Dimensions of Inclusive Urban Mobility: A Scoping Review

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ABSTRACT

Inclusive urban mobility has emerged as a critical concern in the context of growing urban inequalities and the need for sustainable, accessible, and just transportation systems. This review explores a diverse body of academic literature to examine how inclusion is conceptualized, addressed, and applied within urban mobility research. Drawing on 114 peer-reviewed manuscripts, the paper identifies definitions, the theoretical context of mobility justice and right to the city, and conceptual frameworks that shape the discourse, including accessibility, motility and the capabilities approach, among others. The review highlights the multidimensional nature of inclusive mobility spanning individual, social, physical and administrative domains, situated within varying contextual settings and underscores the role of diverse actors, from policymakers to marginalized communities. It also reveals significant gaps in barriers to policy implementation, participatory planning and long-term evaluations of inclusive practices. By mapping out current approaches and recurring challenges, this paper contributes to a more coherent understanding of inclusive urban mobility and points toward future research and practice that centre equity, participation, and inclusive development.

KEYWORDS

1. INTRODUCTION

Mobility is vital to human activity, influencing everything from individual functions to communal and global economies (Hook, 2025). In an urban context, mobility is essential for accessing services, securing employment, and engaging with the community. Furthermore, beyond essential travel, mobility significantly enhances both individual and societal well-being. Discretionary trips, undertaken for recreation or socialization, offer multiple benefits, including improved health and social connections, which consequently instil a sense of pleasure and belonging (Elshater, 2020; Hook, 2025). From a broader perspective, efficient mobility is a crucial pillar for the success of other urban sectors, and well-planned transport infrastructure creates welcoming environments for businesses and city dwellers.

Urban mobility faces many challenges, from climate issues to rising demand that strains infrastructure (Elshater et al., 2022). As cities grow, the need for accessible, efficient transport for all becomes essential. Although researchers have focused on this topic, mobility inequality continues to be a challenge. Mobility inequality refers to the disadvantages that some individuals and groups face due to their lack of equal access to transportation resources (Hidayati et al., 2021). The concept of mobility inequality, often used interchangeably with mobility injustice or transport injustice among others, stems from the acknowledgment that freedom of movement and access to essential services are fundamental human rights (Amgad et al., 2024). Research indicates that mobility systems are designed to accommodate a homogeneous population, typically comprising young, able-bodied, middle-class males from

the city's ethnic majority (Sheller, 2018). This inevitably challenges and exacerbates the exclusion of any individual who does not fit this archetype.

Mobility inequality is a universal issue, and most of us will experience some form of it in daily travel, with a varying degree (Hidayati et al., 2021). Experiences vary according to both intrinsic factors related to individual characteristics and external factors stemming from the spatial environment and sociocultural context in which the individual exists. This issue of marginalization transcends discipline and has been studied across the fields of planning, transport, sociology and geography. However, the problem remains with conventional approaches to planning and design, which often ignore the diversity of the end users, and for reasons of rigid structures, defaults to designing for a unified middle. With the assumption that all individuals have similar mobility levels, planning usually neglects the ageing population, people with disabilities, children, and women (Hidayati et al., 2021).

In light of this issue and similar accessibility challenges in urban environments, inclusive design has become a global imperative. It is estimated that 55% of the world's population currently resides in urban areas, with an expected increase to 68% by 2050 (United Nations, 2015). Similarly, around half of the world's population of people with disabilities and seniors now reside in cities and by 2050, their number is estimated to be around 2 billion people (UCLG, 2019). This demographic shift places pressure on systems and institutions to act responsibly and proactively in accommodating the growing needs of our society.

Reflecting this urgency, the UN uses the term 'inclusive' 40 times in its document 'Transforming our world: the 2030 Agenda for Sustainable Development', including the titles of 8 out of the 17 Sustainable Development Goals (SDGs) (Bristol, 2023). Furthermore, the UN frames the concept of inclusion as a human right in one of their universal values titled 'leave no one behind'; a phrase that is quoted repeatedly in inclusive design research across the fields. This statement focuses on three notions: equality, non-discrimination and equity (United Nations System Chief Executives Board for Coordination, 2017). It is, within this context, argued that there is a strong connection between inclusion, the SDGs, and human rights, and that the realisation of empowerment and inclusion cannot be achieved without addressing the root causes that contribute to exclusion and lack of access in the first place (Bristol, 2023). It is made clear that there is a moral responsibility on the part of built environment researchers and practitioners to work towards creating cities and physical environments that are just and accessible to all.

