



Global Observatory of
**Healthy and
Sustainable Cities**

Barranquilla Colombia 2023

Spatial indicators for healthy and sustainable cities
1000 Cities Challenge report

Olga Lucia Sarmiento, 2023

Full details of the data and methods are available at:

Global Observatory of Healthy & Sustainable Cities
<https://www.healthysustainablecities.org>

Population data: Schiavina, Marcello; Freire, Sergio; MacManus, Kytt (2022): GHS-POP R2022A - GHS population grid multitemporal (1975-2030). European Commission, Joint Research Centre (JRC) [Dataset] doi: 10.2905/D6D86A90-4351-4508-99C1-CB074B022C4A

Urban boundaries: Florczyk, A. et al. (2019): GHS Urban Centre Database 2015, multitemporal and multidimensional attributes, R2019A. European Commission, Joint Research Centre (JRC).
<https://data.jrc.ec.europa.eu/dataset/53473144-b88c-44bc-b4a3-4583ed1f547e>

Urban features: OpenStreetMap Contributors. OpenStreetMap.co (2023).
<https://download.geofabrik.de/south-america/colombia-latest.osm.pbf>

Colour scale: Crameri, F. (2018). Scientific colour-maps (3.0.4). Zenodo.
<https://doi.org/10.5281/zenodo.1287763>

Global Healthy & Sustainable City Indicators Collaboration

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Spatial indicators for healthy and sustainable cities

1000 Cities Challenge report

This report outlines how Barranquilla performs on a selection of spatial and policy indicators of healthy and sustainable cities. As part of the 1000 Cities Challenge, we examined the spatial distribution of urban design and transport features that promote health and sustainability. The maps show the distribution of urban design and transport features across Barranquilla and identify areas that could benefit the most from interventions to create healthy and sustainable environments.

Barranquilla context

Barranquilla is the capital city of the department of Atlántico and the fourth largest city in Colombia, located in the north part of the country. The city was established in the early XIX century, and by being a coastal city, it quickly became one of the main entry points to the country. Barranquilla is characterized for being mostly flat, and for having a dry tropical

Demographics and health equity

Barranquilla has around 1.2 million residents. Access to public services –internet and natural gas– is limited. The city shows significant inequalities, with higher population density in the south and wealth concentrated in the north and northwest. At the departmental level, disparities persist in maternal mortality, access to healthcare, and cervical cancer rates.

Environmental disaster context

Barranquilla experiences environmental disasters like floods, landslides, heatwaves, and wildfires. Flooding and landslides occur near the Magdalena River basin, while heatwaves and fires worsen during droughts.

Additional context

Detail any other considerations relating to urban health inequities and geography in this city, or data considerations that could influence interpretation of findings.

