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Planning for walkable cities in Africa: Co-producing knowledge on conditions, practices, and strategies

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ABSTRACT

This study sought to unravel the conditions of the walking environment, and residents lived experiences of walking in two urban neighbourhoods in the Greater Accra Metropolitan Area (GAMA). Drawing on a participatory mapping exercise and a total of 70 community and institutional qualitative interviews, the results revealed that the study neighbourhoods have precarious walking conditions manifested by the absence of road markings, inadequate traffic lights and other road-calming infrastructure such as speed ramps. The results also show that previous and current national and local development plans do little to plan for the walking environment. This study demonstrates the impacts of the failure of planning and policy responses to the walking environment on urban residents. In an important stakeholder engagement workshop involving a total of 40 participants, our study brought academics, institutional representatives and residents from the two neighbourhoods together to discuss the findings and establish a stronger collaborative relationship for designing an equitable and sustainable walking environment. Based on the findings from the qualitative interviews and stakeholder engagement workshop, we therefore recommend a community-based participatory planning strategy for improving walkability conditions.

Specification table.

Subject area	Social Sciences
More specific subject area	Urban Studies Transport Planning
Category/categories of societal impact	Health Societal
Sustainable Development Goals (SDGS) the research contributes to	GOAL 3: Good Health and Well-being GOAL 11: Sustainable Cities and Communities
Resource availability	Further information can be found on the project website. (https://www.walkingcitieslab.com/).
Related research article	Oviedo, D., Okyere, S. A., Nieto, M., Kita, M., Kusi, L. F., Yusuf, Y., & Koroma, B. (2021). Walking off the beaten path: everyday walking environment and practices in informal settlements in Freetown. Research in Transportation Business & Management, 40, 100630. https://doi.org/10.1016/j.rtbm.2021.100630 Massingue, S. A., & Oviedo, D. (2021). Walkability *and the Right to the city: A snapshot critique of pedestrian space in Maputo, Mozambique.* Research in transportation economics, 86, 101049.
Stage of research	This research is ongoing. The first stage of the study used participatory mapping to explore walking conditions and practices in urban communities of Accra. The second stage brought together different urban actors with related responsibilities on planning for the built environment to co-produce knowledge

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(*continued*)

	towards a community-based planning approach for a comfortable walking environment.

Societal impacts details [mandatory]

- In African cities, residents do a lot of walking, yet their cities are not walkable. This research is premised on fostering social equity in everyday mobility practices, as embedded in SDG 11, through multi-actor engagements that can support the transition of Africa's cities from unwalkable to walkable urban experiences.
- Please outline the value of the societal impacts this research will have/has had through an Impact Overview statement. This statement should address several of the following questions:
  - How will these societal impacts be achieved/how have these societal impacts been achieved? Please provide details on the approach or methodology employed. A walking database of the communities was designed using a participatory mapping tool showing the roads, walking routes and risks and interventions. A mixed methods approach was utilized to understand resident's reactions and attitudes towards the walking environments.
  - To what extent do these impacts help address important societal challenges? Planning for Non-motorized, transport options such as walking are usually ignored in urban transportation planning. This research engaged the responses of community actors on fostering equitable planning for walking for critical walking infrastructure. Brining institutional and community actors together provided an opportunity to co-produce knowledge for participatory planning for a walkable city.
  - Are the impacts of local, regional, national, and/or global value? The impact is regional, however our findings is limited to the Accra case studies.
  - Who can or will benefit from these impacts? Key beneficiaries are women, children, disabled, aged, and community leaders.
  - How can those in other research areas learn from and build upon these societal impacts? We are an interdisciplinary research team comprising development planners, geographers, and civil engineers. Knowledge from an interdisciplinary team allows for new ideas, which are synthesized for the overall benefits of the research. It also helps to apply different theoretical and analytical approaches to achieve the research aims.
  - How can this research be used to develop future projects with societal impacts? The limitations of this research have been provided allowing future research to be undertaken.
  - How sustainable (short-term vs. long-term impacts), replicable and transferable are these impacts? Findings from the research are crucial for developing participatory planning responses for an equitable walking future. It is also compels city authorities to provide to design walkable neighbourhoods which prioritizes safety and social inclusivity.
  - How does your research help deliver a just transition process? It provides empirical findings rich in community inputs and crucial for easier problem identification and the design of appropriate solutions.
  - Which policy measure should complement your research to maximize its societal impacts? Vice versa, which pieces of policy pose barriers? We advocate that municipal development plans recognize and plan for critical walking design features by relying on findings of this research and other related ones.