Echoing this, The International Union of Architects argues that sustainability cannot be achieved without inclusion. They emphasise that "No individual deserves to experience space in a manner that is less safe, less comfortable or less accessible as a result of their identity or challenges." (Mostafa et al., 2023). Inclusive design aims to investigate the questions of exclusion, including who is facing exclusion, why they are being excluded, and how this exclusion can be addressed. A leading set of guidelines for inclusive design was created by the UK Commission for Architecture and the Built Environment (CABE, 2006), and it highlights the following five principles:

- Inclusive design places people at the heart of the design process.
- Acknowledges diversity and difference.
- Offers choice where a single design solution cannot accommodate all users.
- Provides for flexibility in use.
- Provides buildings and environments that are convenient and enjoyable for everyone.

These principles stress understanding lived experiences, acknowledging diverse abilities, rejecting "one size fits all," creating adaptable spaces, and ensuring not just access but also comfort, clarity, and quality. CABE stresses that inclusive design is good design and that

the process of achieving it involves multiple actors: architects, planners, developers, service providers, and the public sector. It is a collective responsibility aimed at removing barriers from the built environment and improving access for everyone.

This review examines the concept of inclusive urban mobility within contemporary research. While the term itself suggests a merging of inclusive design and urban mobility, a closer examination of the linguistic architecture reveals a more nuanced and multifaceted understanding. It presents a wide array of methodologies rooted in a deep understanding of the diverse nature of humans, aiming to create a built environment that is accessible, inclusive and welcoming to all.

2. METHODS AND MATERIALS

2.1 Search process

The researched articles were acquired from the Scopus database by searching for the keywords "urban mobility" and "inclusive". The search was refined by excluding studies outside the research areas of "social sciences," "environmental science," and "arts and humanities". To identify the state of the art, the search included only articles from 2015 to 2025. This yielded 366 research articles, which were screened for relevance to inclusive urban mobility.

An initial screening of titles, abstracts, and conclusions excluded articles that were clearly out of scope, such as those focused on migration, housing, cultural heritage, urban governance, or social issues lacking a clear link to urban mobility or inclusivity. Multiple passes refined the selection, focusing on articles addressing inclusion in urban mobility, either broadly or for specific demographics. During these passes, articles were evaluated for thematic relevance. Studies on sustainable mobility without a particular focus on inclusivity, or on smart cities where inclusive mobility was not central, were excluded. Likewise, articles exploring inclusive design in public spaces (e.g., parks) that did not address mobility infrastructure or travel practices were also excluded. While such studies may touch upon inclusive urban mobility, only those with a direct connection to the topic were included in this analysis. After a thorough review of the full text, a few studies were excluded from this review to maintain a focused analysis. Articles were omitted if they were too broad or vague, discussing mobility or accessibility without addressing diverse users or structural inclusion.

Other manuscripts were excluded because they were too context-specific and not easily transferable to broader urban environments (Abusaada et al., 2025). Additionally, some works were too niche, focusing on themes like urban air mobility that, despite holding futuristic promise, its current stage of development, high projected costs, and limited accessibility, position it as an exclusive service rather than a genuinely inclusive urban mobility solution for the foreseeable future. The final selection comprised 114 articles (appendix table1), contributing to: inclusion and access in urban mobility; whether related to public transport infrastructure, mobility modes, or the design and planning of the built environment; inclusion within mobility policies in general, and sustainable urban mobility plans in particular; inclusion in participatory methods and technological innovation; and studies offering insights or tools to measure or enhance the inclusion of diverse users in urban mobility planning and practice (Figure 1).
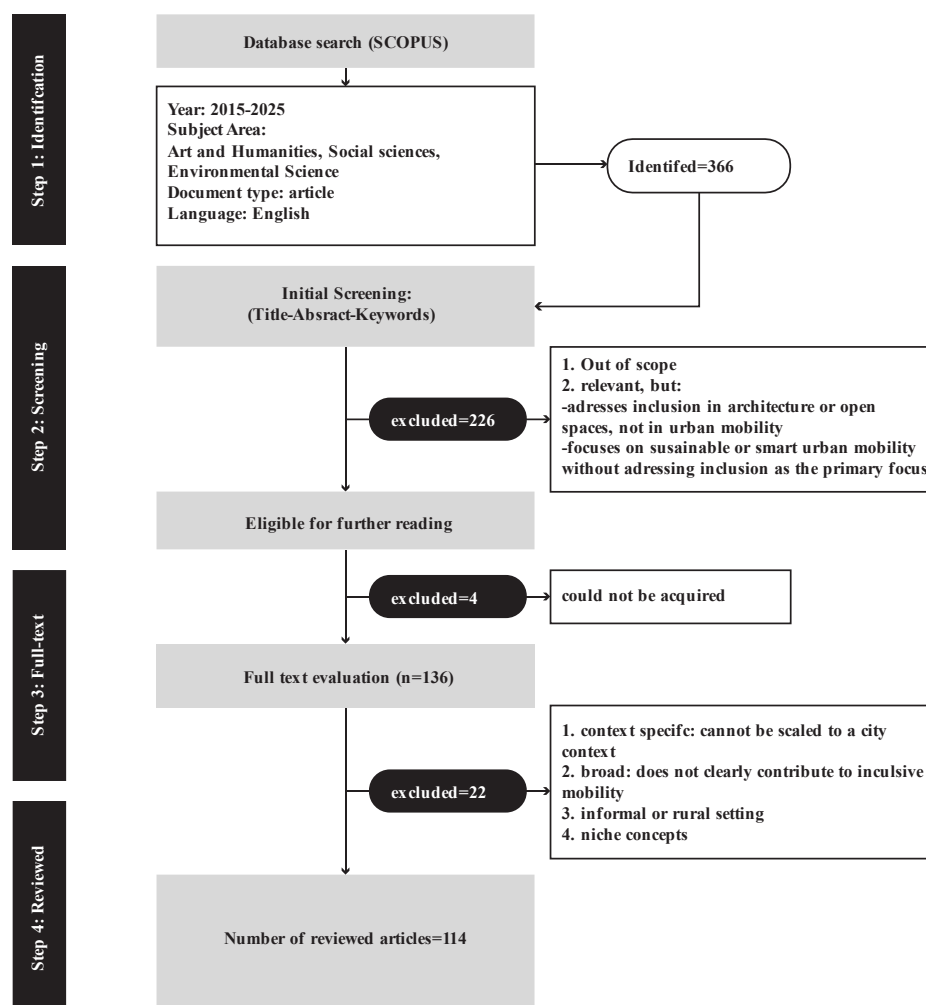
Figure (1): Literature screening process, Source: The authors

