

**Ecological Park for whom? The Case of the Ecological Park of Bodocongó
in Campina Grande - PB**

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ABSTRACT

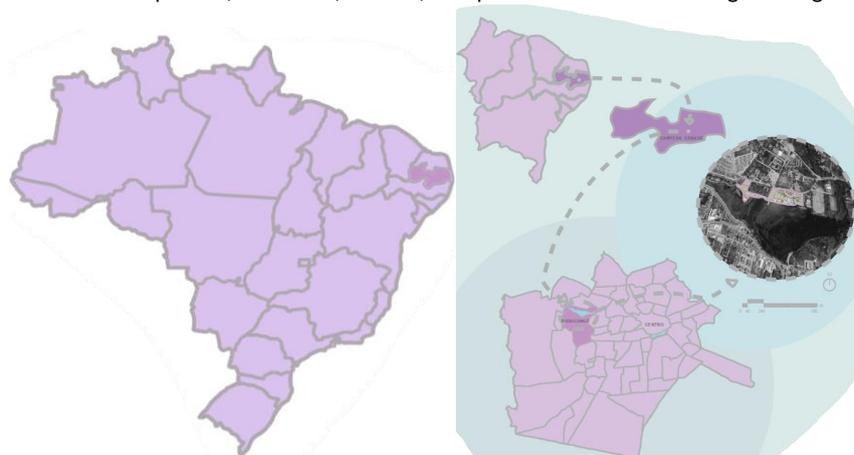
The Bodocongó Reservoir, an important memory of the city of Campina Grande, received an ecological park on its banks in 2017 in celebration of its 100th anniversary of construction. It was the result of a millionaire investment from the government of Paraíba in partnership with the city of Campina Grande and since then it has been criticized mainly about the high value invested to the detriment of its apparent underutilization. This work seeks to understand more about the general characteristics of the park, analyzing the program of needs and its relationship with the profile of the users. The method used was investigation through morphological analysis, in order to understand if it meets the needs of the users, being provided with urbanity which is a characteristic that leads the users to appropriate the space and, consequently, its vitality, which would be the presence of people at various times using the space. As a result, it was found that the park has a wide variety of equipment, especially sports, for various age groups and has been improving the quality of life of both the neighborhood and the Campina Grande residents as a whole, while needing improvements in its physical structure, mainly maintenance. Finally, this work seeks to increasingly encourage public leisure, which presents an undeniable importance in society, as it directly influences the preservation of the environment and the well-being of the population. In addition, encourage social and sports practices that often find themselves in scarcity and/or in poor conditions of use, repelling even more users.

KEYWORDS: Bodocongó Ecological Park. Public Open Spaces. Vitality.

1 INTRODUCTION¹

The Public Open Space (ELP) is of utmost importance for the functioning of the city, where interpersonal relationships related to activities such as walking, playing, contemplating, etc., occur. However, its mere existence does not guarantee its use and appropriation by the population. There are several factors that motivate people to leave their homes in search of moments of outdoor leisure in public open spaces. In the current context, especially in Brazilian cities, there is a noticeable scarcity and/or abandonment of ELP and areas designated for public use and leisure, which ends up further discouraging the appropriation of space by the population. This also occurs in Campina Grande

Figure 1 – Location map Brazil, Northeast, Paraíba, Campina Grande and Bodocongó Ecological Park



Source: SOUZA (2021, p.15)

¹ The present work is an adaptation of the Course Completion Work by Suzane Bezerra Farias de Souza, presented and approved on May 24, 2021, regarding obtaining the title of Architect and Urban Planner from the Federal University of Campina Grande (UFCG).

In an effort to improve the quality of life of the Campinas and local riverside population, in 2017, the year in which the Bodocongó Reservoir completed 100 years of construction, Rainha da Borborema was awarded the project for the Bodocongó Ecological Park, an important ELP located on the banks of one of the city's landmarks: the Bodocongó Dam. It is located in the West Zone of the second most populous city in the State of Paraíba, with a population estimated by the Brazilian Institute of Geography and Statistics (IBGE) for the year 2021 at around 400 thousand people.

