KATHMANDU, NEPAL

URBAN TRANSPORT PROFILE

December 2024

Asian Transport Observatory

Summary

Kathmandu, Nepal's capital city, faces significant urban transport challenges due to its rapid population growth and increasing urbanization. The city's population density has grown from 9,000 persons per sqkm in 2000 to 12,000 persons per sqkm in 2020, leading to increased demands on its transport infrastructure. Despite this growth, Kathmandu's road infrastructure remains limited. This disparity highlights the need for investment in efficient and sustainable urban transport solutions to alleviate congestion and improve accessibility for residents.

The existing transport infrastructure in Kathmandu is predominantly road-based, with buses and minibuses serving as the primary modes of public transportation. However, the lack of a rapid transit system and limited road capacity contribute to traffic congestion and long travel times. While efforts have been made to expand the road network, the rapid increase in private vehicle ownership, particularly motorized two-wheelers, continues to strain the existing infrastructure. This trend underscores the importance of promoting public transport and non-motorized transport options, such as cycling and walking, to reduce congestion and improve air quality.

Despite these challenges, Kathmandu has a relatively high rate of non-motorized transport usage, with 28% of residents relying on walking or cycling for their daily commutes. This figure, however, varies depending on the data source, highlighting the need for comprehensive and up-to-date transport surveys. Furthermore, while public transport accessibility is relatively high, with 20% of the population having convenient access to services, the modal share remains low, indicating a preference for private vehicles. To address this imbalance, investment in improving the quality and efficiency of public transport services is crucial, along with measures to promote sustainable transport options and reduce reliance on private vehicles.

About the Urban Transport Profiles

The Asian Transport Observatory (ATO) Urban Transport Profiles provide a comprehensive snapshot of urban transport dynamics for 40 cities in the Asia-Pacific region. These profiles compile data from official city reports, relevant sources from reputable research organizations, multilateral development institutions, international experts' reports, secondary studies, and all other research endorsed or guided by city governments. Featured cities are benchmarked against other cities, where data is available, in the region, subregional averages — and in some cases, global cities — offering valuable comparative insights. In cases where data is not available, placeholders for the graphs are retained. Each profile also includes a curated list of relevant urban transport policies and documents, presenting a concise overview of the city's policy framework. By covering a wide range of transport-related indicators, these profiles serve as a critical resource for understanding and improving urban transport systems.

General

Population 3.4 million
(2020) (GHS)

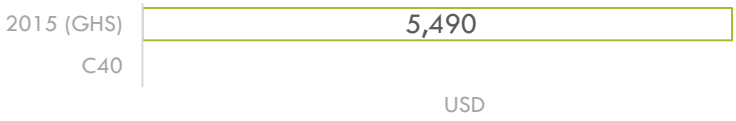
Land area 271 sqkm
(2015) (GHS)

Population density 12 thousand per sqkm
(2020) (GHS)

GDP per capita 5 thousand USD
(2015) (GHS)

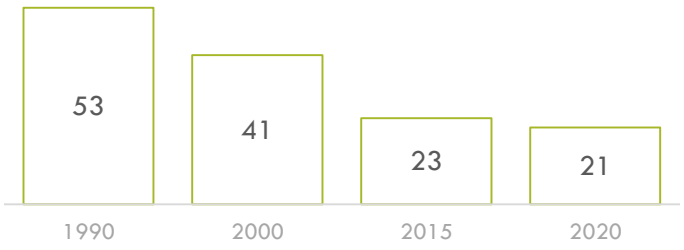
Population density

GDP per capita

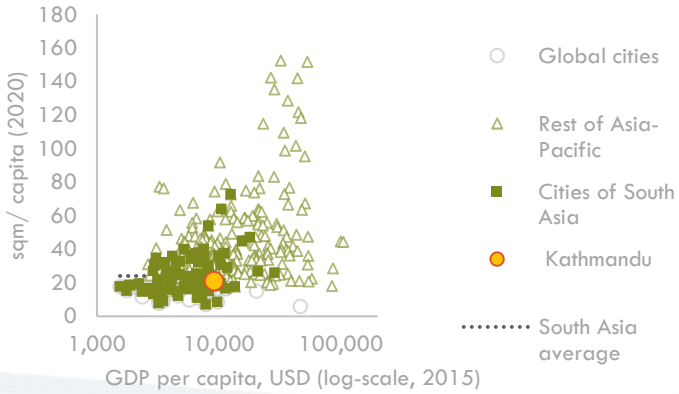


Urban Form and Structure

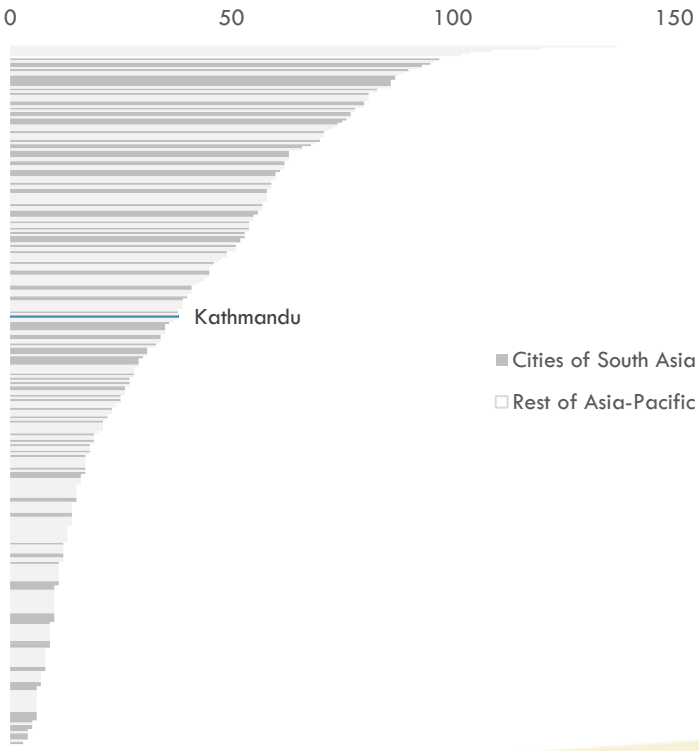
Builtup area per capita
sqm per capita (GHS)



