

Original Article

Does your neighborhood invite you to walk? Analysis of pedestrian perception of walking conditions

O seu bairro te convida para caminhar? Análise da percepção dos pedestres sobre as condições de caminhabilidade

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ABSTRACT

Purpose: The article aims to analyze walkability conditions in the Liberdade neighborhood, Campina Grande, Paraíba, from the perspective of pedestrians. In this context, the goal is to understand the conditions of movement, including sidewalk quality, mobility, public safety, road safety, and the environment, identifying areas for improvement for decision-making by the municipal government.

Design/Methodology/Approach: The research is qualitative, using an analytical and comparative approach. Data collection involved bibliographic and documentary research and semi-structured interviews, conducted both in-person and online over eight days. The sample included 15 participants, predominantly with higher education, residing in Liberdade.

Results: The study revealed inadequate walkability conditions in Liberdade, highlighting irregular sidewalks, a lack of accessibility, and precarious public safety. The research emphasized the need for investments to improve mobility and create a safe environment. The positive perspective of pedestrians regarding attractions such as parks was also emphasized.

Limitations/Implications of the Research: Acknowledging limitations in the results, the research focused on Liberdade, indicating the need for further studies in other neighborhoods of Campina Grande. Practical implications include the need for investments in infrastructure and maintenance.

Social Implications: The findings highlight the importance of public awareness regarding participation in urban planning to enhance pedestrian conditions in the city's urban spaces.

Originality/Value: Contributing to urban management and sustainability, the study provides insights into urban expansion and its consequences. It emphasizes the democratic and participatory role of pedestrians in reflections on urban walkability.

Keywords: Urban management; Cities; Pedestrians

RESUMO

Finalidade: O artigo visa analisar a caminhabilidade no bairro da Liberdade, Campina Grande, Paraíba, sob a perspectiva dos pedestres. Nesse sentido, buscou-se compreender as condições de deslocamento, incluindo qualidade da calçada, mobilidade, segurança pública, segurança viária, e ambiente, identificando áreas de melhoria para a tomada de decisões pelo poder público.

Desenho/Metodologia/Abordagem: A pesquisa é qualitativa, utilizando uma abordagem analítica e comparativa. A coleta de dados envolveu pesquisa bibliográfica, documental e entrevistas semiestruturadas, realizadas presencialmente e online ao longo de oito dias. A amostra incluiu 15 participantes, predominantemente com ensino superior, residentes na Liberdade. O roteiro utilizado foi o instrumento adaptado de Medeiros e Vasconcelos (2021).

Resultados: O estudo revelou condições inadequadas de caminhabilidade na Liberdade, destacando calçadas irregulares, falta de acessibilidade e segurança pública precária. A pesquisa enfatizou a necessidade de investimentos para melhorar a locomoção e criar um ambiente seguro. Destacou-se a perspectiva positiva dos pedestres em relação a atrações como parques.

Limitações/Implicações da Pesquisa: Reconhecendo limitações nos resultados, a pesquisa concentrou-se na Liberdade, indicando a necessidade de mais estudos em outros bairros de Campina Grande. Implicações práticas incluem a necessidade de investimentos em infraestrutura e manutenção.

Implicações Sociais: As descobertas evidenciam a importância da conscientização pública sobre a participação no planejamento urbano para melhorar as condições de deslocamento a pé nos espaços urbanos da cidade.

Originalidade/Valor: Contribuindo para a gestão urbana e sustentabilidade, o estudo oferece insights sobre a expansão urbana e suas consequências. Destaca o papel democrático e participativo dos pedestres nas reflexões sobre a caminhabilidade urbana.

Palavras-chave: Gestão urbana; Cidades; Pedestres

1 INTRODUCTION

Urban mobility is essential when discussing urban development and the population's quality of life (Carvalho, 2016). This area has gained prominence over the years, as it brings an understanding of the pillars present in urban sustainability. By analyzing the approaches to this field of knowledge, it is possible to understand the context of cities and, above all, observe some factors that directly interfere with the relationship between city dwellers and urban space (Carvalho, 2016; Rogers, 2016; Vasconcellos, 2017).

In the second half of the 20th century, an urban planning approach was consolidated, presenting in its summary a more targeted focus on motorized vehicles (Andrade & Linke, 2017). Based on this understanding, it can be seen through transport

policies that individual transport has a privilege over collective transport; therefore, cities become spaces planned for cars instead of people (Follador, 2011).

Although the act of walking is considered a universal form of movement for individuals, plans, and projects carried out in Brazil have historically ignored the act of traveling on foot. Based on this, research highlights the importance of this behavior for the more responsible development of cities since walking is considered the most democratic form of transportation (Andrade & Linke, 2017).

For Vasconcellos (2017), walking is the most used way by Brazilians to get around cities, allowing pedestrians access to different parts of the region. However, according to Piazza and Vieira (2017, p. 24), "in most Brazilian cities, the means for carrying out such movements are non-existent or, when they do exist, they are inadequate or in a poor state of conservation". For Sadin-Khan and Solomonow (2008), sidewalks are considered valuable space; therefore, it is necessary to understand how people want to use them. Thus, it facilitates the process of reactivating streets and cities to make them more alive, safe, healthy, and sustainable.

In this sense, the need to evaluate walkability conditions from a pedestrian perspective brings an understanding of the trends for more significant investment in central areas as they have greater visibility, especially by visitors/tourists. This aspect can be reaffirmed by Bittencourt and Faria (2021), who state that despite progress in more peripheral areas of the city, urban private investments and returns are still concentrated in central areas that continually receive public interventions in infrastructure. Given this need for analysis, pedestrians who know this reality are considered essential instruments. An example is the study and model proposed by Medeiros and Vasconcelos (2021), which reveals the importance of the walker's perspective.

Based on the notes presented here, the premise established for this study is that the perception of pedestrians must be taken as a basis to promote better walkability conditions and encourage walking in urban spaces. Based on this premise, the research problem can be defined as: How do pedestrians evaluate walkability conditions in the Liberdade neighborhood located in the city of Campina Grande – PB, Brazil?

