

ALPhA

The Informal Appropriation of Public Space for Leisure Physical Activity in Lagos and Yaoundé

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A. WHAT DID WE DO & WHY?

The goal of this study, conducted from November 2019 to November 2021, was to understand leisure physical activity (LPA) undertaken in appropriated public spaces (and the ensuing health risks) to inform urban infrastructure investments that support safe physical activity and population wellbeing. In the absence of supportive formal urban infrastructure, urban residents in Africa are devising informal means of appropriating public spaces for LPA (ALPhA spaces) e.g. bridges, traffic intersections and sidewalks. However, these activities are undertaken without regard for conduciveness and health risks to LPA users of appropriated spaces (ALPhA users).

Our cities of interest were Lagos and Yaoundé, cities in West and Central Africa that are rapidly urbanising and with an increasing prevalence of non-communicable diseases (NCDs) such as hypertension, diabetes, and poor mental health. We assessed the safety (injury risk and pollution exposure) of leisure physical activity (LPA) in appropriated public spaces. We explored how these patterns of LPA and risk exposures differed by socio-economic factors and gender, while exploring the accessibility of other built environment opportunities for LPA. We also explored the role of informal and formal actors in governing patterns of space appropriation for physical activity. Lastly, we deployed participatory approaches, engaging with multisectoral urban development actors to understand the contestations around access to open space and public spaces, as well as the potential for identified patterns of informal public space LPA to inform formal urban infrastructure development that support healthy lifestyles and wellbeing.

Funded by the British Academy as part of the Urban Infrastructures of Wellbeing programme, the project started in November 2019 and concluded in November 2022. The project was led by the MRC Epidemiology Unit, University of Cambridge (PI Dr Tolu Oni) with collaborators at the Centre for Housing and Sustainable Development, University of Lagos (co-PI Prof Taibat Lawanson) and Health of Populations in Transition group, University of Yaoundé I (co-PI Dr Felix Assah).

B. HOW DID WE DO THIS?

The overview of the project can be found on the [project website](#). Key activities, outputs, outcomes and impacts are summarised in this [Figure](#). More details as follows:

- *Project launch:*

The PI and a Cambridge co-investigator travelled to Lagos early December 2019 to meet with the University of Lagos team including the co-PI and the director of the research and innovation office of the University of Lagos. This visit was helpful to prepare for the first investigator meeting and as a new partner, it was helpful

to get a sense of institutional processes in both universities. This was followed by a similar visit by the PI to Yaoundé mid-January 2020 and a meeting in Cambridge with the Department of Chemistry colleagues.



Following these visits, the steering committee was agreed (comprising PIs, co-investigators and postdoctoral fellows) and the first virtual meeting held via Zoom on the 05th February 2020. This was followed by the first in-person investigators workshop held in Cambridge 28 Feb-01 March 2020; attended in-person by all investigators in Cambridge, PIs from Lagos and Yaoundé, and attended virtually by postdoctoral fellows in both cities (due to insufficient time to apply for visas to attend in person). At the in-person workshop the team agreed the project boundaries and started developing the protocol for each objective.

The objectives of the project and our approach to achieving these objectives are as follows:

- 1. To conduct a systematic review of the prevalence and determinants of public space LPA interventions in Africa:*

We systematically reviewed published evidence to understand the current state of knowledge on existing public space interventions to support leisure physical activity in Africa. A team of over 30 reviewers was assembled from Nigeria, Cameroon and the United Kingdom. Reviewers received training, delivered by a Cambridge investigator, on the process of conducting a systematic review including how to screen papers and extract and analyse the data. Forty-eight papers were identified and the data were analysed and an additional 50 initiatives that did not fit the selection criteria were analysed to inform policy recommendations.

- 2. To map and engage urban decision-makers and civil society representatives in Lagos and Yaoundé in study development:*

At the Cambridge in-person investigators' meeting, the PI delivered training on stakeholder mapping and analysis. Over the course of the 3-day meeting, the study team conducted a stakeholder analysis to understand

key stakeholders active in the urban development, planning and health sectors in both cities, assessing their potential interest and influence to inform our engagement strategy, including who it would be important to invite to participate in the study's stakeholder workshops. This stakeholder list was further supplemented at the first stakeholder workshop, where existing stakeholders were asked to identify other important stakeholders.

