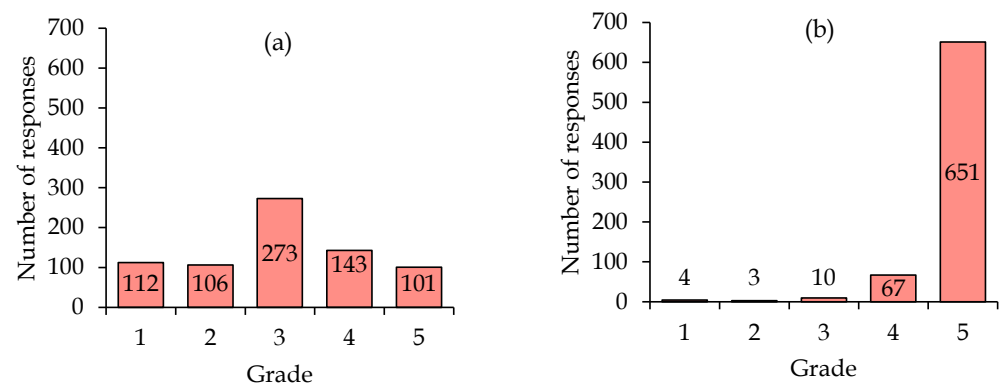


Figure 10. Responses on (a) the change of frequency of visits in the UGAs change after the end (May 2020) of COVID-19 restrictions (research question: “How has the frequency of your visits in the UGAs changed after the end (May 2020) of the COVID-19 restrictions?”) and (b) importance of UGAs, regarding the improvement of human health (research question: “How important do you consider UGAs to be, regarding the improvement of human health?”) (grading scale: 1 = minimum to 5 = maximum).

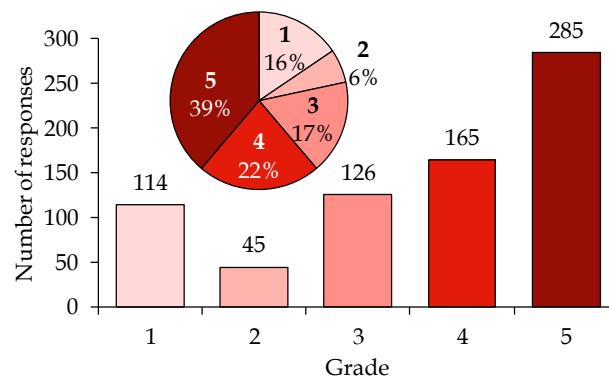


Figure 11. Responses on the degree that lockdown measures against the spread of COVID-19 altered the perception of citizens in regard to urban green areas as a means of improving public health (research question: “How much was your perception about the UGAs affected, regarding the improvement of human public health after (March 2020) the restriction measures (quarantine) for the prevention of spreading COVID-19?”), (grading scale: 1 = minimum to 5 = maximum).

In a trade-off question (Figure 12) asking them to select one of the two options in case a service was offered them gratis in the form of a public good, participants chose by great majority (82%) their access to urban green areas instead of having free access to home internet for each month of lockdown measures. This finding highlights the “use value” of urban green areas as a public good, hinting at high welfare values derived from the existence of urban green areas. It is also interesting to note that about 18% of the participants stated their preference for free internet access at home during the quarantine, against the option for accessing UGAs. About half (52%) of these responders believe that visiting or staying in UGAs is not very safe for the transmittance of diseases and they gave scores less than 3 (1 = least safe–5 = most safe) to the relevant question. In addition, only 12% of this group visits UGAs on a daily frequency, which is half the respective percentage (24%) for the other group of respondents that prefer to have access to UGAs during quarantine.

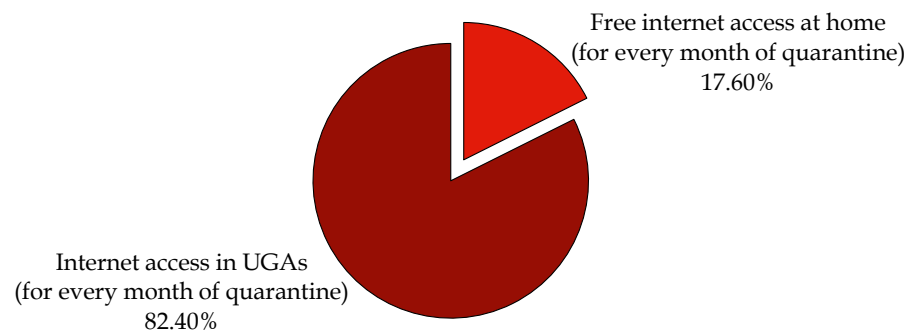


Figure 12. Responses on the selection of trade-off between two options considering lockdown measures against the spread of COVID-19. Research question: “Which of the following 2 options would you choose in case of restriction measures (quarantine) for stopping the spread of COVID-19?”

