



TEHRAN, IRAN (ISLAMIC REPUBLIC OF)

URBAN TRANSPORT PROFILE

December 2024

Summary

Tehran, the capital of Iran, is a sprawling metropolis with a population of 8.9 million in 2020. Despite a high GDP per capita, which grew from \$19,000 in 2000 to \$32,000 in 2015, Tehran faces considerable urban transport challenges. While the city boasts a well-developed metro system, with 179 kilometers of lines by 2023, it falls short in road infrastructure with only 1 kilometer of road per thousand capita compared to the national average of 6. This disparity contributes to heavy reliance on private vehicles, with 72% of trips taken by private modes of transport. This reliance and the city's geographic location surrounded by mountains exacerbate air pollution concerns.

Although Tehran has made significant investments in its metro system, expanding it from 78 kilometers in 2010 to 179 kilometers in 2023, public transport usage remains relatively low. This could be attributed to several factors, including the limited reach of the metro network, inadequate road infrastructure impacting bus services, and the perceived convenience of private vehicles. Consequently, only 52% of the population has convenient access to public transport, although this is significantly higher than the South Asia average of 19%. However, access to essential services and spaces is uneven, with 51% having access to healthcare and schools, but only 29% having access to car-free areas like parks and plazas.

Tehran's air quality is a significant concern, with the city ranking first in Iran for CO₂ emissions and among the highest in South Asia for other pollutants like CH₄ and N₂O. The high volume of vehicles, particularly older cars with higher emissions, contributes significantly to the city's poor air quality. Despite these challenges, Tehran has made some progress in reducing PM_{2.5} emissions from its transport sector, decreasing from 1831 tonnes in 2000 to 789 tonnes in 2020. However, the average concentration of PM_{2.5} and NO₂ remains high. Policy priorities indicate that addressing Tehran's urban transport challenges will require a multi-faceted approach, including expanding public transport networks, improving road infrastructure, promoting cleaner vehicles, and implementing effective traffic management strategies.

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.

Disclaimer

The Asian Transport Observatory (ATO) project collects, collates, and organizes data from publicly available official, as well as reputable and peer-reviewed secondary sources, which may contain incomplete or inconsistent data. It is important to note that the ATO does not generate data. Moreover, while the ATO carries out quality control and assurance of whether the data are truthfully reflected in the ATO, the ATO does not make any warranties or representations as to the appropriateness, quality, accuracy, or completeness of the data in the ATO databases, and in the knowledge products that are produced from such. Users are encouraged to scrutinize, verify, interpret, and judge the data before utilizing them.

General

Population 8.9 million

(2020) (GHS)

Population density

Land area 1,632 sqkm

(2016) (Oke et.al. (2019) (Demographia))



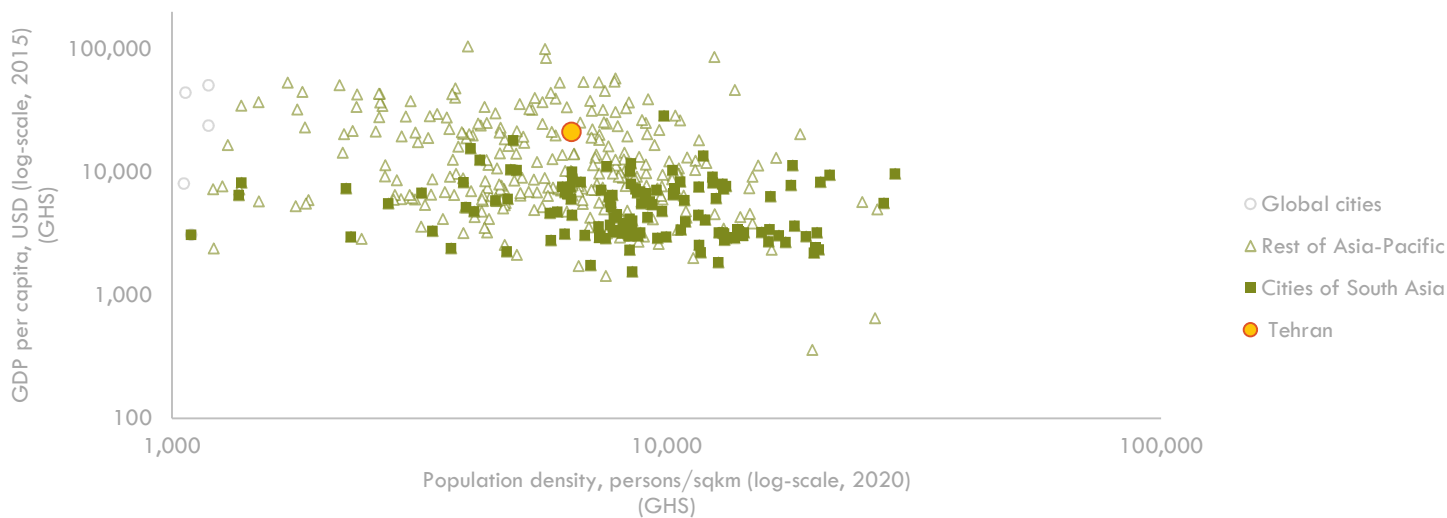
Population density 6 thousand per sqkm

(2020) (GHS)

GDP per capita

GDP per capita 32 thousand USD

(2015) (GHS)