To resolve this issue, the present study aims to analyze walkability conditions from the perspective of pedestrians in the Liberdade neighborhood in Campina Grande - PB. To this end, we used the model proposed by Medeiros and Vasconcelos (2021). This study is justified by the need to analyze the neighborhood in ascendance and growing economic relevance in the city of Campina Grande, as well as by the need to include studies that reveal the perception of individuals regarding their movements, allowing the understanding of the local reality through the perception of those most affected in order to encourage the development of public policies to improve the well-being of the local population.

Thus, through the dimensions and indicators proposed in the model by Medeiros and Vasconcelos (2021), the article will seek to identify points of possible improvements, providing public authorities with a set of information that can directly assist in urban planning and, consequently, in urban management of the locality/city, since these analyzes can contribute to a better distribution of resources.

This article presents, in addition to these initial considerations that contextualize the problem of the study, the second section that presents the theoretical foundation, right after the methodology used to achieve the objective and, then, the presentation and analysis of the results and the final considerations.

2 THEORETICAL FOUNDATION

2.1 Urban mobility and walkability

The approach to urban mobility is multifaceted due to different contributions to the responsible development of cities, as they are recognized as a dynamic and constantly changing system (Rufino et al., 2018). Based on this, it is understood that this field of knowledge goes beyond issues related only to the means of travel, and, for this reason, cities seek measures that help and, above all, efficiently reduce social and environmental problems.

In this context, as urban spaces grow exponentially over the years, a direct relationship is created with the increase in the use of motor vehicles, resulting in the loss of space for pedestrians. However, the act of walking stands out because it presents advantages for individuals and, consequently, for cities (Vieira et al., 2016).

For Cambra (2012 p. 4), “walking is the most elementary means of moving, integrating and experiencing urban space”. Everyone has the right to come and go, and sidewalks must allow this to happen safely and independently, without restrictions (Prefeitura Municipal de Campina Grande - PMCG, 2019). Walkability brings with it contributory elements for city dwellers. Once well implemented and monitored by public authorities, cities become pleasant spaces to be seen and experienced.

Given this scenario, Rogers (2016) emphasizes that the development of cities must have pedestrians and cyclists in mind. From this act, it will be possible to provide a more pleasant and safe environment to encourage people to travel to different parts of the region without using private automobile transport. Based on this understanding, discussing aspects involving walkability conditions is necessary. Thus, aiming to collaborate efficiently in urban planning, the following section presents models capable of analyzing the walkability of a city/section.

2.2 Walkability analysis models

Studies that address walkability have been widely used with objectives aimed at analyzing and diagnosing urban space from the point of view of those who travel on foot (Bradshaw, 1993; Clifton et al., 2007; Dixon, 1996; Frank et al., 2005; Gallin, 2001; Leslie et al., 2007; Moura et al., 2017; Ruiz-Padillo et al., 2016). However, in recent years, authors have emphasized that although most of the walkability indices developed adequately describe the environment, they are not capable of correctly analyzing the way different people perceive urban space (Medeiros, 2019).

Based on this understanding, research on this topic is increasingly intensifying, aiming to create models/tools that enable objective analyses of urban space. To this

end, some authors rely on instruments built to focus more on architects and urban planners. However, researchers seek to modernize them and direct them to be analyzed from the perspective of pedestrians, as they are considered the true protagonists of the analysis of walkability conditions.

The models proposed on the topic show us the adaptations and incorporations that have been implemented in the walking analysis structures. Therefore, the following table presents some tools and their respective authors.

Table 1– Methods/Tools to help analyze walkability studies

(Continued)

STUDY/AREA	GOALS	METHODS/TOOLS	RESULTS
(Bradshaw, 1993) Ottawa - Canada	For the first time, he proposed a methodology for measuring the quality of the urban environment for pedestrian use.	Tool to help estimate the value of properties based on measuring the qualitative and quantitative characteristics of the neighborhood.	Assessment of indicators related to good walkability.
(Cervero & Radisch, 1996) San Francisco - USA	Analyze the influence of urban form and land use distribution on individuals' modal choice.	Comparison between neighborhoods with different urban configurations.	People walk more in compact neighborhoods with greater diversity of land use.
(Amancio, 2005) São Carlos - SP	Analyze the impact of urban form on the way citizens travel.	Correlation between physical and socioeconomic variables. Application of <i>Logit</i> -type Direct Choice Model.	The characteristics of the urban form strongly impact the behavior of individuals regarding the way they travel.
(Cervero & Duncan, 2003) San Francisco - USA	Analyze the influence of factors such as topography, safety, distance, travel time, and user demographic characteristics on the individual's modal choice.	GIS data, interviews, and application of a <i>Logit</i> -type Direct Choice Model.	The extent to which the urban environment's characteristics influence how individuals travel may vary according to the study area.

Table 1– Methods/Tools to help analyze walkability studies

			(Conclusion)
STUDY/AREA	GOALS	METHODS/TOOLS	RESULTS
(Kim et al., 2014) Seoul – South Korea	Assess the level of user satisfaction in relation to various aspects of the built environment at the mesoscale and microscale.	Application of questionnaires, obtaining GIS data.	Individual characteristics significantly influence utilitarian trips, while mesoscale characteristics have a more significant impact on leisure trips.
(ITDP Institute for Transport and Development Policy, 2016) Rio de Janeiro - RJ	Structure a walkability index based on 21 indicators.	Use secondary data from open sources (Google Earth, for example) and information from public bodies.	-
(Cavalcanti, 2016) Campina Grande - PB	Analyze walkability conditions in the center of Campina Grande – PB.	Application of the simplified walkability index.	The best and worst stretches in the study area were identified, placing them at intervention urgency levels.
(Medeiros & Vasconcelos, 2021)	Adapt the model proposed by the ITDP Manual (2016) to analyze the walkability index based on pedestrian perception.	Seminal works that dealt with urban mobility and walkability themes were used.	Model composed of six dimensions and nineteen indicators capable of analyzing actual walking conditions from the perspective of those who walk and know the actual conditions: pedestrians.