2.2 Scope and Limitations

This literature review seeks to comprehensively understand the term inclusive urban mobility and the growing discourse surrounding this subject. It aims to identify definitions, key principles, theoretical frameworks, and best practices that outline this theme, gaining insight from a range of scholarly perspectives. Additionally, it intends to propose future research directions to fill existing gaps, with a particular focus on addressing the unique challenges and opportunities presented in developing contexts. Finally, as with most academic reviews, this study is subject to several limitations. First, the keywords selected might exclude research that addresses similar issues using different terminology. Second, the acquired literature includes only research articles from a single database (Scopus) excluding other forms of literary work and insight from studies that may be present in different databases. Third, this research only includes articles in the English language, which, while facilitating comparability and synthesis, may have excluded valuable research available in other languages. Lastly, the restriction to the last 10 years might exclude foundational research that, while older, is still very relevant for contextualising the topic.

3. RESULTS

Upon initial screening, it was observed that there was a balance between studies from developing and developed contexts. Most articles were published in the last five years, peaking in 2025, indicating growing scholarly interest. To identify key themes and trends, a keyword analysis was performed in VOSviewer. The bibliographic database was imported to generate a visual map using the full counting method. A total of 44 keywords (Figure 2), excluding disconnected and non-thematic words (e.g., country names), met the minimum threshold of two occurrences, revealing clusters of dominant research areas. The visualized cluster uses size to indicate the frequency of keyword use and color to represent thematic connection.