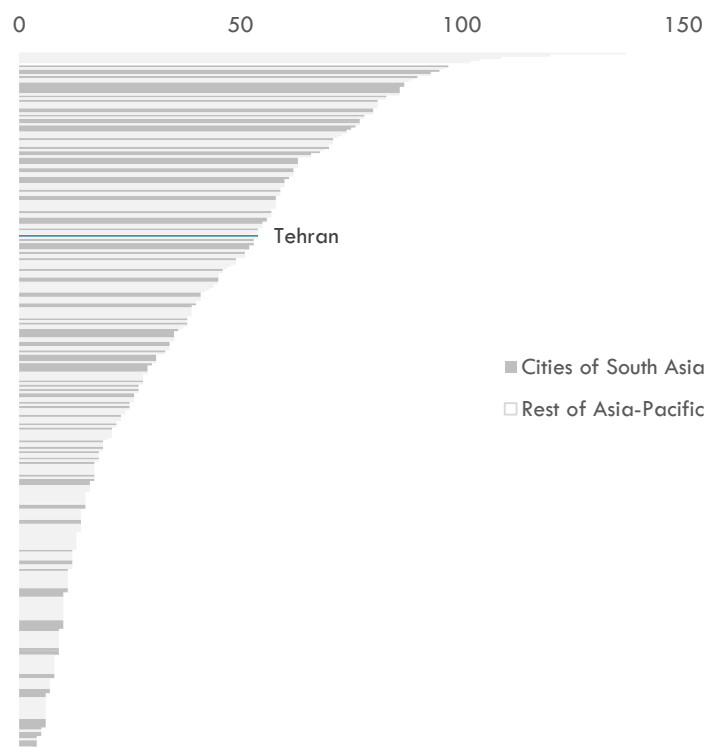
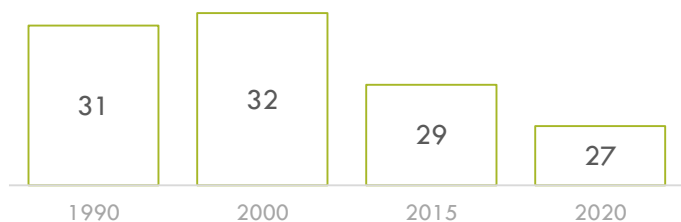
Urban Form and Structure

Builtup area per capita

sqm per capita (GHS)

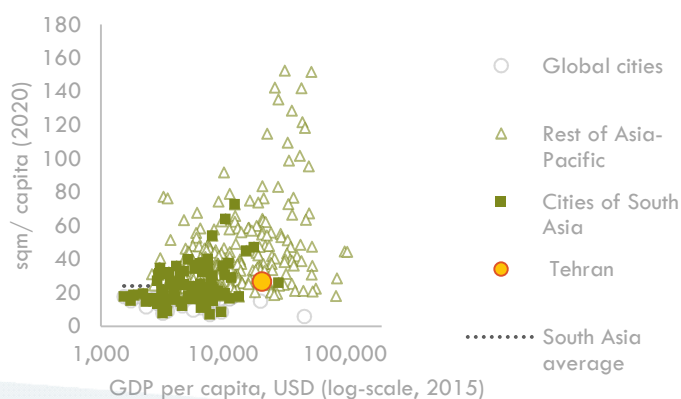
Mean block density

blocks per sqkm (2020) (ITDP)



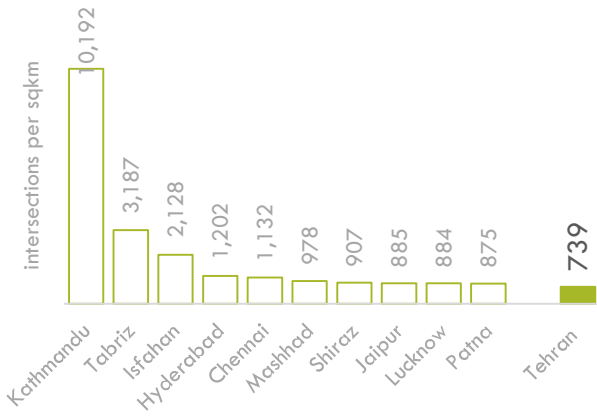
Builtup area per capita

(GHS)



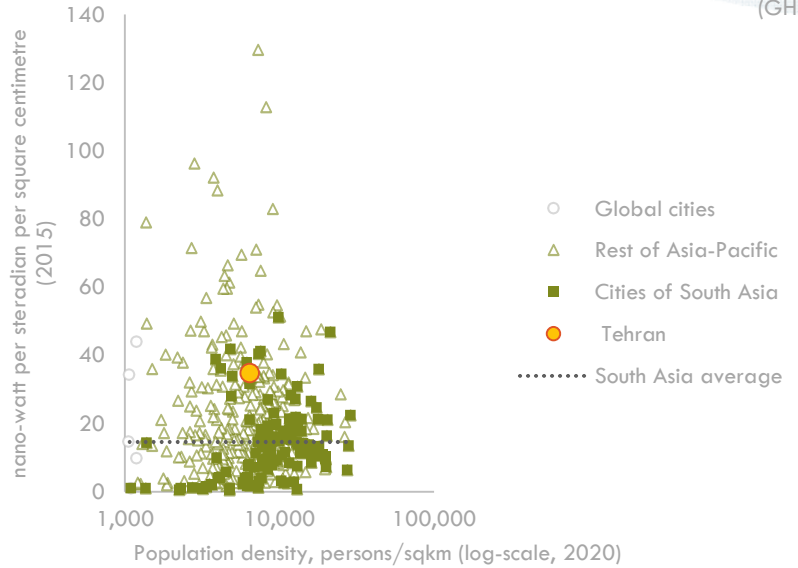
Intersection density

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



Night time light intensity (a)

