



Urban Mobility Readiness Index

2023 REPORT

Foreword

Mobility lies at the center of a global inflection point. Record-breaking heatwaves, inflation, and supply chain shifts have dominated headlines and disrupted urban vitality as people decide how and why they travel. These challenges have a profound impact on society by setting a new paradigm where it's getting increasingly difficult to ensure affordable and sustainable mobility solutions.

However, doubling down on the simple building blocks of urban mobility, like efficient public transit or safer infrastructure for pedestrians and cyclists, can keep downtowns and business centers buzzing.

An emphasis on those mobility fundamentals lies at the center of the 2023 edition of the Urban Mobility Readiness Index, a ranking of 65 global cities on how prepared they are for mobility's next chapter, created by the Oliver Wyman Forum and the University of California, Berkeley. Alongside commentary on each city and regional strengths and challenges, this year's edition introduces tailored recommendations for each city's most important challenges: how to improve public transit and overall sustainable mobility dimensions.

This edition marks the fifth anniversary of the Urban Mobility Readiness Index. By tracking progress with each annual edition, we can monitor a city's evolution over a longer period as well as its year-over-year progress. Reflecting on that trajectory, whether it's one year or five, is critical to identifying winning strategies.

We hope that by focusing attention on the simple essentials of urban mobility, business and policy leaders can be encouraged and motivated to build a more sustainable and equitable future.

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Introduction

CHARTING A NEW COURSE FOR URBAN MOBILITY

The fifth anniversary of the Urban Mobility Readiness Index introduces tailored recommendations to improve public transit and sustainable mobility for each city. It’s a leap forward for the Index to move beyond a year-in-review report to instead become an actionable tool for business and city leaders.

These recommendations complement four key trends identified in this year’s edition that will define urban mobility for the near future.

Economic Pressures

Inflation and supply chain shifts have disrupted travel flows. Cities and businesses need to keep public transit fares affordable to recoup ridership levels and keep city centers buzzing.

Sustainable Investment

Increased investments in sustainable mobility are paying off, with more consumer embraces of electric vehicles, cycling, and car-free zones. European cities maintained their leadership in sustainable mobility.