The work was an investment by the government of Paraíba in partnership with the city of Campina Grande and cost about 35 million, being carried out in two construction stages (2017 and 2018). The urban project of approximately 60,000 m², was signed by the Paraíba architect Sandra Moura and aimed at the historical rescue of the area. The construction took advantage of the landscape potential of the reservoir, an important local memory that boosted the emergence of the first industrial hub in its vicinity. Today, driven by the redevelopment of the area, the place continues to be one of the city's postcards, as well as a reference point for the population, even though it has been neglected by the authorities for years, causing the accumulation of waste and pollution of its water body. The Bodocongó Ecological Park, while having a contemporary character focused on active leisure, mainly sports, seeks to follow (at least by the implicit intention of its name) the concepts of sustainability, preserving the history and vegetation of the place, with areas also destined for passive leisure, such as contemplation and coexistence. Its project sought, through the variety of equipment, to attract the public from different groups and age groups. However, due to its high investment, it is questioned whether the park meets the demands of the population, considering that it is apparently still little used and part of the population is not even aware of its existence.

2 OBJECTIVES

The general objective of the work is to analyze the physical characteristics of the Bodocongó Ecological Park and its users, verifying if it meets their needs.

Among the specific objectives are:

- (i) Analyze the floor plans and the efficiency of the park's needs program;
- (ii) Understand the needs of the users;
- (iii) Indicate improvements so that the park meets the needs of the users and promotes the social well-being of the users.
- (iv) Finally, it is also hoped that this work can provide information to all those involved in the production and maintenance of this park. And serve as a parameter for future public works and/or maintenance of the old ones.

3 METHODOLOGY

As a methodology, morphological analysis techniques were used with the application of 90 questionnaires divided into in loco and online, in addition to interviews, photo analysis, maps, and floor plans. Initially, to obtain data from the Bodocongó Ecological Park, 45 questionnaires were applied (in loco). Later, the same questionnaire was applied and answered by another 45 people online through Google Forms, since during the COVID-19 pandemic, the park remained closed and the research was started a little before this period. In total, the 90

questionnaires helped to better understand the target audience, their activities, their general satisfactions and dissatisfactions with the park.

In this research, a quantitative-qualitative method was used with the quantification of the numerical data collected in the questionnaires and the qualification in a descriptive manner during the problem analysis. It involved standardized data collection techniques (questionnaire, observation), initially requiring a survey of primary data (photos, questionnaires, and interviews) and secondary data (plans and other documents), in addition to the necessary bibliographic research for deepening the concepts that were analyzed in the park and understanding the consolidation of the area. After this stage, a documentary analysis was made from photographs obtained by Google Earth and other data. The work is an empirical, hypothetical-deductive study, that is, it seeks to determine or test a theory, in the case of the object of study, it would be whether this is a successful investment and would meet the needs of the users, having as one of the most important sources of information, the interviews. It allowed the interviewees to express their opinions and impressions about the park, thus allowing the understanding of its operation, as well as the qualities and defects, so that once documented, they could be listed and improvements could be demanded from those responsible. Next is an organogram with the stages of the work:

Figure 2 – Organogram of work stages



Source: SOUZA (2021, p.49)

On the first visit to the park, a spatial recognition was made by observing equipment and people. During this visit, some photos were taken to assist in recognition and subsequent analyses, and some information was gathered about the execution, maintenance, and operation of the park. Later, the floor plans of the executive project were obtained from the Superintendency of Works of the State Development Plan (SUPLAN), through a request made by letter. Upon analyzing them, it was noticed that the plans were not in accordance with the executed project and needed updates, mainly the plan of the second phase, which were made

subsequently. Even so, all the plans served as a basis for the morphological analysis of the project.

The updates to the plans were made through redesign (second phase) and/or indication in the legend (first and second phases). The redesign of the second phase plan was necessary as it configured a new project, with several modifications to the original plan obtained from SUPLAN. The first phase was not necessary, as there were few structural changes, most of them being changes of use, indicated in the legend on the original plan. In the case of the redesign, the method of overlapping lines in Autocad was used from an image of the area obtained by Google Earth (second phase), in addition to photo analysis and on-site verification. With the redesign, there was also the need to update the general plan of the park (first and second phases), which was also done by overlapping in Autocad with an image from Google Earth.

The base map of the city of Campina Grande that was used was the map prepared by the Secretariat of Planning (SEPLAN) in the year 2016. Sandra Moura, the architect in charge, was reached out to via email to resolve certain ambiguities related to the project and the discrepancies noted between the project submitted by SUPLAN and the one implemented. Unfortunately, there was no response from her end. Following that, we employed a word cloud method, defined according to the subjective questions answered in the questionnaires about what users liked or disliked about the park, and areas they believed could be enhanced. To do this, the Wordle application was used, a tool that creates a cloud of words according to their repetition in the text. All words answered by users in the three subjective questions of the questionnaires were transcribed into the program and clouds were formed with the most cited and, consequently, most highlighted words. The least cited words were smaller and less highlighted, in descending order of citation.