After some COVID- related delays, the first stakeholder workshops were conducted in Lagos and Yaoundé on 14th and 21st September 2021 respectively. Due to travel restrictions, the Cambridge team were unable to travel to either city. Instead we adapted the plan and ran the workshops using a hybrid format with local researchers and stakeholders attending in person and Cambridge researchers joining online via Zoom. In Yaoundé, we also used English / French translators to facilitate discussions. Thirty-two delegates attended in Lagos while 43 attended in Yaoundé. The stakeholders completed a pre-workshop survey to share their expertise on public spaces known to them that were used for physical activity as well as the governance and access to these spaces. In addition to providing more data on ALPhA public spaces, these stakeholders also provided information on additional stakeholders that in their opinion should be engaged in the second workshop. The workshop reports detail the sectors and disciplines of stakeholders, ranging from urban planning and social development to Parks and Recreation, Resilience and Health sectors, across academia, government and civil society.



3. *To explore, through direct observation, characteristics of existing public spaces appropriated for physical activity in selected high, medium and low-income neighbourhoods*

&

4. *To assess, utilising citizen science methodology, the nature of leisure physical activities undertaken by study participants in these public spaces, and barriers and enablers of leisure physical activity, with a focus on the role of gender, socio-economic, and current health status*

The initial intention was to complete the researcher-led direct observation before the citizen scientist data collection. However, the uncertainty around travel restrictions due to COVID-19 resulted in an adaptation of this plan. Instead, we utilised a public survey to recruit citizen scientists to identify and characterise ALPhA

spaces. And then shared these findings with stakeholders at the workshop, using their contributions to finalise the typology and inform the researcher-led data collection. Accordingly, these two objectives were conducted concurrently.

During the Cambridge investigator workshop in February 2020, we developed a typology of the different types of public spaces that are being informally appropriated for leisure physical activity. These were shared with stakeholders at the first stakeholder workshops in both cities and their perspectives contributed to creating the final typology used for the rest of the project.

A public survey was used to capture as comprehensively as possible a variety of ALPhA spaces in both cities. Dissemination of this survey was conducted in partnership with physical activity groups/champions/communities identified as part of the stakeholder mapping exercise at the in-person meeting in Feb 2020) to ensure a wide reach in Lagos and Yaoundé. The public survey was completed using EpiCollect5, a free app to capture GPS coordinates and descriptions of ALPhA spaces. The initial respondents were enriched through snowball sampling. Participants from the general populations of Lagos and Yaoundé were invited to primarily capture characteristics of the ALPhA spaces they have encountered and their perceptions of risks and benefits associated with physical activity in these spaces (ALPhActivity). The survey also ascertained from participants whether they are themselves ALPhA users or simply observers of ALPhActivity in public spaces around them. In total, 196 participants in Lagos and 245 participants in Yaoundé took part in the EpiCollect citizen science surveys to map ALPhA spaces in their respective cities.



These citizen science data were then enriched with researcher-led data collection from a selection of ALPhA spaces identified by citizen scientists. Our researchers re-visited a selection of these ALPhA spaces to capture

diverse typologies, spaces used by both male and female participants, and distributed across low, middle and high-income neighbourhoods.

A selection of ALPhA users (60 participants in Lagos and 49 participants in Yaoundé) identified through the public survey were then recruited with ALPhA users purposively sampled to ensure representation across a wide range of ALPhA space typologies and low-high income neighbourhoods. After giving informed consent, researchers administered a survey to these participants, using REDCap a free to access secure data management tool, giving information to assess their NCD risk, diet and physical activity, as well as to capture in more detail their lived experience of engaging in physical activity in public spaces including barriers and enablers and safety and injury risks encountered.

To assess air pollution, we deployed one AQMesh air quality monitor in each city. The location of each sensor, determined in close consultation with air quality experts in both cities, was designed to capture the air quality in a part of the city used for physical activity. Considerations included access to reliable electricity and safety. The sensors captured air quality over a 12-month period from June 2021-May 2022.