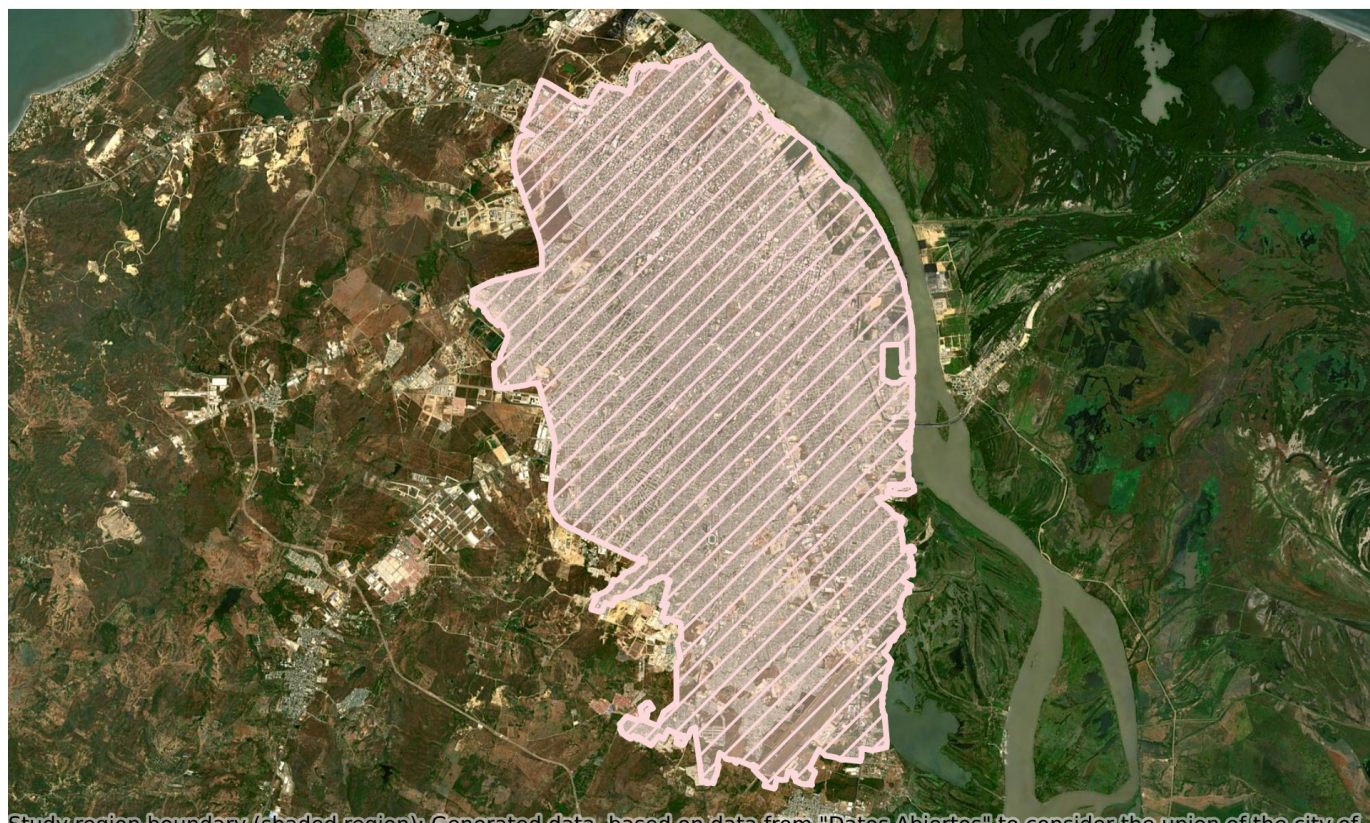
Olga Lucia Sarmiento, 2023



Study region

The study region used to calculate spatial indicators for the population of Barranquilla presented in this report has been highlighted in the map below using parallel line shading.

3 km



Study region boundary (shaded region): Generated data, based on data from "Datos Abiertos" to consider the union of the city of Barranquilla and the municipality of Soledad. This is due to the fact that experts affirmed that between the two territories there are some movement dynamics that cannot be ignored. under NA | Basemap: Sentinel-2 cloudless - <https://s2maps.eu> by EOX IT Services GmbH (Contains modified Copernicus Sentinel data 2021) released under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License

