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Same paths, different experiences: Discussion of possible paths for a walkability assessment tool, including intersectionality

Gabriel Lincoln Lopes Carvalho
Master Student, UFPB, Brasil.
gabriellincolnlopes@live.com

José Augusto Ribeiro da Silveira
Professor Doutor, UFPB, Brasil.
ct.laurbe@gmail.com

Emmanoel Marques da Silva
Master Student, UFPB, Brasil.
emmanuel_marquess7@hotmail.com

Estephannie Fernanda de Andrade
Master Student, UFPB, Brasil.
estephannie-fernanda@hotmail.com

Sheila Rodrigues de Albuquerque
Master Student, UFPB, Brasil.
Sheilaarq1@gmail.com

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ABSTRACT

Walkability is an essential concept for building more accessible and sustainable cities. It refers to the ease with which people can walk and move on foot in a given urban environment, taking into account aspects such as safety, accessibility, comfort, and attractiveness of public space. Intersectionality is emerging as a fundamental approach to the analysis of walkability, as it allows for the consideration of the multiple dimensions that influence the experience of walking in urban spaces. However, it is common to have indices and tools for the analysis of walkability that are limited to the evaluation of aspects of the shape of the built environment and urban morphology, thus ignoring essential social issues in the assessment of the possibilities and limitations of walking. Urban mobility and walkability cannot be approached in isolation from the social, cultural, and political issues that affect people's lives in urban spaces. Intersectionality helps us understand how social inequalities affect how different people access and experience urban spaces. This work aims to discuss the importance and necessity of using intersectionality as part of the parameters for evaluating the walkability of spaces, as well as to present a conceptual proposal for the construction of a methodological tool that adds intersectionality to pedestrian mobility analyzes. Through the literature review method, this research highlights the fundamentality of social aspects to understand urban mobility and walkability in contemporary cities.

KEYWORDS: Walkability. Intersectionality. Urban mobility.

1 INTRODUCTION

The walkability of urban spaces is a relevant issue for public health and people's quality of life, especially in densely populated urban areas. Walkability is related to the ability to walk safely, comfortably, and profitably to access public services and facilities such as schools, hospitals, parks, and others. The ability to walk safely and comfortably in urban areas can have a direct impact on the physical activity and mental health of the population. However, measuring walkability can be challenging as it involves multiple aspects that can vary according to gender, race, social class, age, and other perspectives. In this context, intersectionality emerges as a fundamental approach to the analysis of walkability, as it allows for the consideration of the multiple dimensions that influence the experience of walking in urban spaces.

Based on recent research in urban planning and social dynamics, intersectionality has emerged as an important approach to studying walkability and its relationship to equity and social justice. Intersectionality as a theoretical concept recognizes that people's experiences are shaped by multiple dimensions of oppression and privilege, including but not limited to gender, race, social class, and sexual orientation. Therefore, the measurement of walkability must take into account these interrelated dimensions of social identity and their relationship to accessibility and mobility in urban spaces.

Urban mobility and walkability are important issues for the quality of life in cities. However, these issues cannot be addressed in isolation from the social, cultural, and political issues that affect people's lives in urban spaces. When applied to the study of urban mobility and walkability, intersectionality helps us understand how social inequalities affect different people's access to and experiences of urban spaces. In this sense, intersectionality is fundamental to understanding urban mobility and walkability in contemporary cities.

Walkability is an important issue for promoting sustainable mobility and urban livability. However, walkability analyses often fail to consider intersectionality, that is, the multiple dimensions of social inequalities that affect access to and use of public space on foot

by different groups of people. By considering intersectionality as well as morphological and built environment analyses, we can more fully assess walkability in cities and identify key barriers and opportunities for walking mobility.

This paper aims to discuss the importance and necessity of using intersectionality as part of the parameters for assessing the walkability of spaces and to present a conceptual proposal for the construction of a methodological tool that adds intersectionality to pedestrian mobility analyses, taking into account aspects such as gender, race, social class, age, and physical ability. Although important, this proposal still faces challenges in terms of operationalization and application in specific contexts.

It is necessary to take into account the specificities of the territories and populations involved, in addition to collecting a set of relevant data and indicators for the intersectional analysis of walkability. It is also necessary to ensure the participation and active listening of the communities involved in the process of analysis and formulation of public policies to promote intersectional walkability.

