

Urban parks through people's new lens: Opportunities behind COVID-19 for public spaces' policies in Costa Rica.

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Abstract

The lockdown and restrictions during the last COVID-19 health crisis confronted the population with an unprecedented situation for urban life. Green areas, mainly large urban parks, become highly valued spaces during and even after the pandemic. This work shows the visitation patterns of users from three large urban parks within the Greater Metropolitan Area of Costa Rica (GAM). The research is based on 8575 in situ surveys carried out between January and August 2023; our team also conducted an exploratory study between 2018 and 2019 (pre-pandemic), which was resumed to compare some aspects before and after the pandemic. The findings allow to explore challenges in public policies to improve access and enjoyment of urban recreational spaces in Costa Rica, replicable in other parts of the world.

Keywords: COVID-19, post-pandemic, Costa Rica, public policies, urban parks.

1. Introduction

Public spaces played a crucial worldwide role during COVID-19; they contributed to meeting social needs and physical activities and positively affected users' health (Lin et al., 2023). However, each country approached its restriction measures during the lockdown differently. In Costa Rica, access to many public open spaces such as beaches, National Parks, squares and urban parks was limited or denied. The access to large urban parks within the Greater Metropolitan Area (GAM) was strongly reduced during 2020 and 2021; sometimes, there was no access at all; others, a visitation schedule was enforced for weekdays, and no visitation was allowed during the weekends.

This study focused on the three large urban parks within the GAM: La Sabana, La Paz and El Este; it aims to analyse users' visitation patterns and place appreciation one year after the government lifted COVID-19 restrictions. Urban residents might have a reappraisal of green

local spaces in the early stages of the pandemic (Alizadehtazi et al., 2020). This research intends to understand if urban park users perceive those places as more valuable today than before the lockdown and to reflect if any change in planning policies must be implemented to embrace that fresh lens.

This research is mainly based on 8575 *in situ* surveys carried out between January and August 2023 in the largest urban parks of the GAM: La Sabana, La Paz, and Parque del Este. The sample included teenagers from 14 years old, adults and people over 65. Additionally, between 2018 and 2019, just months before the spread of COVID-19, our team conducted an exploratory study in the same urban parks to examine visitation patterns and user perceptions with a sample of 491 individuals. In the 2023 survey, we repeated the same questions as the previous study and added specific enquiries regarding visitation and perceptions before and after the pandemic. Therefore, this paper analyses participants' new perspectives while considering views from the same places before the outbreak.

The findings suggest that COVID-19 was a game changer in people's visitation patterns and appreciation of large urban parks within the GAM. The results show that 50% of participants state that they visit the park more often today than before the outbreak; that behaviour was even higher in teenagers, with 56% assured of having increased their visitation frequency. Individuals over 65 years were the group that missed the urban parks the most; 88% mentioned that they missed open spaces or they were looking forward to them being opened. These findings contribute to understanding the effect of COVID-19 in Latin American public spaces.

Although more research is needed, some examples show an increase in visitation patterns in local parks in Brazil after the lockdown (Freires et al., 2022) or a decrease in Puerto Rican parks by 2021 (Luengo-Duque and Crespo, 2022). In Costa Rica, despite the self-reported increase of visitation post-pandemic, planning policies in urban parks face challenges; private cars are the dominant mode of transport to get there, and there are safety concerns, infrastructure, and accessibility issues. Public policies should focus on promoting more accessible and secure urban spaces aiming to ensure a better quality of life for its residents. This paper aims to address public policy challenges according to new post-pandemic visitation patterns.

2. COVID-19 and spatial inequalities

The spread of the COVID-19 pandemic brought crucial challenges to contemporary planning policies. The cities were scenarios of several restrictions in public spaces; each country applied them differently, but common elements such as lockdown, social distance, and limited use of public transport were implemented worldwide. Furthermore, COVID-19 unveiled and aggravated many inequalities related to urbanisation practices; the impact of the lockdown affected disparately for those without access to outdoor spaces and who had a garden or any open space to relax or exercise (Orford, Fan and Hubbard, 2023). The purpose of public policies during the pandemic was focused on stopping the spread; however, suspending routine activities brought devastating effects on mental health (Castillo, 2023).

Beyond the income inequalities, the pandemic also intensified discrimination towards marginalised and stigmatised groups, such as the LGBTQ+ community (Kneale and Bécares, 2020) and older people (Buffel *et al.*, 2023). People over 60 were unreasonably affected by COVID-19; Buffel *et al.* (2023) highlight that according to the WHO Europe, they represented 95% of deaths in Europe; nonetheless, despite the number of fatalities in residential care (half of them) and older people been identified as the most vulnerable during pandemic, there is a limited amount of public policies to address this population issues. Furthermore, the access to

urban green space reveals spatial inequalities among different age ranges. Buffel et al. (2023) suggest that those circumstances have rarely been transferred to public policies; therefore, 'Age-friendly recovery planning' (p.1472) is required to involve older people in 'designing smart, liveable and resilient cities of the future' (p.1473).