Map legend

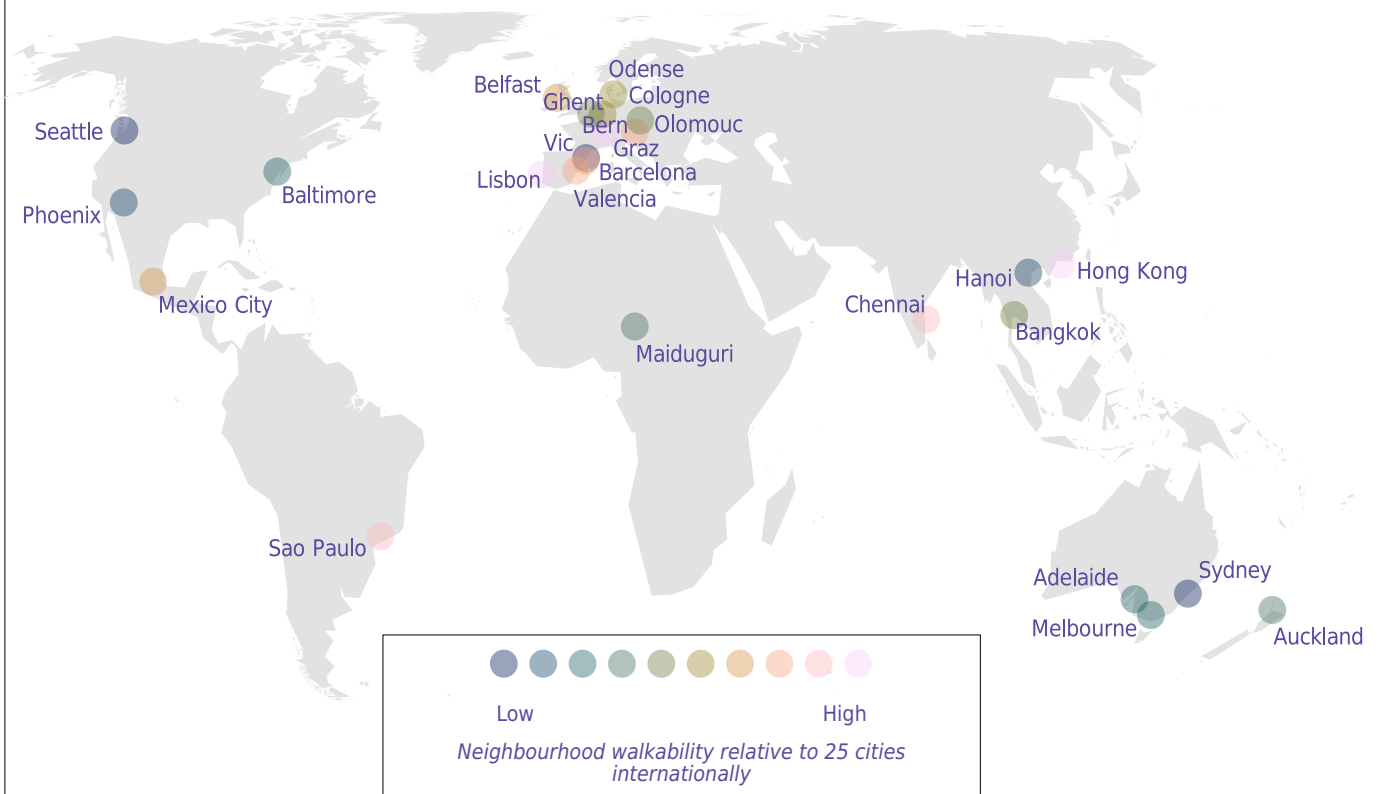


Study region boundary
(Organización AMB (2019).
Cartografía Catastral en formato
geoDataBase del Área
Metropolitana de Barranquilla.
https://www.datos.gov.co/Ordenamiento-Territorial/Cartografia-Catastral-en-formato-geoDataBase-del-r/jt5b-pjm4/about_data)

Box 1: The Lancet Global Health Series study of 25 cities internationally

The 1000 Cities Challenge extends methods for assessing the health and sustainability of cities outlined in the 2022 Lancet Global Health Series on urban design, transport, and health. Policy and spatial indicators were calculated, analysed and reported in multiple languages for 25 diverse cities across 19 countries and 6 continents. These cities provide a useful reference for comparisons, but are not a representative sample of all cities internationally.