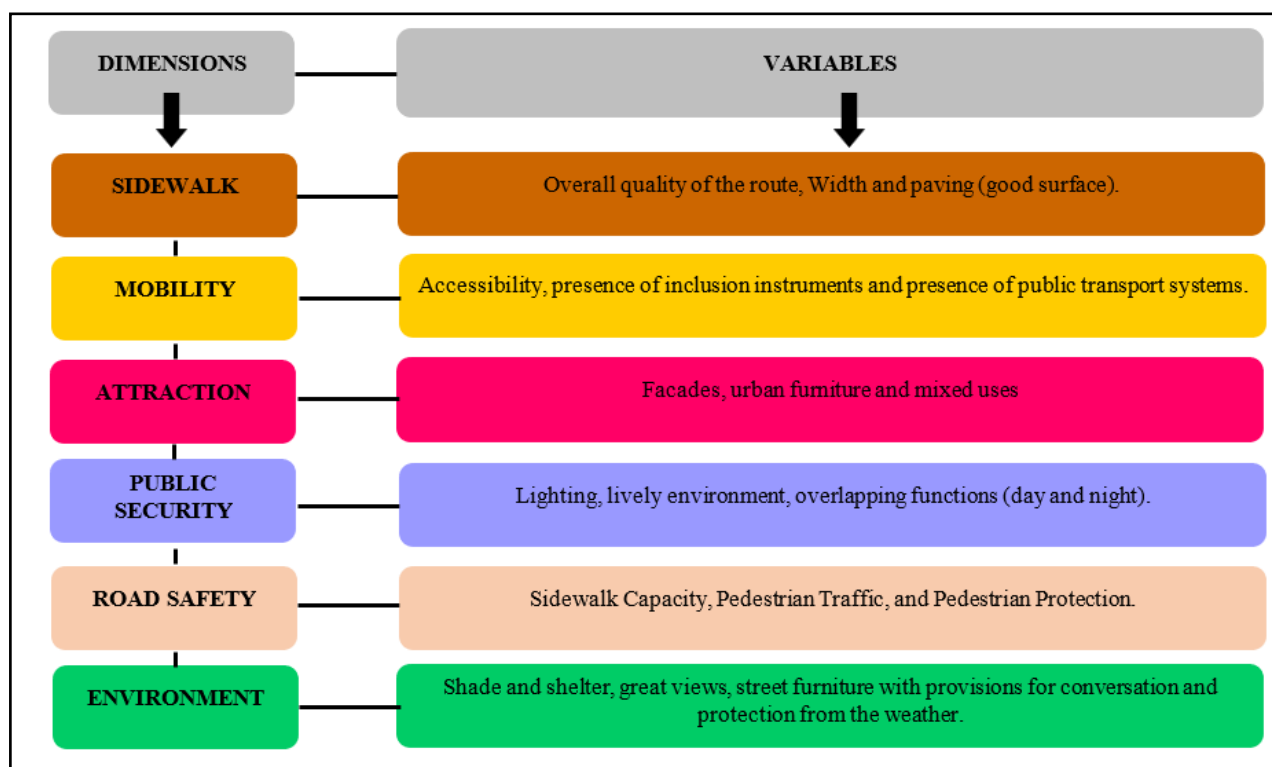
Source: Adapted from Medeiros (2020)

The most used methods are some adaptations of Bradshaw's tool (1993) since it is seen as a precursor of many works; however, it meets the applicability of each proposed study and also highlights the indicators that appear in the instrument developed by ITDP (2016), as it allows numerous analyzes about Brazilian cities.

After analyzing the methods/tools used by such researchers, the method proposed by Medeiros and Vasconcelos (2021) stands out, which is delimited for the following topic, considering that its construction is based on the adaptation of the instrument developed by the Institute of Policies of Transport and Development (2016).

The model adapted by Medeiros and Vasconcelos (2021) is intended to analyze walkability conditions based on pedestrian perception. Furthermore, the instrument comprises six dimensions and nineteen indicators capable of measuring and, above all, evaluating the quality of urban space simply and objectively through a data collection instrument.

Figure 1 – Proposed model for analyzing the walkability of a section/city



Source: Medeiros and Vasconcelos (2021, p. 09)

The dimensions highlighted in the model present their respective definitions. The sidewalk category incorporates walkability and infrastructure approaches, seeking to consider the route quality, surface, and floor maintenance suitable for pedestrians

(ITDP, 2016). The mobility category presents variables capable of analyzing the context of pedestrian movement accessibility (Medeiros & Vasconcelos, 2021). The attraction category addresses characteristics that enhance the intensity of use of pedestrian routes and their distribution throughout the day or week (ITDP, 2016).

A public security category discusses the use of the street and other public spaces. In this context, the road safety dimension guarantees protection for pedestrians concerning motor vehicle traffic and promotes the adaptation of crossings to comfort and universal accessibility requirements. Finally, it is understood that the environment category relates to environmental aspects that may affect the walkability conditions of an urban space (ITDP, 2016).

Based on the discussions described above, this article will analyze from the point of view of those who walk and identify more incisively the possible improvements in walkability in the location to be analyzed. The following section presents the methodological procedures to achieve the objective.

3 METHODOLOGICAL ASPECTS

3.1 Characterization of the research

This work is characterized as qualitative research since this type of analysis presents an analytical and comparative approach to facts, data, or theories about a given problem or concern. The researcher seeks to describe them and interpret them without the need for measurements or statistical procedures (Rodrigues, 2007).

Bibliographic and documentary research strategies were used to collect secondary data to obtain fundamental information about the city and the neighborhood. The indicator models were identified and subsequently chosen for analysis. The primary data collection strategy was the semi-structured interview, intending to collect information about the dimensions analyzed. The interviews were

carried out through online and on-time platforms, as well as on-site, over a period of eight consecutive days, starting on June 8, 2022, and ending on June 15, 2022.

The criteria established for choosing respondents were: residents of the Liberdade neighborhood who frequently travel on foot every day to carry out any type of activity in the locality. In this sense, the sample that made up the research corpus was classified as non-probabilistic due to accessibility, and the sample was defined due to data saturation due to the repetition of information. In total, 15 people participated in the research, nine women and six men, and the vast majority of them had higher or postgraduate education at their level of education, with all interviewees over 18 years old. Table 2 presents data from the interviewees.