(GHS)

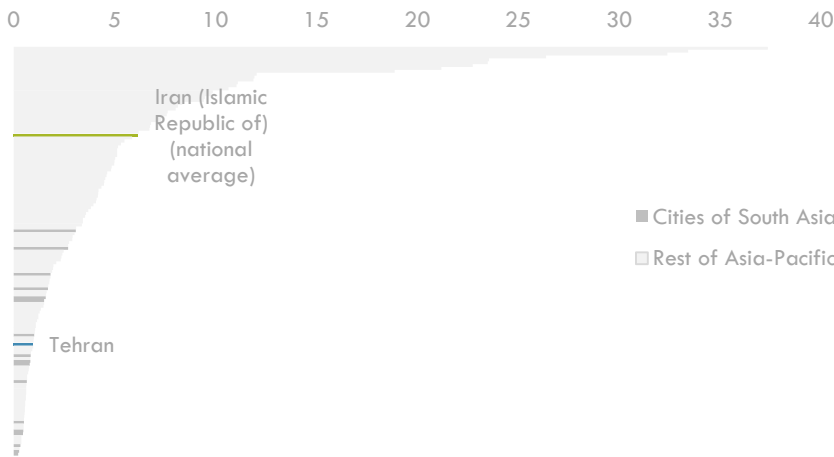


(a) Night time light intensity studies illustrate urban forms and patterns by mapping human activity, infrastructure, and connectivity, offering insights into urban sprawl, density variations, and transport network

Urban Transport Infrastructure

Road availability

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



Road kilometers 2,639 kilometers

(2020) (Primary data)

Rapid transit infrastructure

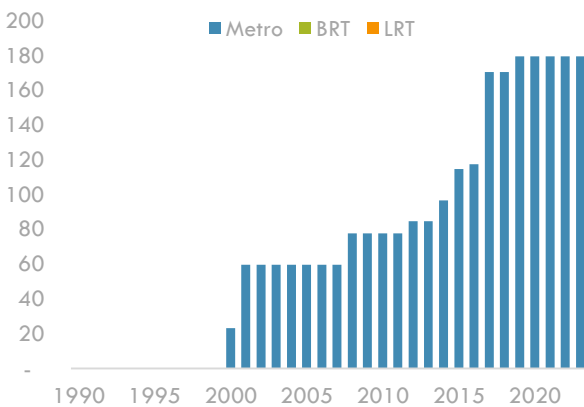
(2024) (TE)

■ Under construction ■ Planned



Rapid transit infrastructure

kilometers (ITDP, Primary data)



BRT none

LRT none

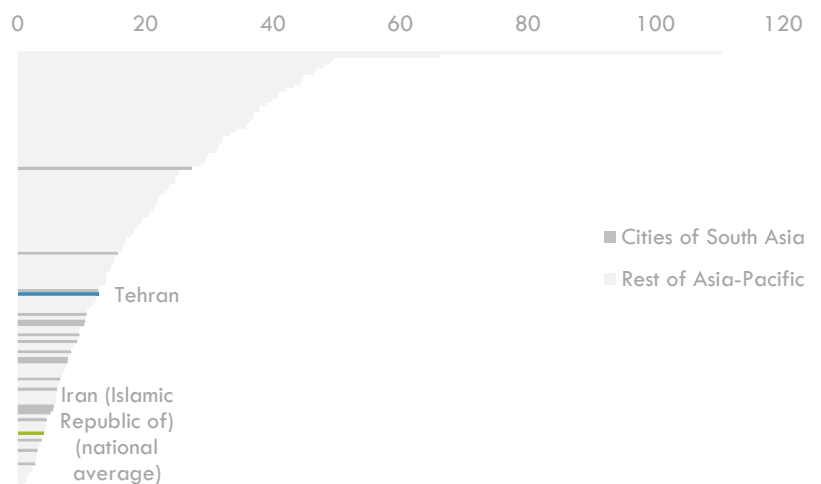
Metro 179 kilometers

Total 179 kilometers

(2023) (ITDP)

Rapid transit availability

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



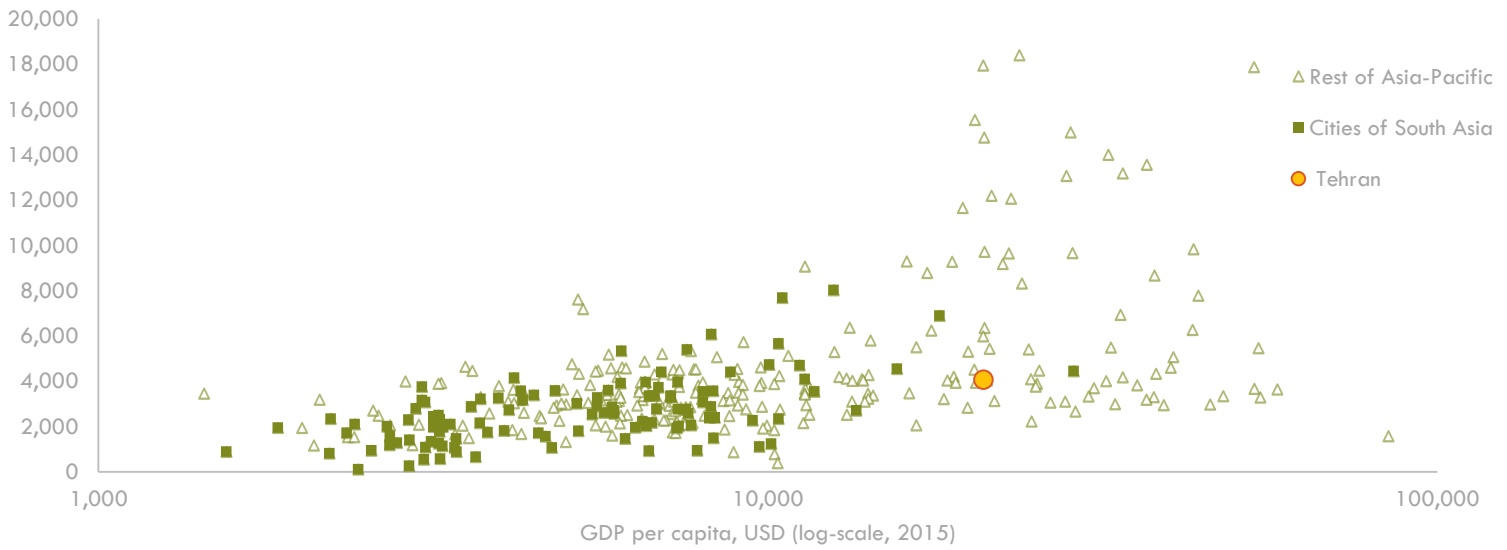
Approximate transit coverage 17% of land area