2.1 Planning policies adopted during the COVID-19 pandemic

Measures undertaken to reduce COVID-19 transmission aimed at diminishing crowding; for instance, enhancing online services, reducing face-to-face services and promoting active transport means such as walkability and bike sharing (AbouKorin, Han and Mahran, 2021). However, urban morphology also had a role in the disease spread; AbouKorin, Han and Mahran (2021) carried out research in England, Germany and Italy; they found different infection rates in cities with radial, grid and linear forms; in this respect, radial and grid forms were related to with higher infection rates, mainly because those morphologies allow to concentrate higher densities. Those findings shed light on the planning challenges to keep cities efficiently connected but also resilient to face health emergencies.

Temporary solutions were adopted during the COVID-19 pandemic; many actions were approached through Tactical Urbanism, which allows small-scale interventions with low cost and quick implementation (Vázquez and Berardo, 2023). According to Sáez Reale and Azpiroz de Achával (2022), Tactical Urbanism proved to be a valuable tool during the lockdown; then, when the countries started to lift COVID-19 restrictions, those interventions allowed the create new public spaces in sectors formerly dedicated to cars; also promoted sustainable and safe mobility by expanding footpaths, pedestrianising streets and creating new bike lines.

Within the Latin American region, like many countries worldwide, there were many transformations in public spaces; for instance, in Argentina, they focused on three main strategies: urban mobility, green spaces and open street markets; there was a change in mobility by creating temporary pedestrian areas through the closure of perimeter streets high traffic areas (Vázquez and Berardo, 2023). The expansion of gastronomic public space through platforms dedicated to tables and chairs, commonly known as 'parklets' or 'gastronomic decks' was another tactical intervention with a significant impact on Argentina, as they represent a cost-effective way to reclaim space from cars (Sáez Reale and Azpiroz de Achával, 2022).

Some planning concepts that somehow existed before the pandemic emerged and were further developed, such as 'superblocks', aimed at reducing traffic by closing some streets and dedicating more space to active travel; also, the '15-minute city' (Moreno, 2024), which seeks dwellers can access their essential living needs in less than 15 minutes. Those initiatives search to promote the planning pyramid in favour of public transportation, walking, and cycling (Gesto Rodríguez, 2021)

2.2 Responses post-pandemic

Post-pandemic debates in planning encompass inequality, community participation, green spaces, mobility, and proximity. Shatkin, Mishra and Khristine Alvarez (2023) suggest that post-pandemic informality discourses are framed in three main approaches: the first is 'revanchist' which is based on stigmatisation of informal settlements, often through urban exclusion; the second is 'incrementalist' which is focused on the most immediate contagion threats, and finally a 'reformist' approach which addresses structural causes that foster informality and inequality.

Urban parks play a crucial role in reducing part of spatial inequalities and ensuring equitable access to recreation; however, citizen participation is the first stage in equitable park planning; people want to incorporate their vision in what they wish parks to be, proximity and access are

essential but also quality and sense of belonging (McCormick, 2020). Citizen-led interventions provide balance to city management, and it helps to encourage the use of neighbourhood parks and squares, avoiding long travel distances (GIZ Ecuador, 2020; Bueno Carvajal, 2022). Kyriakidis et al. (2023) found in Athens that the lack of engagement provokes dissatisfaction, and people might feel unfamiliar with the intervention; nevertheless, quick participation interactions through electronic devices such as mobiles (apps) allow people to discuss their community and perceive themselves as empowered.

Some approaches suggest it is not necessary radical city transformations; however, tools for better mediation between citizens and their built environment are required; CAF (2021) recommends four types of public spaces: parks, vegetable gardens, markets and leisure spaces. Furthermore, it is necessary to rethink streets and public spaces for the post-pandemic city; thus, they should prioritise public transit, walking and cycling, more outdoor space, improving the city's environmental conditions, and giving people more space (Barbarossa, 2020). In places such as Italy, the planning policies redefining urban streets for leisure and cultural uses were actions to promote intermodality, traffic data monitoring, tactical urbanism, new parking rules, and an increase in non-polluting means of transport, among others (Barbarossa, 2020).

Lessons that the COVID-19 pandemic left behind suggest the local government should have more quantitative and qualitative information about their parks that help to make medium and long-term decisions about the use and management of public spaces, considering safety and future risks (GIZ Ecuador, 2020); however, this type of information is still limited in places such as Costa Rica (Cruz Zuniga, Centeno Mora and Barrantes Chaves, 2023). Municipalities are the closest institution for citizen participation; therefore, updated data allow them to intervene more quickly than a centralised response through national institutions; local government could encourage a neighbourhood governance model for the organisation of residential communities, recognising their power to transform their local spaces (Fan, Orford and Hubbard, 2023).

3. Costa Rican Context

As in many Latin American countries, the pandemic surprised health authorities and those in charge of public policies. Costa Rica's Minister of Health was trained in epidemiology and led the lockdown policies; however, the main goal was to stop the spread. It was not considered how the adopted measures could affect citizens' right to recreation, leisure, and healthy coexistence.

