ATTITUDES AND VIEWS OF CITIZENS ON URBAN GREEN SPACES – CASE STUDY IN THE CITY OF VERIA, GREECE

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ABSTRACT

Urban green spaces and their networks have a positive effect on a city's microclimate since they greatly improve the city and the citizens' health and reduce noise and atmospheric pollution. Life in cities is characterized by complexity that greatly degrades the quality of life of its inhabitants. The inability to solve the problems identified in cities due to various causes lead to the absence of structures that could help to improve the living standards of the residents. One major problem is the absence of sufficient green spaces. Many urban green spaces are either inadequate or degraded in both aesthetic and activity capacities. This paper explores the attitudes and views of citizens on urban green spaces and their networks in the city of Veria, Greece. Topics regarding the urban green spaces' qualitative and quantitative status, their level of service, attractiveness and accessibility, as well as their possibilities for improvement and the creation of new ones, aiming at the improvement of the quality of life, are being discussed. Data is gathered via questionnaires distributed to residents of Veria and processed using appropriate statistical tools. According to results, there are significant problems in the existing urban green areas in terms of number and quality. Green networks are non-existent in the city. In addition, the existing green urban spaces are not considered as adequate by the citizens of Veria city. Also, citizens are interested in the development of linear vegetation elements. Moreover, residents are willing to compensate time and money for the maintenance and/or creation of new green urban spaces. The city of Veria has great potential because it is linked to natural wealth due to its geographical location and other morphological elements.

KEYWORDS

green networks; quality of life; questionnaire survey; urban green spaces; Veria city

1. INTRODUCTION

Intense urbanization over the last two centuries has led the majority of population to urban centers. In addition to increasing growth rates and to reluctant treatment of environmental problems, the planning of cities and land uses are greatly affected. In particular, the intense urbanization, combined with the largely anarchic construction of the cities, contribute to the reduction of free spaces and consequently of green urban spaces.

The urbanization process in Greece was late compared to Northern Europe, but was faster and at a stronger pace. The consequences of this are the uncontrolled expansion of the built environment without clear boundaries and structures, the occupation of agricultural land and forest areas, the compaction of streams,

the fragmentation of free spaces, the mixing of incompatible or disturbing land uses and finally, the disconnection of the city from nature [1]. All these contribute significantly to the reduction of urban spaces and especially of urban green spaces, affecting adversely the urban environment, society and economy that constitute the three interrelated components of the city.

The modern way of life and the increased multifaceted issues that appear in contemporary cities, have led to a number of negative consequences at the expense of the quality of the urban environment. The degradation of the natural element in the city, as well as the plethora of social, economic, administrative, etc. issues that urban planning is called upon to resolve, often leads to an inability to meet the needs for green urban spaces.

The creation of networks based on the integration of urban green spaces, contributes to the protection and preservation of indigenous habitats within the urban fabric, highlights the nature protection zones within the city and reveals the need for restoration and regeneration of degraded landscapes. At the same time, it provides the opportunity for comfortable, enjoyable and sustainable movement of citizens by connecting important poles of attraction and destinations. In addition, the green networks identify and connect archaeological, historical and cultural sites, thus highlighting and enhancing the historical and cultural continuity of the city [2,3].

The present work deals with the attitudes and views of the citizens of Veria city in Greece, regarding the existing green spaces, their management and their networking possibilities. Despite the existence of natural wealth in the city of Veria, the absence of developmental policies and techniques, results in the consideration of the existing green spaces as "decorative" and not as part of the everyday life of citizens. In fact, there are no green networks that could achieve an improved and sustainable standard of living for the citizens of Veria. The main problems identified in the city of Veria are:

- the absence of sufficient green spaces,
- the additional degradation of the existing green spaces, not only by the residents themselves but also by the competent bodies who do not provide for the proper management of those spaces, and,
- the consideration of the “green” element only as a decorative one and not as a natural one that could result to improved quality of life of the citizens.

Results of the present study could be helpful for local and regional authorities in implementing new strategies and actions to improve local urban planning and, consequently, quality of life of the citizens.

2. METHODOLOGY

The empirical part of the study is based upon a questionnaire survey that attempts to study the attitudes and views of citizens of the Veria city in Greece regarding various issues concerning the existing green urban spaces and the creation of new ones.