Table 2 – Characteristics of interviewees

Code	Age	Interview duration
E1	34 years	1:10
E2	58 years	1:05
E3	28 years	50 minutes
E4	67 years	1:08
E5	26 years	1:03
E6	27 years	1:02
E7	53 years	55 minutes
E8	22 years	1:07
E9	26 years	1:09
E10	25 years	50 minutes
E11	23 years	1:06
E12	22 years	1:04
E13	36 years	51 minutes
E14	35 years	1:10
E15	74 years	52 minutes

Source: Research data (2022)

We used thematic content analysis of the recorded and later transcribed interviews to analyze the responses obtained. This type of analysis allows for

interpretation from the perspective of the theory that guides the study. Therefore, the content analysis presents, according to Bardin (2016 p. 42):

A set of communications analysis techniques aimed at obtaining, through systematic and objective procedures for describing the content of messages, indicators (quantitative or not) that allow the inference of knowledge relating to the conditions of production/reception [...] of these messages.

According to the author, it is understood that this analysis can be used in qualitative investigations in both oral and written communications, with the message as its objective. Therefore, an interview or questionnaire can be used to obtain data.

The locus of application will be the Liberdade neighborhood, located in the city of Campina Grande, in the state of Paraíba, seeking to analyze and describe it through a semi-structured interview script adapted from the data collection instrument model constructed by Medeiros and Vasconcelos (2021). In this way, the elaborated itinerary presents all dimensions in its structure: sidewalk, mobility, attraction, public safety, road safety, and environment, as well as their respective variables mentioned in Figure 1.

3.2 Characterization of the city/neighborhood

The application of the model in the Liberdade neighborhood, located in the city of Campina Grande, in the state of Paraíba, is justified by its great economic and population potential. It is worth highlighting that the city of Campina Grande is located in the Agreste Paraibano mesoregion, in the Central-Eastern Zone of the state, in the Borborema plateau section, making up the caatinga biome.

It is characterized as a submetropolitan center and stands out for being the second largest municipality in population in the state of Paraíba, which is home to around 413,830 inhabitants, exerting influence on the political and economic dynamics over the other municipalities in the state (Instituto Brasileiro de Geografia e Estatística - IBGE, 2021).

When observing the territorial spaces of this city, it is highlighted that the founding of the Liberdade neighborhood has a strong link with the economic development of the

city of Campina Grande. At the beginning of the 20th century, the city appeared nationally and internationally as a major cotton exporter. In the middle of 1935, industrial zones emerged, with the installation of the company Sociedade Algodoeira do Nordeste Brasileiro (SANBRA) (Gomes, 2020). Furthermore, as explained by (Andrade, 2011), a concentration of houses and businesses began to occur in its spatial perimeter, giving rise to a housing nucleus forming the current Liberdade neighborhood.

In this sense, the Liberdade neighborhood is located in the south zone of the city of Campina Grande - PB; to its north is the São José neighborhood; to the south, the Jardim Paulistano and Cruzeiro neighborhoods; to the east, the neighborhoods of Estação Velha and Tambor, and to the west the Quarenta neighborhood. Furthermore, the neighborhood has a considerable population and physical extension, in which it develops essential economic and commercial activities in its territorial space (Andrade, 2011). According to the 2010 census, the population of this territorial unit is approximately 15,836, representing 7,174 inhabitants in the male population and the female population, 8,662 inhabitants (IBGE, 2010).

Based on this information, when highlighting the locus of this study, it is important to highlight that the neighborhood has numerous spaces that continue to drive the economic and social aspects of the city. Notably, it has some attractions in its area and immediate surroundings. These include various urban facilities, health centers, parks, squares, schools, gyms, bars, supermarkets, and others, causing the area to have a substantial flow of people and goods.

Therefore, the need to analyze walkability conditions in the Liberdade neighborhood stands out so that residents and people who frequent this region can safely walk to any part of the territory. Aiming to transform spaces that are increasingly democratic and, above all, inclusive, allowing pedestrians to be intensively inserted into the city.

3.3 Development of the research instrument

Given the discussions by Medeiros and Vasconcelos (2021), the need to apply effective methodologies that contribute to society is understood. Considering the choice of the assessment model for walkability conditions established in this research, a semi-structured script was constructed (Appendix 1) based on the dimensions and variables proposed by the authors and already presented in the theoretical foundation.

During the interviews, the range of information shared by the respondents was noted. Since it allowed us to reach a level of understanding of human reality that became accessible through speeches, the interview is an appropriate form for this type of investigation, whose objective is to know and, above all, understand how people perceive the world around you (Fraser & Gondim, 2004).

After delimiting the methodological path used, the following section presents and discusses walkability conditions based on the perception of people who move daily in the neighborhood.

4 RESULTS AND DISCUSSIONS

4.1 Analysis of dimensions

The dimensions presented below reveal the scenario shared by residents who travel to carry out different activities at some point in their day. The analyses met the respondents' perceptions and were discussed, analyzed, and compared based on the literature.

4.1.1 Sidewalk Dimension

It is important in the context of cities, once presented in a preserved way, it becomes possible for all people to move to different parts of the city (Medeiros & Vasconcelos, 2021).

From the interviews, it was possible to analyze the vision of the residents of the Liberdade neighborhood in more depth. In this sense, it is understood that the

interviewees' perception becomes essential to guide them with the theory addressed by the authors, in which they deal with the theme studied in the article.

The interviews showed a large concentration of negative responses that transcend into several problems about quality, surface, and paving. Responders exposed the sidewalks as slippery, too narrow or non-standard, and with many holes.

The paving of sidewalks in the Liberdade neighborhood is a critical point mentioned by most interviewees. Furthermore, the fact that pedestrians move to the street, taking risks among cars, stands out. Therefore, a worrying scenario is assessed.