Even before the pandemic, Costa Rica had a real shortage of spaces dedicated to recreation and sports. The national body in charge of the issue, ICODER (Costa Rican Institute of Sports and Recreation), have had a low budget and many restrictions on its actions. Therefore, the lack of urban planning policies to create green spaces in Costa Rican cities has resulted in historical shortcomings (Cruz Zúñiga, 2002; ProDUS, 2007; Araya-Vega and Quirós-Solano, 2024). For instance, in 2002, Cruz Zúñiga (2002) found sectors of GAM Costa Rica with an average of 2.27 m²/inhabitant of green and recreational areas, against a standard established 12 m²/inhabitant; this flaw has not improved recently; Araya-Vega and Quirós-Solano (2024) found GAM's districts with figures from 1,23 m²/inhabitant to 8,97 m²/inhabitant.

On the other hand, looking back at how the pandemic was experienced in Costa Rica, the focus of attention throughout the first two years was stopping the contagion. Free movement measures were strongly restricted, especially during 2020, mainly focused on all people who could be

fatal victims of the disease, including older adults. During 2020, the parks under study were closed on weekends due to non-compliance with sanitary measures (Peña Nassar, 2021); some areas, such as children's playgrounds, were closed due to being considered places with high human contact. Over the weeks with the highest contagious peaks, these parks were only open for few hours in the mornings (from 5 am to 10 am) to strictly allow outdoor activities and individual sports. The closure of open spaces meant a considerable impact on older people (Barrantes-Chaves, Centeno-Mora and Cruz-Zúñiga, 2023); the Costa Rican population is ageing rapidly (Costa Rica's global fertility rate is ultra-low, 1.31 per woman) (INEC, 2022) and older people choose these spaces for social gatherings and sharing with their peers.

During the lockdown, there was a decrease in traffic on roads, including the park's surroundings. According to previous studies (Barrantes-Chaves, Centeno-Mora and Cruz-Zúñiga, 2023), there has been a strong dependence on private vehicles to visit GAM's urban parks, both before and after the pandemic. In those places, especially on weekends, spaces for private parking are not enough and illegal parking occurs in the park's surroundings, mainly in La Sabana, contributing to the dense local traffic. The economic losses due to heavy traffic within GAM have been estimated at 3.8% of the Gross Domestic Product (GDP) (PEN, 2018).

According to the National Time Use Survey (INEC, 2023), the time per week that Costa Ricans spend in recreational activities has decreased from 2017 to 2022; however, men still prevail as those who dedicate more time to activities such as playing sports or training, while women prefer passive leisure activities. The study infers that before the pandemic, it was more common for both men and women to practice passive leisure activities. However, in 2022 (the last year of the pandemic), these activities reflected a slight shift towards more active routines (it rose on average 1.4% in women and 0.33% in men).

4. Methods

For this study, three main stages were considered. The first involved a thorough exploration and understanding of the different dynamics of the three parks evaluated; the second addressed a literature review on public policies related to public park management; and the last was the fieldwork conducted in the parks. Each of these stages is detailed below.

4.1 Description of the parks considered in this study

The parks considered in this research were all located in San José, the Costa Rican capital, and can be classified as urban parks. Figure 1 presents the location of the three analysed parks: La Sabana, La Paz and El Este, whereas

Table 1 summarises their main characteristics relevant to this work.

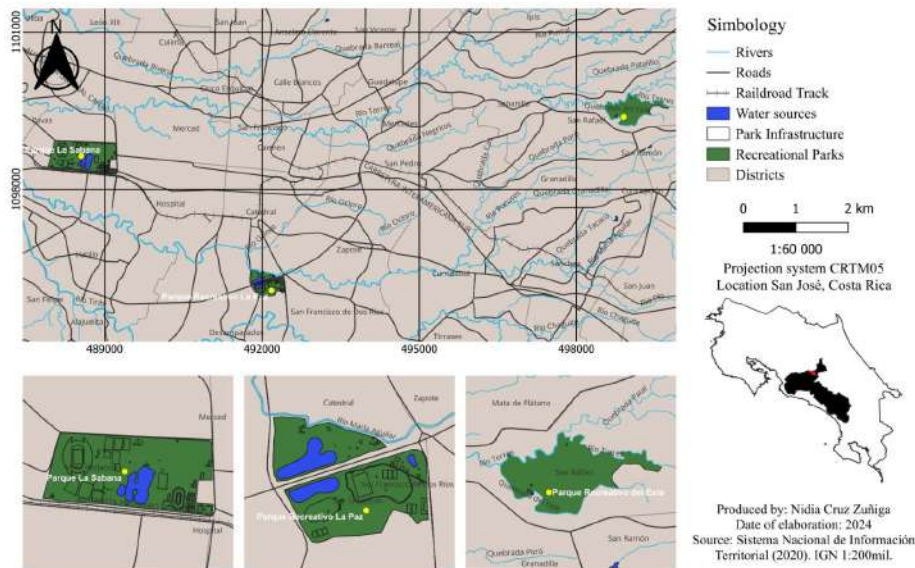


Figure 1. Location of the analysed parks.