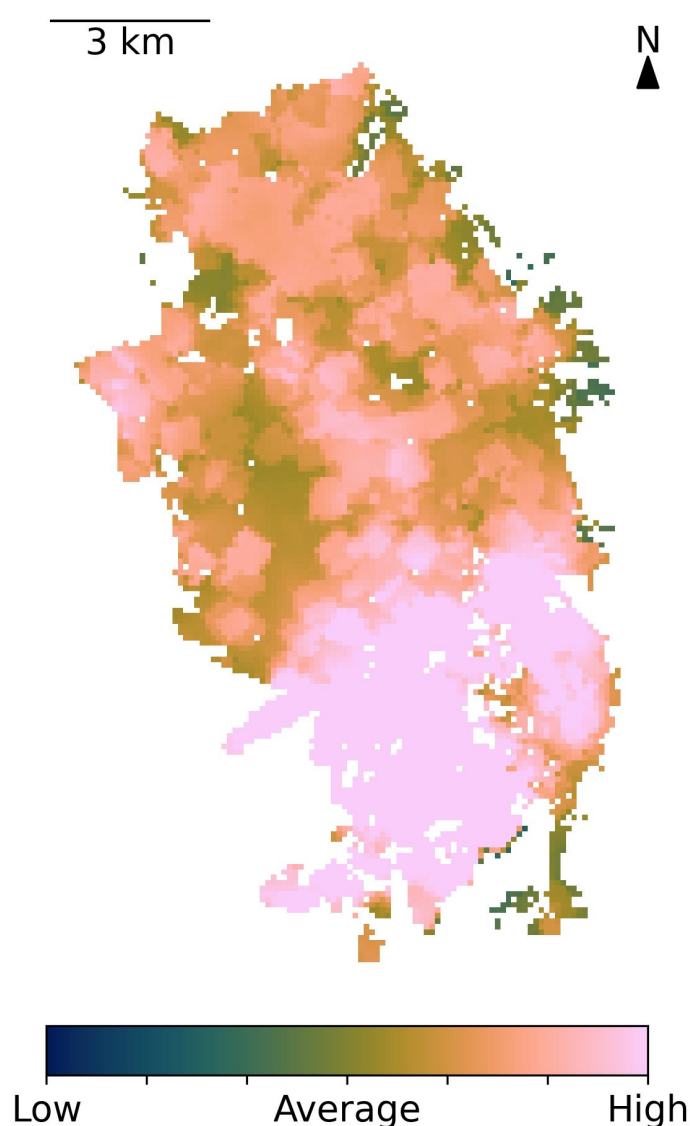
For more details, please see the 2022 The Lancet Global Health Series on Urban design, transport, and health (<https://www.thelancet.com/series/urban-design-2022>).



Walkability and destination access

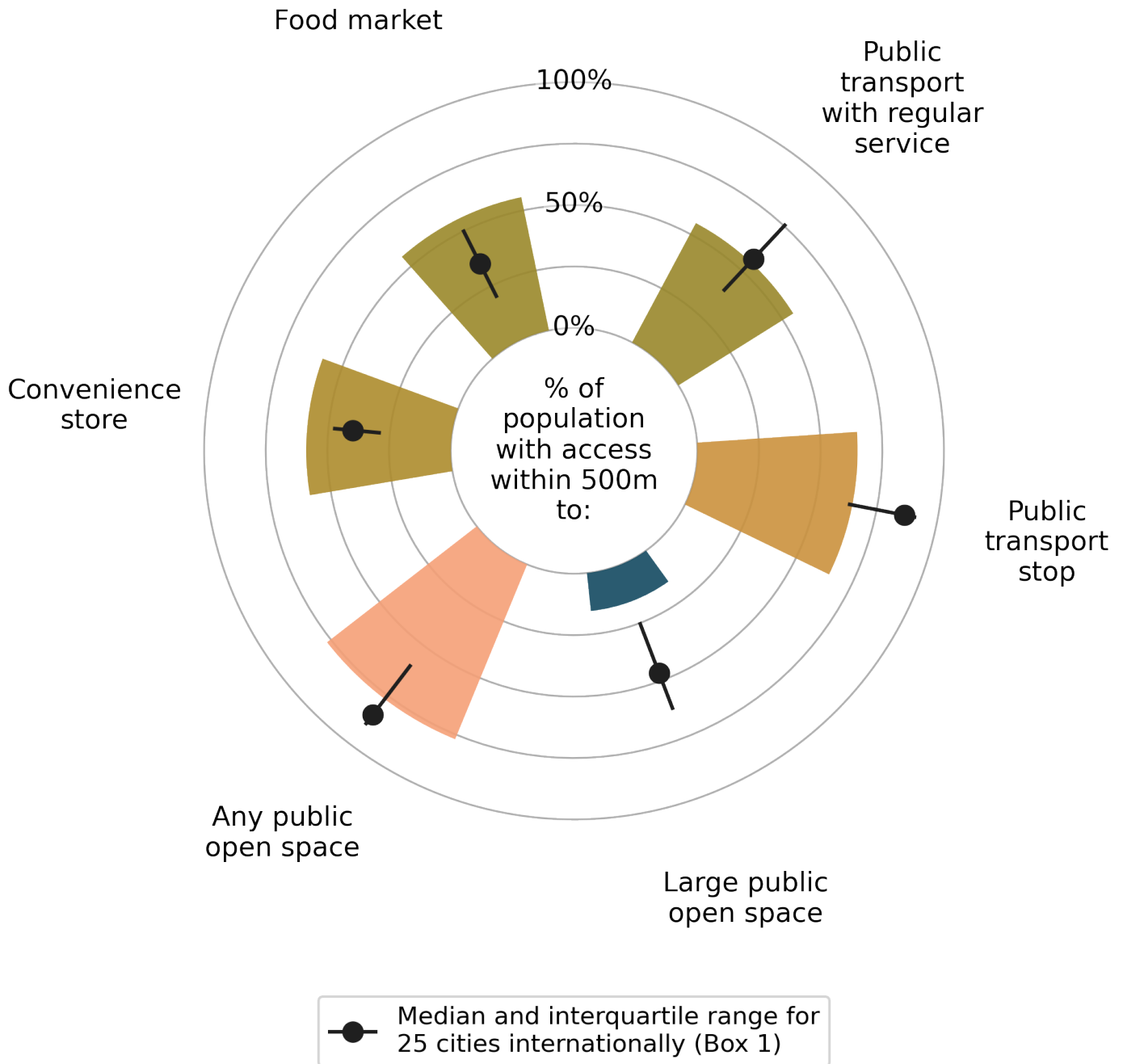
Walkable neighbourhoods provide opportunities for active, healthy, and sustainable lifestyles through having sufficient but not excessive population density to support adequate provision of local amenities, including public transport services. They also have mixed land uses and well-connected streets, to ensure proximate and convenient access to destinations. High-quality pedestrian infrastructure and reducing traffic through managing demand for car use can also encourage walking for transport.