Builtup area per capita
(GHS)

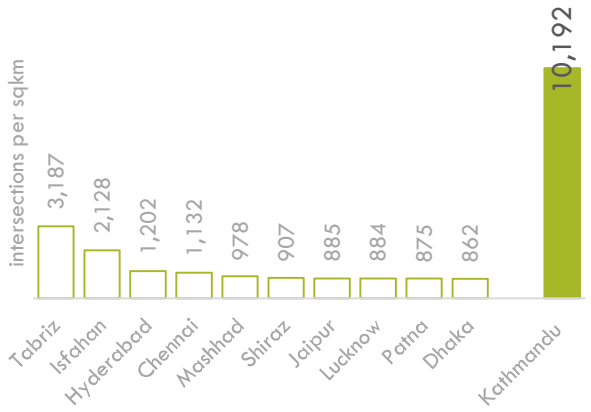


Mean block density
blocks per sqkm (2020) (ITDP)



Intersection density

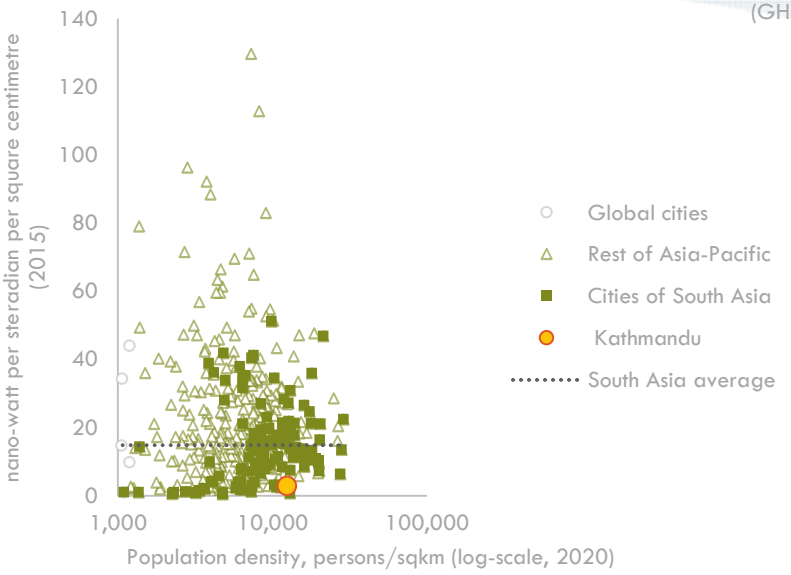
(Oke et.al. (2019) (OSM))



(a) Night time light intensity studies illustrate urban forms and patterns by mapping human activity, infrastructure, and connectivity, offering insights into urban sprawl, density variations, and transport network

Night time light intensity (a)

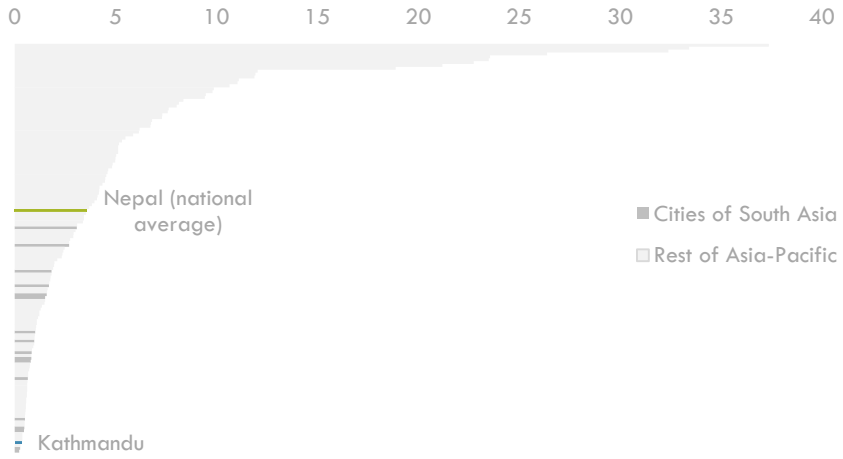
(GHS)



Urban Transport Infrastructure

Road availability

kilometers per thousand population (2019) (Oke et.al. (OSM) and GHS)

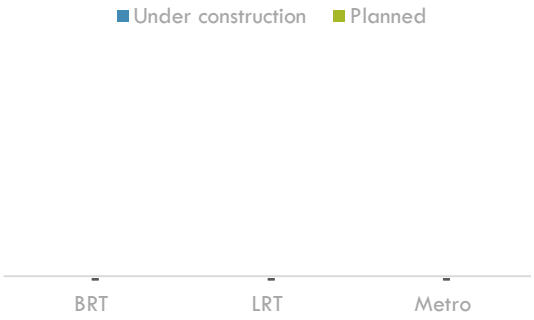


Road kilometers 1,040 kilometers

(2010) (Primary data)

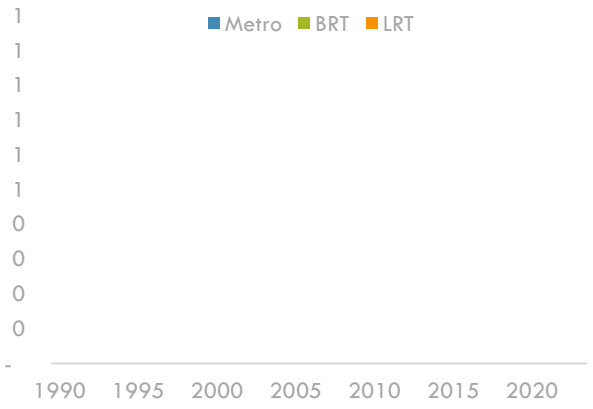
Rapid transit infrastructure

(2024) (TE)



Rapid transit infrastructure

kilometers (ITDP, Primary data)