These analyses can be reaffirmed through the comments of the interviewees, in which they highlight the following: *"The sidewalks in Liberdade do not have a standard; they are often uneven. In general terms, it does not have adequate sidewalks... Forcing us, pedestrians, to walk in the middle of the street"* (E6) or even state that: *"The sidewalks are quite precarious, with reliefs, stops and ramps, which makes it impossible for us to walk calmly, running the risk of running into it and having an accident"* (E8).

Furthermore, it is understood that the danger becomes even more significant for elderly pedestrians and/or those with physical limitations, as explained by (E2): *"In terms of paving, they are irregular, some have ceramic tiles that slide... There are also many plants that they raise the sidewalks and make access difficult for older people"*.

The unpleasant situation experienced by the vast majority of respondents is understood through the statements, in which they emphasize the difficulty of remaining on their route in spaces designated for pedestrians, as can be seen below:

They are not good, mainly because there are places that do not even have sidewalks, the perception is bad. It needs to improve a lot, the government needs to look at this, we keep walking down the streets... The pavement is also full of holes; when I take my daughter for a walk in the stroller, I go along the street because there is no sidewalk, at least the route I take is quite complicated. There is the issue of balance, too; disproportionate height between sidewalks. The issue of paving leaves a lot to be desired (E13).

In view of the above, it should be noted that these factors may be the responsibility of private property owners since the neighborhood residents place the type of material of their interest and taste on their sidewalks without further inspection by the public authorities. According to Carvalho et al. (2022), in these cases, the action of the municipal public authorities becomes necessary, not only with inspections, notifications, or fines but with the awareness and dissemination of the rules in force in the municipality, such as, for example, the Guidance Booklet: Standardized Sidewalk, which follows the standard of the Brazilian Association of Technical Standards (ABNT), specifically the Brazilian Standard (NBR) 9050, of June 2015 (PMCG, 2019).

Based on these notes, it is worth highlighting that pedestrians increasingly need inclusion in the city, given that they are the true protagonists of urban planning (Velooso et al., 2015). As a result of these reports, understanding studies on the disorderly expansion of cities linked to walkability emerges as an essential contribution to academia, considering that it is necessary to understand the urban organization of the city/neighborhood.

In this way, as stated by the authors Cunha and Helvecio (2013, p. 14) in their book "Sidewalk: the first degree of urban citizenship", it is admitted that to understand what happens to sidewalks "you just need to try to walk along the sidewalks perimeter of a measly block, anywhere in the city, to get an idea and feeling about the drama of those who constantly use them".

4.1.2 Mobility Dimension

The dimension reveals scenarios about the quality offered by the city/neighborhood from the point of view of accessibility, inclusion instruments for the movement of people with reduced mobility, and addresses access points to public transport.

When analyzing the interviews, it is understood from all respondents that the Liberdade neighborhood negatively presents itself, as it does not offer adequate

accessibility, much less does it present inclusion instruments, for example, ramps that can facilitate the walkability of disabled people. Most sidewalks have uneven levels and holes, making it difficult for wheelchair users and people with visual impairments to move around.

Through the adversities in which the neighborhood finds itself, the pedestrians interviewed emphasize that the best access ends up being Parque da Liberdade or central areas, considering that these are urban spaces that present more significant investments in accessibility or even point out a second option, which is: moving along the street. These analyses can be confirmed through the following statement:

Poor accessibility, the sidewalks no longer have an adequate structure for people who do not have any difficulties... imagine those who have some type of disability because they do not have adequate ramps; the sidewalk stops prevent a wheelchair user, for example, from moving along the sidewalk. These people must go to the curb, running the risk of a car, motorbike, or bicycle hitting them (E14).

Respondents reveal, *"Every time I walked, I see that there is no accessibility for the disabled in general. There should be more ramps in the neighborhood"* (E5). Another pointed out the following: *"The accessibility points are bad because until then, we only found them in supermarkets like Assaí, Maia, Parque da Liberdade or Praça da Odon Bezerra"* (E1). When asked about access points to public transport, respondents were divided. Generally, the Liberdade neighborhood is well distributed along its routes but requires greater investment in signage and shelters at bus stops. Furthermore, there is dissatisfaction with the frequency with which they are passed, and the COVID-19 pandemic could be one of the triggers. As a result, some people opt for apps like Uber and 99, as they become more convenient.

One of the interviewees reported that: *"We have good access and also a regular frequency, due to the neighborhood having some main streets that cross it and making more bus line options available and, also, a greater flow of people"* (E3). Questioned under the same aspect, one of the interviewees stated the following: *"In general, this is good,*

like Getúlio Cavalcante, Odon Bezerra, even Espírito Santo. Yes, there are good bus access points, but it would be interesting to have them in other locations as well" (E9).

On the other hand, almost all interviewees pointed out issues of improvement, this analysis can be understood through the speech of (E11): *"I believe that there is a lack of more investment in terms of shelters and visible signs. As for frequency, it should be improved to avoid greater crowds on buses."* They also highlight that: *"It has been a while since I rode the bus, but according to reports from people I know, sometimes public transport takes a long time to pick up passengers, which makes the majority turn to apps, even because access points do not have access desired and safe quality" (E12).*

From this perspective, integrating the concepts of urban mobility and accessibility in the study of circulation in urban areas means ensuring better travel conditions and freedom for the population (Rodrigues et al., 2020). Based on the interviews, it is understood that the more central regions have more significant investments in infrastructure and accessibility; however, there is concern regarding the areas that connect pedestrians to these points in the neighborhood.

Environments such as parks and squares are considered urban spaces that provide better quality for walking due to the presence of inclusion instruments for people with physical or visual disabilities. Therefore, the need for public authorities to focus greater attention on urban planning in the Liberdade neighborhood stands out, seeking to integrate people and encourage a quality and democratic space.

According to Tissot et al. (2020), a public environment adapted to accessibility standards has its use encouraged by society, regardless of the abilities or limitations of the different users. This discussion is equivalent to public transport systems, which, if directed to greater investments, both in terms of the vehicle and in access and shelter points, would encourage people to be part of the city and choose to use it. This fact would create policies to encourage public transport, giving pedestrians a voice and minimizing problems of a mobility model structured around individual transport (Carvalho, 2016).