Finally, graphs were created based on the applied questionnaires, indicating the profile of the users and the activities carried out in the park, in addition to the general satisfaction level and regarding access, infrastructure, environmental comfort, cleanliness/conservation, and safety.

4 RESULTS

The Bodocongó Ecological Park is very similar to the concept of an ecological park by Macedo and Sakata, 2010:

The ecological park primarily aims to conserve this or that environmental resource, such as a wetland or a forest. And, at the same time, it has very concentrated areas, focused on active leisure activities such as games and children's recreation, alongside areas aimed at passive leisure such as walking along sparse, bucolic trails. (MACEDO and SAKATA, 2010, p. 13).

However, it fails in the main aspect: sustainability, as in addition to not carrying out the planned dredging of the Bodocongó weir, it also does not use rainwater capture and reuse, nor other energy efficiency technologies. On the other hand, although this equipment has a good urbanity, stimulating the occupation of the population, which is defined by Aguiar (2012) as those characteristics - good or bad - that come from the city, from the scale of the building to

the scale of the city, that is, it refers to a city or place that welcomes or receives people with civility, politeness and courtesy.

The park, however, does not promote the intense vitality of the place, which would be the frequent and diverse existence of users using the equipment, the effective and regular occupation of the space, which in the case of this Public Open Space is still incipient.

In an attempt to mitigate this issue, state actions have been implemented to promote engagement and draw attention to the park, according to information gathered from employees and users during a field visit. Despite the fact that the local population did not actively participate in the initial planning and discussion stages, these actions aim to stimulate vitality, particularly during the park’s anniversary celebrations in April. The government organizes several events for the public, including music workshops, dance classes, Hip Hop battles, cultural presentations, and performances by regional artists. Additional services such as dental, psychological, and medical care, legal guidance, and assistance with documentation from the National Employment System (Sine) are also provided. These events are designed to encourage the use and occupation of the space with activities of general interest.

Users appreciate the park primarily because it offers a pleasant environment with a variety of activities, including popular ones like walking, volleyball, and futsal. According to park officials, it is estimated that around 600 people visit the park during the weekend, which is the busiest period. This number is steadily increasing as more of the population becomes aware of the park’s existence. It is believed that only 30% of the population of Campina was aware of the park’s existence in 2021, according to employees.

In terms of the impact of the park on leisure and quality of life, interviews indicate that the park has had a positive influence on the quality of life of not only neighborhood residents, but also the wider Campina community.

Figure 3 – Floor plan 1st phase Bodocongó Ecological Park



Source: SOUZA (2021, p.55)

Figure 4 – Floor plan 2nd phase Bodocongó Ecological Park (proposal not executed)



Source: SOUZA (2021, p.56)

Figure 5 – Floor plan 2nd phase Bodocongó Ecological Park (proposal executed)



Source: SOUZA (2021, p.57)

Regarding the analysis of the plans acquired from SUPLAN, it can be seen that in the first phase plan, there is almost no change in the physical structure, the physical change being only in the location of the pier, which was carried out in the second phase. As for uses, there was a change in the location of the warehouse, which became an administrative room and the popular restaurant that bears the name of the refinery, but functions as a space for corporate and cultural events and as an auditorium. It also hosts classical music classes from the Social Inclusion through Music and Arts Project (Prima), which has been bringing new perspectives to communities at social risk for nine years. The refinery also hosts regional force training jiu-jitsu classes, in partnership with the Department of Physical Education of the State University of Paraíba (UEPB).

In the plan of the second phase, it can be seen that the park project was almost completely modified, mainly in terms of the physical structure, by the implementation of the bicross track which, was a request from the Bicross Team of Paraíba to the State government,

was built with official dimensions of competition, as the one at Parque da Criança did not meet these specifications. The bicicross track was installed in the place of the sculpture square and the clay tennis court, and in part of the parking lot that was reduced; but it still meets user demand as it is not the only one in the park.

Other changes were: the non-execution of the community garden, the multipurpose pavilion, the souvenir pavilion, the administrative block and the orchid nursery. The other activities were relocated, such as the volleyball court, speedball, and the popular gym. The area designated for the popular gym was fragmented into several parts of the park. The elements that remained were: the playground, although not built in sand, and the table games area.