5. To utilise an integrated knowledge translation process for research findings to inform existing and future formal urban infrastructure planning and development strategies:

In the second stakeholder engagement workshops in each city, we invited the same stakeholders from workshop 1 as well as the additional stakeholders suggested by those workshop delegates. Thirty-two stakeholders were convened in Lagos on 31st May 2022 and 43 in Yaoundé on 7th June 2022. The purpose of this workshop was to share findings from the project and to co-create healthier public spaces. Stakeholders were guided through a facilitated process to re-imagine five of the ALPhA public spaces in Lagos and three in Yaoundé as spaces that better support health. For this exercise, we leveraged a collaboration with the UN Habitat public space programme who provided the framework that was used to re-design these public spaces for health addressing the health risks and barriers identified by citizen scientists.



- *Additional COVID-related objective:*

This additional component was not part of the original proposal but was developed to

- a. Leverage COVID-19 lockdown induced disruptions in the built environment to explore the potential of social media analysis to understand public sentiment that could inform public health interventions; and
- b. As an additional strategy to identify key stakeholders to engage as part of the workshop, survey dissemination and identification of ALPhA users.

We therefore leveraged the British Academy award to apply for additional funds from the [Cambridge Africa Alborada COVID emergency award](#). For this activity, we included an additional collaborator, Centre for Analytics and Behaviour Change, University of Cape Town, with expertise in social media analysis. Following several training sessions on social media analysis conducted by South African partners for the research team, two post docs (one in Cambridge and a second in Lagos) were tasked with leading the analysis, (supported by the PI, with input from the rest of the research team) focused on identifying key actors and understanding sentiments in Lagos and Yaoundé on COVID-19, physical activity, governance of public space and health.

C. WHAT DID WE FIND?*

The key overall findings of the project were as follows:

1. *Systematic review on Urban Public Space Initiatives and Health in Africa (submitted):*
 - Most peer-reviewed literature on public space initiatives originated from South Africa. Public space initiatives often took place in open spaces, residences, and specified clubs and facilities. We discovered that the success of public initiatives depends on a wide range of partnerships between local, community, government, international and academic, with consideration for present and historical community perceptions.
 - We also discovered that people navigate public spaces through ad-hoc activities or scheduled events.
 - The review highlighted that communities view the impacts of such initiatives on their wellbeing through multiple social, economic, ecological lenses, but health was one dimension. Public space initiatives face challenges with long-term funding and tensions between formal and informal land uses, limiting long-term planning and sustenance. African cities need more documentation on public space initiatives that capture a broader range of diverse countries. In advocating for

improved health through public space interventions, public health practitioners should use frameworks and approaches that integrate the various health, social, and economic lenses through which communities understand their wellbeing.

- Our findings underscore the importance of prioritising maintaining existing public space initiatives, particularly those at the grassroots level, which may be cut-off from formal networks of funding, recognition and support, and may be in contention with formal priorities for the use of public space.

2. [*Social media engagement around non-communicable disease behaviours during Nigeria's COVID-19 lockdowns:*](#)

- We set out to assess the role that social media played in driving public engagement with COVID health measures in Lagos, Nigeria. We analysed public engagement on Twitter between January and August 2020 that related to the city's lockdown protocols.
- One of our key findings was that the public responded most to public health information being shared by prominent individual social media influencers. These included sportspeople, comedians, musicians and businesspeople.
- It was also clear that people responded most positively to the use of satire, humour and messaging that drew on influencers' everyday lived experiences of the lockdown.
- These findings offer useful insights for future emergencies and disasters. While social media does not adequately currently represent society as a whole, it should be regarded as a valuable supplementary tool for public health and other public interest practitioners who seek to ensure that public responses to disasters are successful.

3. *Types of public spaces appropriated for physical activity in Lagos and Yaoundé (to be submitted March 2023):*

- Both cities employed the use of open spaces mostly around the road as seen in their analysis. However there were some differences as Lagos participants mainly used open spaces like car parks and University roads while roadsides were dominant in Yaoundé.
- The most common motivation cited for using public space for physical activity in Lagos was the availability of space while safety was a predominant factor cited in Yaoundé.
- Activities were more likely to be spontaneous in Lagos while Yaoundé participants were more likely to report involvement in organised activities led by instructors.
- Typologies of space identified by participants were similar to those identified by stakeholders.
- There are gender differences in perceptions on safety and injury risk in both cities.