A structured questionnaire is constructed and is distributed from 22nd April to 21st May in 2019 to respondents living in the city of Veria, Greece.

The questionnaire is structured in three parts. The first part deals with three general questions about the perception of the respondents regarding the quality of life that the city offers, the contribution of the green spaces to the improvement of the daily life and the quality of life and the identification by the respondents of the main parameters that constitute the quality of life.

The second part includes questions dealing with the personal views of the respondents about the existing green spaces in the city, on various issues, such as: visits and frequency of visits, evaluation of the existing green spaces in terms of number, dispersion, ease of access, care and safety, their view on the creation of linear zones to connect green spaces, their willingness to spend money and time for the

maintenance, improvement and creation of green spaces, etc.

The third part includes the personal data of the respondents such as gender, age, marital status, educational level, occupation and family income in year 2018.

Regarding the optimal sample size, the population of Veria city in 2011, based on the last reported national census, is 43.061 people [4]. Therefore, adopting a 95% confidence level and 5% sampling (precision) error, the optimal sample size is 397 questionnaires [5].

Data collected are analyzed adopting proper statistical tools. In particular:

- Descriptive statistics include statistics tools that help to describe and organize all the data collected from the survey questionnaires and to record them in the form of tables or frequency diagrams

- Inferential statistics include the tools for searching possible correlations of responses with the characteristics of the sample. In particular, the Pearson chi-squared test at α = 5% significance level (95% confidence level) is adopted. However, if the control conditions for 2×2 correlation tables are violated, then the Fisher's Exact Test is used.

Exact Tests (e.g. Monte Carlo, if available) or the Likelihood Ratio Chi Square Test [6] can be used on larger correlation tables. Mann-Whitney tests are also performed for two samples and Kruskal-Wallis for more. Also, the Spearman rank-order correlation coefficient test is adopted that checks the correlation of two variables in the sample population. This test, checks the null hypothesis (H_0) that there is no association between the two variables in the sample population. A rejection of H_0 implies that there is a (monotonic) association between the variables in question [7].

3. RESULTS AND DISCUSSION

Data of the study are collected from 397 valid questionnaires.

3.1 Characteristics of Sample

Almost 44% of respondents are men and 56% women. Rations are closed to 2011 census [4] regarding the Veria city (table 1).

Table 1. Gender in sample

Gender	Sample (%)	2011 Census (%)
Men	43,80	48,80
Women	56,20	51,20
Total	100,00	100,00

The age of the respondents ranges from 16 years to 83 years. The average age is 43,37 years. Considering the marital status of the respondents, 29,2% state that are single, 61,7% are married, 7,1% are divorced and 2% state that are widowed.

Regarding the educational level of the respondents, the following results are recorded: A 0,5% of respondents are illiterate, 2,8% are primary school graduates, a percentage of 22,6% are secondary school graduates, 15,9% are post secondary or technical school graduates, 40,1% are graduates of higher or high education and 18,1% of respondents hold a Master's or a Doctoral degree. It should be noted that the proportion of respondents that are graduates of higher education and above is quite large in the sample and contradicts the relevant reports considering the educational level in Veria city as depicted in official 2011 census [4].

Regarding respondents' occupation, out of total 397, 32,5% are civil servants, 24,2% are private employees, 18,9% are self- employed, 5% are retired, 0,3% are incomers from investments, 3,8% are students, 3% are farmers, 5,3% declare household and 7,1% are unemployed. Therefore, more than half (56,7%) of respondents work for the public or private sector.

Finally, the allocation of the sample considering its family income in year 2018 is depicted in table 2.

Table 2. Family Income (2018) in sample

Income (€)	%	Cumulative %
0-5.000	18,39	18,39
5.001-10.000	20,65	39,04
10.001-15.000	25,19	64,23
15.001-20.000	14,11	78,34
20.001-25.000	8,56	86,90
25.001-30.000	7,05	93,95
30.001-35.000	1,51	95,47
35.001-40.000	1,26	96,73
40.001-45.000	0,76	97,48
45.001-50.000	1,26	98,74
>50.000	1,26	100,00
Total	**100,00**	

3.1 First part – General questions

Almost 80% of respondents report from "not at all" to "more or less" satisfied with the quality of life that the Veria city is offering (figure 1).