The analysis highlights that the most prominent clusters centre around the key themes of accessibility, mobility, inclusion, and disability, which form the conceptual core of the field. These dominant terms are interconnected and serve as bridges linking various subtopics. The accessibility cluster (blue) is the most central, indicating its foundational role in the discourse. It is linked with themes such as active mobility, inclusive streets, and people with disabilities, underscoring the general direction of access to urban space. The mobility and urban mobility cluster (cyan and green) is associated with terms like public transport, bike sharing, gender, and resilience, reflecting a concern for inclusive transport systems and environmental sustainability. The inclusion-disability cluster (yellow) is closely linked with wellbeing, children, and social inclusion, highlighting the human-centered dimension of the field, particularly in relation to vulnerable groups. Overall, the map reveals a multidimensional approach to inclusive urban mobility, with accessibility as the thematic anchor uniting infrastructural, social, and conceptual perspectives.
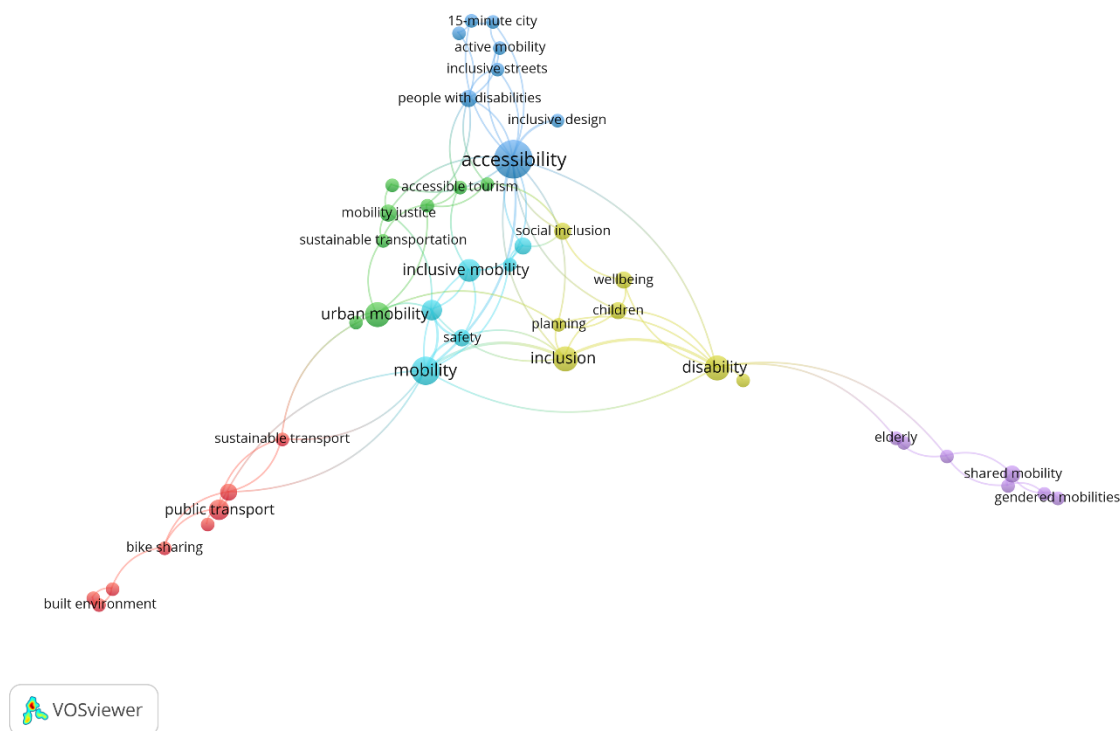

Figure (2): Keyword co-occurrence cluster analysis
Source: The authors

4. DISCUSSION

4.1 What Is Inclusive Urban Mobility?

A clear understanding of the discourse surrounding inclusive urban mobility is essential for establishing a shared conceptual language among researchers and practitioners. The review

of selected articles indicates a plurality of theoretical orientations and an absence of a unified analytical framework. Rather than a limitation, this diversity reflects the richness of the field and enables novel contributions and methodological innovation. Nevertheless, grounding the term in a set of foundational concepts can enhance conceptual clarity and provide a more coherent basis for future research and policy development. The objective of this article is to explore the themes, frameworks, and analytical tools identified in the literature, with the aim of contributing to a more precise understanding of inclusive urban mobility and its associated discourse. This section proceeds in three parts: first, it examines how the term is defined or interpreted across studies and the theoretical context in which it is discussed; second, it identifies the frequently employed conceptual frameworks; and third, it identifies key dimensions and factors that appear across multiple studies and shape the dynamics of inclusive mobility.

4.2 Definitions And Theoretical Context

Within the reviewed literature, there is no single widely cited definition of the term 'inclusive urban mobility' or 'inclusive mobility'. Despite the fact that inclusion as an end goal is clearly framed in the discourse, the term itself lacks unanimous identification and structure. One study discusses inclusive urban mobility along with the human right to access the city, noting that enhancing mobility can alleviate exclusion, foster a strong sense of community, improve well-being and enable access to opportunities and services (Erçetin, 2024). Other studies describe it as "a concept that emphasizes equitable access to mobility systems and urban opportunities for all, thereby addressing social disparities and fostering a more inclusive urban fabric". Additionally, they underscore the importance of inclusive urban mobility for all humans, emphasizing inherent dignity and equal rights for everyone. Furthermore, inclusive mobility can be interpreted either as simply addressing social exclusion by improving transport systems, or better, as enhancing community interaction and cohesion by promoting shared travel experiences and public modes of urban mobility (Jeekel, 2018). Additionally, (Gautam et al., 2025) cited a clear definition from a brief by Humanity & Inclusion (2018), that defined inclusive and safe mobility as 'the ability of a person to safely and reliably access their preferred destination by navigating an environment that considers [their] needs and preferences' highlighting how this is essential to fulfill the right of each person of living an independent life within the community.

All the reviewed articles aimed to achieve inclusion, narrowing the inequality gap and improving access to the urban environment through and within different means of mobility. The studies commonly respond to the global calls by the United Nations for sustainable urban development that leaves no one behind as an essential response to the rapidly growing urbanization, echoing the fact that addressing the challenges in urban mobility is crucial for achieving the goal of equitable, efficient, safe and sustainable transportation, and for the realization of inclusive cities and communities. However, the term was used explicitly in only a few articles and usually, in conjunction with other themes, i.e. green and inclusive mobility (Nóżka, 2025), inclusive and equitable mobility (Paiva et al., 2022), and inclusive and universal mobility (Silva et al., 2023). The latter, for example, highlights that by introducing the ideologies of universality and accessibility into mobility, the needs of people with temporary or permanent difficulties can be considered and thus improving transportation services for everyone (Silva et al., 2023). This indicates that the concept usually intersects with other urban planning approaches and is discussed within broader academic contexts.