Social impact

In African cities, the walking regime is characterised by engineering deficits and institutional and funding constraints [1]. Literature on urban mobility in African cities has shown vulnerabilities related to the transport sector and emphasized the need for community-based transport planning [1,2]. For instance, Williams et al. [4] have demonstrated the structural challenges impeding the provision and management of urban transport infrastructure as well as the mobility and land use challenges faced by more disadvantaged socioeconomic populations. In African cities, conditions of the walking environment are unsafe and precarious for urban residents because of the over-prioritization of motorised transport [5]. Research (e.g. [3]) suggests that improving conditions of non-motorised transport in African cities provides opportunities for improving health conditions associated with walking and the urgency of community-based planning for walking as a mode of transport. Indeed, planning for safe, pleasurable, accessible, and inclusive walkable neighbourhoods and cities is essential for realising equitable and sustainable urbanism. First, it protects vulnerable groups such as women, children, the disabled, and the aged from the precarious and harsh walking conditions evident in African cities. Second, it offers opportunity for urban residents to engage in regular exercise, which is imperative for reducing the risk of developing non-communicable diseases associated with sedentary lifestyles, such as hypertension [3]. Lastly, planning for safe, accessible, and pleasurable urban neighbourhoods creates spatial awareness and incites social consciousness, leading to social capital accumulation. Walkable neighborhoods often generate intense pedestrian presence and associated human activities, which act as 'eyes on the street' to socially regulate and moderate disorder and crime occurrence. Simply put, planning for walkable neighborhoods and communities holds social development benefits in terms of the mobility needs of vulnerable groups while providing co-benefits in the areas of health and wellbeing.

This study was undertaken in Accra Newtown and Dome in the Ayawaso North and the Ga East Municipalities, respectively, all in the Greater Accra Metropolitan Area of Ghana. Both study neighbourhoods and, by extension, the municipalities have precarious walking conditions, yet limited evidence exists on equitable community-based planning strategies. This study documents conditions and experiences of the walking environment in the two study communities with the goal of co-producing knowledge with multiple inputs from academics, community residents, and institutional representatives to develop a shared vision of participatory community-led planning interventions to improve walking conditions for all urban residents, especially those in low-income communities. The study allowed for participatory planning for walkability to promote inclusive and sustainable pathways for achieving good health and well-being. This study is part of a larger research project under the walking cities lab (https://www.walkingcitieslab.com/), involving three African cities: Accra, Freetown, and Maputo. At present, two research papers, one from Freetown and the other from Maputo, have been published from the larger research project.

Methodology

This study takes inspiration from ongoing discourses around realising equitable and sustainable urbanism in African cities, as reflected in development frameworks such as the Sustainable Development Goals, the New Urban Agenda, and the African Union Agenda 2063. It upholds the observation that planning for walkability, which is the dominant mode of transport for the majority of Africa's urban population, constitutes one mechanism for realising equity in everyday urban experiences [1]. Indeed, planning for a more inclusive and sustainable walkable neighbourhood's addresses multiple societal needs, including that of vulnerable groups such as children, women, the aged, and the disabled. Against this backdrop, the study developed several activities and methods to ensure that societal impacts were achieved. These participatory community-engaged methods and activities began with a reconnaissance visit by the research team to the two study neighbourhoods in December 2021. This allowed the research team to observe and

interact with community members to develop a robust interview guide to capture community interest. The interview guide was updated after the reconnaissance survey and validated by the research team.