On the other side, the roller-skating rink, the multi-sports court and another volleyball court were added, in addition to the pier. Basically, the only space that was kept in the same location as planned in the original project was the playground

Table 1 – Needs Program

PROGRAMA DE NECESSIDADES	QUANTITATIVO
ACADEMIA POPULAR	5
ADMINISTRAÇÃO	1
ANFITEATRO	1
ÁREA DE CONVIVÊNCIA/ CONTEMPLAÇÃO	1
ÁREA JOGOS DE MESA	3
CAIXA D'ÁGUA/ CASA DE MÁQUINAS	1
ESPELHO D'ÁGUA	1
ESTACIONAMENTO	4
PIER	1
PISTA DE BICICROSS	1
PISTA DE CAMINHADA	1
PISTA DE PATINS	1
PISTA DE SKATE	1
PLAYGROUND	2
QUADRA BASQUETE DE RUA	2
QUADRA POLIESPORTIVA	3
QUADRA VÓLEI DE AREIA	4
QUIOSQUES ALIMENTAÇÃO	3
QUIOSQUES BANHEIROS PÚBLICOS	2
REFINARIA	1
SPEEDBALL	1
UNIDADE DE POLÍCIA SOLIDÁRIA (UPS)	1

TABELA 01: PROGRAMA DE NECESSIDADES PARQUE ECOLÓGICO DE BODOCONGO.
 FONTE: PRODUZIDO PELA AUTORA.

Source: SOUZA (2021, p.58)

Figure 6 – Zoning map



Source: SOUZA (2021, p.59)

The fact that the park has specific opening hours, from 6 am to 9 pm, restricts both the vitality of the place at all times, and the permeability of the park with the surroundings. The fences that surround the park, when closed, implies that the movement of the surrounding area also disappears.

Regarding permeability within the park, even though there is a connection between all its internal areas, perceived by the zoning - where they are grouped according to sporting, administrative, food functions, among others - some interviewees complained about the distances from the support kiosks, such as food and restrooms (in addition to often being closed), for some points within the park.

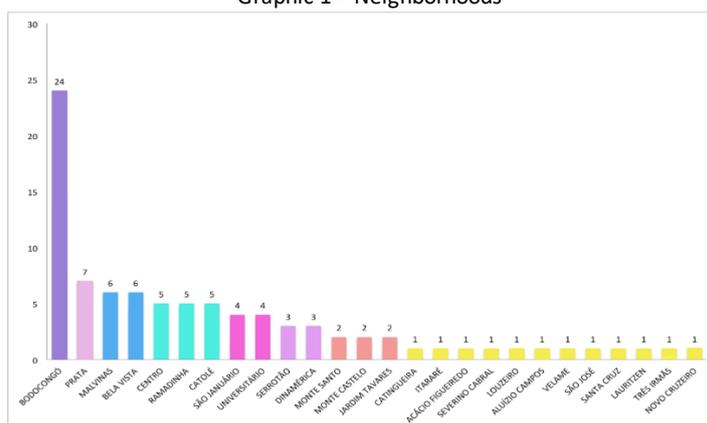
Furthermore, in terms of accessibility, the park follows the standards set out in NBR 9050 and despite the reasonably rugged topography (with approximately 10 meters of difference in level in 115 meters of width and a difference in level of 5 meters in 745 meters of length), it was softened by solution of building embankments and platforms interconnected by access ramps, favoring walkability within the park.

Although accessibility is not favored outside its limits, due to the physical fence barrier and the lack of sidewalks, ramps and cycle paths around the entire perimeter of the weir.

Talking about the park's equipment, one of the main criticisms is about the water mirror, designed as an area for contemplation, however, deactivated because the needy population used to use it as a swimming pool. The existence of this equipment is questioned since the park is located next to a considerable body of water and there is still a recurrence of water crisis in the city, added to the fact that its water is not reused or captured from rain.

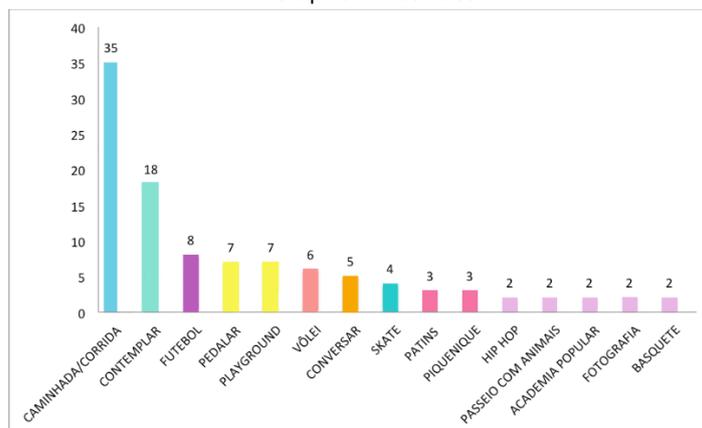
This all influences the conservation of the park, because just like this equipment, which is not immediately repaired or maintained, there is often other equipment, hindering the use of the space by users due to the lack of maintenance.