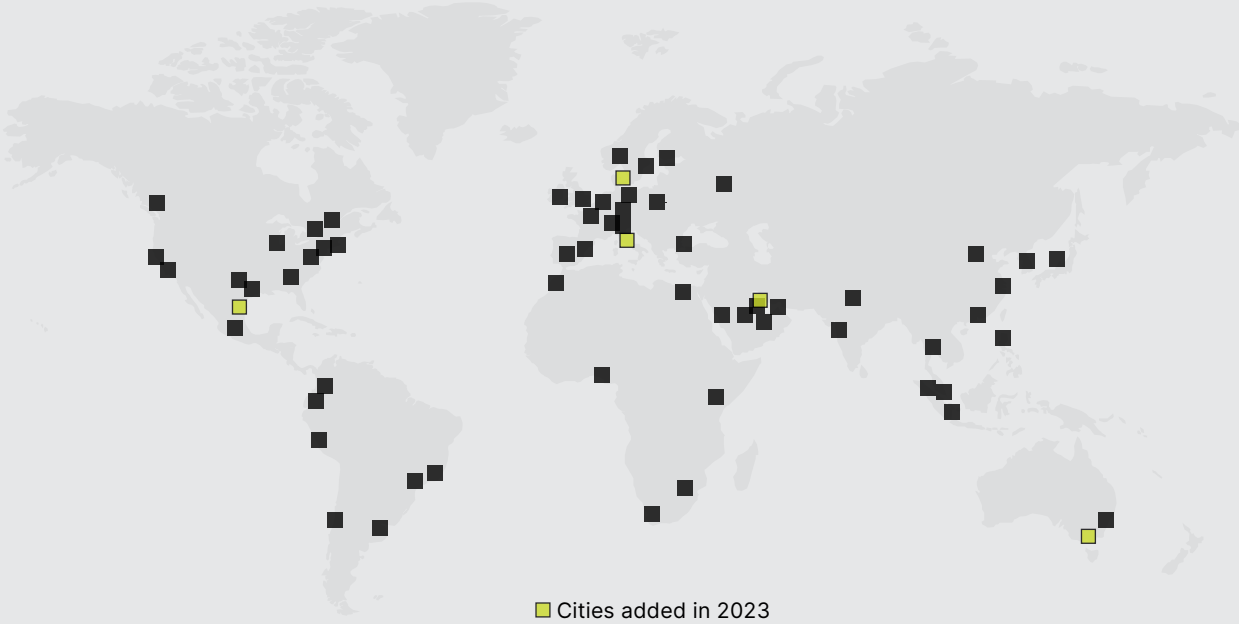
Supply Chain Risks

Manufacturers have strengthened supply chains against geopolitical events via multi-sourcing and localization. However, resource scarcities — especially for new technologies — challenge supply chains.

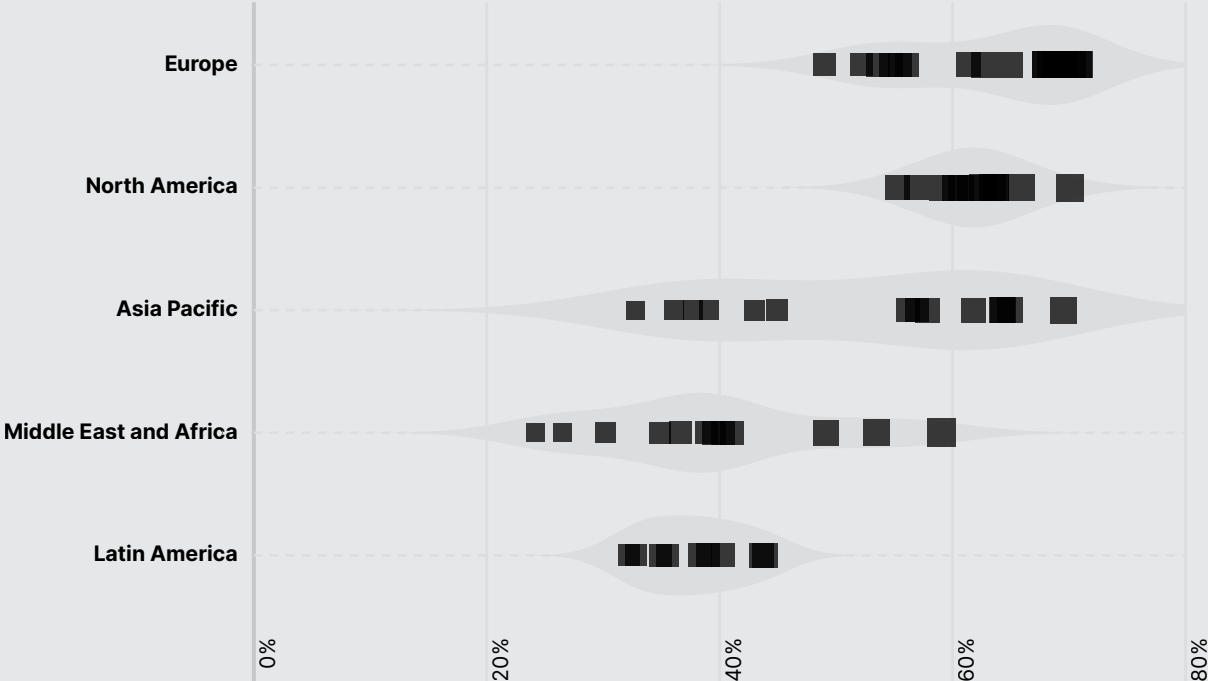
Convenient Mass Transit

Leading Asian cities offer the highest rates of public transit station density and ridership levels, while European counterparts offer diverse modal options that are fast and operate at long hours.