Therefore, this work is an invitation to researchers and public administrators to advance in the construction of more inclusive and equitable methodologies for promoting pedestrian mobility, recognizing the differences and social inequalities that permeate urban space. The construction of intersectional walkability is an important step toward building more equitable and democratic cities.

The methodology adopted for the preparation of this article included a bibliographic review, selecting articles, books, and reports that address the issue of walkability and intersectionality, as well as studies that propose models for measuring walkability. From the analysis of these materials, it was possible to discuss the relationship between walkability and intersectionality, and how incorporating this perspective can contribute to the development of more equitable and inclusive cities.

2 METHODOLOGICAL APPROACH

The present research adopts the method of bibliographic review, based on the survey of theoretical sources that deal with the subject in question in scientific articles, monographs, dissertations, books, annals, theses, and technical standards. The most recent available works dealing with the topic were selected, to build solid and up-to-date knowledge. As stated by Fink (2013, p. 3), "A literature review is a systematic process of searching, selecting, and critically analyzing the available literature on a particular topic or research question to generate new knowledge or solve practical problems".

The methodological stages of the work were divided into four main ones: the first stage consisted of theoretical research on websites, books, journals, theses, and other sources with the keywords "intersectionality", "walkability" and "urban mobility", using the seminal authors as well as more recent works. This was followed by a theoretical deepening to systematize the data obtained from the bibliographic review, which contributed to the third stage, which consisted in compiling and building conceptual paths for a walkability tool that includes intersectionality as a parameter. Finally, the fourth stage consists of the results and discussions, which expose and discuss the objectives achieved, as well as contextualized all the conceptual contributions.

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3 WALKABILITY AND INTERSECTIONALITY IN URBAN MOBILITY

Walkability is an essential concept for building more humane and sustainable cities. It refers to the ease with which people can walk and move on foot in a given urban environment, taking into account aspects such as safety, accessibility, comfort, and attractiveness of public space. Walkability, a term derived from the English neologism "walkability" that has recently been increasingly used by researchers in the field of transportation and urbanism, is a characteristic that refers to public spaces, streets, neighborhoods, and cities. This ability is directly related to how the built environment is structured to enable walking and is supported by a variety of factors that encourage and support this activity. Walkability is, therefore, the ability of the built environment to enable the act of walking, regardless of the motivation, by providing the necessary conditions for it (CAMBRA, 2017; SOUTHWORTH, 2005). Ghidini (2011, p. 22) complements the concept of walkability by arguing that it is "[...] a quality of place, the way that allows the pedestrian good accessibility to the different parts of the city [...]".

It is through walking that we can have a closer relationship with the life of the city, it is sharing experiences and contact with existing cultural expressions, participating in the process of the symbolic construction of the city through the use of the landscape, the reflective possibilities that the environment can evoke in the observer, and the time taken to contemplate the elements and compositions that go beyond the aspect of using such furniture or equipment, but also to engage in the playfulness that walking allows. (CARERI, 2002; SÁNCHEZ and CAMPILLO, 2013).

The valorization of walkability has become increasingly present in urban planning and public management debates, since walking is one of the healthiest and most accessible paths of getting around, contributing to the promotion of the health and quality of life of the population. In the contemporary urban scenario, the valorization of pedestrianism is increasingly explored, considering ways to recover or mitigate anthropic actions that follow paths contrary to sustainability. In addition, walkability can promote social interaction, economic vitality, and environmental preservation.

In this context, the role of the urban planner is fundamental, as he can identify the lack of attention to walkability and carry out research, criticism, and proposals for solutions to the difficulties encountered on the circulation routes. The aim is to improve the functionality of the city and to qualify the spaces so that they can be used effectively by society.

It can be noted that urban mobility is closely related to urban planning, which has to ensure that circulation is fluid and accessible to the entire population. However, with the accelerated growth of cities in an unregulated manner, the infrastructure and road system has created problems that have affected the quality of life of the population (AYUB, 2016). Therefore, it is essential to have adequate and efficient urban planning that takes into account the modal systems and the needs of the population to ensure quality urban mobility.

However, creating walkable cities is a challenge that requires consideration of several factors, including the spatial distribution of public and private facilities, pedestrian infrastructure, urban design, and traffic management. Therefore, public policies and urban planning projects must consider walkability as a central element to ensure more equitable, inclusive, and sustainable cities for all citizens.