Graphic 1 – Neighborhoods



Source: SOUZA (2021, p.66)

Graphic 2 - Activities



Source: SOUZA (2021, p.66)

As expected, the research showed that the majority of users are from the surroundings of Parque Bodocongó, with 24 people (26.67%) from the Bodocongó's closest neighborhood, followed by 7 from Prata, 6 from Malvinas and Bela Vista and 5 from Centro and Ramadinha. However, the surprise was regarding the use of the park by users from more distant neighborhoods such as Catolé (5), Velame (1), Lauritzen (1), Louzeiro (1) and Itararé (1). In general, users come from different parts of the city and although the neighboring population is the majority, there is heterogeneity both in the location of users and in the activities carried out by them (GRAPHIC 1).

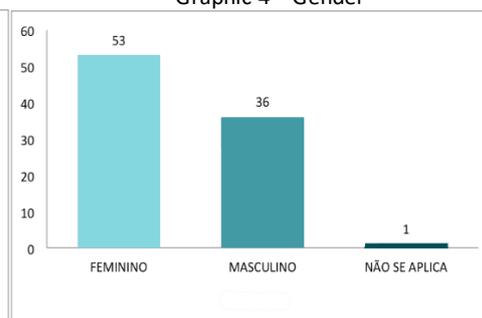
Walking/running was the activity most practiced by park visitors, answered by 35 people out of 90 interviewees, followed by contemplation (18), football (8), cycling and playing in the playground with children (7). The least performed activities were: Hip Hop dancing, walking with animals, popular gym and basketball (2). The following activities were also mentioned: volleyball, chatting (5), skateboarding (4), rollerblading (4) and picnic (3). Users indicated that they practiced more than one activity in the park, generally one of the options was walking/running, contemplating and another diverse activity (GRAPHIC 2).

Graphic 3 – Age range



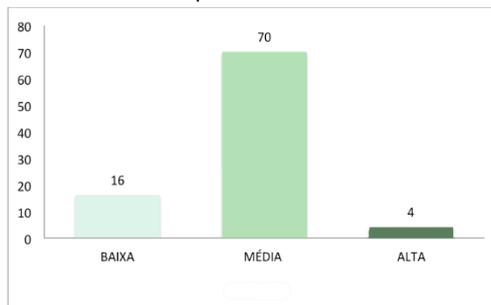
Source: SOUZA (2021, p.67)

Graphic 4 – Gender



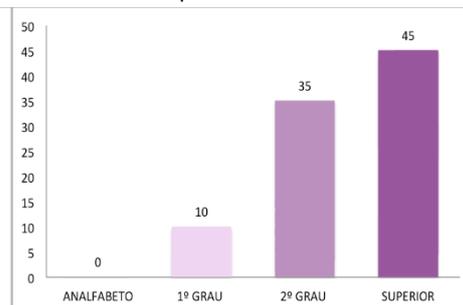
Source: SOUZA (2021, p.67)

Graphic 5 – Income



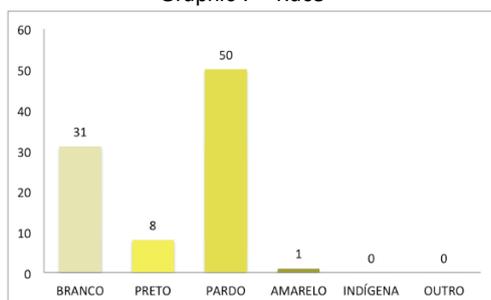
Source: SOUZA (2021, p.67)

Graphic 6 – Education



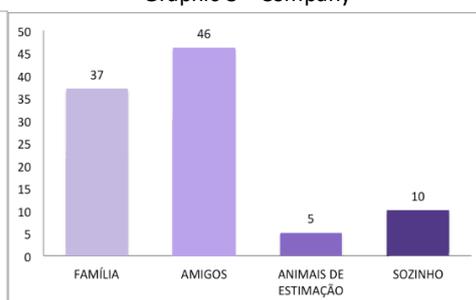
Source: SOUZA (2021, p.67)