4.1.3 Attraction Dimension

The variables constituted in this grouping seek to analyze the attributes that have a decisive impact on walkability. This category evaluates the points of attractiveness, urban furniture, and mixed use that the Liberdade neighborhood offers pedestrians.

When analyzing the interviewees' responses, it is clear that all pedestrians spoke positively regarding the attraction dimension indicators. In this sense, the Liberdade neighborhood presents itself as a location in the city of Campina Grande with significant economic and social potential. The studied location includes a series of constructions that arouse people's interest while traveling on foot. An example of this is commercial establishments and urban spaces that contribute to the city's health, social interaction, and afforestation.

From this panorama, it can be concluded from the interviewees' statements that Parque da Liberdade and the squares present in the neighborhood make it more wooded and beautify the city as a whole. Therefore, afforestation enhances the attractiveness of those interviewed for walking in the neighborhood. This analysis can be confirmed through (E15): *"I evaluate it as beautiful; there are many beautiful houses and buildings, and freedom is growing a lot. We have everything nearby: supermarket, pharmacies, shops, gyms, parks, fair... there is everything we need. I keep my eyes on that."* They also emphasize the following: *"When I'm walking, I understand the beauty of the neighborhood's trees. People are planting some trees here on the street, which looks beautiful. This beauty still enchants me, which keeps the question of looking"* (E13).

Through the interviews, the neighborhood development is a point exposed by almost all interviewees: *"The neighborhood is beautiful compared to some; we don't see so much trash on the streets. Some streets here have many trees. I believe the neighborhood is becoming a center, we have practically everything regarding stores and restaurants"* (E8).

Therefore, it can be seen that the Liberdade neighborhood is a compact territorial space, a diverse environment that promotes and, above all, motivates people to walk.

Through analysis, it is possible to recognize the importance that pedestrians give to the parks and squares in the region. According to Jacobs (1961, p.76) in his book "Death and life of great cities", the following can be understood:

You can't lie to a neighborhood park or reason with it. "Artistic conceptions" and persuasive plants can compose vivid images in neighborhood parks or on tree-lined terraces, and the argument can invoke visitors who should appreciate them, but in reality, only a diverse neighborhood has the adequate power to induce a natural and permanent flow of life and uses. An architectural variation on the surface may look like diversity, but only a genuine conjuncture of economic and social diversity, which results in people with different schedules, makes sense for a park and has the power to grant it the gift of life.

Based on this understanding, the analysis of the quality of urban life from the perspective of public spaces has been the subject of several studies that aim to understand the relationship with society and how these public areas help to promote social, economic, and environmental development.

4.1.4 Public Security Dimension

The urban design of cities has been explored to understand the feeling of safety pedestrians feel. Variables based on lighting, how alive the environment is, and overlapping functions become capable of analyzing this perception. The interviews clearly show that the dimension studied fits into a pessimistic scenario. Public safety is considered an influencing factor for the walk. The pedestrians interviewed emphasize the difference between opening hours in the Liberdade neighborhood, highlighting the fear of walking at night. It is important to highlight that, due to the neighborhood's growth in public urban spaces and commercial sectors, respondents created a greater incentive to walk around the neighborhood, as they feel safer due to the movement of people that some streets have.

Thus, it is noted that lighting, which is often inadequate at night, increases insecurity. These analyses can be understood more specifically through the following statement:

When you are walking here in the Liberdade neighborhood during the day, we feel more confident because the movement on the street is much greater. However, when it gets dark, the activity drops more, people are more sheltered at home, then it gets weird. And the lighting itself, we're already scared because it's dark and there's not much security. It's different when we see other people, see the shops open and everything, we become more confident. The night leaves more to be desired (E7).

Based on the notes, it is understood that pedestrians feel safer walking around the neighborhood when other people are present. This feeling is shared by all respondents, as highlighted by (E9): *" Yes, this difference in schedules is noticeable, the safest time to walk is in the afternoon, especially because there is a large number of people moving to Parque da Freedom or leaving school"*. As the interviewee (E14) pointed out: *" The neighborhood is still lacking in lighting, you only feel safe if the neighborhood is bustling until then, you are still left behind, unfortunately"*.

Given the above, lighting is considered a key factor with regard to public safety. It allows nighttime pedestrian traffic to occur with better quality, as crime is often associated with poorly lit spaces (Lima & Jeronymo, 2021).

Through this dimension, it is noted that the lack of security can influence people's behavior. The city and public authorities do not contribute to the vitality of environments and, above all, leave aside the idea of making them brighter and safer spaces, allowing people to change their mode of transport at night. According to the authors Santos et al. (2016), public safety is an essential societal issue. The influence that this dimension has on people's lives must receive the necessary attention in the development of public policies and, especially, in mobility studies.

4.1.5 Road Safety Dimension

The variables analyze the support context of sidewalks in situations of high pedestrian flow, as well as qualify the conditions of the signs that guarantee better safety during the route taken.

Based on the interviewees, it is clear that the dimension stood out negatively. From the answers obtained, it is understood that the conditions are still not satisfactory for those who frequently walk through the Liberdade neighborhood; this can be justified and mainly linked to the analyses carried out in the sidewalk dimension.

In summary, the respondents showed that the sidewalks can meet the high demand for the flow of people in the neighborhood, but this path is carried out with great difficulty. Furthermore, the presence of obstacles, low-quality materials in the paving, and unevenness that influence this perception is highlighted.

From this perspective, due to the negative context in which the neighborhood is presented, people choose to continue their walk on the street, therefore, a risk is created. Furthermore, signage is another aspect that stood out negatively, or rather insufficiently, by almost all interviewees. Only the most central regions and sections have more significant investments.

These analyses can be understood through the speech of the following interviewee: *"[...] as the sidewalks have these ups and downs, it kind of gets in the way if there is a large flow of people. You have to be jumping and moving away..."* (E8). Another respondent explained, *"The sidewalks for many people to walk on are more complicated because I think they are narrow"* (E4). Regarding the aspects of signage, the interviewees highlighted that: *"[...] in general, only the paved roads, the main roads in the neighborhood have signs for pedestrians, other than that, none else"* (E3). This analysis is reaffirmed through the following statement:

Regarding signs for pedestrians, at the top of Liberdade, which involves Acre Street towards Cacildiva school, it is all signposted there. Both with signs and pedestrian crossings, here in this lower part of Odon Bezerra to Aprígio Nepomuceno where you find the most signposted, is in front of Parque da Liberdade (E1).