The 2023 Index includes a selection of 65 global cities across five regions: **Asia Pacific, Europe, Latin America, the Middle East and Africa and North America**



The top performing cities are clustered in North America, Europe, and Asia Pacific



Source: Oliver Wyman Forum and University of California, Berkeley

The Index captures what business, consumers, and policymakers consider indispensable for urban mobility

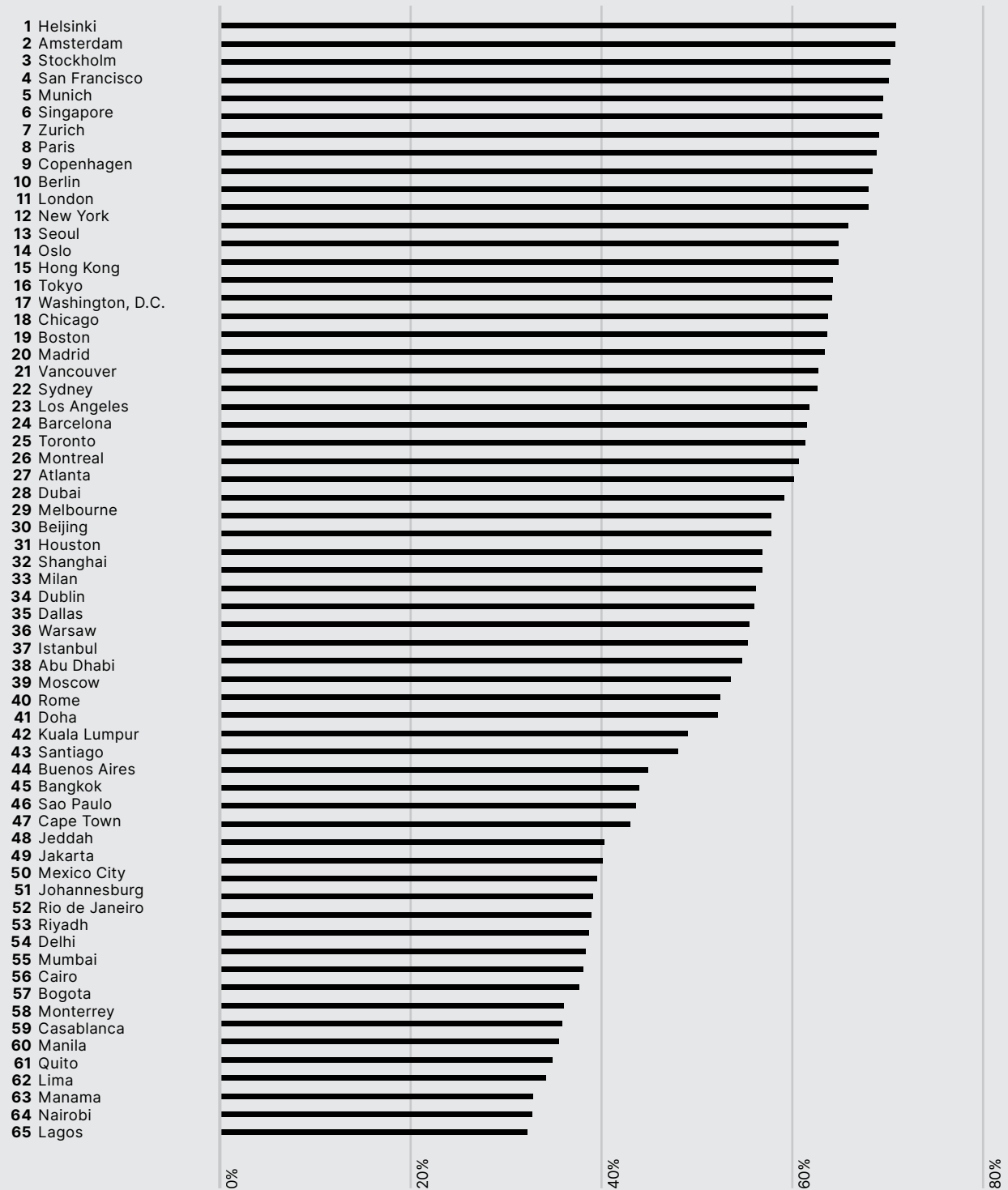
Urban Mobility Readiness Index Mobility readiness is holistically measured by 56 KPIs across social impact, infrastructure, innovation, system efficiency, and market attractiveness.	Sustainable Mobility sub-index First launched in 2021, the Sustainable Mobility sub-index measures cities' efforts to build greener and more sustainable mobility ecosystems.	Public Transit sub-index Launched in 2022, the Public Transit sub-index measures cities' performance on public transit density, efficiency, and utilization rate.
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Succeeding in these five dimensions is critical for a winning mobility ecosystem