Graphic 7 – Race



Source: SOUZA (2021, p.67)

Graphic 8 – Company

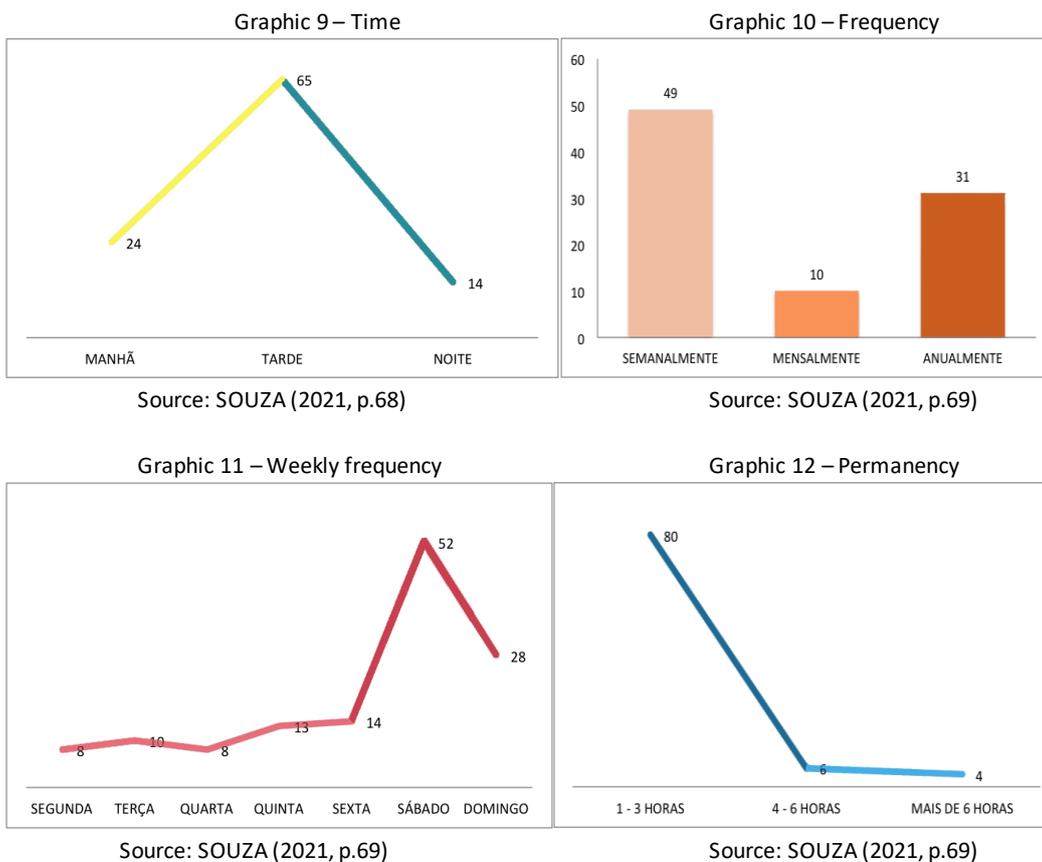


Source: SOUZA (2021, p.67)

Regarding the age group, the interviewed audience was mostly adults (from 20 to 59 years old) (71), followed by young people (up to 19 years old) (18) and only 1 elderly person (from 60 years old) (GRAPH 3).

In terms of gender, 53 of the people interviewed were female (58.89%), 36 were male (40%), and one person identified as agender (1.1%) (see GRAPH 4). According to Gehl and Svarre (2013), the higher number of women in the space could indicate a sense of safety. Women, being more vulnerable, tend to frequent spaces that are safer or convey a feeling of safety. This is also true for the elderly and children. Although the latter were not interviewed, the fact that playing in the playground was one of the most cited activities (7) by the respondents suggests that it is a safe space.

Regarding income (see GRAPHIC 5), 16 people (17.78%) considered themselves to have a low income, 70 people (77.78%) a medium income, and 4 (4.44%) a high income. In terms of education, no illiterate person (0%) was interviewed. Ten people (11.11%) said they had completed a first degree, 35 had completed a second degree (38.88%), and half of the interviewees (50%) claimed to have a higher education degree, totaling 45 people (see GRAPHIC 6). As for the race of those interviewed, more than half (55.55%) consider themselves mixed race (50 people), 31 are Caucasian (34.44%), 8 are black (8.88%), and 1 is Asian (1.11%) (see GRAPHIC 7). When asked about their company when visiting the park, the majority said they usually visit with friends (46 people), followed by those who go with family (37). Ten said they usually go alone, and 5 in the company of pets. Some people mentioned they usually go with more than one option, typically family and friends (see GRAPHIC 8).