Table 1. Main characteristics of each public park

Characteristic	Park		
Park name	Parque Metropolitano de la Sabana	Parque de La Paz	Parque del Este
Location	Canton: San José, District: Mata Redonda	Canton: San José, District: San Sebastián	Canton: Montes de Oca, District: San Rafael
Year of inauguration	1873	1989	1982
Extension (hectares)	72	53	24
Administrative entity	Costa Rican Institute of Sports and Recreation	Costa Rican Institute of Sports and Recreation	Municipality of Montes de Oca
Entry fee	No	No	Yes, approx. US\$ 2.0
Opening hours	24/7	24/7	8 am-4 pm
Approx. distance from the centre of San José	3 km	4 km	6 km

4.2 Literature review

A systematic literature review was performed to identify the main published studies worldwide, with more emphasis on Latin America and the Caribbean, about the usage of public parks in the pre-COVID and post-COVID eras.

A protocol was established according to the selection criteria, search terms, and databases. The search was conducted across the academic databases such as Scopus, Web of Science, and Google Scholar, using keywords such as "COVID-19", "public parks", "park usage," "urban parks" and "policy", in English and Spanish. Boolean operators (AND, OR) were employed to refine the search.

Studies were included if they provided empirical data on park usage during or after the COVID-19 pandemic and were published in English or Spanish from 2019 onwards. Exclusion criteria included non-peer-reviewed articles and studies that did not focus on empirical data regarding park usage. After the initial search, titles and abstracts were screened for relevance. Selected articles underwent a full-text review and considered for this article.

4.3 Data collection and analysis

For data collection in this research, 8 575 in situ surveys were conducted across the analysed parks from January to August 2023. The sample included teenagers from the age of 14, adults, and seniors over 65. The surveys were administered by research assistants from the University of Costa Rica, who were previously trained for this task.

Our team undertook a preliminary exploratory study in the same urban parks in a previous publication (Cruz Zuniga, Centeno Mora and Barrantes Chaves, 2023) between 2018 and 2019. This initial research, conducted just months before the COVID-19 pandemic began, aimed to assess visitation patterns and user perceptions with a sample of 491 individuals. It is important to note that during the pandemic, these parks were partially closed following government directives, significantly impacting the usual visitation patterns and park usage. In the new 2023 in situ survey, we not only repeated the questions from the previous study but also introduced specific enquiries designed to understand changes in park visitation and user perceptions before and after the pandemic. This approach allowed a comparison of how perceptions have shifted due to the pandemic and to consider the effects of the partial park closures mandated by the government. To facilitate the processing of field data, an electronic form was created on the Typeforms digital platform, allowing surveyors to enter the information into the platform directly.

Additionally, as a complement to the surveys of 2023, visitation counts were conducted in the parks. For this purpose, in the case of Parque La Sabana and Parque de La Paz, the entire perimeter of the parks was divided into various entry and exit points, and the project assistants were trained to carry out visitation counts, being instructed on how to proceed to avoid duplicating counts. In the case of Parque del Este, being a park with a single entry and exit point where an entrance fee is charged, the counts were conducted only at the park's entrance. These counts were carried out for 5 to 10 hours, repeated over several days of the week, to identify visitation patterns; in total, 38430 people were counted. The data analysis was conducted using Excel (descriptive analysis) and RStudio (descriptive and inferential analysis).

5. Results.

Understanding visitation patterns in large urban parks is essential for developing inclusive planning policies; these findings explore the frequency of visits, transportation means to reach the park, self-reported visitation after the COVID-19 pandemic, and changes in visitation according to data from 2019 and 2023.

5.1 Characterisation of visitors

Visitation patterns of large urban parks within the GAM in Costa Rica have nuances according to age or sex. The age range of the sample is shown in Table 2; it was noticed that users at both ends of the distribution represent the smaller number of participants; which is consistent with the visual counts that were made to triangulate the data and choose the sample size. The figures show that less than 10% of visitors are older people, and a slightly higher number are teenagers.

Table 2. Age range of participants by park (Survey 2023).

Park's name	Age range						N/A	Grand Total
	Under 18 (14-18)	18-30	31-40	41-50	51-64	65 or older		
La Paz	71	632	515	385	329	120	1	2053
El Este	141	945	729	343	207	43		2408
La Sabana	159	1456	1116	815	434	134		4114
Grand Total	371	3033	2360	1543	970	297	1	8575

The sex distribution of participants is shown in Table 3; women's participation was around 47%, and men 53% of the sample. Once again, the data closely aligns with the counts; during the counts, 44% of visitors observed were women, and 56% were men. As shown in the Costa Rican National Time Use Survey (INEC, 2023), women spend less time in recreational activities than men; the report shows that women dedicate to sports 4:32 hours a week while men spend 5:12 hours; also, in active leisure women spend 5:10 hours, in contrast with men who use 6:49 hours a week. In this regard, it is expected to find more men than women in both counts and survey applications.

Table 3. Sample by sex and park (Survey 2023)

Park's name	Sex			Grand Total
	Women	Men	Prefer not to say	
La Paz	949	1094	10	2053
El Este	1231	1171	6	2408
La Sabana	1809	2268	37	4114
Grand Total	3989	4533	53	8575

The educational level of participants (see Table 4) shows that people with lower qualifications are the minority in the sample. As will be shown, most park users respond that their main transportation means to reach the park is by car. This situation exacerbates inequalities in access to quality public spaces within the GAM (Barrantes-Chaves, Centeno-Mora, and Cruz-Zúñiga, 2023). Therefore, the limited participation of people with a lower educational level could be explained by the challenges they have to face to get there.