Intersectionality is a theory that seeks to understand how multiple oppressions and inequalities intersect and reinforce each other, affecting people's lives in complex paths. In the context of urban mobility, this theory is fundamental to understanding how inequalities of gender, race, social class, and sexual orientation, among others, affect access to and use of urban space and transportation. The key features of intersectionality are the understanding that oppression cannot be studied in isolation, but rather as an interconnected and multifaceted phenomenon and the emphasis on the importance of people's subjective experiences in analyzing inequalities. This theory has been applied in several areas, including health, education, criminal justice, and urban mobility.

Intersectionality in urban mobility addresses issues such as unequal distribution of transport modes, unsafe commutes, sexual harassment on public transport, and spatial and social segregation, among others. These problems are experienced differently by people based on their gender identity, race, social class, sexual orientation, age, and other factors. It also affects urban mobility by showing how social inequalities and oppressions are reproduced and reinforced in urban space and the use of transportation. For example, LGBTQIAP+ people in marginalized and low-income areas may face greater difficulties in accessing and securing public transportation, while upper-class white men may find it easier to use their private cars and have freer mobility.

Another example of how intersectionality can be applied in the context of urban mobility is the study on women's access to public transport. Research shows that women generally have less access to public transport than men due to several factors, such as lack of safety at bus stops and stations, waiting time, availability, and accessibility of transport. In addition, women face specific forms of sexual violence and harassment on public transport, which can affect their mobility and physical and psychological well-being.

Walkability is affected by several factors, including the quality of sidewalks, street lighting, the presence of obstacles, and signage, among others. However, these factors affect people differently depending on their gender identity, age, race, social class, and other factors. For example, older women and people with disabilities have more difficulty walking than young and healthy men due to factors such as lack of accessibility and insecurity.

3.1 Approaches to assess walkability

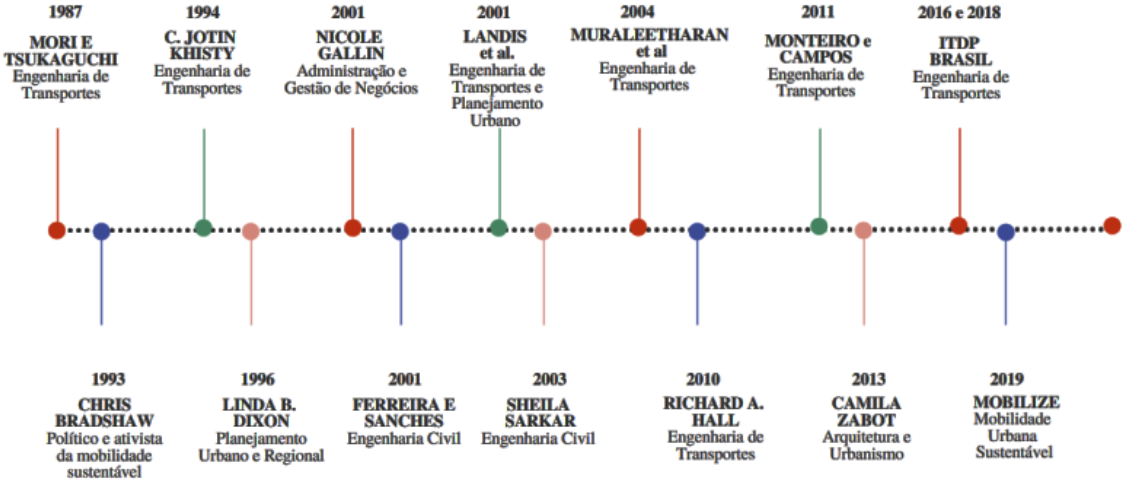
To measure the walkability of spaces, there are several existing methods and application tools, some improved over the years, others using initial conceptual bases and being improved, as well as some that mix parameters from different authors focusing on more complete analyses. They can be defined as two main existing approaches, the first being the assessment of walkability focused on the analysis of urban morphology, we can mention several authors who use techniques that measure indicators such as density, connectivity of the road network, the size of blocks, the presence of sidewalks, furniture, the hierarchy of streets and the quality of pedestrian infrastructure. These aspects are important because they have a direct impact on pedestrian safety, accessibility, and comfort.