BRT none

LRT none

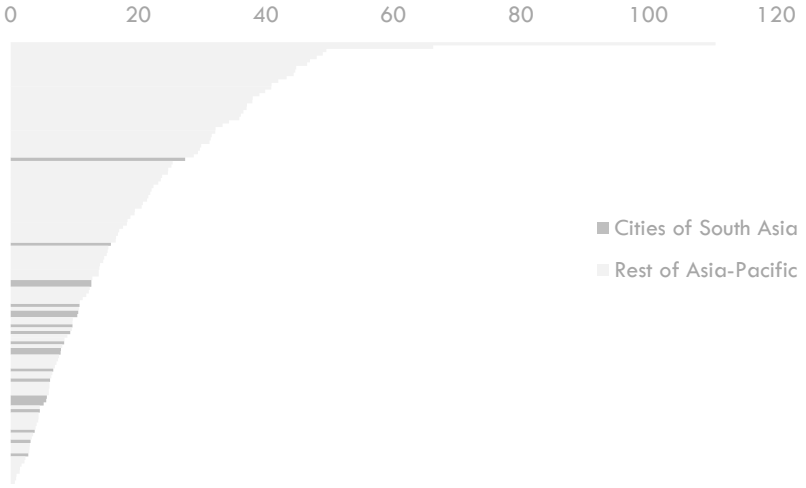
Metro none

Total none

(2023) (ITDP)

Rapid transit availability

kilometers per million urban population (2021) (ITDP, Primary data)

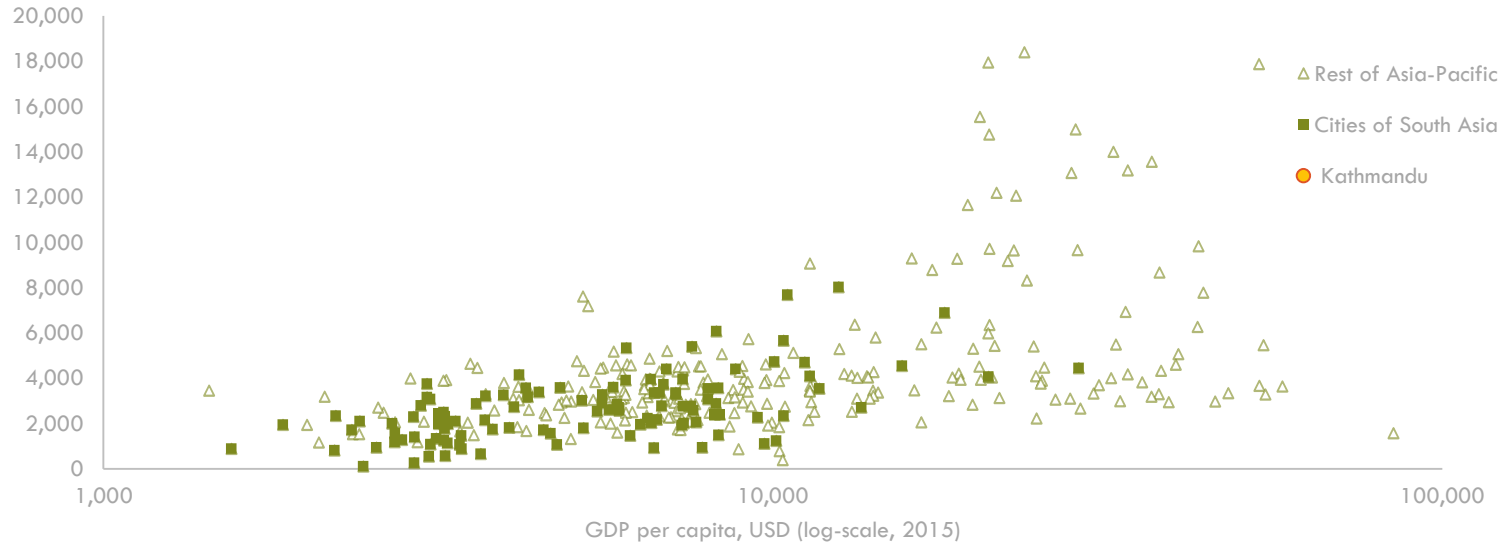


Approximate transit coverage n.d.