Table 4. Educational level of participants (Survey 2023).

	Women	Men	Prefer not to say
Primary	9%	7%	8%
High school	36%	39%	45%
University (incomplete)	33%	34%	25%
University (complete)	23%	21%	23%
Grand Total	100%	100%	100%

5.2 Visitation Patterns

Participants were asked how they perceived their visitation frequency compared to pre-pandemic times. Figure 2 shows that around 50% of people of all range ages reported that they visit the park more often; this finding concurs with the rise in park visitation after the COVID-19 pandemic in some places from Latin America (Freires *et al.*, 2022). Furthermore, the high increase in teenage frequency visitation (56%) is important because they are not always on the target of planning policies; these data could help local authorities to encourage youth's participation in community park designs. Also, it is essential to highlight that less than 9% of people over 18 years old perceive a reduction in their visitation routine.

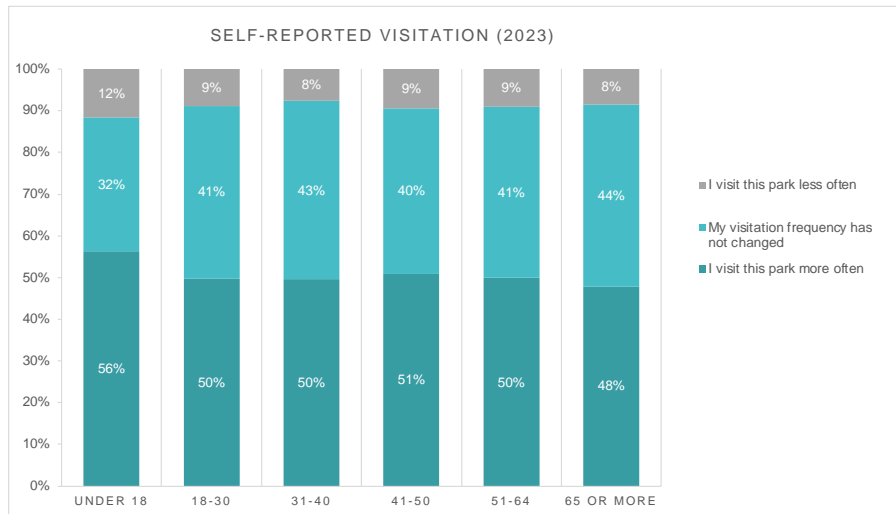
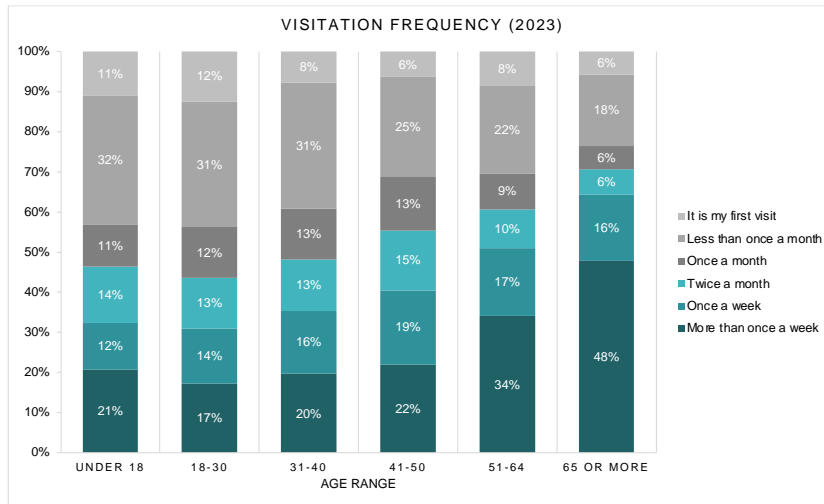


Figure 2. Self-reported visitation after COVID-19 pandemic

Figure 3 shows the visitation frequency in accordance with age. It is noticeable that the visitation frequency of older people (65 years or older) was the highest, with almost half of that age sample visiting the park more than once a week and 16% once a week; research in Atlanta has demonstrated that older people heavy use large scale parks after pandemic due to concerns about contagion and to keep social distance (Liu *et al.*, 2024). This tendency appeared to increase with age, as individuals aged between 51 and 64 also reported more frequent park visits. Other studies have shown the importance of public and open spaces, such as parks, for the well-being of the older population (Xie *et al.*, 2018). Finally, the age group with the lowest visitation frequency is those between 18 and 30; only 31% state that they go to the park at least once a week.