Influenced by the sun and the lack of shading, most users frequent the park in the afternoon (65 people) and early in the morning (24 people). The feeling of insecurity somewhat inhibits people from visiting the park during the later part of the night, with only 14 people visiting the park at that time. Most users attend in the afternoon and extend their stay until the evening (see GRAPH 9). In interviews carried out before the pandemic, it was found that the problem of lack of shading was being addressed with the planting of seedlings. A total of 500 seedlings were planted, including ipê, jacarandá, cocoa, pingo de Ouro, and some palm trees. For the near future, it was planned to plant another 500, thus creating the possibility of a better future environment with more areas for living and staying.

Regarding the frequency of attendance, it's observed that there's a regularity among the users. Out of those interviewed, 49 people (54.44%) reported attending the park weekly, 10 (11.11%) monthly, and 31 (34.44%) annually. The weekend sees the highest attendance, with Saturday being the peak day with 52 users, followed by Sunday with 28 and Friday with 14 (Chart 10).

Tuesdays (10 people) and Thursdays (13 people) see slightly higher attendance due to weekly volleyball games, compared to Mondays and Wednesdays (8 people). Most interviewees reported visiting the park more than once a week, especially those participating in activity groups like volleyball, basketball, Hip Hop, skateboarding, etc., which hold weekly meetings (Chart 11).

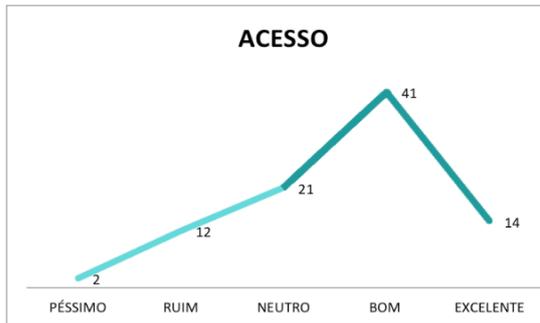
Regarding the duration of stay (Chart 12), 80 people (88.89%) reported spending 1-3 hours, 6 people (6.66%) spend 4-6 hours, and 4 people (4.44%) stay for more than 6 hours. Thus,

the park generally sees short stays and a high turnover of users, except for those participating in group activities like volleyball, skateboarding, futsal, and Hip Hop.

These groups, in addition to their activities, engage in social interactions and spend more time at the site, particularly skateboarders who, due to their lifestyle, tend to spend a significant amount of time in groups.

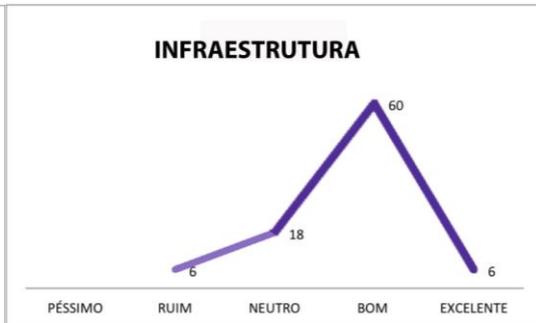
Some general attributes were considered for user opinion analysis, such as: access, infrastructure, environmental comfort, security, cleanliness/conservation, and overall satisfaction. Most of the attributes were considered good, including the level of overall satisfaction, with the exception of security, which was considered neutral.

Graphic 13 – Access



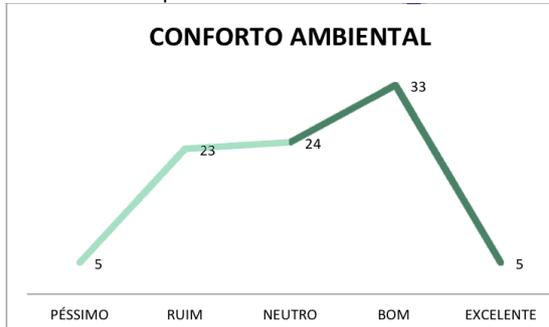
Source: SOUZA (2021, p.70)