Transport Activity and Services

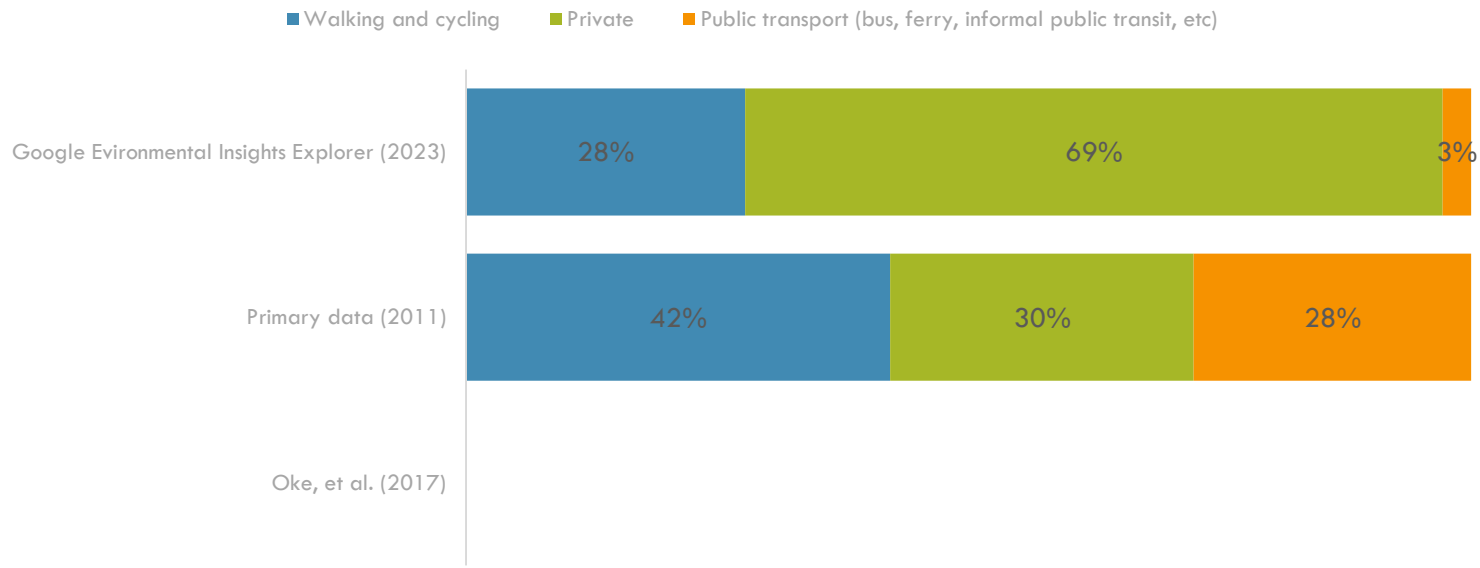
VKT per capita

Vehicle-kilometer per capita (2022) (ClimateTrace)



Trips Mode share (b)

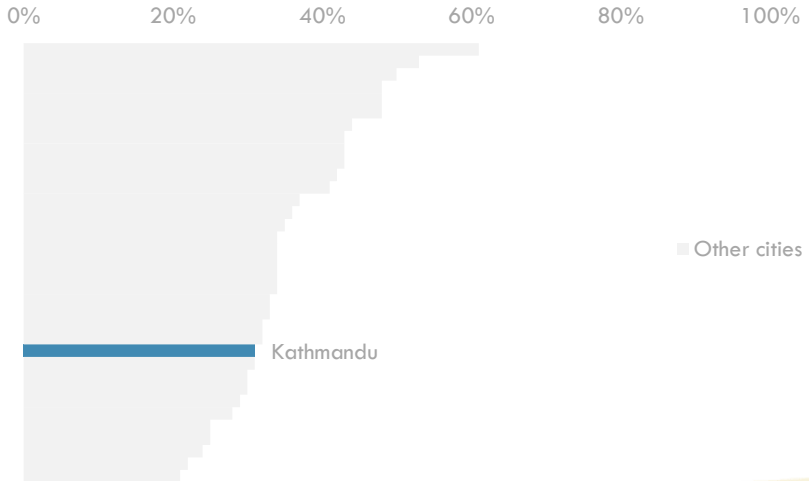
Share, %



(b) The methodologies used for mode share assessments vary across different studies, making direct comparison of results inadvisable. Specifically, the Google Environmental Insights Explorer derives its assessments from mobile data analysis, while primary data studies typically rely on survey-based approaches. In contrast, the study by Oke et al. utilizes a combination of secondary data sources.

Congestion level

Percent increased travel time vs. uncongested conditions (2021) (TomTom)

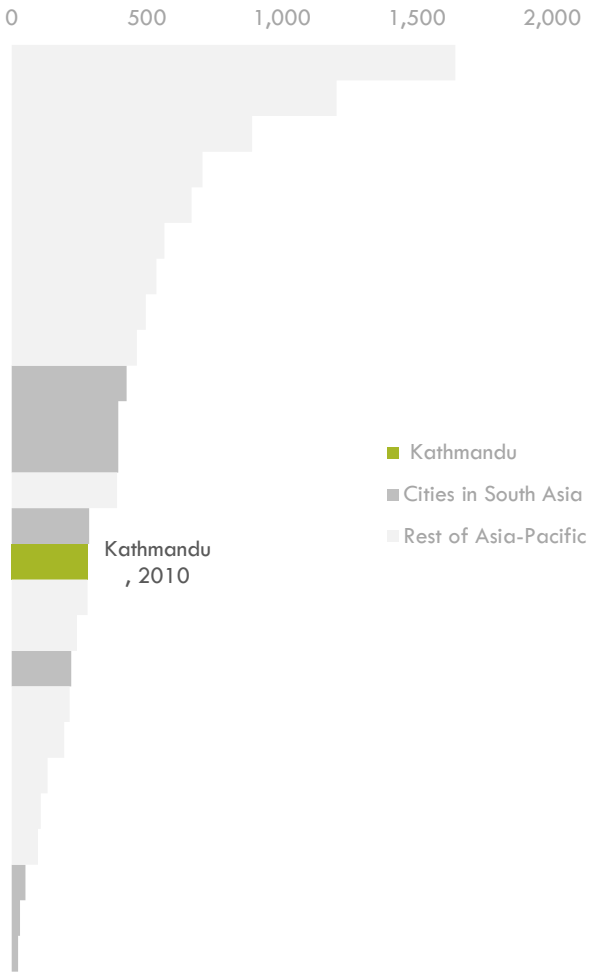


Metro ridership n.d.

Congestion ranking n.d.

Vehicle motorization

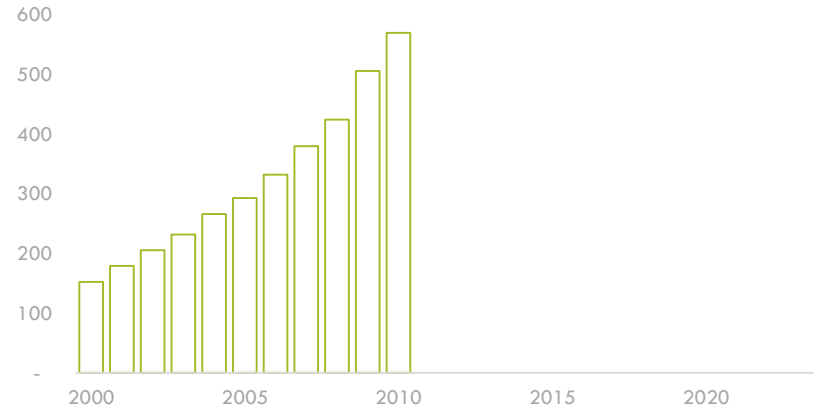
Vehicles per thousand population (Primary data)



(c) It should be noted that, in most cases, scrapped vehicles are not de-registered, which may result in slightly inflated numbers.