(2015) (ITDP and GHS)

Transport Activity and Services

VKT per capita

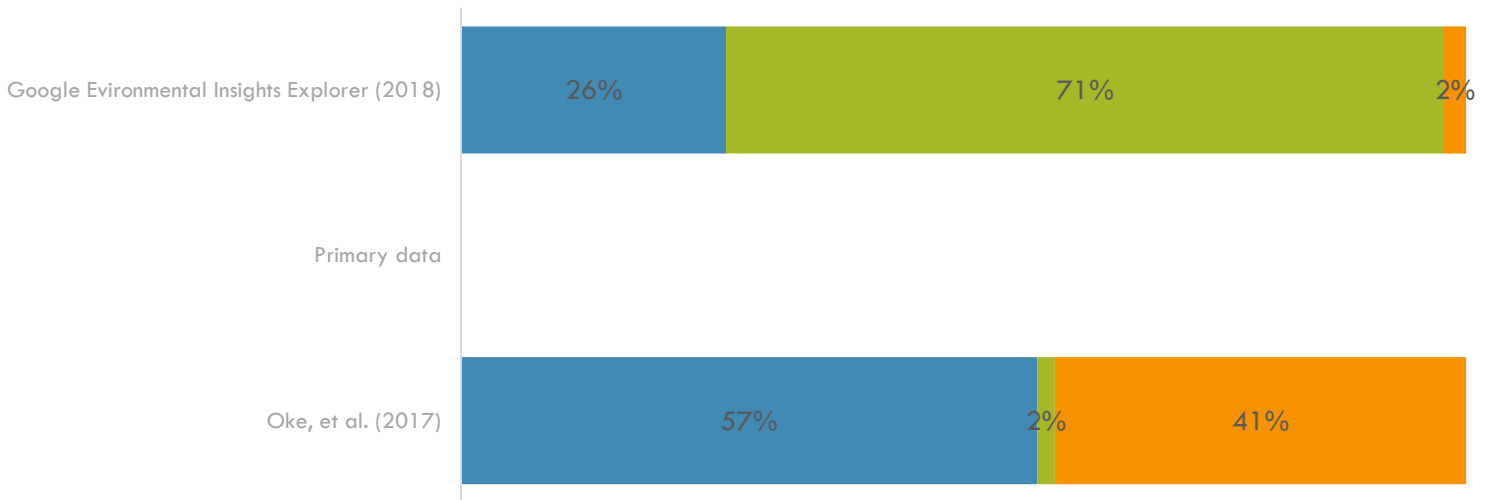
Vehicle-kilometer per capita (2022) (ClimateTrace)



Trips Mode share (b)

Share, %

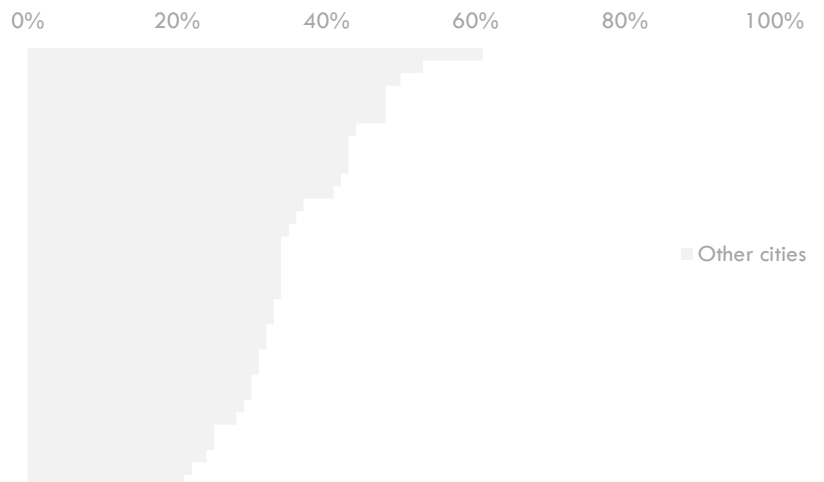
■ Walking and cycling ■ Private ■ Public transport (bus, ferry, informal public transit, etc)



(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)