As mentioned earlier, the ethical context for understanding inclusion in mobility stems from the argument that freedom of movement and access to essential functions are fundamental human rights, as stated in the Universal Declaration of Human Rights. The theoretical frameworks link mobility access to ideologies of social and spatial justice to capture human

mobilities complexity. The key theories which seem to directly delineate the discourse are 'right to the city' and 'mobility justice' in a general sense, and 'the social model of disability' in more targeted studies.

Right to the city is a concept introduced by Henri Lefebvre in his 1968 publication, Le Droit à la ville that has been revitalized as a call to reclaim urban spaces as co-created environments that prioritize life over the commodification and spatial inequalities driven by capitalism over the past two centuries (Barrett et al., 2020). It suggests urban theory should address fundamental human needs like creativity, social connection, and sensory experiences, often overlooked in urban planning. The concept critiques contemporary urban life, where the authentic, lived experience of the city is diminishing, leading to a museum-like state of aesthetic consumption (Barrett et al., 2020).

Mobility justice, conceptualized by Mimi Sheller, examines the unequal distribution of mobilities and (im)mobilities (Sheller, 2018). It critiques traditional stationary theories of justice and shows how freedom of movement is dynamic and shaped by race, class, gender, sexuality, ability, and colonial histories. The framework examines how power dynamics and historical injustices shape movement, establishing a new mobilities paradigm that analyzes how mobilities inform identities, social relations, politics and economy. It calls for new methodologies capable of capturing and analyzing these dynamic processes, from the individual scale to community at large.

Finally, the social model of disability, developed by Mike Oliver (1983), criticizes the medical model approach by shifting disability understanding from individual impairment to societal and environmental barriers (Jackson, 2018). This shifts responsibility to society's role in addressing barriers that create disability (Jackson, 2018).

In the reviewed literature these frameworks are usually used in conjunction with each other to lay the theoretical basis of the studies integrating them with modern urban concepts. For example, Soliz (2021) explored the essential role of grassroots efforts and citizen activism for envisioning and implementing just transportation systems that challenge top-down, car-centric approaches, what they called "insurgent mobilities." Through the lens of mobility and transportation justice, they highlight the crucial role of social movements in addressing challenges related to active transportation, such as inadequate infrastructure and safety concerns, thus, contributing to sustainable cities. The author argues that true sustainable transportation extends beyond mere technical solutions, emphasizing the need to consider social power, historical context, and participatory governance to create truly inclusive and equitable urban environments, aligning with the ideology of mobility justice. Moreover, (Nyamai & Schramm, 2023) examined accessibility, mobility, and spatial justice in Nairobi, Kenya, through three interconnected dimensions: spatial, referring to how the city's layout affects access to essential services, modal, pertaining to the availability and quality of transport options, and individual, highlighting how personal characteristics influence mobility experiences. They argue that the city's urban planning, which prioritizes motorized transport and a centralized urban core, leads to significant injustices, particularly for vulnerable populations, advocating for policy shifts toward people-centered mobility. In another study, (Nóżka, 2025) explores how public spaces, particularly pedestrian routes, reproduce varying experiences of ability and disability through "kinaesthetic practices" which refers to the learned, social ways people move their bodies. The author investigates the accessibility of walking examining the intentional and unintentional bodily movements of both walkers and wheelchair users in the context of a Polish city. Their research reveals how incompatible, discontinuous, or unpredictable environments hinder free and independent movement, creating "spaces of disability," while comfortable, connected, and predictable routes foster "spaces of ability" that support diverse motor capabilities. The article employed a nuanced understanding of mobility justice, emphasizing

that truly inclusive urban design requires considering the lived experiences and diverse needs of all users to ensure equitable access and participation in public life. Furthermore, Erçetin (2024) delves into the critical concept of urban accessibility from a rights-based approach, specifically focusing on the lived experience of persons with reduced mobility. The core argument builds on the right to the city highlighting that accessibility transcends mere physical access, but rather encompasses interwoven spatial, societal, and administrative aspects that collectively shape individuals' vital right to access. To conclude, the reviewed literature is mostly built upon these theoretical frameworks aiming to reiterate the connection between inclusive urban mobility and the fundamental established right of movement and access.