The second main approach to the analysis of walkability is the user's perception of the urban environment and its walkability. This methodological approach recognizes that the pedestrian experience is influenced by subjective factors such as the perception of safety, the composition and beauty of the landscape, the presence of cultural activities, the quality of local

services and shops, and the social dynamics involved. One approach does not exclude the importance of the other and does not discredit the data evaluated. Frank et al. (2003) and Owen et al. (2014) discuss in their studies that the combination of these methods can lead to more effective urban interventions in terms of improving walkability.

Ozelim (2022), in her studies, carried out an analysis of the methodologies for the evaluation of pedestrian mobility, that is, the author delved into the main tools used for the analysis of walkability, describing the main points of each one, as well as developing a timeline of methodologies and the main authors who used techniques for the evaluation of walkability, as can be seen in Figure1. Carvalho (2022) also discusses numerous approaches to the evaluation of walkability, with different objectives and often to evaluate other processes, not necessarily safe, comfortable, and accessible spaces for the walking of their users. Their analysis highlighted research aimed at land valuation, others focused on guidelines for urban expansion (the case of Kubat et al., 2007), and many other works aimed at establishing categories and indices for assessing walkability based on characteristics of the form of the built environment.

Figure 1 - Chronology of most used authors and methodologies for walkability assessment



Source: Ozelim (2022, p. 49).

3.2 Approaches to Walkability Assessment with a Focus on the Built Environment

Morphological and built environment analyses are fundamental to the assessment of walkability in cities. Urban morphology refers to the physical form of the city, such as population density, land use, street connectivity, and the distribution of public facilities and services. The built environment includes the characteristics of public spaces, such as sidewalk width, the presence of street furniture, lighting quality, and accessibility.

Among the main parameters for assessing walkability that take into account the built environment, we can mention the width and quality of sidewalks, the presence of safe pedestrian crossings, adequate public lighting, the presence of street furniture (such as benches and trash cans), and the maintenance of public spaces (GONZÁLEZ et al., 2019). It is also important to assess the connectivity of streets, the presence of green spaces, and the proximity of public facilities and services, such as schools and hospitals.

To measure walkability in urban areas, several indices have been proposed and used in

different parts of the world. One of the most well-known is the PedShed Walkability Index, developed by Urban Design 4 Health (UD4H) in collaboration with the University of Louisville in the United States (OWEN et al., 2016). This index considers the distance people can walk in a given time, taking into account the presence of public facilities and street connectivity. Another widely used index is the Walk Score, developed by the company Walk Score, which calculates the walkability of a given address based on the proximity of public facilities and services such as restaurants, stores, and parks (Carr et al., 2010).

In Brazil, one index that has gained prominence is the Urban Walkability Index (ICU), developed by the Institute of Applied Economic Research (IPEA) in collaboration with the Ministry of Cities (IPEA, 2010). This index takes into account the presence of sidewalks and crosswalks, the quality of public spaces, and the connectivity of streets. Another index developed in Brazil, Icam 2.0, developed by the Institute for Transport and Development Policies (ITDP), is an assessment tool that seeks to measure the quality of walkability in urban areas. It uses a series of indicators, such as sidewalk quality, pedestrian safety, accessibility, comfort, and convenience, to assign a score to the streets and neighborhoods evaluated.

Table 1 lists the main categories, indicators, and parameters found that correlate with the indices and tools for the analysis of walkability through the evaluation of aspects of the built environment. The systematization of the characteristics evaluated in the researches used as a theoretical reference in this work resulted in the main points shown in Table 1:

Table 1- Table example

SPATIAL SYNTAX	SIDEWALK	MOBILITY	ATTRACTION	ROAD SAFETY	PUBLIC SAFETY	ENVIRONMENT
CONNECTIVITY		BLOCK SIZE	PHYSICALLY IMPERMEABLE FACADES	STREET TYPOLOGY	LIGHTING	SHADE AND SHELTER
ACCESSIBILITY	PAVEMENT	BUS STOP - DISTANCE	VISUALLY ACTIVE FACADES	CROSSINGS	CROSSINGS DAY-NIGHT PEDESTRIAN FLOW	ARBORIZATION
CHOICE	PERMANENT OBSTACLES		DAY-NIGHT PUBLIC USE		SENSE OF FEAR	GARBAGE COLLECTION AND CLEANING
INTELLIGIBILITY			MIXED USES			NOISE POLLUTION
Reference basis for indicators: Bradshaw (1993); Khisty (1994); Sarkar (1995); Dixon (1996); Gallin (2001); Ferreira e Sanches (2001); Keppe Junior (2007); Hall (2010); Mobilize (2013); Cema (2014); Gehl (2015); NBR 9050 (2015); ITDP (2016); Prado (2016); Nanya (2016); WRI Brasil (2017b).						