Neighbourhood walkability relative to 25 cities internationally



0.3% of the population in Barranquilla live in neighbourhoods with walkability scoring below the median of 25 cities internationally (Box 1)

Percentage of population with access to amenities within 500 metres (m)

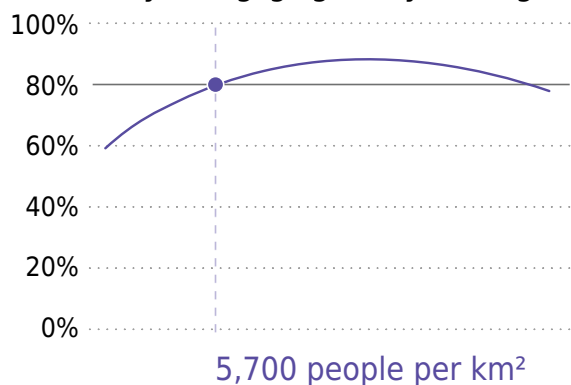


Urban design thresholds to promote walking

The 2022 Lancet Global Health Series found that to achieve at least 80% probability of engaging in any walking for transport, an average urban neighbourhood would need a population density of at least 5700 people km² and street connectivity of at least 100 intersections per km², approximately and depending on context. Preliminary evidence showed that street intersection density above 250 per km² and ultra-dense neighbourhoods (> 15,000 persons per km²) may have decreasing benefits for physical activity. This is an important topic for future research.