4.3 Deductive Argument: Conceptual Frameworks

The conceptual frameworks explored in this section capture the 'what' and 'how' in the research, in contrast to the 'why' established by theoretical frameworks. In other terms, these frameworks are used in the literature to answer research questions and guide the research methodology. These concepts include, but are not limited to, the capabilities approach, motility, and the most prevalent, accessibility and its complementary measurements. Accessibility is the most prevalent concept employed by the studies which reinforces the idea that mobility and accessibility are mutually interdependent. Broadly, accessibility, is a concept that is interpreted differently among different domains and is explored through various approaches (Persson et al., 2015). The article by Persson et al. gives valuable insight into the discourse surrounding accessibility and proposes a holistic definition to the term as; ''the extent to which products, systems, services, environments and facilities are able to be used by a population with the widest range of characteristics and capabilities (e.g. physical, cognitive, financial, social and cultural, etc.), to achieve a specified goal in a specified context.'' Within the context of spatial justice, accessibility is employed as a spatial concept as it refers to the ability and ease of traveling to destinations (Bartzokas-Tsiompras & Photis, 2019). Services, places and opportunities that an individual can reach and achieve all depend on accessibility and mobility and the way physical space is organized. Mobility in this light can be defined as the inevitable action that enables accessibility (Nyamai & Schramm, 2023). Furthermore, within the context of transport planning and services, it can be defined as access to public transport systems, or as access to destinations reached by public transport systems (Saif et al., 2018). So in addition to possessing a spatial nature, accessibility also depends on a myriad of factors that encompass individual, temporal, socio-cultural, and infrastructural aspects. For example, Olsson et al. (2021) explored 'perceived accessibility' which is a tailored concept that focuses on the individual aspect pertaining to the individual's evaluation of his/her accessibility (Geurs & Ritsema van Eck, 2001). It shifts the focus from just the environmental conditions and infrastructure, to include personal characteristics and preferences that shape the overall experience of accessibility.

The capabilities approach and motility are other conceptual frameworks exploring individual characteristics alongside mobility. The capabilities approach, developed by Amartya Sen, focuses on individuals' ability to achieve their desired life (Sen, 1989). Gasperoni et al. (2024) use this approach in infrastructure planning workshops for inclusive participation, while Xu et al. (2024) applied it to understand mobility needs of pedestrian groups in transit-oriented development. Martinez et al. (2024) used it to study disadvantaged groups' requirements for mobility hubs.

Similarly, motility describes entities' capacity to be mobile within specific contexts through three elements: access, competence, and appropriation (Kaufmann et al., 2004). Access refers to available mobility options based on contextual constraints. Competence encompasses skills enabling mobility, including physical ability and knowledge of rules. Appropriation describes how people select mobility options based on their needs and plans. Motility can be

considered as a form of capital that is related to, but distinct from, other forms of capital like economic, cultural, and social capital. It represents a new perspective on inequality, as different actors have varying degrees of access, competence, and appropriation. Masse et al. (2025) employ this concept to examine how individuals navigate urban spaces and access opportunities for inclusion, particularly when they lack traditional resources such as economic, social, or cultural capital. While Enderle (2025) combines it with intersectionality theory to study cycling patterns of displaced women in Germany.

Moreover, some studies explored inclusive mobility from the perspective of modern urban planning concepts, such as 15-minute city and smart cities. One study explores behavioral differences and needs of blind vs sighted pedestrians (Oliveira et al., 2025) emphasizing the critical need for inclusive infrastructure and targeted safety measures to address the unique challenges faced by blind pedestrians, within the context of 15-minute cities where quiet electric vehicles pose additional risks. Willberg et al. (2023) question the inclusion of the 15-minute city concept highlighting that walking distance to services is usually considered from the perspective of the average person. They explore the joint impact of age and temporal (daily and seasonal) variation in walking accessibility. Chandler (2023) highlights tensions between technological innovation and the pursuit of inclusive development within smart city initiatives. Paiva et al. (2022) apply the concept of smart mobility and proposes an image recognition tool to enhance inclusive mobility of visually impaired people in urban environments. Other authors introduce a framework, outdoor positioning for visually impaired people using landmarks, which utilizes a smartphone camera to capture surrounding images (Megahed et al., 2024, 2025).

Additionally, inclusive mobility was addressed from the perspective of public transport planning concepts, such as transport equity, transport related social exclusion also known as transport poverty, transport disadvantage, and transport disability. Transportation equity examines the distribution of transportation benefits and burdens across population groups (Farber et al., 2014). Transport-related social exclusion and transport poverty refer to "the inequitable distribution of accessibility, resulting in certain groups lacking access to social opportunities." Transport disadvantage refers to the limitations individuals face in accessing transportation services, which restrict their mobility and ability to engage in daily activities (Pyrialakou et al., 2016), while transport disability refers to the individual's loss of the ability to create specific needs for transportation (Gu, 2024). The studies employ these concepts to discuss the accessibility and availability of public transport for different disadvantaged groups. For example, Guzman and Oviedo (2018) examine the effectiveness of "pro-poor" public transport subsidies in Bogotá, Colombia, focusing on their impact on accessibility, affordability, and equity. (Gu, 2024) studies the correlation between socio-economic qualities (i.e. sex, age, education level, income and family size) and transportation disability. Mayaud (2025) explores the role of micro-transit in inducing trips that would not have occurred otherwise hence, alleviating transport inequity. These are a few examples among others that discuss the role of transport in addressing inclusion for different groups including women, people with disabilities, the elderly and low-income communities.