The next stage involved the creation of a walkability database using the participatory mapping software, i.e., Maptionnaire[1] to capture both objective and subjective phases of the walking environment. The objective mapping exercise was undertaken to document road types, features, and conditions in the study neighbourhoods, whereas the subjective part of the exercise-involved residents using the Maptionnaire software to demonstrate their walking practices and feelings towards the walking environments. The Maptionnaire software was used because, in contexts where well-documented data about local conditions is scant and difficult to obtain, it provides an innovative, easy-to-use, inexpensive, and participatory platform to explore the built environment, particularly walking conditions with everyday devices such as a mobile phone. Further, content analysis was done on national transport policies and municipal development plans to evaluate how these policy and planning documents reference walking. This was crucial from a policy perspective as transport policies in Ghana largely prioritise motorised transport options over non-motorised transport options such as walking. In fact, the Ghana Urban Policy Framework has no explicit reference to walkability. This observation and others were inductively drawn after a careful review of the transport-related policy documents, It was also evident that little attention was given to addressing the challenges facing walking as a mode of transport in urban neighbourhoods such as sidewalks and shading amenities for pedestrians.

Next, in-depth qualitative interviews were conducted with institutional and community representatives who were conveniently sampled. In total, 70 interviews were conducted involving 60 community members and 10 institutional and local representatives comprising assembly members, unit committee members, opinion leaders, planners, and transport planners and engineers. The qualitative interviews were crucial in gaining rich and detailed perspectives from the respondents everyday lived realities of walking. Interviews allowed the research team to deeply engage respondents and thus enrich understanding of walking experiences. The interviews were carried out for a period of three months, and each lasted between 45 and 60 min depending on the interest and knowledge of the respondents about the research topic. Pictures of risk and vulnerable conditions were taken for photo elicitation to help unpack the manifestation and underlying issues shaping poor neighbourhood walkability conditions.

Recently, a stakeholder engagement workshop involving the local actors was conducted to deliberate on the preliminary research findings and discuss strategies for developing equitable interventions in improving walking conditions. In all, 40 participants were present and comprised 25 community members and 15 institutional and local representatives drawn from both study municipalities. Participation in both the interviews and workshops was voluntary and informed consent was sort from all respondents before engaging them. The entire data collection exercise was conducted in English and Twi, depending on the preference of the participants. Maps produced with the maptionnaire software during the second stage of the study (objective and subjective audit of walking conditions) were shown to all the participants during the stakeholder engagement workshop. Outputs from the data, such as research materials under review, were also shared with all participants (see Table 1). At present, the research team is developing storytelling maps using the pictures from the study neighbourhoods and having a video recording database of walking practices and conditions.

The data collection process was not without challenges. First, during the subjective mapping exercise, some of the respondents had challenges demonstrating their walking experiences on the Maptionnaire because the software was new to them. Therefore, our field research assistant assisted them during this phase. Second, due to safety concerns within the neighbourhoods, some of the walking paths were not accessed. Third, some of the respondents were initially hostile during the reconnaissance visit due to unfamiliarity with the research team and the overall impact of the research on their well-being. However, attitudes changed, and most residents were supportive and cooperative after engagements and meetings with the research team. In fact, representatives at the community meetings and workshop expressed their satisfaction with the opportunity the study provided them to have direct discussions with municipal officials about walking conditions in their communities.

Table 1
Conditions of the walking environment and practices in the study neighbourhoods.