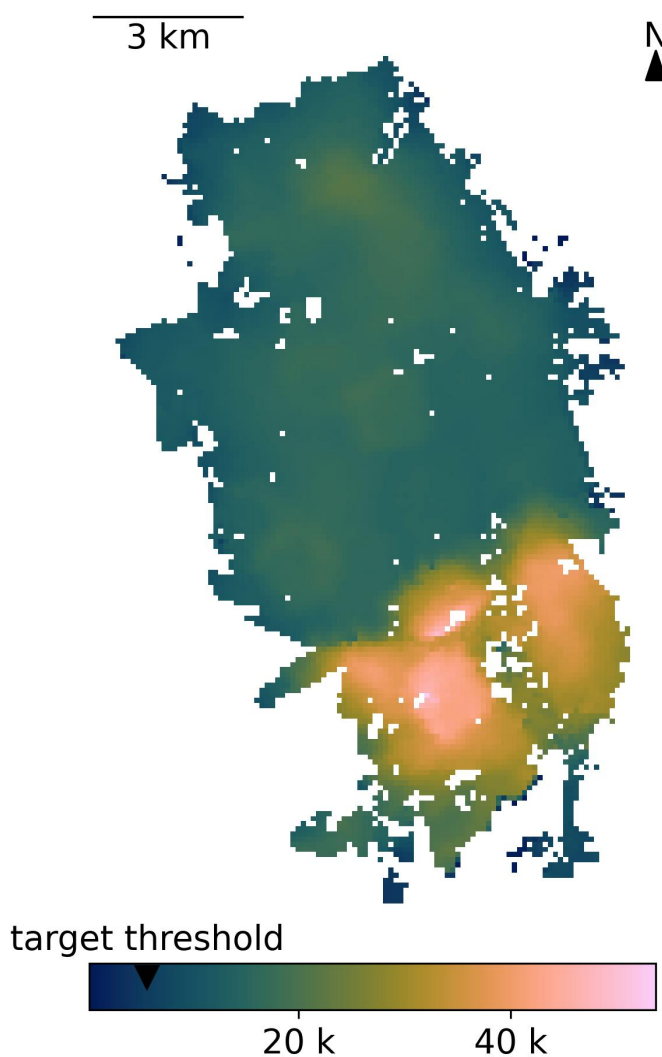
Neighbourhood population density (per km²)

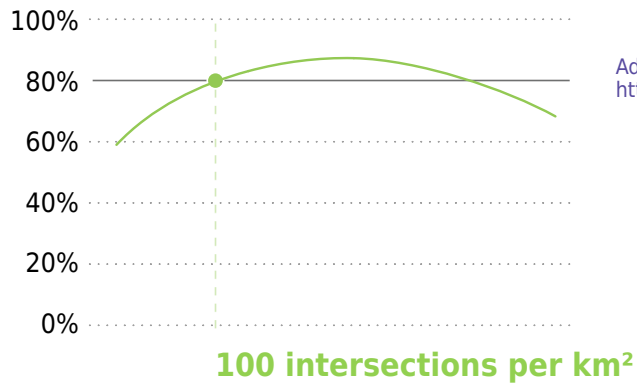
Probability of engaging in any walking for transport



Adapted from The Lancet Global Health (2022):
<https://www.thelancet.com/infographics-do/urban-design-2022>

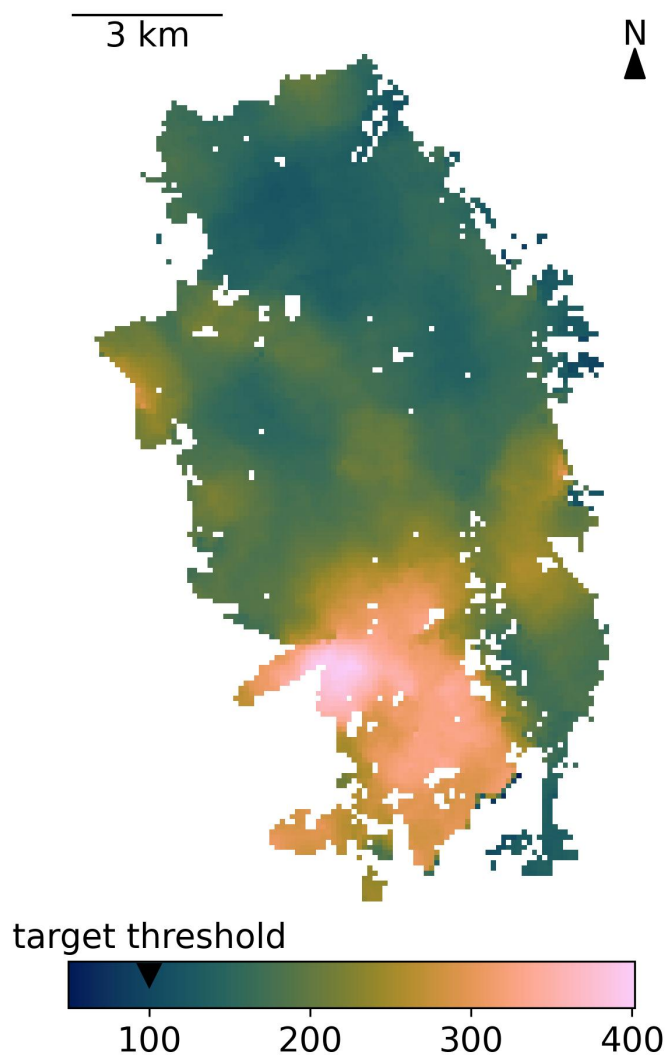
99.7% of the population in Barranquilla live in neighbourhoods meeting the population density threshold for 80% probability of engaging in any walking for transport (5,700 people per km²)