The previous concepts offer significant insights into inclusive urban mobility from individual, urban planning, and transport planning perspectives, advancing the conceptual understanding of how diverse factors influence its dynamics. Additionally, the 'Staging Mobilities' framework, despite being used in one study (Vargas et al., 2025), is particularly noteworthy for its comprehensive overview of mobility, by bridging sociological analyses with urban design, civil engineering, and architecture (Jensen, 2013). Jensen's framework examines the design and construction of infrastructures and networks, and their relation to the social and cultural spheres. The framework posits that mobilities are inherently staged, serving as an

analytical tool to understand staging mechanisms and responses. By focusing on physical settings, social interactions, and embodied performances, this approach investigates individual experiences and collective processes of inclusion within the transport system.

4.4 Key Dimensions And Factors

The reviewed literature shows diverse approaches to studying inclusive urban mobility, which can be broadly categorized by focus. Demographic-based research examines the mobility needs of disadvantaged groups such as the elderly, persons with disabilities, women, children, migrants, or low-income communities, with some studies applying intersectionality to highlight compounded barriers faced by groups such as children with disabilities or migrant women. Modal-based studies assess the inclusivity of transport modes, including public transit, walking and cycling, and modern modes that include electric and autonomous vehicles, and emerging micro-mobility options. Policy-based research analyzes how planning policies and regulations, and mobility plans address social inclusion, emphasizing the need to align smart city and sustainable mobility agendas with equity goals. Planning-based studies explore integrating inclusive principles into design and planning processes with stakeholder participation. Physical environment-based research investigates how the design of the built environment, i.e. sidewalks, streets, land use and city layout, and transportation infrastructure such as public transport stations and mobility hubs, contribute to or hinder inclusive mobility. Community-based studies explore the role of civil society outside structured planning processes to co-create solutions that are tailored to their needs and contexts. Lastly, some studies focused on tool creation and development of new instruments or technologies designed to improve accessibility, discover infrastructural barriers and enhance inclusive urban mobility.

Inclusive urban mobility research is multi-dimensional and engages various actors. The research displayed a complex interplay among a multitude of factors, of which inclusive mobility planning should be mindful. What is presented in (Figure 3) is an attempt to capture this dynamic process holistically. Inclusive urban mobility acknowledges the variety of users and centers their embodied experiences, identified as the unique interactions between the individual and environmental dimensions within a travel journey. The individual dimensions pertain to the travelers' dispositions and identity, such as age, gender, income, race and ability. While the environmental factor includes the social and physical aspects along with the availability of information needed to access these environments i.e. transport schedules, maps, direction signage, etc. The social aspect is discussed as the behavior of travelers among each other which varies between different cultural and political contexts and the interactions with transport service providers. The physical aspect can be categorized into macro and micro scales, the former includes land use, city layout and transport systems and infrastructure, while the latter relates to sidewalk design, ramps, street furniture, lighting and signage. Planning and policy should address these factors holistically and inclusively to make travel journeys accessible and comfortable, which in turn contributes to the individual's social, emotional and physical wellbeing. Inclusive mobility also acknowledges how the contextual setting affects a user's journey, in terms of culture, time, climate, topography and politics.
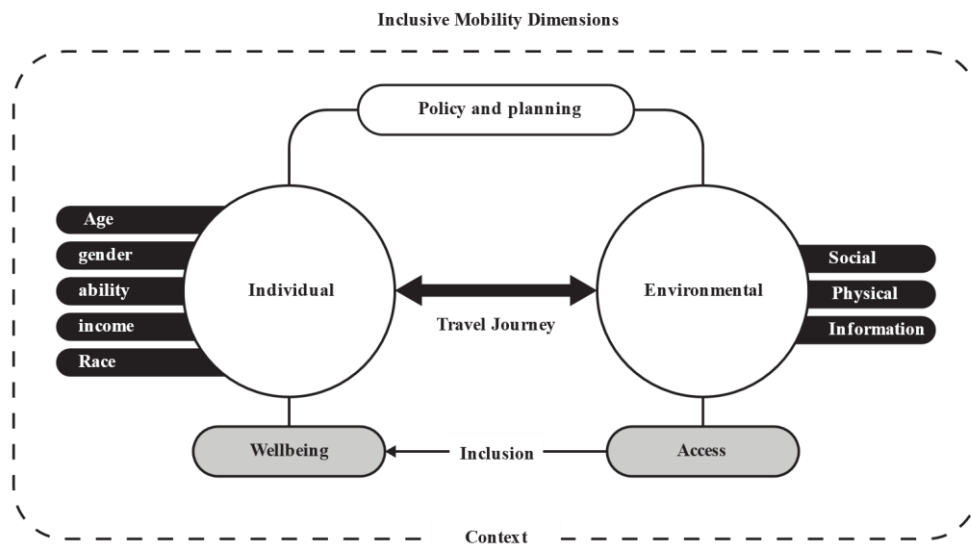
Figure (3): Inclusive mobility dimensions
Source: The authors