The next question (In case of restriction measures (quarantine) to help minimize the spread of COVID-19, which of the following services would you choose to be available for the general public? Figure 13) revealed that the great majority of the respondents would opt for access to public parks (41.2%) and urban forests (34.6%). This is mainly influenced by the curfew measures due to COVID-19, where residents were restricted to their homes. Therefore, the need of going to open spaces and spend some time there was preferable to other options that included visits to other spaces, such as sport centers and busy streets with shops. The high preference of respondents for the green (76%) against the blue (17%) infrastructures is also notable, and is possibly attributed to the season (late autumn and early winter) of the research, since during this period of the year, the general public indicates an increase interest for green-related activities. In all cases, however, the green and blue infrastructure facilities comprised about 93% of the respondents’ preferences.

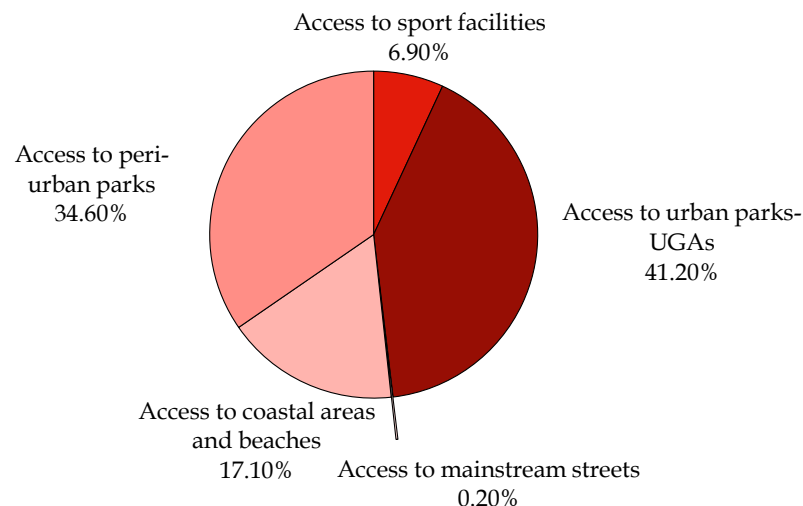


Figure 13. Responses on the preference of services that citizens prefer to be available to the wider public in case of lockdown measures against the spread of COVID-19 (research question: “In case of restriction measures (quarantine) to help minimize the spread of COVID-19, which of the following services would you choose to be available for the general public?”).

Lastly, citizens appear to feel quite safe in regard to COVID-19 transmission during their presence in urban green areas (Figure 14). More specifically, 72.2% of the respondents assessed their visit to urban green areas as very safe (4) or even safest (5). It is worth noting that 54% of these citizens considered that in their municipality, many and small UGAs were safer regarding the transmission of COVID-19 against fewer and larger ones, whereas the rest (46%) supported the opposite. For the 28% of the respondents that gave a score less than 3 (1 = least safe to 5 = most safe) when evaluating how safe they feel in UGAs, the

abovementioned percentages concerning the number and the magnitude of the UGAs give a clearer picture, since this citizens' group considers the many and small UGAs safer in terms of preventing COVID-19 transmission by 63%.

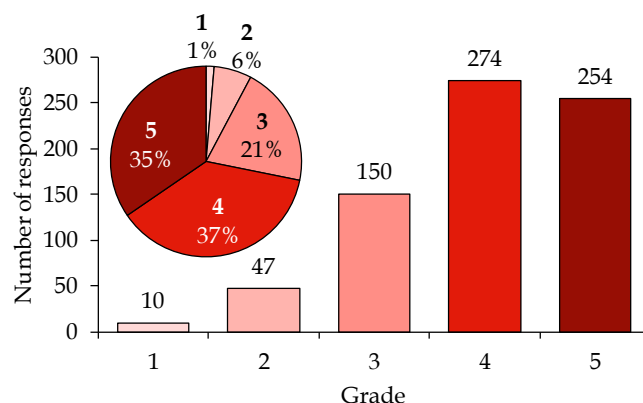


Figure 14. Responses on citizens' perception of safety of presence in urban green areas in regard to disease transmission (research question: "How safe do you consider the visiting/staying in urban green areas regarding the transmission of diseases?"), (grading scale: 1 = least safe to 5 = most safe).