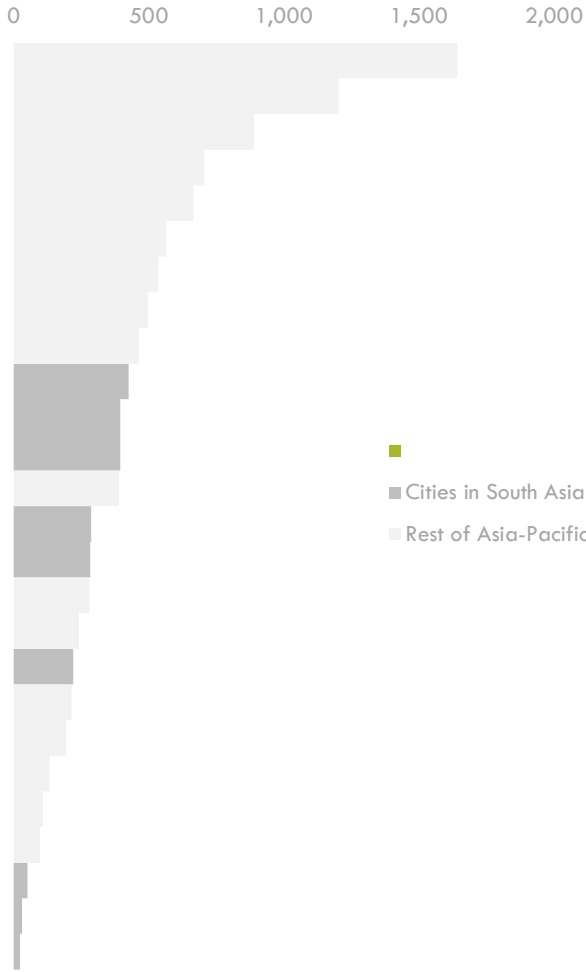


Metro ridership n.d.

Congestion ranking n.d.

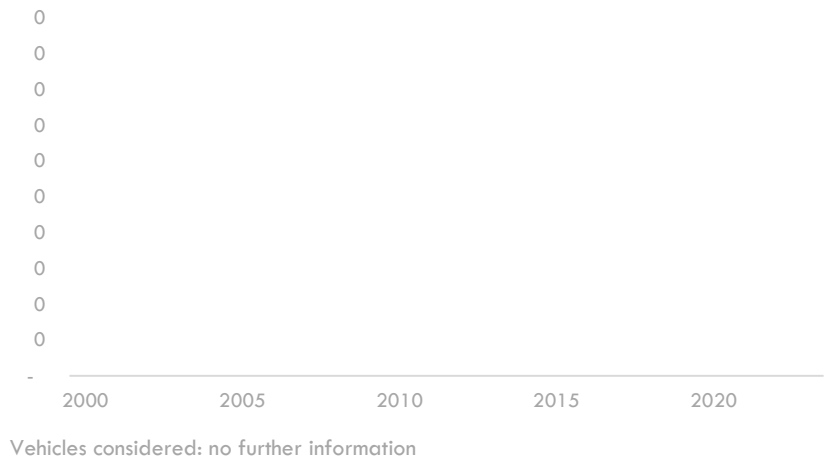
Vehicle motorization

Vehicles per thousand population (Primary data)



Vehicles registered (c)

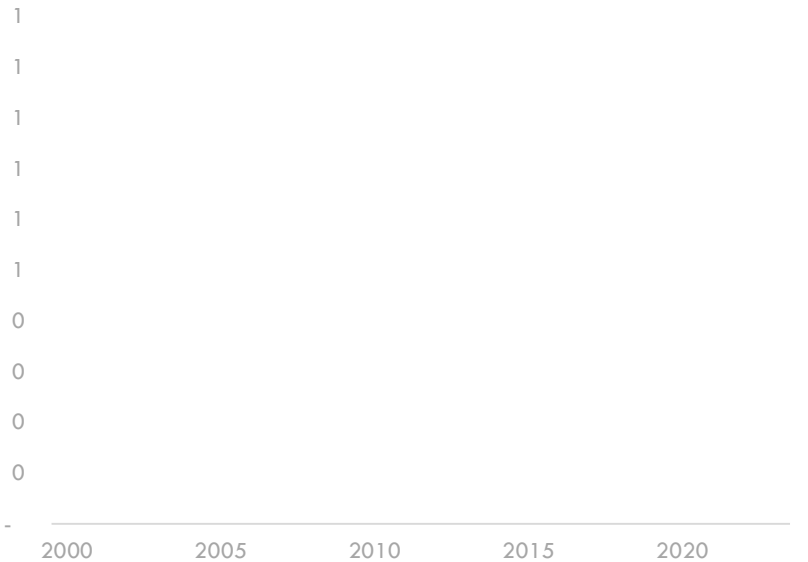
Thousand vehicles (Primary data)



Vehicles considered: no further information

Bus fleet (operational)