5. CONCLUSIONS

Inclusive mobility is a holistic approach to mobility planning focusing on socioeconomic and individual disparities among travelers. It places humans at the center of planning, aiming to understand mobility through their interaction with their environment to ensure accessibility for the widest range of users. Despite growing research on this topic over five years, gaps remain that need addressing.

This study reviewed 114 journal articles to explore the literary landscape of inclusive urban mobility. The studies demonstrate a wide array of approaches unified by the goal of understanding and improving inclusion in the study and practice of mobility within the context of cities. Researchers have explored multiple methodologies, ranging from ethnography and qualitative interviews to the analysis of big datasets in relation to geo-spatial data. While the former provided insight into individuals' mobility perspectives and firsthand experiences, the latter provided an overview of the mobility patterns of socio-demographic groups at large. A more holistic approach, one that cross-examines the results of big data analysis of large-scale travel patterns against the embodied experiences, is noticeably lacking.

Additionally, current literature provides valuable insights into barriers to access but lacks a comprehensive examination of barriers to inclusion in policy and planning. Some studies have shed light on the failure of governance and administrative systems to implement existing policies and inclusivity guidelines. However, insights into the specific barriers and gaps between policy and practice across contexts and demographics are limited. Only a few studies have examined the extent of social equality and inclusion in contemporary urban policies, such as sustainable urban mobility plans and smart city initiatives, and very few have explored inclusive formats for participatory planning.

Moreover, research on the inclusion of individuals with disabilities often emphasizes those with mobility impairments, while neglecting less visible disabilities like developmental and cognitive impairments. These can impact skills such as trip planning, wayfinding, and navigation, leading to stress for both the individuals and their caregivers. Our results also indicate that intersectionality theory can be explored further in future research to offer deeper understanding into how overlapping identities might intensify mobility challenges.

Finally, as the world is moving forward with digital and technical innovations, some articles have attempted to answer questions relating to exclusion issues associated with interactions with digital infrastructure, the accessibility of electrical and autonomous vehicles to different demographics, and the utilization of AI and machine learning in data analysis. Future directions should explore these arenas further to ensure that inclusion is incorporated at the onset of development and that advancements do not exacerbate existing inequalities or create new ones. Lastly, technological tools can be explored as a long-term approach to participation and continuous feedback on issues and areas of development.

Conflicts of Interest: The authors declare no conflicts of interest.

A List of the reviewed articles can be found on: https://doi.org/10.5281/zenodo.16942836

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مراجعة استكشافية لأبعاد التنقل الحضري الشامل

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ملخص البحث

لقد برز التنقل الحضري الشامل كقضية بالغة الأهمية في ظل تصاعد أوجه عدم المساواة في المدن والحاجة إلى أنظمة نقل مستدامة، ميسّرة وعادلة. يتضمن هذا البحث مراجعة شاملة لمجموعة متنوعة من الأدبيات الأكاديمية بهدف دراسة كيفية تناول الشمولية وتصورها وتطبيقها ضمن بحوث التنقّل الحضري. ومن خلال مراجعة 114 مقالة علمية مُحكَّمة، يحدد البحث التعريفات والسياقات النظرية المتناولة من عدالة التنقّل والحق في المدينة، إلى جانب الأطارات المفاهيمية التي تشكل الخطاب، بما في ذلك إمكانية الوصول، والقدرة على الحركة، والنهج القائم على القدرات، وغيرها. وتبرز المراجعة تعدد الأبعاد للتنقل الشامل، والتي تشمل نواح فردية واجتماعية ومادية وإدارية في سياقات مختلفة، وتؤكد الدراسة على دور الفاعلين المختلفين من صانعي السياسات إلى المجتمعات المهمشة. كما تكشف عن فجوات بارزة تتعلق بمعوقات تنفيذ السياسات، والتخطيط التشاركي، والتقييمات طويلة المدى للممارسات الشاملة. ومن خلال رسم خريطة للمنهجيات الحالية والتحديات المتكررة، يسهم هذا البحث في بناء فهم أكثر اتساقًا للتنقّل الحضري الشامل، ويشير إلى آفاق بحثية وعملية مستقبلية ترتكز على العدالة، والمشاركة، والتنمية الشاملة.

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