Vehicles registered (c)

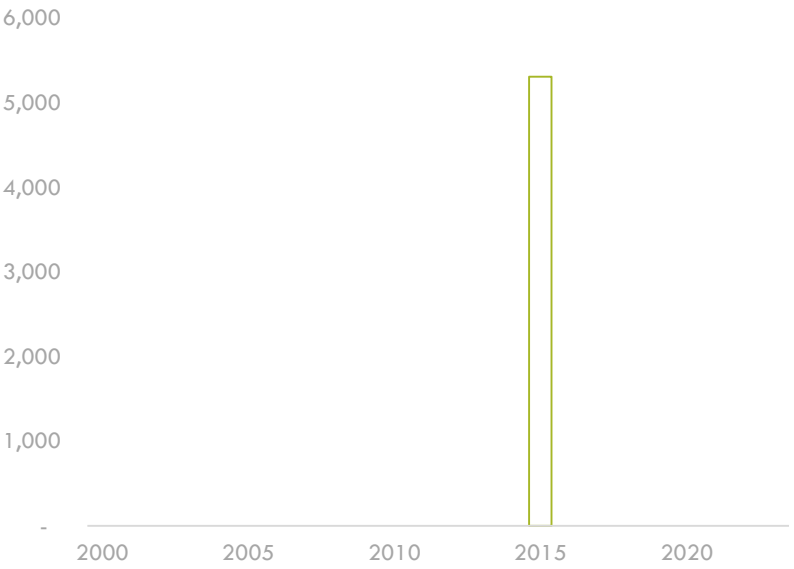
Thousand vehicles (Primary data)



Vehicles considered: Car, 2W, Bus, Others

Bus fleet (operational)

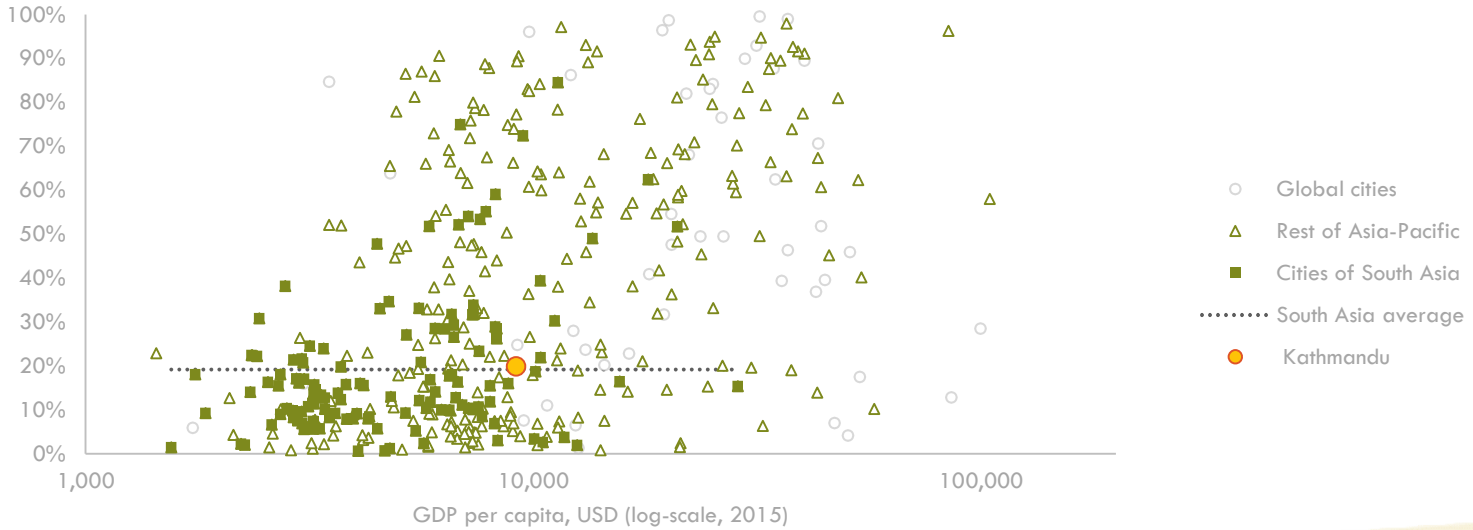
Bus (and other public transport) fleet (Primary data)



Urban Access

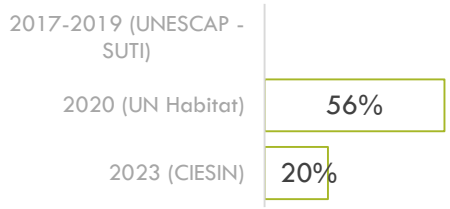
Access to urban public transport

Share of population with convenient access to public transport (2023) (CIESIN)



Access to urban public transport (d) - by source

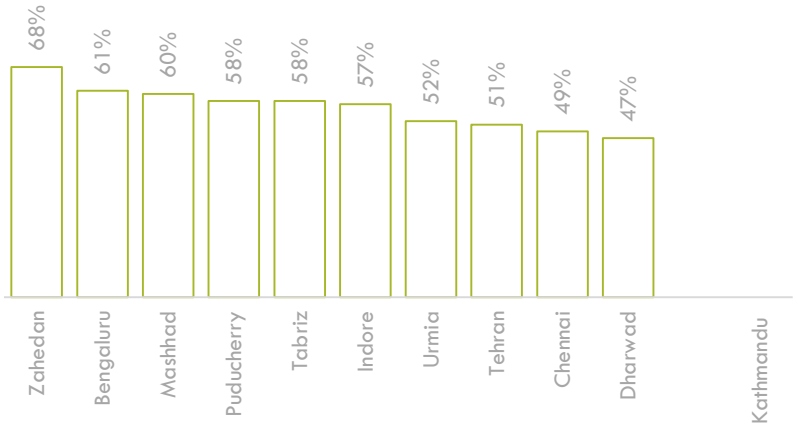
Share of population with convenient access to public transport



(d) "Access to urban public transport" is computed as share of population who live within a walking distance (along a street network) of 500m to a low capacity public transport system (eg bus, tram) and 1000m to a high capacity public transport system (eg trains, ferries, etc). Only public transport stops which are mapped are included in the analysis which may include both formal and informal stops. Many cities (mostly in the developing countries) have informal public transport systems which are not fully mapped - meaning that they may record higher levels of access to public transport than reported in this dataset.