4. *Seasonal variations in air pollution in public space in Lagos and Yaoundé (to be submitted March 2023):*
 - Ambient air pollution is impacted by meteorology (eg temperature, rainfall etc) which can affect the level of exposure.
 - Seasonal effects include reduced air pollution exposure during rainy seasons linked to washout of pollutants in the atmosphere.
 - Increased exposure was found during the harmattan haze periods due to long-range transportation (of dust from the Sahara) particularly impacting particulate matter (PM) in sub-saharan Africa.
5. *The association between non-communicable disease risks and types of ALPhA public spaces in low-to high-income neighbourhoods (analysis ongoing; to be submitted Q2 2023).*
6. *Exploring Stakeholders' Perceptions of the Appropriation of Public Spaces for Leisure Physical Activity in Lagos and Yaoundé (analysis ongoing; to be submitted Q2 2023).*

In addition to the findings set out above, the following outputs were also completed:

7. [*Systematic review protocol:*](#)
 - The methods used to conduct the systematic review were published in this protocol paper.
8. [*Commentary on COVID and leisure physical activity in cities:*](#)
 - This commentary sought to illustrate the possibility of rethinking urban development and the reforms necessary to address health inequalities.
 - We highlighted the ways in which leisure physical activity is shaped by local contexts and explored the existing trade-offs between the benefits and risks of undertaking leisure physical activity in Lagos to inform local solutions.
9. [*Social media can be a force for good:*](#)
 - To share the findings from the social media sub-study with a wider audience, the key findings were summarised into this blog published in The Conversation.

10. *Workshop reports from stakeholder engagement workshops:*
 - To capture lessons from engaging diverse stakeholders in both cities, we wrote a report for the workshops in Lagos ([workshop 1](#) and [workshop 2](#)) and Yaoundé ([workshop 1](#) and [workshop 2](#)), published on the project website.

11. [Stakeholder workshop 1 policy brief](#):
 - This policy brief is an outcome of an international workshop on "Urban Public Spaces and Leisure Physical Activities", held on Tuesday, 14th and 21st September 2021 in Lagos and Yaoundé.
 - Participants were from government, multinational organisations, civil society organisations, the sporting and academic communities, print and social media.
 - The workshop focused on understanding the features and health risks of public spaces that are informally used for leisure physical activity (exercise). It also sought to examine the experiences and motivation of users of these spaces in Lagos, Nigeria and Yaoundé, Cameroon.

12. [Stakeholder workshop 2 policy brief](#)
 - This brief summarised the activities and outcomes of the second workshops held in Lagos and Yaoundé on 31st May and 7th June respectively.
 - The workshop achieved the following: Validated and disseminated research findings to key stakeholders; explore the role of informal and formal actors in governing patterns of space appropriation for physical activity, as well as the legal and extra-legal implications of such actions.
 - The brief synthesised the activities of stakeholders who explored the potential for identified patterns of informal public space leisure physical activities to inform co-design and development of inclusive and sustainable public space interventions for the cities of Lagos and Yaoundé.

13. [Multisectoral stakeholder re-imaginings of public space](#):
 - During the workshops, stakeholders were presented with a selection of public space sites identified by the project that are regularly appropriated for physical activity.
 - Guided by a framework for considering health risks, participants identified strengths of each site (features that were supportive of safe physical activity), site weaknesses (features that posed health risks) and identified opportunities to re-imagine and shape each of those sites to make them more conducive for physical activity.

14. *Physical activities and public spaces in African cities, an edited book volume (to be submitted March 2023):*
 - Given the systematic review findings of the need for documentation of public space initiatives across the continent, we invited chapter contributions from researchers and practitioners across West, East

and South Africa who are actively working on projects that unearth the health impacts of public space and promote and advocate for the use of public space for physical activity.

- In addition to foster greater South-South exchange, a civil society organisation from Latin America was invited to share their experiences on this topic.
- We further sought to get a more global perspective on this topic by inviting contributions from the UN Habitat public space programme.
- This book is to be published by the Proceedings of the British Academy.

*Outputs without hyperlinks are yet to be published. Further information on these outputs will be posted on the project website once published.