Due to these analyses, there is a need to invest in the capacity and quality of sidewalks in general and signage in the Liberdade neighborhood. However, as the locus studied grows exponentially, it becomes essential to understand the consequences of its development so that public authorities can create improvement projects within urban planning.

In this sense, promoting these improvements and, consequently, seeking to create more walkable cities through actions that minimize the risks that the city is generating goes beyond understanding the data. Road safety arises intending to create methods that can reduce the risk of traffic accidents. According to Jesus and Santos (2022, p. 14) it is understood that:

Municipal road safety is carried out by the municipal traffic authority, with the competence to monitor the infractions listed in Art. 24 of the CTB, such as: circulation, parking, stopping, dimensions, excess weight, and capacity. In addition to these duties, municipal bodies are given the authority to monitor the movement of vehicles whose infractions include running a red light, using a cell phone, etc.

Based on these notes, it is up to the municipal public authorities to direct greater attention to the occupation of urban spaces. This involves observing people's behavior on foot or their absence, establishing its relationship with how cars are used in the neighborhood.

4.1.6 Environment Dimension

The evaluated indicators provide information regarding shade and shelter, great views, urban furniture with provisions for conversations, and protection from the weather.

The Liberdade neighborhood presented a positive picture given the dimension analyzed. Respondents explained how afforestation benefits the neighborhood in several aspects, as it provides shade and, in the same way, serves as shelter during the walk. Furthermore, as mentioned in the attraction category, it acts as an attractiveness and beautification factor.

It was observed through the speeches that almost all interviewees pointed to Parque da Liberdade as a highly significant space. The location benefits residents of the Liberdade neighborhood and pedestrians from surrounding neighborhoods. It is essential to highlight that many people even walk on the park's tracks, considering they feel greater security. This can be justified because of the lighting and the large number of residents of the neighborhood who visit to carry out different activities.

Through this space and the squares in Liberdade's perimeter, it is possible to find all the variables that make up the environment. Taking these discussions as a basis, these analyses can be reaffirmed through the following statements: *"The afforestation structure in the Liberdade neighborhood is a positive point, it allows us to have a good view..."* (E6). Another respondent shares his perception, stating that: *"Very good, we have Parque da Liberdade, which serves as an example of a well-treed environment and easy socialization between people"* (E11).

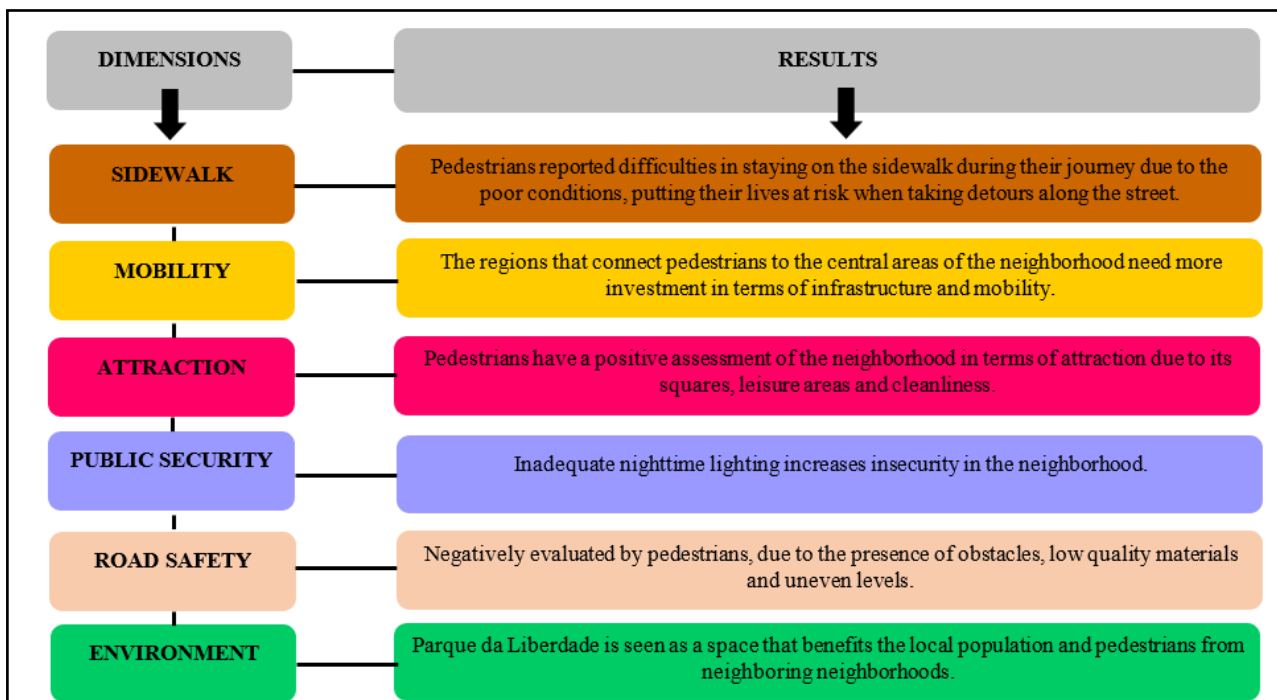
The interviewees emphasize how public urban spaces play a multifunctional role in the city, this fact can be perceived through the following statement:

In the Liberdade neighborhood, there are trees, there is Parque da Liberdade, which is very good, where people gather to exercise, talk, and dance. There is also a square near the Liberdade fair, where people trade and chat. There's also one near the gas station, where there's another square where people meet in the afternoon to talk, and older people set up a board to play dominoes... (E7).

When analyzing the context of the responses obtained, it is clear how investments in construction and revitalization in places such as parks and public squares are fundamental. According to Neto and Palacios (2012), when observing parks, it is understood that they need vitality; that is, people must want to be in them and their surroundings, attributing usefulness to them. Furthermore, Jacobs (1961) argues that urban parks are directly affected by the way in which the neighborhood interferes. Therefore, it is clear how pedestrians' perception of walkability is essential in urban planning processes.