Social Impact	Social impact metrics are based on volatile variable measures that often prove controversial for municipal governments to regulate, such as commuting time, traffic fluidity, public transit utilization, commuter density, car ownership, vehicle occupancy, population density, road safety, air quality, and international airport volumes.
Infrastructure	Infrastructure metrics focus on static measures that are likely to remain near constant over time or are at least difficult to change, such as the density of public transit stations, the walkability of a city, and the strength of a city's multimodal networks.
Market Attractiveness	Market attractiveness is based on market-driven metrics over which municipal governments can exert influence, such as the competitiveness and penetration of sharing-economy business models in mobility, multimodal app maturity and availability, fleet management, internet connectivity, and the scope of international airport connections.
System Efficiency	System efficiency metrics focus on controllable factors that are influenced by market dynamics and the public sector, such as public transport operating hours, public transport affordability, public transport reliability, and traffic management.
Innovation	Innovation is a technology-related metric linked to emerging technologies, such as connected autonomous vehicles, electrification, and advanced connectivity. It considers the city government's investment and commitment to these technologies, and the city's ability to attract and keep high-tech labor and startups.

The 2023 Urban Mobility Readiness Index Score

The top cities score highly in a diverse set of metrics, underscoring the importance of a well-rounded playbook



Source: Oliver Wyman Forum and University of California, Berkeley

Why Cities Should Focus On Mobility Fundamentals

Simple, affordable, and efficient mobility solutions will help cities navigate economic and climate disruption



It's more important than ever for urban mobility to emphasize the fundamentals. Cities that offer affordable and efficient mobility with simple essentials — like cycling lanes or efficient trains — can buffer against risks like record-breaking heatwaves or high living costs that threaten how and why people travel.

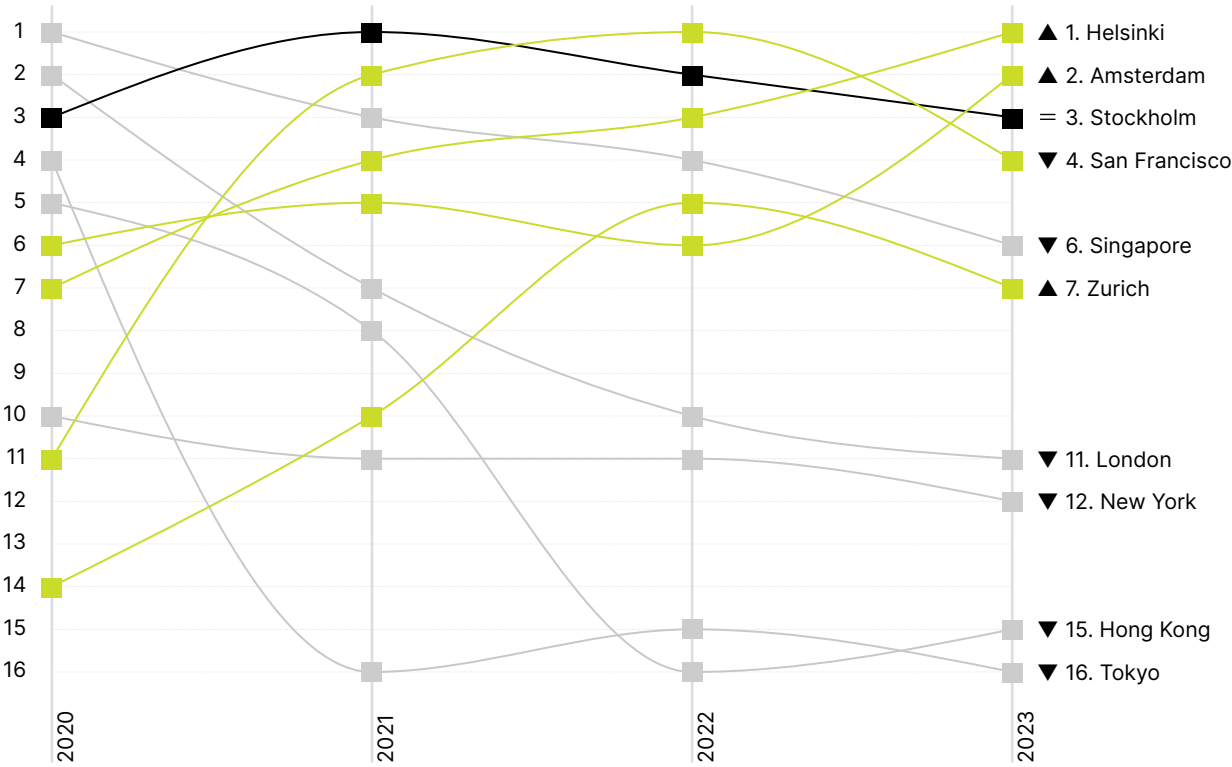
Many cities are trying to address these problems. Some are investing heavily in public transit and cycling infrastructure, while others are experimenting with new pricing strategies to lower fares or are making electric vehicle (EV) purchases more affordable and convenient, according to the 2023 edition of the Urban