Figure

3. Visitation frequency

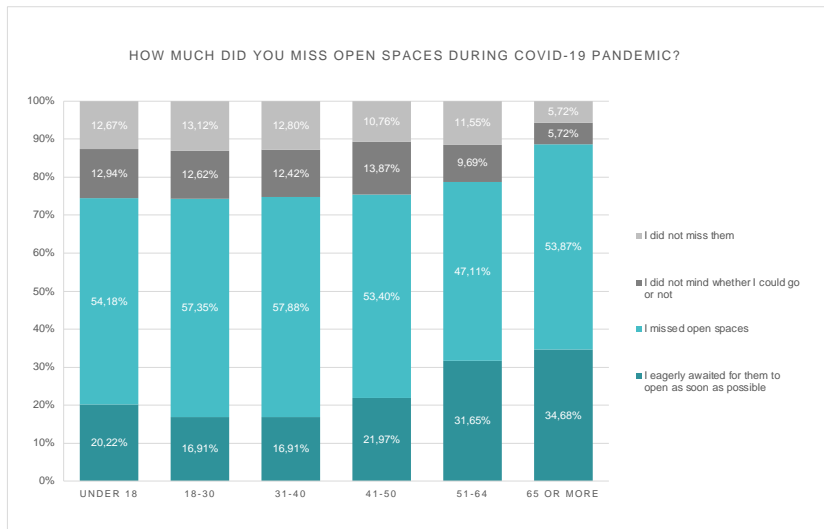


Figure 4.

Reports about how people missed the parks during the lockdown.

Users from GAM's parks in San José, as worldwide, had to follow sanitary measures during the pandemic; therefore, all three parks were closed or partially closed during the lockdown. Participants were asked about how much they missed those large open spaces during the COVID-19 lockdown (see Figure 4); the responses show that more than 75% of the sample (N=6484) missed those places or eagerly awaited for them to be open, even those users who reported lower visitation rates admitted to feeling the need to visit these places. The age group that missed parks the most were again those over 65; more than 88% missed or enormously

missed those places. It is noticeable that the eagerness to return to open spaces was highest among the oldest population (over 65) at 34.68% and decreased with age, except for teenagers. Conversely, indifference towards accessing open spaces decreased with age, peaking at 12,94% in the youngest population. The trend of not missing open spaces at all, decreased with age (except for teenagers), with the group between 18-30 expressing the highest indifference (13.12%). These trends suggest a strong affinity for open spaces in older individuals.

Table 5 presents the park visitation for each gender. The visitation patterns show that men generally visit parks more frequently than women; the highest disparity is seen in the "More than once a week" category, suggesting men have a greater tendency for frequent visits. Therefore, 39% of men answered that they visit the park once a week or more, and 36% of women visited those sites under the same conditions. First-time visitors are more likely to be women, perhaps indicating different motivations or opportunities for initial visits between genders. Overall, men's more significant total visit numbers could reflect higher engagement or opportunities to attend the location surveyed.

Table 5. Park visitation variation with gender

Visit frequency	Women	Men	Prefer not to say
More than once a week	21%	23%	21%
Once a week	15%	16%	15%
Twice a month	11%	14%	32%
Once a month	11%	13%	8%
Less than once a month	31%	27%	19%
It is my first visit	11%	8%	6%
	100% (N=3889)	100% (N=4533)	100% (N=53)

As mentioned in the methods section, our team undertook an exploratory study in early 2019 (pre-pandemic) to understand the visitation patterns in those parks from the GAM. As the research used the same survey tool for the post-COVID-19 investigation (2023), it was possible to make an association. Figure 5 displays a comparison between 2019 and 2023; by analysing women and men visitation frequency, it is noticeable that in both samples, 20% of men attend 'more than once a week' to those parks, with a short increase post-pandemic in contrast, women increase their frequency (more than once a week) from 13% in 2019 to 21% in 2023. However, it is worth mentioning that both genders cover a higher range of people who visit the park 'less than once a month'; this figure was lower in 2019. These findings suggest that users of those parks might come more often than before the pandemic, which aligns with the self-reported visitation shown in Figure 2.

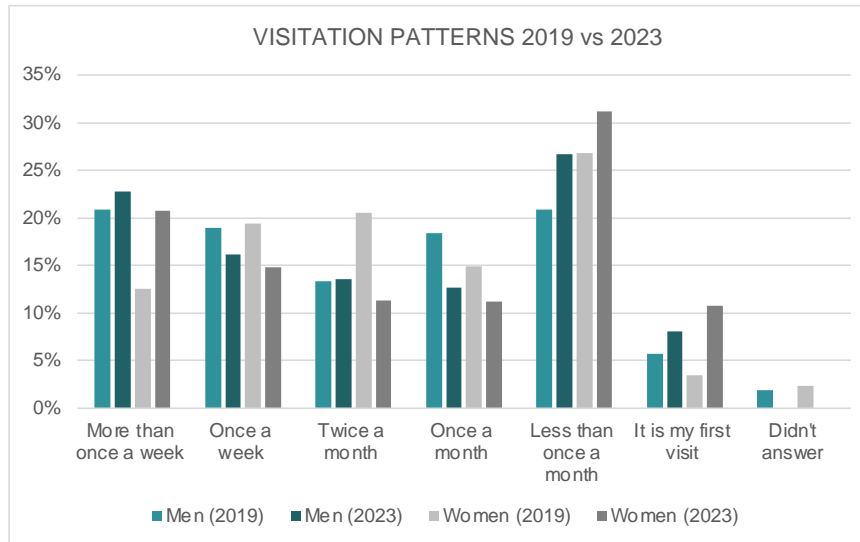


Figure 5. Visitation patterns before and after COVID-19 pandemic

Users from those parks come mainly by car (see Figure 6); despite being urban areas with bus stops nearby, public transport is one of the less popular options to get there. Costa Rica has severe issues with mobility; 34% of the population commutes by bus and 33% by car; 90% of the High Capacity Network does not meet the National Transportation Plan's parameters regarding the number of lanes (PEN, 2018). This means that even a short trip can take a long time. In this regard, more than 40% of large park users prefer to come by car; however, 37% of visitors over 65 come by walking, which is the highest percentage among all age ranges. Less than 25% of park users reach those places by public transport. These findings suggest that large urban parks in Costa Rica's capital might not be easily accessible to people with lower incomes who are not able to afford private transport.