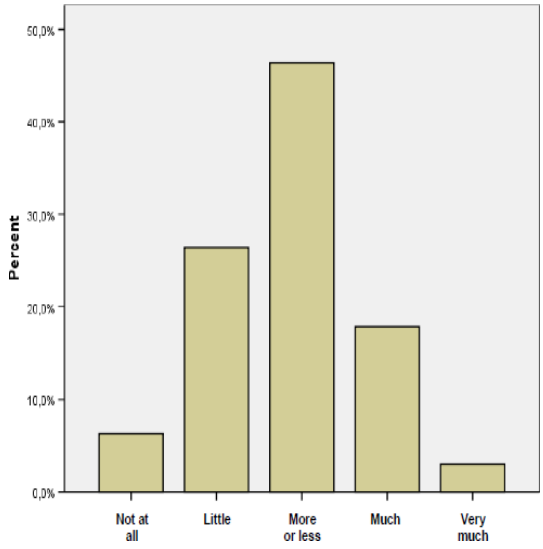

Figure 1. Satisfaction level of respondents from the quality of life in Veria city

However, almost 68,5% of respondents (from "more or less" to "very much") believe in the contribution of green urban spaces to the improvement of their quality of life.

Regarding the five most important parameters that constitute the quality of life, the most popular options (with the highest frequency) are: physical health (65,50%), health benefits and social care (47,61%), freedom - sense of security (41,81%), natural environment (pollution, noise, climate) (38,80%) and finally, family relations (32%).

3.2 Second part – Opinions about green spaces in Veria city

A significant percentage of respondents (79,8%), answer that they visit urban green spaces (figure 2).

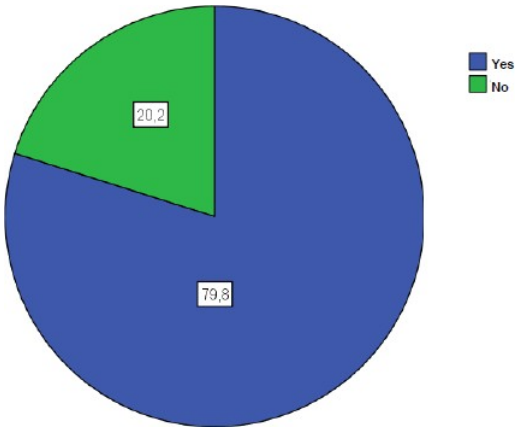

Figure 2. Visiting green spaces in Veria city (%)

The five most popular reasons that the 317 respondents who are visiting green spaces in Veria report, are: relaxation - fresh air (70,35%), exercise - walking (54,26%), accompanying children (30,60%), social meetings (friends etc.) (25,55%) and daily route (19,56%). On the contrary, the 80 respondents who do not visit green spaces report mainly as reasons: existence of stray animals (53,75%), lack of adequate equipment and infrastructure (sanitary facilities, playgrounds, refreshment, etc.) (47,50%), lack of time (31,25%), distance from home (22,50%) and problematic route from the house to the green area (obstacles, steep slopes, etc.) (18,75%).

Citizens of Veria city prefer to visit mostly the Elia park (79%) and the Tripotamos (Barbuta etc.) place (44%). Considering the frequency at which respondents visit green urban spaces, results are shown in table 3.

Table 3. Frequency of visiting green urban places in Veria city

Frequency	%	Cumulative %
Daily	24,40	24,40
Once a week	50,60	75,00
Once a month	17,40	92,40
Once a year	5,50	98,00
Not at all	2,00	100,00
Total	**100,00**	

Regarding the number of existing green spaces in Veria, the respondents answer that they are "very few" (28%), "few" (39%), "neither few /not many" (30%), "many" (3%) and "too many" 1 person. Therefore, the majority of respondents (67%), believe that the existing green spaces are "very few" or "few".

Slightly more than half of the respondents (51,4%) believe that green spaces are evenly distributed. The largest percentage of respondents (62,3%), consider that the existing green spaces in Veria are easily accessible or accessible. Moreover, 74% of respondents believe that the green areas of Veria do not have the care they need. Similarly, a large percentage of respondents (63%) believe that security (security and protection) in green spaces is non-existent or little.

The most important obstacles to approach green urban spaces are the problematic sidewalks (narrowness, occupied by vehicles or other uses, unmaintained) (62,47%) and traffic jam (43,83%).