Source: Elaborated by the authors, 2023.

Not all the existing parameters are listed, but the main aspects that favor or limit the walking of its users, focusing on the morphology and how much the urban environment is or is not equipped, prepared, and maintained for pedestrian use.

3.3 Approaches to assessing walkability that focus on user perception

The assessment of walkability is not limited to the physical aspects of the built environment, but must also take into account the user's perception and experience of the environment (CARRUS et al., 2013). In this sense, several parameters and indicators can be used to assess the quality of walkability from the user's perspective. According to Carrus et al. (2013),

one of the most used indices in this type of evaluation is the Walkability Index, developed by the American organization Walk Score. This index takes into account the proximity of services and shops, ease of access to public transport, safety, and quality of the urban environment for pedestrians. It also takes into account users' perceptions of walkability through opinion surveys.

Another widely used indicator is the Pedestrian Environment Review System (PERS) developed by Transport for London. PERS assesses the quality of the urban environment for pedestrians based on a set of criteria, such as the width of sidewalks, the presence of obstacles, and the quality of street furniture (TRANSPORT FOR LONDON, 2014). It also takes into account the perception of users through interviews and opinion surveys.

In addition to these indices, some other tools and methodologies attempt to assess walkability from the user's perspective, such as the Urban Quality Index, which Giasante et al. (2015) discuss, is widely used and address different aspects that together allow us to infer the physical and psychological characteristics of the users of a given space. The Perceived Walkability Index, developed by researchers at Utrecht University in the Netherlands, differs from other walkability indices by taking into account the subjectivity of the user's perception of the built environment (KOKKINEN et al., 2018).

Cerin et al. (2006), evaluate the main choices of adolescents in the urban space when it comes to residential areas and areas for physical activity. While Malavasi et al. (2007) discuss the perception of walkability and physical activity in low-income elderly, methodologically and thematically similar to that addressed in the work of Ferreira and Sanches (2010), who add contributions of these evaluations to urban planning in Portugal.

Kim et al. (2016), in their research, discuss the factors that hinder the perception of walkability of neighborhoods of transit-oriented development, correlated with mediating aspects of safety related to crime and traffic. Autran (2015) studies the issue of pedestrians' perception of the environment in the municipality of Belém/PA, from the perspective of those who enjoy the space of one of the city's squares. Nanya et al. (2015) contribute with analyses of the relationship between travel behavior in urban areas and walkability attributes.

This type of methodological approach focuses mainly on users' perceptions of walkability, including their attitudes and behaviors toward the urban environment and the importance they attach to walkability in their daily lives. They examine the safety of the urban environment, which is influenced by the occurrence of crime, the presence of police, lighting, active facades, and the constant use of buildings in the urban environment. Together, these indicators and tools are important to assess walkability not only from the physical aspects of the built environment but also considering the perception and experience of users in the urban environment. This makes it possible to identify the main barriers and challenges that pedestrians face in their daily lives and to develop more effective public policies to improve the quality of walkability in cities.

4 INTERSECTIONALITY AS A PARAMETER OF WALKABILITY: FINDINGS AND DISCUSSIONS

Intersectionality is a concept that refers to how different social identities, such as gender, race, social class, and sexual orientation, intersect and interact, producing unique experiences of oppression and privilege. Intersectionality has been increasingly recognized as an important approach for public policy analysis and formulation, including urban planning.

When considering walkability, intersectionality is key to ensuring that policies

and interventions are equally accessible and beneficial to all members of society. For example, women may face different barriers to walking in an urban environment than men, such as fear of harassment and sexual violence. In addition, people from low-income and ethnic minority groups may have limited access to walkable and safe public spaces due to issues of social and economic inequality.