D. WHAT DOES THIS ALL MEAN?

The key messages that emerged are as follows:

- Urban planning and urban infrastructure play a critical role in determining access to physical activity. Where people live determines how much physical activity they can engage in. Planned gated communities have higher physical activity intensity due to availability of safe communal playgrounds and well paved lit streets. Residents of unplanned low-income communities are compelled to appropriate public infrastructure for physical activity due to lack of adequate infrastructure in their communities.
- The side and middle of the road are the most appropriated public spaces for physical activity in our study cities. However, they often lack vital features that would enhance conduciveness for physical activity such as safety, lighting, signages and gender and disability friendliness. As such, despite its health benefits, engaging in physical activity comes with added risk of injury and air pollution vulnerability.
- Dominant leisure physical activities include individual sports (walking, running and jogging) and team sports (aerobics, cycling, football and boxing), largely due to relative ease of access, and availability of alternative infrastructure in the absence of dedicated public recreational facilities across cities. Public space elements such as good roads, dedicated bike lanes, pedestrian walkways, speed breakers, sensors and pollution monitors, and community parks that can promote physical activity are also lacking.
- Time and location where physical activity is carried out determines vulnerability to injury and air pollution. Air pollution has negative socio-economic and health impacts
- There is insufficient air quality monitoring in cities due to scarcity of in situ air quality monitoring devices, hence we do not know the extent of vulnerability/risk.

- Physical activity initiatives across cities are largely micro-scale and driven by non-governmental actors operating in silos.
- Social media is an agent for active physical activity and health-promoting messaging and advocacy.

The overarching recommendations from this project are:

- Co-production is necessary for enhancing access to public space for physical activity. In order to make an impact, key actors must be involved from infrastructure conceptualisation, co-design, advocacy, implementation and management. These actors include formal and informal sports authorities, government agencies and ministries in charge of physical planning and environment, security, health, youth and social development, as well as civil society actors, sports promoters and host communities.
- It is imperative to consider the needs of special groups, such as women, children and people living with disabilities, in the design and management of public spaces.
- Design of urban infrastructure must take into consideration how public spaces are used for physical activity, and the necessary modifications, to enhance landscaping features, cycle and running tracks and appropriateness for physical activities, must be done. Initiatives and programs encouraging the upgrade of existing public spaces, the provision of waste receptacles (colour coded), first aid boxes to counter the risk of poor air quality, safety, injury, and diseases, installation of air quality monitoring devices, and creating opportunities for competitions and non-competitive recreational sports are crucial for community members to use public spaces.
- Targeted initiatives such as the implementation of non-motorised transport policy, bike-sharing initiatives and air quality monitoring are necessary to improve air quality and enhance safe physical activity.
- Social media should be leveraged for more active health messaging and physical activity promotion.

E. WHAT NEXT?

1. [Cityzens4CleanAir](#): leveraging experience of citizen science to understand health risks in the built environment, the PI developed a proposal on a youth-led citizen science approach to understanding air pollution and other health risks. The goal of this project was to explore the feasibility of working with young adults (representing the majority demographic) to generate data stories to inform and augment urban design for health and climate resilience. This project, conducted in Lagos, Accra, and Cape Town, was conducted between June-December 2022, funded by the Clean Air Fund. This project has

been widely covered by [local and global media](#) including Al Jazeera, BBC Africa and The Guardian and was [presented by youth at COP27](#) in Egypt.

2. [New project on participatory integrated approaches to building air quality and health capacity across Africa](#): In June 2022, a follow-on workshop was held in Lagos. This workshop, focused on identifying opportunities for research partnership on air pollution, public space and health, was motivated by the Lagos State government's commitment in April 2020 to clean air as part of the C40 African Cities for Clean Air initiative. The opportunity to work together to support this commitment was identified in preparation for the second stakeholder workshop in Lagos. This workshop also enabled the project team to build partnership with AirQo, an air quality research programme at Makerere University, Uganda, who also attended the June workshop. Key outcomes of the workshop were to identify key air pollution and health stakeholders, existing data on air quality and knowledge and capacity gaps that if addressed would support the government's efforts to improve health and climate action through addressing air pollution. The findings of this workshop were summarised in this [report](#) and resulted in a research proposal co-designed by the transdisciplinary team of researchers in Nigeria, UK and Uganda, and government actors across diverse sectors including the environmental protection agency, ministry of physical planning and health. The proposal also included collaborators from West (Nigeria, Ghana), Central (Cameroon) and East (Uganda, Burundi) Africa; focused on building integrated air pollution and health capacity across the continent. The application, submitted to the United States Department of State, was successfully funded (USD 440,000 amount between Oct 2022-Sept 2025).

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