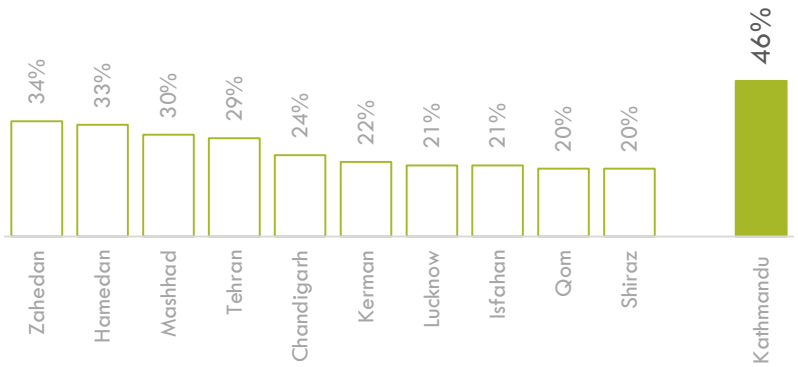
People near services (both healthcare and schools) (e)

(Share of population) vs. highest 10 cities in South Asia (2020) (ITDP)



People near car-free places (f)

(Share of population) vs. highest 10 cities in South Asia (2020) (ITDP)

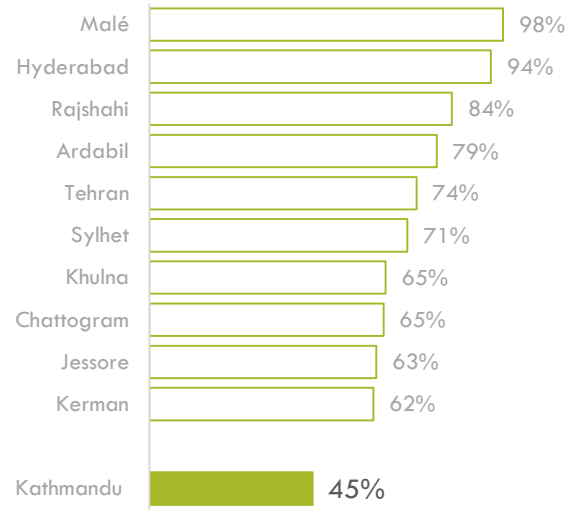


(e) People Near Services measures the percentage of the city's population living within a 1km walk of both healthcare and education. These services are especially vital for babies, toddlers, and their caregivers, who should be able to reach them on foot.

(f) Percentage of the city's population that lives within 100m of a car-free place. These car-free places include pedestrian-only alleyways, nature trails, playgrounds, pedestrianized squares, and anywhere else that is not used by cars and trucks (except, in some cases, emergency vehicles).

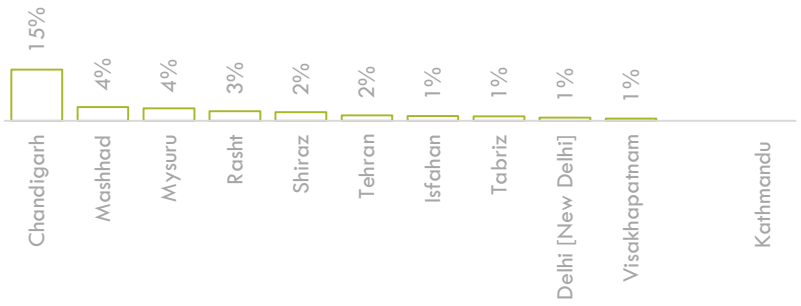
People near open public space

(Share of population) vs. highest 10 cities in South Asia (2020) (UN Habitat)



People near protected bikelanes

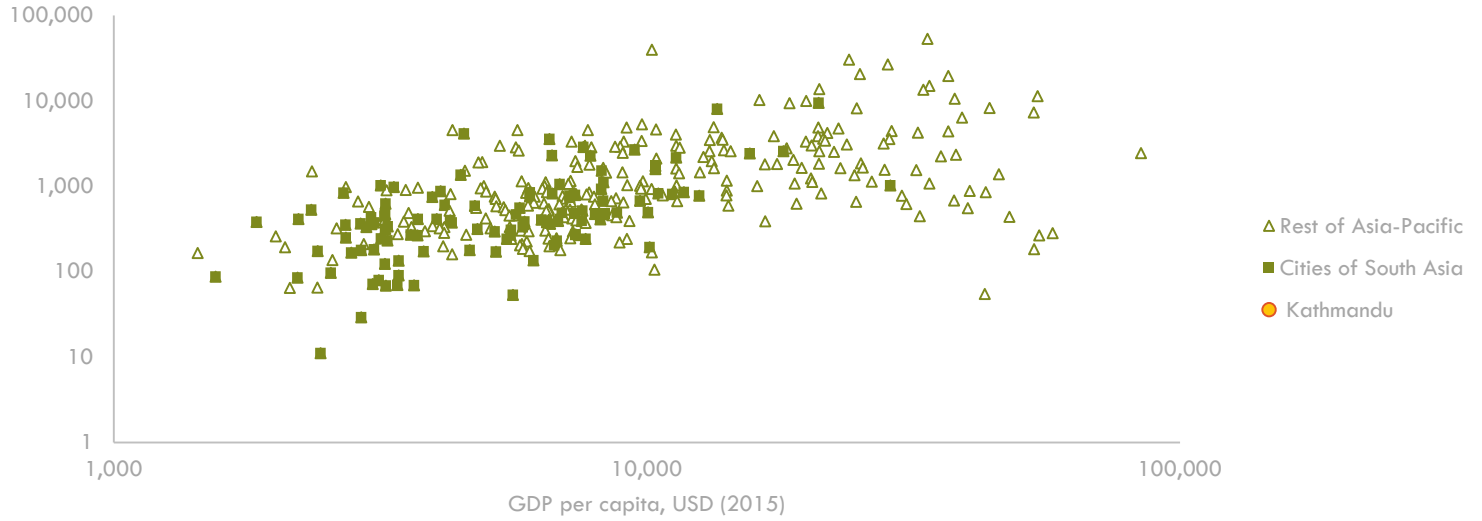
(Share of population) vs. highest 10 cities in South Asia (2020) (ITDP)