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

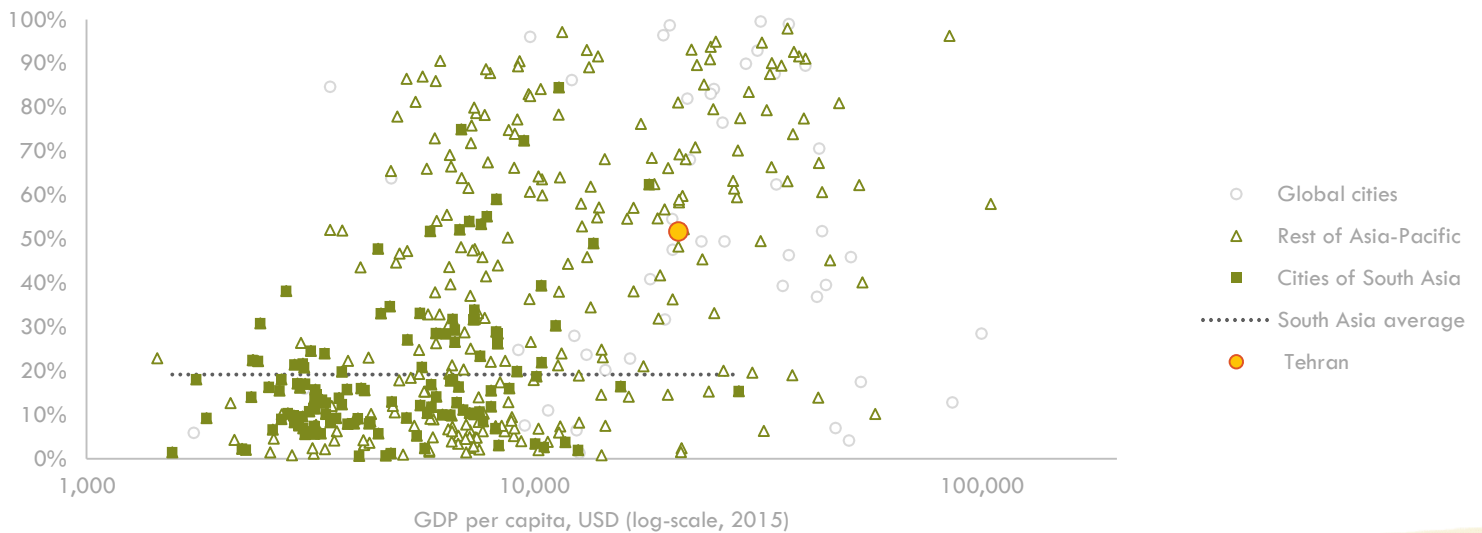


(c) It should be noted that, in most cases, scrapped vehicles are not de-registered, which may result in slightly inflated numbers.

Urban Access

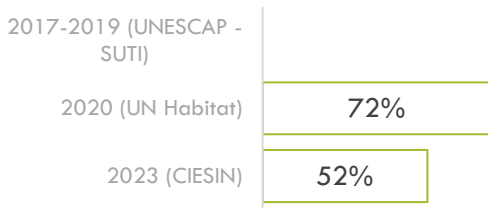
Access to urban public transport

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



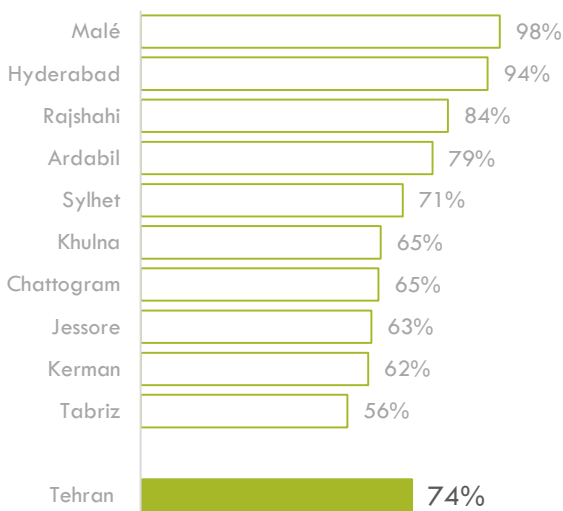
(d) "Access to urban public transport" is computed as share of population who live within a walking distance (along a street network) of 500m to a low capacity public transport system (eg bus, tram) and 1000m to a high capacity public transport system (eg trains, ferries, etc). Only public transport 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.

(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).

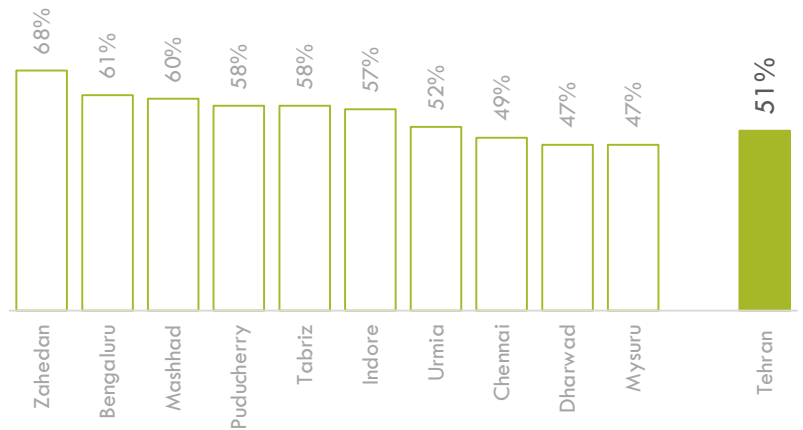
People near open public space

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



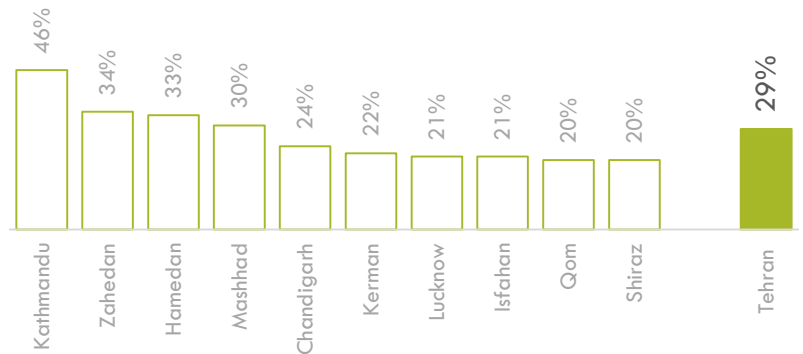
People near services (both healthcare and schools) (e)