Area/ Municipality	Accra Newtown- Ayawaso North Municipality	Dome, Ga East Municipality
Partners	Residents, assembly members, opinion leaders, planning department, works department, transport/urban roads department	Residents, assembly members, opinion leaders, traditional authorities, planning department, works department, transport/urban roads department
Walking Conditions	Congestion on the street and walkways, contestation of space between residents, drivers and pedestrian, lack of road markings, absence of sidewalks, inadequate streetlights, etc.	Congestion on the street and walkways, contestation of space between residents, drivers and pedestrian, lack of road markings, absence of sidewalks, inadequate streetlights, absence of gutters, untarred roads, frequent flooding, etc.
Activities	Creating a community walking database using a participatory mapping tool, creating story telling maps on the walking environment, video recording of the walking experience, interviews, and stakeholder engagement workshops, etc.	Creating a community walking database using a participatory mapping tool, creating storytelling maps on the walking environment, video recording of the walking experience, interviews, and stakeholder engagement workshops, etc.
Strategies	Developed a mapping database for the municipality, co-produce knowledge with community members and municipal staff, coming together to share idea, etc.	Developed a mapping database for the municipality, co-produce knowledge with community members and municipal staff, coming together to share idea, etc.
Outcomes	Created a community walking database using a participatory mapping tool; organised stakeholder engagement workshops to develop a shared understanding and forward-looking strategies etc.	Created a community walking database using a participatory mapping tool; organised stakeholder engagement workshops to co-produce knowledge, prepared manuscript and under review, etc.

Results and implications

Regarding the research product, the study has developed a map-based walking database of the two study neighbourhoods using Maptionnaire. This map documents the objective and subjective phases of the walking environment. The map shows road types and walking routes, risks, vulnerabilities, and community-led interventions instituted to improve walking conditions. These community-based maps co-produced were shared with community leaders and are being adopted by municipal officials to guide the planning of the walking environment. The map was crucial in negotiating public interventions and the self-respect that came with acknowledging their informal collective strategies. Their input in developing the community-based mapping database on the walking environment and conditions led to knowledge co-creation between the research team and the community actors. In fact, municipal officials have asked for further discussions to integrate outputs into the next phase of their Medium-Term Development Plan

[1] maptionairre.com

(MTDP) preparation. The research team expects that shortly, the municipality staff relying on the research output and with inputs from community and assembly members will initiate incremental interventions to address risk and vulnerabilities in the walking environment.

During the stakeholder engagement meeting (Figs. 1 and 2), the research team witnessed appreciation from community members, assembly members, planners, and engineers for the attention given to their often-neglected communities. The community and assembly members also asked detailed questions about the benefits and impacts of the research and called for the attention of municipal officials to develop solutions for the challenges espoused by the study in their respective communities. Here, residents sought clarifications from local government agencies about their roles in providing safe and accessible walking environments. The municipal staff also asked residents about their roles in creating congestion on walkways. The opportunity for deliberation between community members and municipal staff helped address misunderstandings, build trust, and provide opportunities for collaborative partnerships to improve neighbourhood walking conditions. Municipal staff and local representatives guaranteed to integrate outcomes from the deliberation to plan for community-based interventions to realise safe, accessible, and pleasurable walking environment. This holds the potential for realising equity in everyday walking and its benefits across social and economic aspects of urban living (e.g., SDG 11). The research team has also built new relationships with municipal planners, engineers, and community members through this study. In addition, our existing relationships with assembly members and opinion leaders were strengthened towards developing a new community-based action-research network.

In terms of empirical findings, the study outcomes so far have revealed that actions in policy and development plans intended to improve conditions of the transport sector prioritize automobile transport over non-motorised transport such as walking (e.g. Ghana Urban Policy Action Plan). Oviedo et al. [1] have reported similar findings in Freetown, Sierra Leone. In our study, city authorities have neglected the precarious walking conditions, especially in disadvantaged communities, and have attributed this problem to the behavioural anomalies exhibited by residents. The results also show safety and accessibility vulnerabilities in the two communities, as pedestrians are in constant competition for space with traders and automobile users (Fig. 3). The absence of road markings, speed ramps, traffic, and other essential road design features that improve walking conditions and practices poses risks for vulnerable road users (Fig. 4). Yet, interviews with municipal staff revealed funding and logistical constraints. They also mostly failed to accept responsibility for the bad nature of the road and walking conditions and shifted the blame to residents' behavioural challenges. This research has therefore shifted the dial for working on inter-sectoral and critical complex urban issues such as the planning for safe, pleasurable, and accessible walkable neighbourhoods through the use of community-accessible data tools and multi-stakeholder platforms to develop a shared understanding of and tailored responses to everyday walking conditions in urban informal settings.