Regarding the opinion of the respondents on whether they are interested in the creation of linear vegetation zones in order to connect green areas with other areas, a significant percentage of 95,7% are positive. In accordance, almost 83% of respondents consider the creation of such zones necessary in order to unite green areas as well as other areas. Again, 86,4% of respondents believe that much more money should be allocated from the city for the maintenance, improvement and creation of green spaces.

Regarding the percentage of income that the respondents would accept to offer annually for the improvement of the existing green spaces and the creation of new ones, according to table 4, it seems that citizens of Veria city are willing to contribute a small or even a larger percentage of their income.

Table 4. % of income that respondents are willing to offer for the improvement and/or creation of urban green spaces

% of income	%	Cumulative %
Not at all	18,10	18,10
Less than 0,1%	13,60	31,70
0,1%-0,5%	25,70	57,40
0,5%-1%	18,60	76,10
1%-2%	13,90	89,90
More than 2%	10,10	100,00
Total	**100,00**	

Finally, as to how much time the respondents would be willing to devote on a monthly basis (in the context of volunteering) for the maintenance and improvement of green spaces in the city, the answers are as follows: “not at all” 13,4%, “less than an hour” 13,4%, from “1 to 2 hours” 39,8%, from “3 to 4 hours” 18,9%, from “4 to 8 hours” 8,8%, from “9 to 12 hours” 3,3% and “more than 12 hours” 2,5%.

3.3 Correlations

3.3.1 Correlations of answers with gender

Concerning the creation of green vegetation zones, based on the chi- squared test (p-value = 0,001 <0,05), it turns out that women consider it as necessary to a greater extent than men.

From the Mann-Whitney test (p-value = 0,003 <0,05), men and women have a different opinion about the city’s administration spending more money on green spaces, since women mostly believe that more money should be spent on the maintenance, improvement and creation of new green spaces than men.

3.3.2 Correlations of answers with age

The age groups evaluate green spaces in terms of their number, in a different way. It seems that two age "groups" are formed, as the ages from 31 years and over do not have statistically different views on the number of green spaces in Veria (p-value = 0,704> 0,05). As shown in figure 3, younger ages consider that the green areas in Veria city are too many compared to older ages.

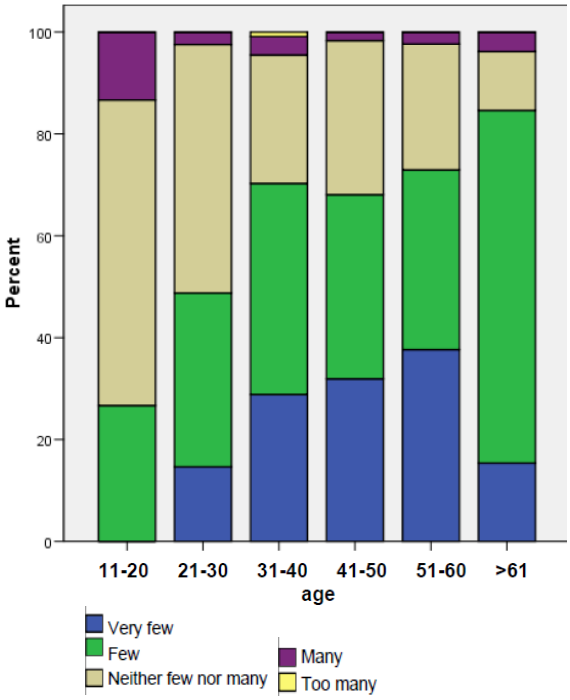

Figure 3. Evaluation of the number of existing green spaces of Veria – age groups

Mann-Whitney and Kruskal-Wallis tests, indicate that the youngest age group has the intension to devote more personal time per month for the maintenance and improvement of existing green spaces (figure 4).