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



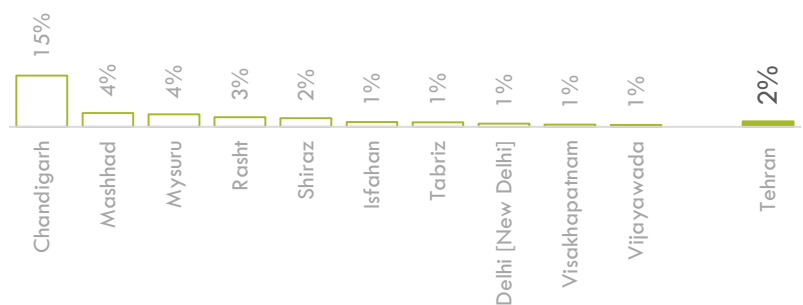
People near car-free places (f)

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



People near protected bikelanes

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



Transport externalities

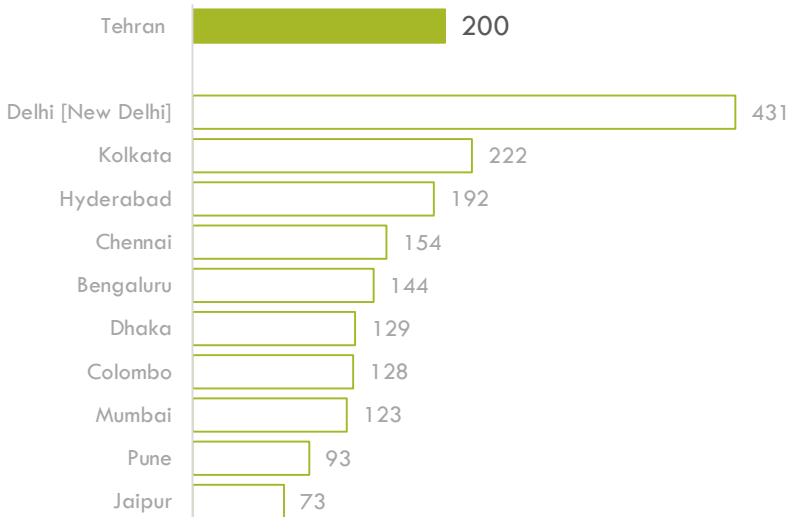
Road transport - CO2 emissions

Thousand tonnes (2022) (ClimateTrace)



Road transport - N2O emissions

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



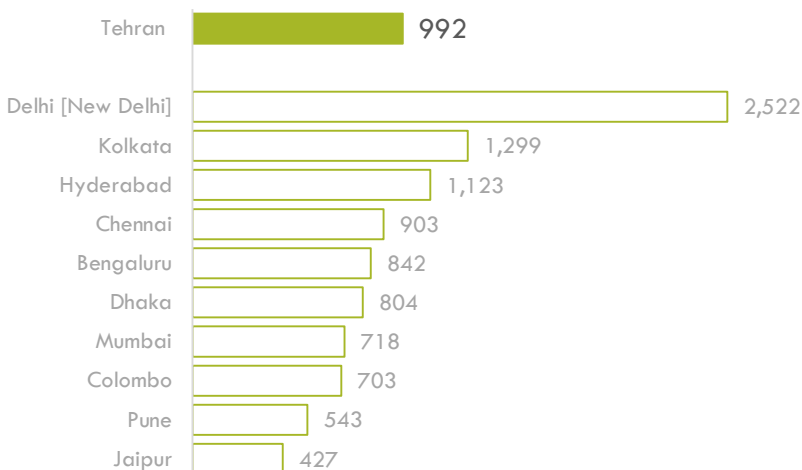
Population exposure to disasters

Share of population (2015) (GHS)



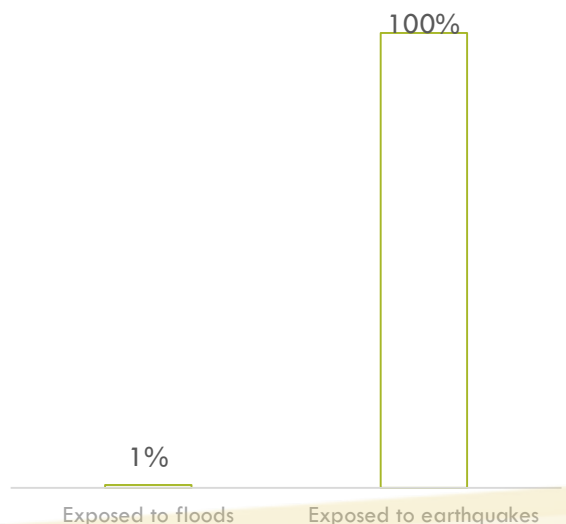
Road transport - CH4 emissions

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



Urban built-up area exposure to disasters

Share of urban area (2020) (GHS)