From this perspective, attributes that provide a better experience when walking around the park become essential for this healthy and sustainable behavior to become routine in people’s daily lives. The beautiful areas (great views) mentioned by the interviewees provide shade, shelter, and protection from the elements. Figure 2 presents a summary of the categories analyzed.

Figure 2 – Summary of results



Source: Research data (2022)

Based on the results obtained, it is concluded that of the six dimensions, only two are positively evaluated: the Attraction Dimension and the Environment Dimension, which are characterized by natural and geographic aspects and do not depend on more active public policy actions to be promoted. The others, which lack planning and public management actions and direct action by city dwellers, were evaluated negatively. This fact reinforces the need for action by public authorities and the community to promote more favorable walking conditions.

4.2 Dimension Hierarchization Analysis

This section analyzes which aspects the interviewees point out as priorities if they could decide on public investments for their neighborhood. At the end of each interview, the degree of importance was classified regarding the dimensions: sidewalk, mobility, attraction, public safety, road safety, and environment.

Analyzing the speeches, it is clear that almost all respondents considered the public safety category to be of the most significant degree of importance. This classification can be justified through the content analysis carried out in this research, which shows a negative scenario for the Liberdade neighborhood.

Secondly, the mobility dimension, which stood out negatively in the Liberdade neighborhood, is understood to have a concern regarding its variables, mainly regarding accessibility. The third place is occupied by the sidewalk category, considering that walking conditions in the neighborhood require investment and greater attention from the municipal government and residents. In this sense, interviewees ranked road safety in fourth place, pointing out that it was more important than the dimensions of attraction and environment.

The attraction category was classified in fifth place, therefore, the environmental dimension was identified as having lower priority in the hierarchical analysis. In general terms, these two categories were considered to be of lesser importance, and when analyzing the context of the walkability conditions in which the studied locus is presented, it is observed that they were considered positive in the Liberdade neighborhood. In this way, the interviewed pedestrians demonstrated that the priority, at the moment, is not issues related to their respective variables.

Based on the analysis of the dimensions and variables listed by Medeiros and Vasconcelos (2021) and the hierarchical analysis, it was observed that walkability conditions are concentrated in an inadequate situation since pedestrians state that the Liberdade neighborhood lacks greater investments to achieve safe and inclusive travel.

The main problems reported by the interviewees were the occurrence of irregular sidewalks and/or holes, lack of accessibility and inclusion, and precariousness in terms of public safety.

5 FINAL CONSIDERATIONS

This work aimed to analyze the walkability conditions in the Liberdade neighborhood, located in the city of Campina Grande, Paraíba, through the perception of people who walk on foot during some time of their day.

In this sense, the execution of this work was justified by the need to analyze the neighborhood in ascendance and growing economic relevance in the city of Campina Grande, as well as by the need to include studies that reveal the perception of individuals regarding their movements, allowing understanding of the local reality through the perception of those most affected in order to encourage the development of public policies to improve the well-being of the local population. From this, the results of this research led to conclusions about the dimensions analyzed: sidewalk, mobility, attraction, public safety, road safety, and environment.

The content analyses carried out in this article can generate critical reflections from the pedestrians' point of view regarding the travel situation to different parts of the studied location, allowing a greater understanding of the needs of these citizens. It was observed that the neighborhood presents numerous urban mobility and accessibility problems, which these approaches directly affect people who need to move around safely, mainly the elderly and people with some physical or visual limitations.

The context of the conditions and reality of the sidewalk dimension are spheres that deserve attention, as they significantly impact the quality of life of people who choose to walk. Mobility is analyzed as a point that requires investment, as well as issues involving public and road safety, therefore, it is necessary to create plans that bring to light the inclusion of city dwellers in the city space in a safe and accessible way and democratic.

In this sense, the findings of the work can contribute to promoting the development of public construction policies and, mainly, adequate maintenance of sidewalks. Although the relevant regulations already exist for the standardization of sidewalks (PMCG, 2019) and improvement of walkability and accessibility, it is clear from the interviewees' statements that the city hall does not adequately monitor this.

Improving mobility is a demanding factor for pedestrians to emphasize the importance of a well-designed and obstacle-free sidewalk, facilitating the safe and efficient movement of people on foot and facilitating access for people with disabilities, the elderly, and other vulnerable groups.

It can be seen, therefore, that the Liberdade neighborhood is growing exponentially, presenting new commercial buildings and urban spaces in its territory that benefit the city as a whole, especially those who live in the region or its surroundings. Examples are restaurants, supermarkets, banks, gyms, pharmacies, parks, and squares. As a result, it becomes a compact, complete, and, above all, connected place, encouraging community life.

Of particular note are the green spaces (parks and squares) that encourage coexistence between people and strengthen connections between those who live or frequent the place. Furthermore, this scenario contributed to the attraction and environment dimensions becoming positive in the neighborhood.

Supported by this understanding, this research intends to instigate the municipal public authorities to better direct resources to priority sectors determined by the interviewed pedestrians. In addition to alerting them to the importance of monitoring and raising awareness among the neighborhood residents. Additionally, the aim is to highlight the role of the pedestrian as an agent of change and an actual user of the sidewalk. In this sense, the need to raise awareness and engage the community is highlighted, raising awareness about the need to care for and preserve these spaces in compliance with established standards.

Finally, the results highlight the importance of studies that include the participation of pedestrians in the analysis of walking conditions and the usability of the city. As a limitation of the study, it should be noted that the results reflect the perception of the interviewees; therefore, in another sample, analyses may be presented differently. We highlight the relevance of future work analyzing other neighborhoods in the city of Campina Grande, Paraíba, adopting this and other methodologies, seeking to understand that the city is to be lived in, not just transited through.

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7. Statistical analysis	✓	✓	
8. Analysis and interpretation of data	✓	✓	v
9. Critical revision of the manuscript		✓	
10. Manuscript writing	✓	v	✓
11. Other (please specify)			

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