Mobility Readiness Index, a forward-looking ranking of how well-positioned cities are to lead mobility's next chapter.

Conducted by the Oliver Wyman Forum in partnership with the University of California, Berkeley, the cities that topped this year's edition are those that opted for the simpler building blocks of urban transport, like infrastructure and systems efficiency, rather than more innovative solutions still in development, like autonomous cars. For the Index's fifth anniversary, the report includes city specific recommendations on ways to improve public transit offerings and their sustainability.

Helsinki And Amsterdam Remain Steady At The Top, While London And Tokyo Decline

How top city rankings changed from 2020-2023



Source: Oliver Wyman Forum and University of California, Berkeley

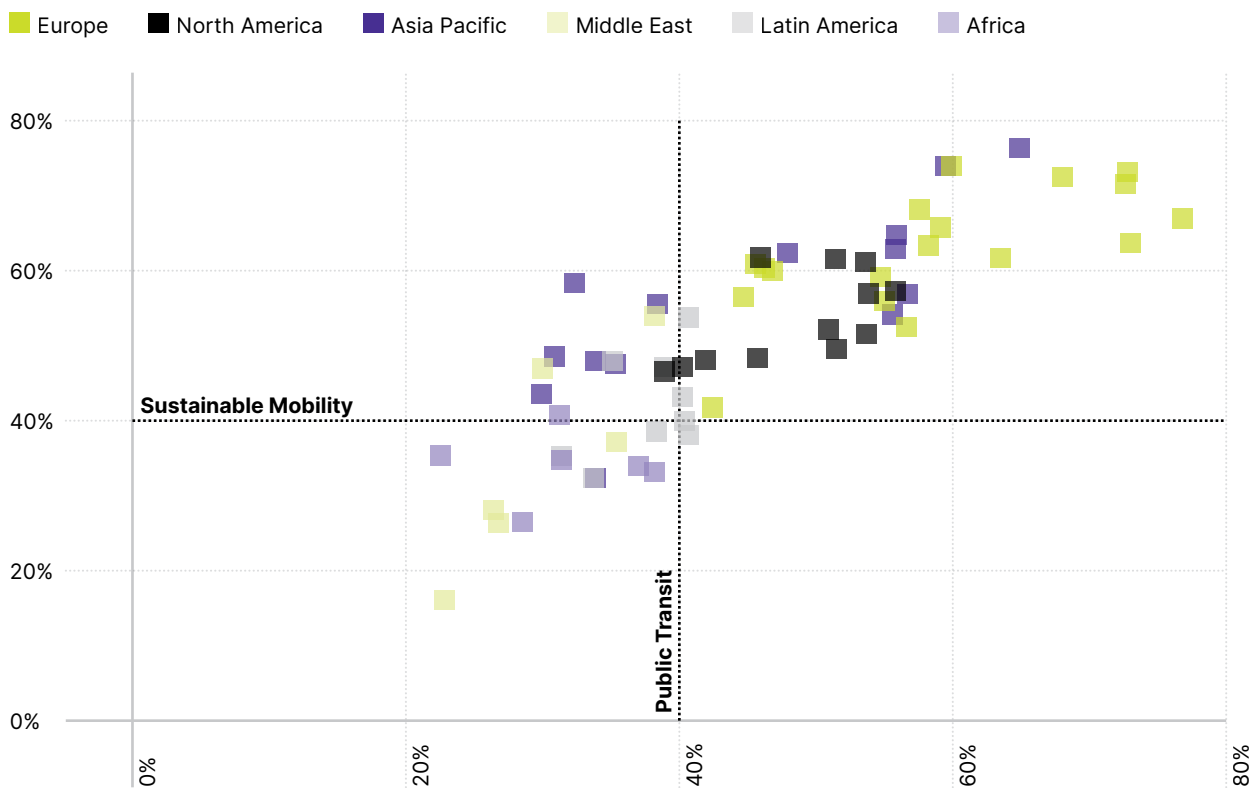
Why Cities Should Focus On Mobility Fundamentals