When it comes to urban walkability, intersectionality is particularly relevant, as socioeconomic inequalities and inequalities in access to urban services and facilities affect marginalized groups such as women, older people, people with disabilities, and ethnic minorities differently (MURRAY et al., 2017). Walkability research and intervention plans need to consider the complex interactions between social, economic, cultural, and environmental factors that affect different groups in different paths (RIVERA et al., 2019). This includes an analysis of the physical and social barriers that limit access to and use of urban space by marginalized groups.

Incorporating intersectionality into measures of walkability can ensure that interventions and policies are sensitive to the needs and experiences of specific social groups. Incorporating intersectionality can be done by collecting data disaggregated by gender, race, social class, and other relevant social identities. This data can be used to identify disparities in the accessibility and safety of walkable public spaces and to assess the impact of interventions on equity and social justice.

Incorporating intersectionality into walkability metrics can also involve consulting with marginalized groups and incorporating their perspectives and needs into policy formulation and interventions. This can be done through participatory and collaborative urban planning processes that involve a wide range of stakeholders, including marginalized groups.

4.1 Possible paths toward a methodological tool

This research discusses the relevance and encourages the construction of a method that can assess walkability from intersectionality, which can provide important information for urban planning and the development of more inclusive and equitable public policies. The proposed methodological tool to assess walkability including intersectionality as a parameter would be built from a mixed approach, combining subjective and objective aspects. It could use questionnaires to collect data on users' perceptions of walkability, as well as spreadsheets and other data collection tools to assess aspects of the built environment that influence walkability.

In addition, it would be possible to use statistical methods to compile and analyze the data collected, seeking to identify relationships and interactions between different variables and social groups. This would allow for a more accurate and detailed assessment of walkability in different contexts, taking into account the diversity and specificities of the social groups involved. Thus, the methodological tool that this research proposes to develop would be a flexible and adaptable instrument, capable of taking into account the complexity and diversity of urban contexts and the social groups involved. It would make it possible to obtain a more accurate and complete assessment of walkability, contributing to the development of more effective and inclusive public policies in the field of urban mobility.

In their study, Montesanti et al. (2018) used a combination of factor analysis and the Delphi method to evaluate the walkability of urban areas. They used a questionnaire based on the Delphi method to identify the main factors affecting walkability and then used factor

analysis to reduce these factors to a smaller number of components. From these components, they developed a walkability index for the studied areas.

One possible statistical approach that could be used in this tool is factor analysis. Factor analysis is a technique that attempts to identify underlying patterns and structures in a set of correlated variables, reducing the complexity of the data by creating latent factors. In the application of the walkability assessment tool that uses intersectionality as a conditioning aspect, factor analysis could be used to identify the most important factors that influence users' perceptions of walkability in a given context.

For example, given the parameters discussed above, such as safety, accessibility, and environmental quality, a survey could be conducted using questionnaires to assess users' perceptions of these aspects, and then factor analysis could be applied to identify which of these aspects are most strongly correlated and form a latent factor influencing the overall perception of walkability. Thus, the tool could use questionnaires to assess users' perceptions and spreadsheets to compile the data and apply factor analysis. Based on the results of the analysis, it would be possible to identify which aspects should be prioritized to improve walkability in a given context, allowing for more informed decision-making based on objective and subjective data.

Currently, the iCam 2.0 tool developed by the ITDP, like several other methods for evaluating walkability, uses a spreadsheet with predefined parameters and weights; this methodology also includes an application manual with important instructions and how the researcher who will apply it in the field should be. In addition to the application instructions, the tool adds concepts and paths for filling in the spreadsheet so that there is no discrepancy between the objective of this method and the results of the investigations (ITDP, 2022).

In addition to regression analysis, another statistical tool that could be applied in this case is cluster analysis, which, according to Taylor and Bogdan (2017), is a data clustering technique used to identify patterns or groups within a data set. This technique could be used to group respondents based on their responses to the questionnaires, creating profiles or groups of users with similar perceptions and needs regarding walkability.

Cluster analysis can be performed using several methods, including k-means and hierarchical clustering. In k-means, the data are divided into a predetermined number of clusters, and each observation is assigned to the closest cluster. In hierarchical clustering, the data are grouped into clusters hierarchically, starting with each observation in its cluster and then combining the clusters based on their similarity. After applying cluster analysis, the results can be used to identify priority groups for walkability interventions and guide the development of more effective public policies that target the specific needs of each group (TAYLOR and BOGDAN, 2017; MONTESANTI et al., 2018).