Graphic 14 - Infrastructure



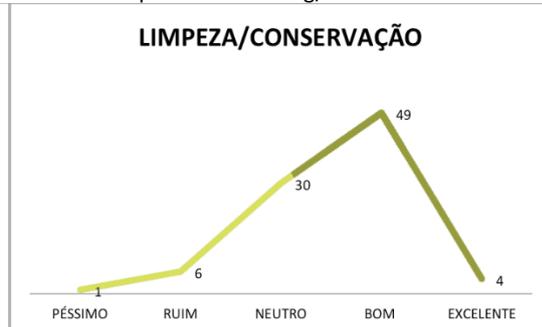
Source: SOUZA (2021, p.70)

Graphic 15 – Environmental comfort



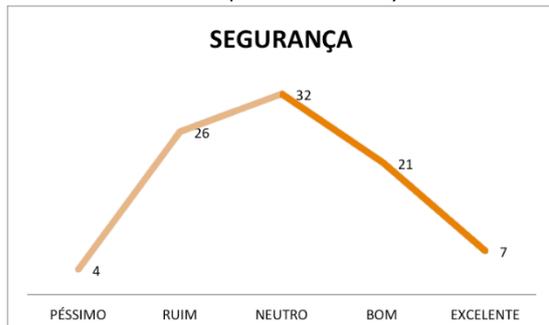
Source: SOUZA (2021, p.70)

Graphic 16 – Cleaning/ Conservation



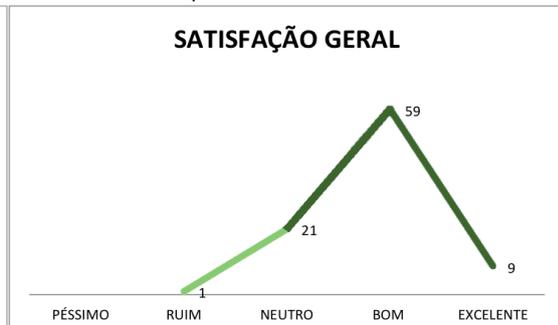
Source: SOUZA (2021, p.70)

Graphic 17 – Security



Source: SOUZA (2021, p.70)

Graphic 18 – Overall satisfaction



Source: SOUZA (2021, p.71)

When it comes to access to the park (Chart 13), many users complained about the sole access point via Rua Juvêncio Arruda, citing poor signage and confusion. Additionally, all four

In the questionnaires, users were asked to write what they liked most about the park, what they didn't like, and what could be improved. The word clouds presented above point out the main qualities, defects, and improvements that could occur in the park in hierarchical order of importance, with greater prominence according to user responses. Among the most cited qualities are: physical space; infrastructure, such as courts and sports area; the landscape potential of its location on the banks of the weir; the general ambiance; and the connection with the environment and nature. Among the most cited defects, those related to the lack of environmental comfort stand out, such as: the lack of shading and afforestation, in addition to the pollution of the weir. Concerning infrastructure, the main complaint was the lack of drinking fountains and maintenance on equipment in general and especially on the playground. The feeling of insecurity was also frequently mentioned, as was the use of drugs on the park's premises. Regarding the improvements, in addition to those mentioned (security, afforestation, and maintenance), people also suggested improvements in the food area, since it only has three kiosks, which are normally not in operation and in a higher topography area, being isolated from the rest of the park, where the activities take place. The bathrooms were also cited for being only in two kiosks (two for women and two for men, one for each kiosk) and for being generally closed due to theft of their utensils.

3 CONCLUSION²

According to the needs program, there is in fact a wide variety of equipment, of different types and for different age groups, which contributes to people of different ages carrying out several different activities simultaneously, thus stimulating urban vitality. There is a need for improvements in urbanity, so that the stimulus for occupation is even greater, mainly shading through trees, resting and contemplation areas with cover, so that open spaces become more pleasant, especially in the sun and rain. Another important point to be improved is the lack of maintenance on the street furniture, which is one of the biggest complaints from users, in addition to the reported lack of physical security. Even so, the majority of the population interviewed is satisfied and uses the Bodocongó Ecological Park for outdoor leisure time and reports an improvement in quality of life and well-being, driven mainly by the park's sporting nature. This equipment, although little publicized and known, has been improving the quality of life mainly for the residents of Bodocongó, but not just for them, for the entire population of Campina Grande. It is up to the authorities to promote greater awareness and commitment to safety and maintenance so that there is a greater reach and number of people benefiting.

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² The results described were the result of work carried out before the pandemic period. During the pandemic, the park was closed and kept without maintenance. Even today, despite being back in operation, the space suffers the impacts of this period.

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