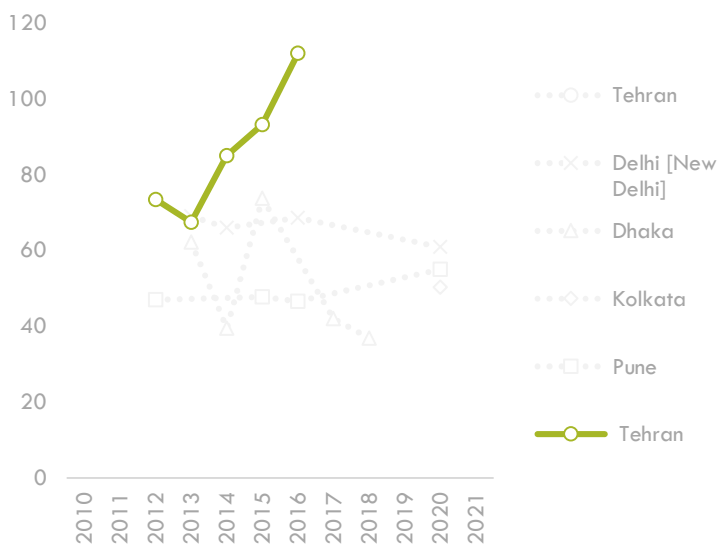
Transport PM 2.5 emissions

(GHS)



NO2 concentration

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



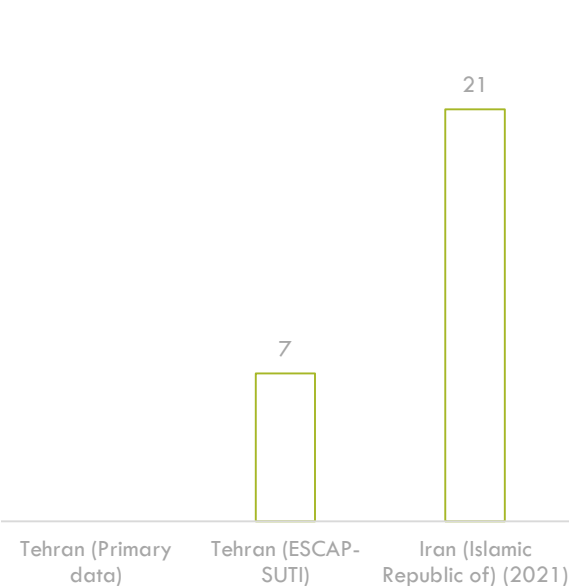
PM 2.5 concentration

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



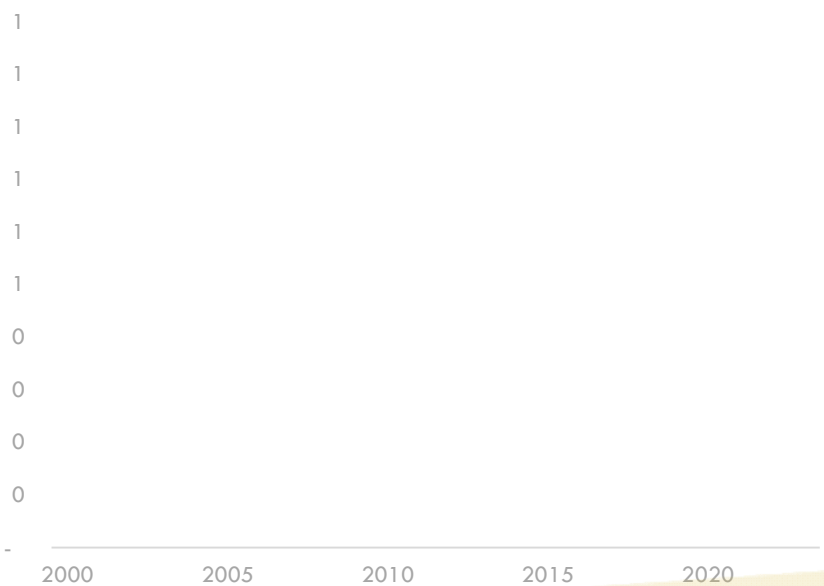
Road crash fatality rate

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)

Tehran 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

Tehran 0.08/1.00
(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

Tehran 51 score out of 100
(2024) (UNESCAP - SUTI)

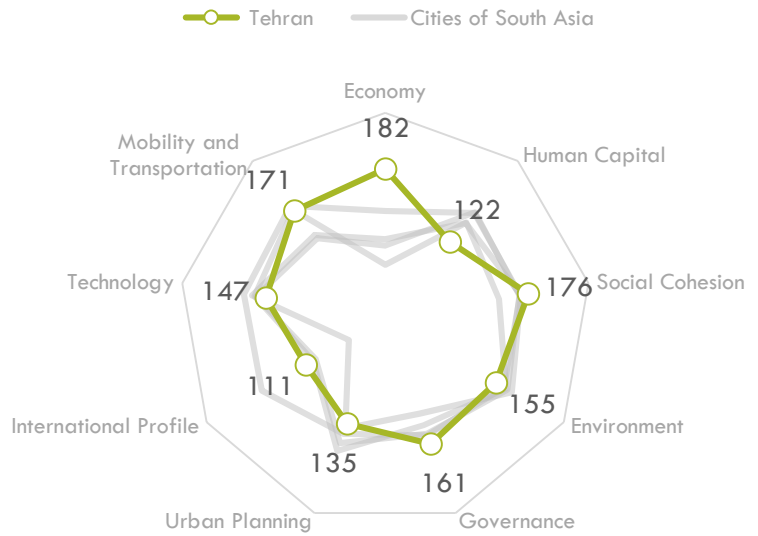
Cities in Motion index ranking

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

Tehran 161st out of 183 cities
(2024) (IESE)

Cities in Motion index ranking by subcomponent

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



Transport relevant policy documents

Year published	Document name
2018	Tehran Rail Master Plan Updated
2020	Tehran Sustainable Transportation Indicators

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