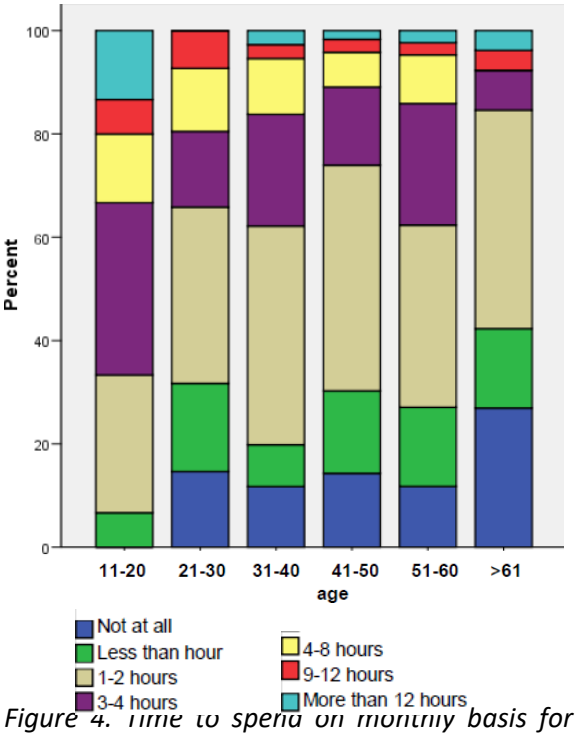

Figure 4. Time to spend on monthly basis for the maintenance and improvement of existing green spaces – age groups

3.3.3 Correlations of answers with educational level

There seems to be a "linear relationship" between the educational level and the opinion that more money should be spent by the city's administration for the maintenance, improvement and creation of green spaces. In particular, the higher the educational level the more the belief that more money should be spent.

3.3.4 Spearman rank-order correlation coefficient test

The hypothesis of independence of the population's opinion on the contribution of green spaces to the improvement of their daily life and the frequency of their visits to urban green spaces is rejected as the value of Spearman's rho is 0,198 and is significant.

Similarly, the hypothesis of independence of the population's opinion on the contribution of green spaces to the improvement of their daily life with the evaluation of the green spaces of Veria in terms of their number, the care they receive and cleanliness, and their security and protection is rejected. The value of the Spearman's rho is 0,191, 0,163 and 0,024

respectively and is significant in all cases. So, Spearman coefficient values in all three cases indicate a very weak positive relationship.

The hypothesis of independence between the population's view of the need the city government to spend more money to improve and maintain the green spaces in Veria city with the percentage of their annual income they would compensate and with the voluntary time on monthly basis they would devote is rejected in both cases, as the p-value of the Spearman's rho is statistically significant (<0.05). The Spearman correlation coefficient values, 0,231 and 0,139 respectively, indicate a weak positive relationship.

Finally, it seems that the percentage of annual income that the respondents would be willing to offer for the green spaces in Veria city is not unrelated to the time they would be willing to devote voluntarily on a monthly basis for the improvement and maintenance of green spaces. The value of the Spearman rho (0,363) indicates a moderately positive correlation.

4. CONCLUSIONS

This paper studies the attitudes and views of citizens of the Veria city in Greece regarding various issues concerning the existing green urban spaces and the creation of new ones.

In general, citizens in Veria city do not have a positive view about the existing urban green spaces in the city. They consider them few in number, with substandard care and without guarding.

The limited possibilities of the citizens for frequent contact with nature, as well as the limited existing vegetation, increase the desire of the people for better and qualitative contact with the “green” in the city. For this reason, most respondents are willing to change course or even walk long enough to get in touch with green spaces. They also believe in the process of creating urban green networks and are willing to allocate a percentage of their personal income and time voluntarily, in order to maintain existing spaces and/or create new green spaces.

A proper distribution and management of qualitative green spaces can lead to the creation of a unite network which will join all green spaces with other public and common areas as well as archeological and other cultural sites. This could ensure the residents’ easy and safe access to these sites and their integration into their daily lives.

Starting from the existing green spaces in the city of Veria, especially Elia, Tripotamos, Lofo Vikela etc., the creation of green networks could occur following specific criteria:

1. Utilization of existing free spaces in the city along with the neglected green spaces as well as creation of green paths with elongated parks.

2. Connection of the green paths with places of culture as well as places of historical importance, thus integrating them in the daily life of the citizens and highlighting the monuments of the city.

3. Interconnection, also, with other public spaces, linking the green routes with the daily movements of the citizens, taking advantage of the existing pedestrian streets.

In the implementation and design of the above, special attention should be paid to the accessibility of the premises, the cleanliness and hygiene of these areas, as well as their safety, in order to prevent injuries and anti-social aggressive behavior.

Also, voluntary and collective actions of the residents of the Veria city for the management of existing green spaces (maintenance, improvement, etc.) as well as the creation of new green spaces could be encouraged.

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