Transport externalities

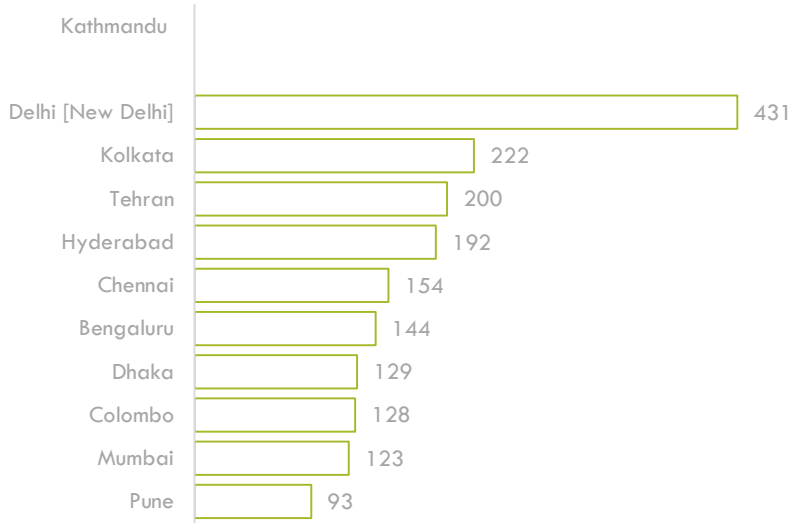
Road transport - CO2 emissions

Thousand tonnes (2022) (ClimateTrace)



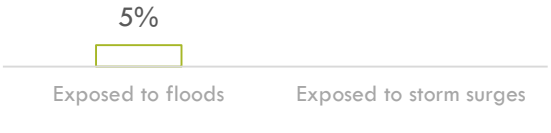
Road transport - N2O emissions

Tonnes (2022) vs. highest 10 cities in South Asia (ClimateTrace)



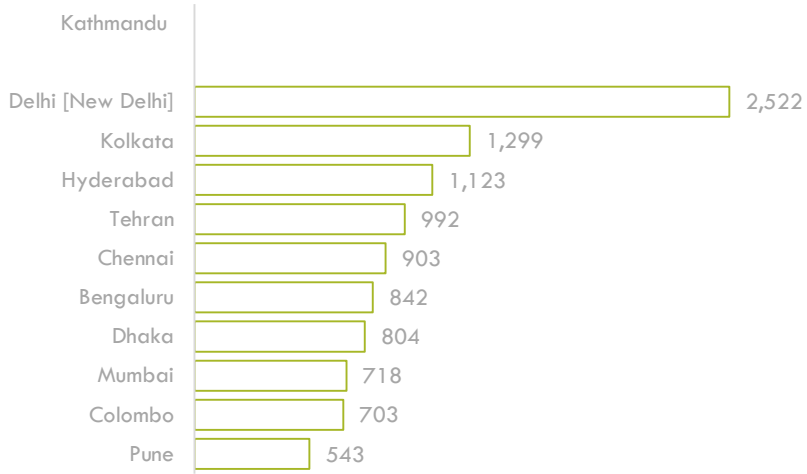
Population exposure to disasters

Share of population (2015) (GHS)



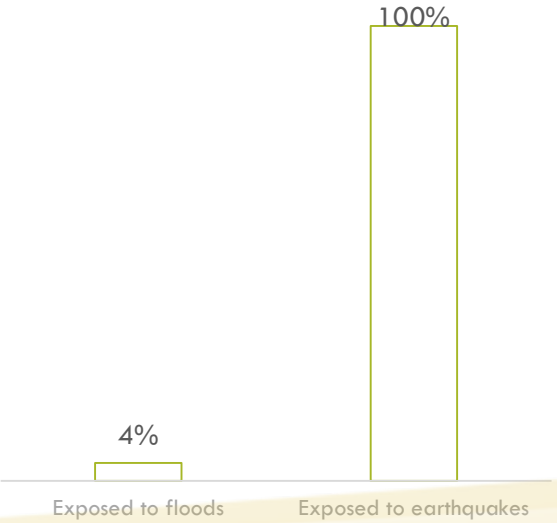
Road transport - CH4 emissions

Tonnes (2022) vs. highest 10 cities in South Asia (ClimateTrace)



Urban built-up area exposure to disasters

Share of urban area (2020) (GHS)

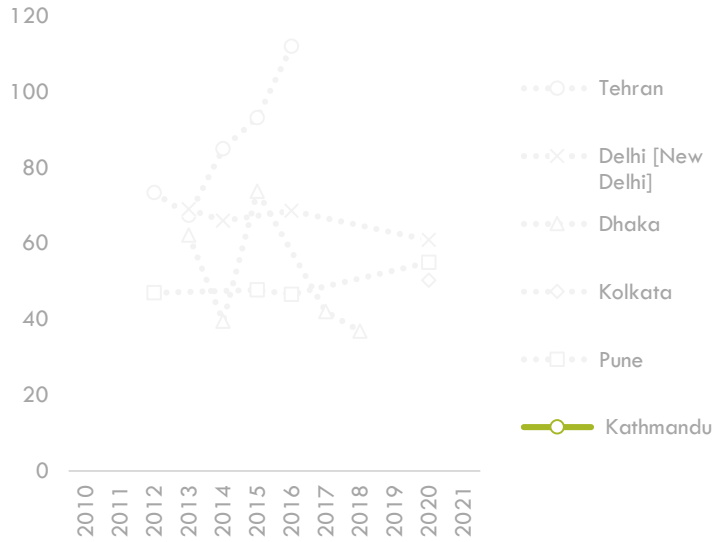


Transport PM 2.5 emissions

(GHS)