The findings from the field interviews and the stakeholder community-engagement workshop offer some imperatives for policy

Fig. 1. Assembly members, opinion leaders and community members round table discussion.

Fig. 2. Municipal planners, engineers and transport officers round table discussion.

Fig. 3. A walkway used for vending in Accra Newtown.

Fig. 4. Absence of walkways along the street of Dome.

and practice. For urban planners and policymakers, our study demonstrates that drawing on participatory mapping and co-production activities through workshops and multi-stakeholder engagement activities can co-create knowledge about walkability in a way that recognizes community agency and empowers residents to become partners in negotiating and improving conditions. From an institutional perspective, the maps and the workshops have brought municipal planning and transport officials closer to residents' needs and aspirations while providing previously non-existent data and fostering trustable relationships for collaborative experimentations.

Further, planning for non-motorised transport in the study municipalities needs to identify and target the needs of vulnerable population sub-groups such as the children, women, the aged, and the disabled. This is important to the policy discourses around equity in everyday urban experiences. Also, there should be prioritization of walkability in plans at the local level should be accompanied by adequate funding support from both national and local government levels to support the implementation of walkability interventions such as pedestrian walkaways and shading amenities. Lastly, to address the growing concerns for transport accessibility and safety in urban neighbourhoods, urban and transport planners need continuous engagement with the local population to develop a shared understanding of existing conditions and strategies for improvement, build trust and recognize local agency planning for walkability.

Despite its contributions, this study has limitations. For one, hard-to-reach but vulnerable groups such as the aged and disabled were not well represented in the study. Additionally, due to logistical constraints, the stakeholder engagement workshops were held outside the study communities and thus limited the broader participation of some community members. Future research should therefore expand the scope of participatory avenues to include a more diverse stakeholder group, as the success of such initiatives lies in developing a shared understanding, interest, and commitment among residents, community leaders, and local government authorities to value community-based outputs and collaborate further to implement walkability strategies. Overall, our study submits that planning for walkability using participatory tools and building on multi-stakeholder platforms could engender social equity and well-being in the everyday urban experiences of those living in predominantly walking cities that are not walkable.

Ethics statements

Informed consent was obtained from all study participants. Participants were also assured of the anonymity and confidentiality of their responses. Those who participated in the study did so voluntarily, while those who declined to participate were exempted.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

[1] D. Oviedo, S.A. Okyere, M. Nieto, M. Kita, L.F. Kusi, Y. Yusuf, B. Koroma, Walking off the beaten path: everyday walking environment and practices in informal settlements in Freetown, Res. Transp. Bus. Manag. 40 (2021), 100630.

[2] S.A. Massingue, D. Oviedo, Walkability and the Right to the city: a snapshot critique of pedestrian space in Maputo, Mozambique, Res. Transp. Econ. 86 (2021), 101049, https://doi.org/10.1016/j.retrec.2021.101049.

[3] A.L. Oyeyemi, S.M. Kolo, A.Y. Oyeyemi, B.A. Omotara, Neighborhood environmental factors are related to health-enhancing physical activity and walking among community dwelling older adults in Nigeria, Physiother. Theory Pract. 35 (3) (2019) 288–297.

[4] S. Williams, A. White, P. Waiganjo, D. Orwa, J. Klopp, The digital matatu project: using cell phones to create an open-source data for Nairobi's semi-formal bus system, J. Transp. Geogr. 49 (2015) 39–51.

[5] A. Wood, Planning for walkability in Johannesburg, in: R.A. Acheampong, K. Lucas, M. Poku-Boansi, C. Uzondu (Eds.), Transport and Mobility Futures in Urban Africa. The Urban Book Series, Springer, Cham, 2022, https://doi.org/10.1007/978-3-031-17327-1_16.