No city better demonstrates how important these factors are than Helsinki, which claims this year's top overall ranking. The Finnish capital boasts car-free zones, large investments in EV charging infrastructure, advanced cycling infrastructure, and an expanding public transit network with new light rail and tram projects. Increasing public transit offerings is just one way Helsinki's attempting to boost ridership: It also makes it affordable with a roughly \$3 ticket that allows commuters to ride on any mode of transport.

Cities That Consistently Invest in Mobility Make Strides

Even cities that rank in the bottom half of the Index can make leaps forward in modernizing their mobility systems with continual investment in the mobility essentials. Take Jeddah and Bangkok, which climbed the rankings the last two years thanks to determined efforts to boost public transit ridership with affordable fares and convenient service. Consider also Mumbai, a top performer in road safety, or Casablanca, which has the highest pedestrian modal share in the

2023 Urban Mobility Readiness sub-indices Performance



Source: Oliver Wyman Forum and University of California, Berkeley

Index. These cities display a spirit of consistent effort and investment in improving their mobility networks — and are climbing up the Urban Mobility Readiness Index rankings in the process.

Those that slipped in our Index, like Singapore, Zurich, Boston, and Los Angeles, have been outpaced by other cities that are accelerating efforts to modernize their mobility networks. These cities should continue to find ways to innovate and make real progress across a range of Index metrics, from EV market share and public transit use to road safety and engagement of the private sector.

Hong Kong Remains a Model for Public Transit Authorities

Some cities that already offer a gold standard of mobility services can continue to double down on their strengths with continued investment. Consider Hong Kong, which for the second year in a row, tops our Public Transit Sub-Index thanks to its efficiency, affordability, and accessibility. Those ingredients have enabled the city’s public transit system to account for a staggering 71% of all distance traveled within Hong Kong. And city authorities continue to bolster the transit system even further — in 2023 it began work on a new station that would help connect the eastern and western parts of the New Territories — a major region of Hong Kong.

The importance of these continued investments can’t be understated: 45% of consumers said that accessibility and availability are the most important factors driving their mobility decisions — a close second to affordability, according to the Oliver Wyman Forum’s April 2023 survey. Offering a dense public transit

71%

The percentage of all distance travelled in Hong Kong via public transit; the city sits atop the Public Transit sub-index for the second straight year.

49%

The percentage of global consumers that listed affordability as a top factor in choosing a mobility mode. Public transit affordability must remain a top priority for cities to maintain ridership levels.

network that's easy to use is a wise investment for cities that want to increase public transit ridership and grow their economies: Every \$1 billion invested in public transport generates economic returns five times as great and creates 50,000 jobs, according to C40, a coalition of 96 cities that advocate for climate action.¹

Inflation and Supply Chain Pressures Challenge Access To Essential Mobility Services

Providing affordable public transit is crucial for cities. High inflation rates in combination with supply chain disruptions have squeezed households globally and delayed the production of electric vehicles and buses that may delay city plans on EV uptake and result in higher costs in doing so. Meanwhile, a tight labor market in many countries exacerbates the issue by leaving some suppliers without truck drivers to deliver goods while some public transit agencies struggle to retain workers to deliver reliable service.