5. Discussion

Among the key findings of the study, of notable importance is that citizens saw UGAs as an important means for improving public health, while citizens were willing to accept a certain increase in their municipal taxes for improving the services offered by UGAs. It is interesting to note that the main reasons behind this acceptance were basically environmentally related, such as climate change or environmental conservation. A further important finding of the survey is the dilemma between free internet access and free access to UGAs. The clear preference for the latter option, i.e., free access to UGAs, was partially biased by the COVID-19 restrictions. It should be noted that conducting this study in the period following the strictest curfews of the COVID-19 pandemic in Greece led to a significant bias towards the perception of UGAs in citizens' perception. The choice of the trade-off question was utilized as a means for controlling this bias, and indeed it was found that citizens indicated a much higher degree of preference towards the free access to UGAs. Combined with the tandem acceptance of an increase in their municipal taxes, this clear preference reveals that in situations of public health emergencies, such as the COVID-19 pandemic, UGAs emerge as a means to fulfil the citizens' physical, cognitive and emotional benefits. In that way, the role of UGAs as a public good and the "vehicle" for increasing the citizens' well-being is highlighted. Further interesting findings include the citizens' acknowledgment that UGAs are critical for public health, while the majority supported that the COVID-19 restrictions substantially affected their perception of UGAs. To that end, the vast majority of the respondents perceived UGAs as safe spaces regarding the transmission of COVID-19.

It has already been presented how UGAs have a positive influence on citizens' well-being [2,3,10,11] and how difficult its codification through a single metric can be [12]. This influence is surely multidimensional and there is further need for research [13,14]. In general, this preliminary study should take into careful account the contribution of UGAs to the urban environment along with the possible positive effects on citizens' quality of life and positive influence on citizens' well-being through the activities that could be carried out in UGAs, e.g., recreation and socialization [14]. Additionally, it has been apparent from other studies, as well as this research, that COVID-19 curfews gave a "window of opportunity" so as to highlight the importance of UGAs [37–42]. More specifically, it was shown that UGAs emerged as places where citizens' physical, cognitive and emotional need were fulfilled and satisfied. On the contrary, access restriction to UGAs or a lack of UGAs in the vicinity of citizens' residence resulted in feelings of isolation and consequently to lower well-being [34–36,42]. Furthermore,

the importance of UGAs is also expressed in increased rates of WTP for the construction and maintenance of UGAs [46,47]. Consequently, it can be assumed that the COVID-19 curfew triggered a “crisis,” thanks to which the multidimensional and (until then) hidden advantages of UGAs were unveiled.

6. Conclusions

This study’s findings highlight the utmost importance of urban green areas for achieving the Sustainable Development Goals, specifically “Goal 3: Good Health and Well-Being” and “Goal 11: Sustainable Cities and Communities.” Our results indicate that in a period of both climatic and public health crises, healthy and green urban environments can play a seminal role in alleviating and mitigating different challenges and impacts, while at the same time ensuring sustainability of urban ecosystems. In regard to policy recommendations, the current study’s findings emphasize the need to further investigate the socioeconomic importance of urban green areas from an ecosystemic and public health perspective considering the emerging challenges of COVID-19. The results of this study could be utilized both by researchers and policy makers and similar studies should be mainstreamed for policy makers and experts in order to assist the design of healthier and safer municipalities according to existing initiatives at national and international levels.

It should be noted that responsible local and/or regional authorities and experts should take into account all the necessary parameters related to the realization of UGAs, i.e., the benefits, the possible spillover effects, the emergent threats, as well as the management costs. Therefore, a comprehensive study regarding the realization and maintenance of UGAs of all categories, i.e., urban parks or forests, should be carried out beforehand. This should be the starting point before the composition and implementation of any plan regarding UGA management.

It becomes evident that policy makers should incorporate climate governance in the management of green infrastructure at the local level through the establishment of integrated policy frameworks focusing on urban green areas. This implies considering open urban spaces not as isolated units, but as vital elements of the urban landscape with their own contribution to the goals of sustainability and the adaptation and mitigation of the effects of climate change.

The key limitations of this study are associated with the both the respondents’ profile, mainly male, university graduates and the exact place of residence of participants, since the city typology might influence the accessibility to UGAs, citizens’ perceptions of UGA importance, as well as respondents’ age, which in web surveys could be linked to relatively younger respondents.

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