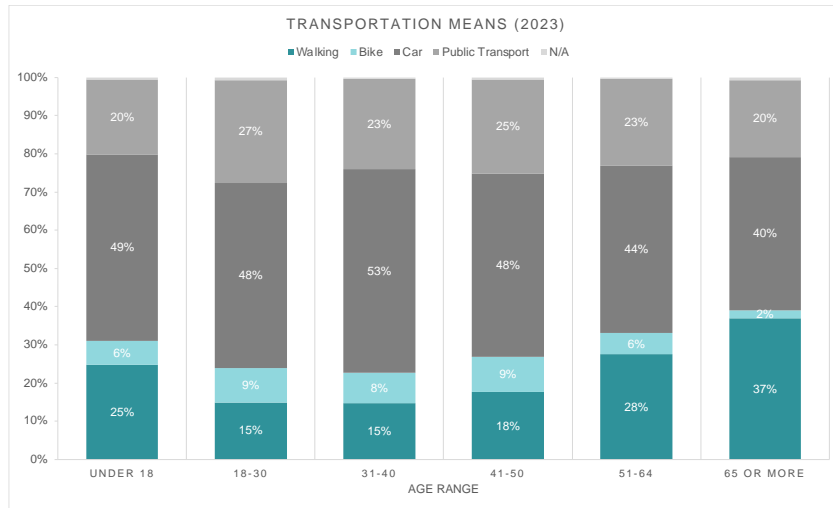


Figure 6. Transportation means after COVID-19 pandemic

By comparing transportation means between 2019 and 2023 (see figure 7), the COVID-19 pandemic seems to have not any incidence in transportation means to reach the parks; in fact, there was a reduction in the use of active ways of transportation such as walking and biking in almost all cases, except for walking in men. In this regard, despite people missing parks and there being an increase in visitation, the mobility conditions have not changed, and public transport has not improved; this situation could lead in the short or middle term to go back to the visitation patterns pre-pandemic as there is not urban policies that foster better macro mobility to urban parks.

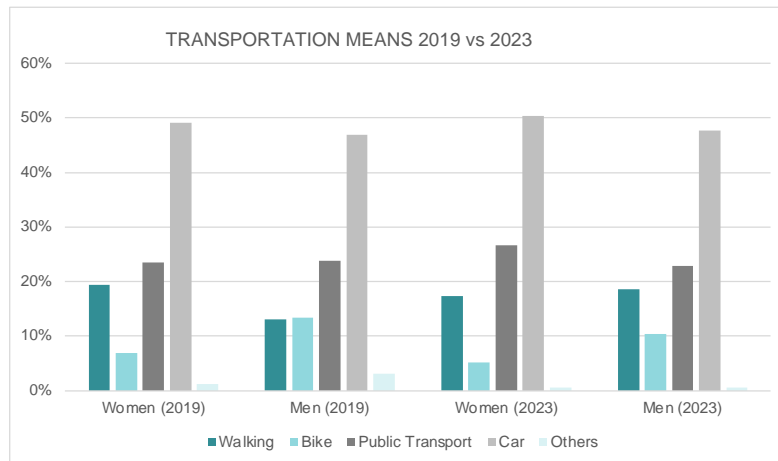


Figure 7. Transportation means before and after the COVID-19 pandemic

6. Discussion

The COVID-19 pandemic brought many lessons to urban planners. The spatial inequalities exacerbated by the pandemic reveal how disparities impact public health in general. Despite park visitation drop during the pandemic in different contexts (Dawwas and Dyson, 2021; Wu *et al.*, 2023), this work reveals that around 50% of visitors reported an increase in their visitation to GAM's parks after the COVID-19 pandemic, which concurs with others context in Latin America (Freires *et al.*, 2022). This research joins a body of literature that demonstrates that after the COVID-19 pandemic, there is a stronger appreciation of parks' contribution to everyday life and recreation (Soares and Brasil, 2020; Wu *et al.*, 2023).

The pandemic has notably changed some behaviours; although an increase in visitation to parks was detected, it remains to be seen if new people's appreciation and preferences will return to pre-pandemic times (Wu *et al.*, 2023). In this regard, authorities in charge of public policies must take advantage of the opportunity to hold that enthusiasm and facilitate better conditions for enjoying those public spaces; for instance, lessons about how flexibility can help to face short to medium-term disruptions (BID, 2022). This new awareness about the importance of green spaces for mental and physical health (Wu *et al.*, 2023) can be approached through new perspectives such as 'Nature-Based Solutions' (NbS) that can offer new possibilities for the public, encompassing integrality, multifunctionality, governance and action orientation (Hernández-García, 2020).