Neighbourhood intersection density (per km²)**Probability of engaging in any walking for transport**

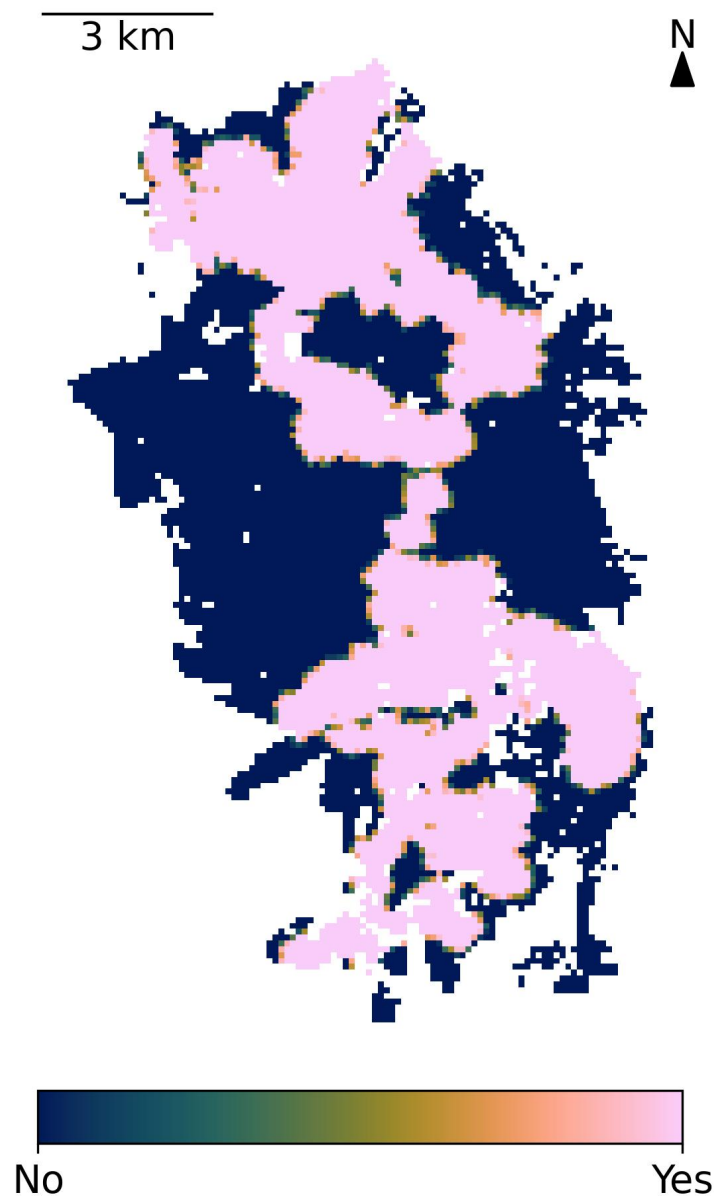
Adapted from The Lancet Global Health (2022):
<https://www.thelancet.com/infographics-do/urban-design-2022>