Intersectionality is a concept that refers to the interaction of multiple factors of oppression and discrimination, such as gender, race, ethnicity, sexual orientation, and social class. It seeks to understand how these factors combine and affect people's experiences in different social and spatial contexts. To build a methodological tool that takes intersectionality into account when assessing walkability, it is important to highlight some important steps to consider, as shown in Figure 2.

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Figure 2 - Step-by-step diagram for applying a walkability assessment tool that incorporates intersectionality.

INTERSECCIONALIDADE + CAMINHABILIDADE - INTERSECTIONALITY + WALKABILITY

1- FATORES DE INSTERSECCIONALIDADE - INTERSECTIONALITY FACTORS
2- PARÂMETROS DE AVALIAÇÃO - EVALUATION PARAMETERS
3- AVALIAÇÃO EM CAMPO - FIELD ASSESSMENT
4- FERRAMENTA ESTATÍSTICA - STATISTICAL TOOL
5- COMPILAÇÃO E SISTEMATIZAÇÃO DOS DADOS - DATA COLLECTION AND SYSTEMATIZATION

Source: Elaborated by the authors, 2023.

The first step is to define which intersectionality factors will be considered in the assessment. This may include, for example, the presence of physical barriers on sidewalks, lack of safety in high-crime areas, areas with higher accident rates, lack of accessibility for people with disabilities, the presence of language and cultural barriers, and other factors.

The second step is to choose which parameters to use to assess each of these factors. For example, to assess the presence of physical barriers on sidewalks, one can consider the width and quality of the sidewalk, the presence of potholes and obstacles, and the presence of ramps and other accessibility devices, among other things. The issue of safety can be assessed by the amount of criminal evidence in the area, or by the desolation of the facades, among other characteristics that must be previously defined and assigned weights.

The third step is to determine how the field measurements and assessments will be conducted. The assessments must be carried out by a multidisciplinary team that includes experts in urban planning, architecture, sociology, anthropology, public health, and other relevant fields. This team should establish a clear and precise protocol for collecting data in the field, defining the measurement instruments, the parameters to be assessed, and the procedures for analyzing the data collected. This protocol must take into account the specificities of the area to be studied and the particularities of the populations involved. When collecting data in the field, the team must be careful and systematic to avoid bias and ensure the quality of the information collected. Tools such as questionnaires, interviews, systematic observations, and precise measurements can be used.

The fourth step is to apply a defined statistical analysis method, which may be one of those mentioned above or another that is similar in terms of the technique used. The

fifth step is to analyze the collected data and identify the main barriers and challenges faced by people in different contexts of intersectionality. This analysis must take into account not only the physical aspects of the built environment but also users' experiences and perceptions of walkability. At the end of the tool application, it is essential to use the assessment results to develop public policies and urban interventions that promote inclusivity and equity in walkability. This may include, for example, building ramps and accessibility equipment, improving the quality of sidewalks, implementing public safety measures in high-crime areas, and other measures.

5 NOT THE END OF THE ROAD: CONCLUDING CONSIDERATIONS

In light of the above, it is possible to conclude that walkability is a relevant issue for urban and mobility policies, with an emphasis on intersectionality as a fundamental dimension to be included in the analyses. From the literature review, it was possible to understand the importance of assessing walkability as well as social factors as a way of guaranteeing the right to the city and promoting more inclusive and sustainable urban mobility.

It was observed that to build a methodological tool that incorporates intersectionality in walkability analysis, it is necessary to consider multidisciplinarity as a key aspect. Specialists in different fields, such as urbanism, architecture, sociology, anthropology, and public health, should form the team responsible for field assessments to take into account the different dimensions involved.

In addition, the bibliographic research carried out allowed the identification of several studies and initiatives that have already explored aspects of intersectionality and also walkability, signaling the growing importance of this issue. It is also possible to verify that the search for more sustainable and inclusive urban mobility needs to be increasingly strengthened, with actions ranging from the promotion of active transport to the development of more integrated public policies.

Therefore, the incorporation of intersectionality in the analysis of walkability is a relevant contribution to the promotion of more comprehensive and inclusive urban mobility, and it is essential to continue research and initiatives in this direction. It is hoped that this work can stimulate debate and the development of new methodological approaches that address the complexity of the issue and contribute to the construction of sustainable, accessible, and safe cities.

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