There are also many structural challenges to ensure higher visitation of women in parks; in Costa Rica, women spend less time for leisure than men (INEC, 2023). Although there is still a long way to ensure that men and women equally share responsibilities in domestic and caregiving tasks, some affirmative actions can be taken to facilitate women's access to recreational spaces, such as more versatile infrastructure to meet different needs, and better safety conditions; for instance, minimise blind areas and implement a complete structure with complementary services (Zhang *et al.*, 2022).

This research also shows that older people more frequently visit the GAM's parks; they are willing to come by walking, but their use of public transport is very limited. In this regard, Buffel *et al.* (2023) recommend an 'age-friendly recovery plan' post-COVID-19, which allows a rethink of which type of urban infrastructure meets older people's needs to support vulnerable populations in order to keep alive informal networks that protect everyday life. Buffel *et al.* (2023) suggest six principles to secure 'age-friendliness': protect the most vulnerable, mainly when spatial inequality is present, fight against ageism, inclusive post-pandemic city, promote community-based services and infrastructure as well as green areas, develop local partnerships and finally include older people in co-design cities.

The possibility of installing temporary markets would allow nearby communities to interact, sell their products and improve coexistence, which helps the local economy and activation of public spaces, avoiding longer travel times, lower prices from direct producer-to-consumer sales, and natural and fresh products that help maintain a healthy immune system (BID, 2022). Mobility could be the most critical challenge to face; the current transportation system prioritises private vehicles, thus exacerbating inequalities in access to recreational sites.

7. Conclusions

The findings of this work highlight how public policies need to be improved to ensure better access to recreation for Costa Rican citizens. Open spaces were highly valued during the COVID-19 pandemic, and they are necessary and convenient to create a pleasant environment

in the city. The situation experienced during the pandemic left lessons learned about how regional parks are seen with a new lens.

COVID-19 was a game changer in people's visitation frequency in GAM's large urban parks; around 50% of the sample reported increasing their visitation frequency after the COVID-19 pandemic. However, their means of travel have remained the same compared to pre-pandemic times; cars are still dominating the way to get there. Therefore, this momentum could be threatened by growing traffic issues and the need for an efficient public transport system. Biking is not a popular means of transportation; poor infrastructure and heavy traffic make it dangerous. Central and local governments must commit to providing bike lines and pacified streets.

Older people manifested a higher attachment to GAM's large urban parks; it was the age group which missed the most those places during the lockdown; currently, they are the most frequent visitors, and the proportion of senior citizens arriving by walking at the parks is much higher than other age groups. Like many countries worldwide, demographic trends in Costa Rica reveal that the population pyramid has transformed. The proportion of older people has increased; currently, it is 9,6% of the Costa Rican population. The global fertility rate is 1.31 children per woman, considered ultra-low (INEC, 2022), making it necessary to design friendly cities for older adults. Planning policies to encourage better cities for this population are limited; some initiatives are focused on persons with disabilities who are not necessarily older people; for instance, since 1996, Costa Rica has had a law (# 7600) which aims to provide tools for persons from all age with disabilities to achieve their maximum development, social participation, exercise of rights and duties; that includes universal physical accessibility. Costa Rican planning codes could include guidelines to improve the condition of pavements, footpaths, signage, panic buttons, information points, complementary services, and enhance the quality of the walk by planting trees along streets (reducing outdoor temperature). On the other hand, teenagers were the group that reported a higher increase in visitation; thus, the growing interest of teenagers in green spaces and the engagement of older adults might be an invaluable opportunity to promote intergenerational encounters.

Women's visitation frequency was slightly lower than men's, and visual counts showed a higher number of men than women coming to the parks;. However, both genders have similar trends in transportation means to reach the parks; men lightly use more active means such as walking and biking. Affirmative actions could help provide safer pathways for women that could encourage them to try healthier travel methods.

Less than 10% of the sample were people with low educational attainment, which shows how unequal the enjoyment of recreational spaces, even those freely accessible. The poor quality of public transportation and extended times might discourage those people who do not own private vehicles. Outdoor markets stimulate the visitation of people from different economic backgrounds, not only by providing the opportunity to sell products but also by reducing intermediaries and offering fairer prices. As demonstrated in other initiatives worldwide, these spaces might activate public spaces and provide natural surveillance that contributes to the area's security and vitality.

Finally, community participation has been proven to engage people in their familiar environment successfully; therefore, planning policies have to be able to capture citizens' views fairly; data is crucial, not only for authorities but also for citizens to make informed decisions. Planning policies can be addressed to meet people's needs and new visitation patterns after COVID-19. For example, how can we promote a richer intergenerational exchange by taking advantage of teenagers' increase in visitation? Which activities would keep the interest of older

people in those spaces? How can we promote new ways of commuting and reduce access inequalities? How can we provide safer walking and biking routes for women? Public spaces are volatile places (Jacobs,1961); therefore, new users' attitudes also bring new opportunities that must be noticed.

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