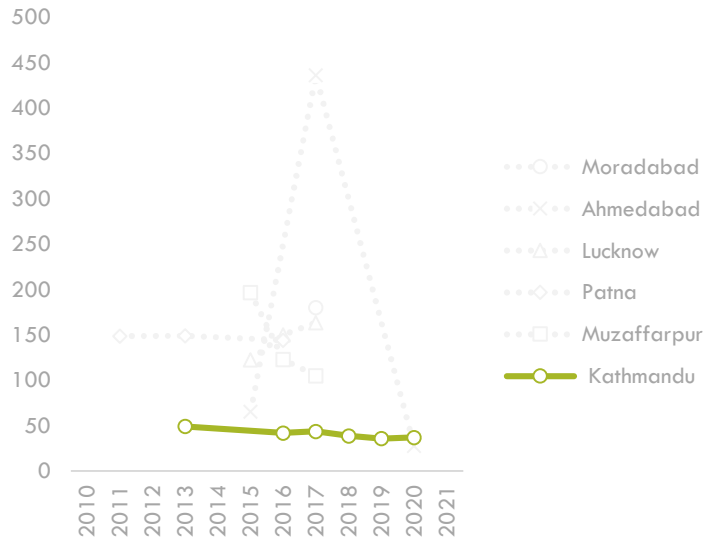
NO2 concentration

ug/m3 (vs. highest 5 cities in South Asia) (WHO)



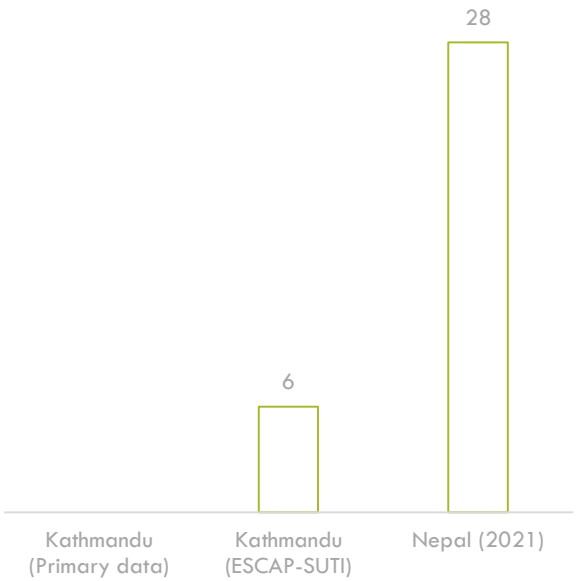
PM 2.5 concentration

ug/m3 (vs. highest 5 cities in South Asia) (WHO)



Road crash fatality rate

Deaths per 100,000 population



Road crash fatality rate

Deaths per 100,000 population (Primary data)

Transport related Indices

Container port performance index

Index is resultant of the sum of a weighted average of indices for each of the five vessel sizes: feeders (<1,500 TEUs), intra-regional (1,500–5,000 TEUs), intermediate (5,000–8,500 TEUs), neo-Panamax (8,500–13,500 TEUs), and ultra-large container carriers (>13,500 TEU)

Kathmandu n.d.

Cities in Motion index ranking

The Cities in Motion Index (CIMI) is a composite indicator evaluating cities across nine dimensions—governance, urban planning, technology, environment, international profile, social cohesion, human capital, mobility, and economy—focusing on sustainability and quality of life. It uses a weighted aggregation model to combine sub-indicators for a holistic assessment of urban performance

Kathmandu n.d.

Critical Infrastructures Spatial Index for the transportation sector

CISI is an index that spatially explicit indicates the coverage or lack of transport infrastructure. The CISI is expressed in a dimensionless value ranging between 0 (no CI intensity) and 1 (highest CI intensity). The index aggregates high resolution geospatial information on multiple CI assets per CI system

Kathmandu 0.02/1.00

(2020) (GHS)

SUTI Geometric Mean

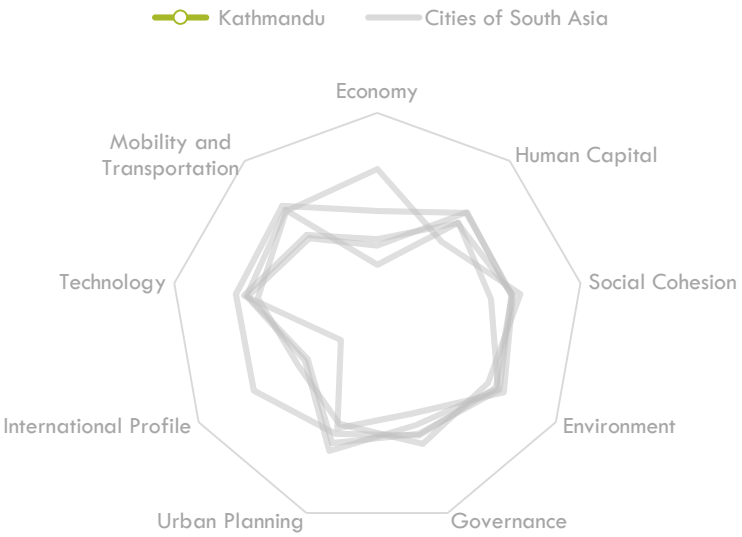
The geometric mean in the Sustainable Urban Transport Index (SUTI) by UNESCAP is a mathematical approach to aggregate scores across its 10 sub-indicators, including public transport ridership, safety, affordability, air quality, and access to transport

Kathmandu 48 score out of 100

(2024) (UNESCAP - SUTI)

Cities in Motion index ranking by subcomponent

Ranking (vs. other Cities of South Asia) (2024) (IESE)



Transport relevant policy documents

Year published	Document name
2012	Data Collection Survey On Traffic Improvement In Kathmandu Valley
2017	Air Quality Management Action Plan for Kathmandu Valley
2017	The Project On Urban Transport Improvement For Kathmandu Valley
2022	Municipal Actions for Air Quality in the Kathmandu Valley
n.d.	Project on Kathmandu Valley Urban Transport System Master Plan
n.d.	Kathmandu Sustainable Urban Transport Project (KSUTP)

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