100.0% of the population in Barranquilla live in neighbourhoods meeting the street intersection density threshold for 80% probability of engaging in any walking for transport (100 intersections per km²)



Public transport access

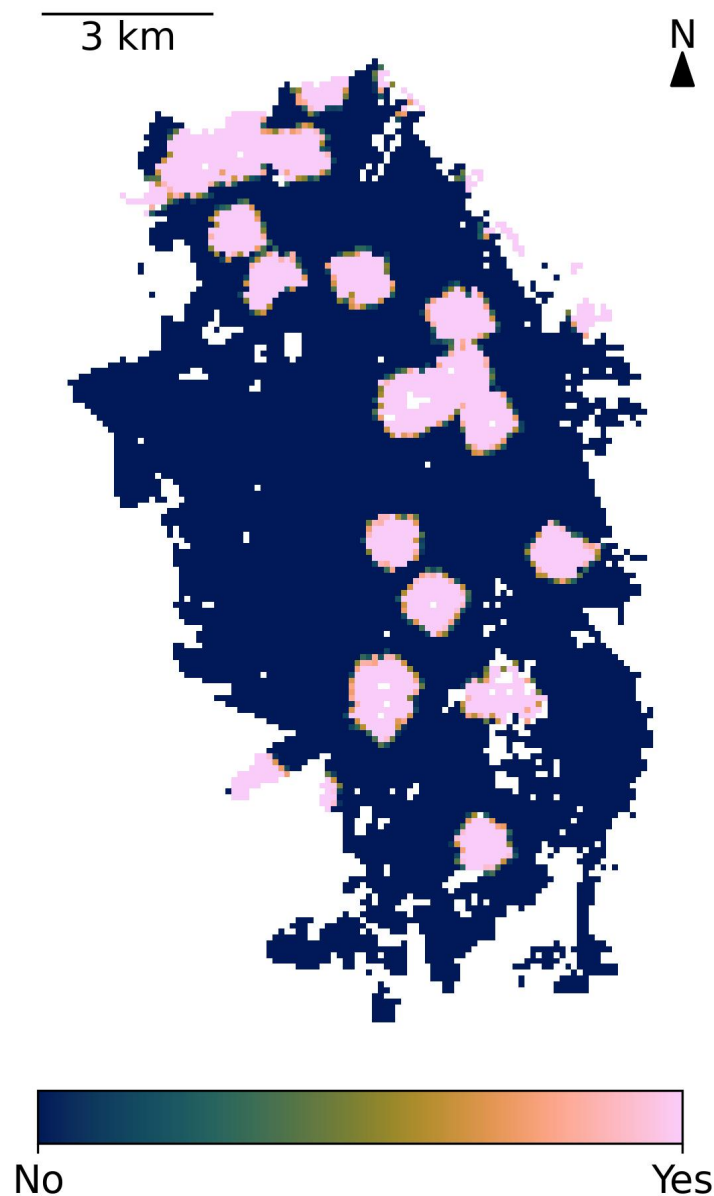
Easy access to frequent public transport is a key determinant of healthy and sustainable transport systems. Public transport near housing and employment increases the mode share of public transport trips, thus encouraging transport-related walking; offering access to regional jobs and services; improving health, economic development, and social inclusiveness; and reducing pollution and carbon emissions. The frequency of services also encourages public transport use, in addition to the proximity of stations or stops.



55.0% of the population in Barranquilla live within 500m of public transport with 20 mins or better average weekday frequency

Public open space access

Local access to high-quality public open space promotes recreational physical activity and mental health. Nearby public open space creates convivial, attractive environments, helps cool the city and protects biodiversity. As cities densify and private open space declines, providing more public open space is critical for population health. Having public open space within 400 m of homes can encourage walking. Access to larger parks may also be important.



15.5% of the population in Barranquilla live within 500m of public open space of at least 1.5 hectares in size

Summary

After reviewing the results, update this summary text to contextualise your findings, and relate to external text and documents (e.g. using website hyperlinks).

Citation

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