Intensifying regional competition between Europe, North America, and China to more closely integrate value chains indicate how the mobility industry evolves in the coming years: China has a wellspring of raw materials to manufacture EVs, while the US seeks to onshore semiconductor manufacturing. Europe's decentralized industry model will make it difficult to localize supply chains — although the region generally offers many incentives to buy EVs. The regional supply chain dynamics will ripple through the economic tissue of cities and their mobility systems.

Public transit ridership has not returned to pre-pandemic levels for most cities in the Index, which strains an essential urban

function that is also challenged by higher energy and maintenance costs. The American Public Transit Association found that 71% of the largest transit agencies will face a fiscal cliff in the next five years while a European Union study notes significant loss in post-pandemic revenues.^{2,3} And with nearly half of consumers citing affordability and accessibility as the most important factors when choosing how to travel, according to a Forum survey, it's vital that cities be resolute in satisfying these expectations.

Some governments included in the index are being proactive about making public transit more affordable. Berlin and Munich, for example, benefit from Germany's recent Deutschland Ticket, which lets commuters use all local mass transit for roughly \$52 per month.⁴ Seoul, similarly, plans to release a mass transit pass that would allow riders to use all subway and bus lines and the city's bike-sharing service in 2024.⁵ Boston, meanwhile, is studying the feasibility of offering flexible transit fares based on income levels.⁶

Clean Energy Generation Gets the Spotlight for Sustainable Mobility

The war in Ukraine focused attention on what energy sources countries use and how they source them. It's a facet of the larger problem: how mobility can truly be sustainable if it's powered by oil and gas or carbon-heavy energy generation. Cities that are reliant on carbon-heavy energy are off track to meeting their climate goals, according to an Oliver Wyman Forum analysis.⁷ But many of the top cities in the Sustainable Mobility sub-index are making concentrated efforts to pursue more eco-friendly alternatives.

Consider cities like Amsterdam, Berlin, and Munich. They provide everything from world-renowned cycling culture to strong public transit offerings, earning them top-10 finishes in the Sustainable Mobility sub-index for the second consecutive year. While natural gas or fossil fuels still account for large percentages of their energy production, both the Dutch and German governments have committed to transitioning to cleaner sources.

Oslo, which relies on a national hydropower system to generate nearly all of its electricity, extended its reign as the top-ranked city in the Sustainable Mobility sub-index.⁸ That clean energy powers an impressive EV fleet — which accounted for more than 80% of new car sales in the second quarter of 2023. Norway also plans for zero-emission vehicles to account for all new car registrations beginning in 2025.

Urban vitality depends on affordable, convenient, and sustainable mobility networks. As global pressures stress livelihoods and the climate, cities must futureproof their feasibility as places to live and work. A return to fundamentals that keep mobility sustainable, accessible, and efficient can strengthen that vitality.

Regional Analysis

The fundamentals of mobility are more important than ever, and each global region has unique strengths in those building blocks. Some offer efficient and cost-effective public transit systems, encourage micromobility like cycling or walking, or limit road congestion with car-free zones. Understanding each region's distinct characteristics provides a crucial backdrop for city-by-city insights.

Asia Pacific	18
Europe	20
Latin America	22
Middle East and Africa	24
North America	26



Asia Pacific

	2023	vs. 2022
Singapore	6	↓ -2
Seoul	13	↑ +7
Hong Kong	15	↑ +2
Tokyo	16	= 0
Sydney	22	= 0
Melbourne	29	n/a
Beijing	30	↑ +1
Shanghai	32	↑ +3
Kuala Lumpur	42	↑ +1
Bangkok	45	↑ +2
Jakarta	49	= 0
Delhi	54	↓ -1
Mumbai	55	= 0
Manila	60	↑ +2

Cities in the Asia Pacific run the gamut from leading cities to those that are still developing or lagging in urban mobility readiness. The leading cities offer public transit systems that are affordable, efficient, and have high station densities that make personal cars less necessary. Hong Kong, which leads the Public Transit sub-index for the second year in a row, has a public transit system that covers an impressive 71% of all distance traveled within the city, according to an Oliver Wyman Forum analysis.⁹ Singapore, similarly, with an efficient and dense public transit system, is also a top finisher in the Public Transit sub-index.

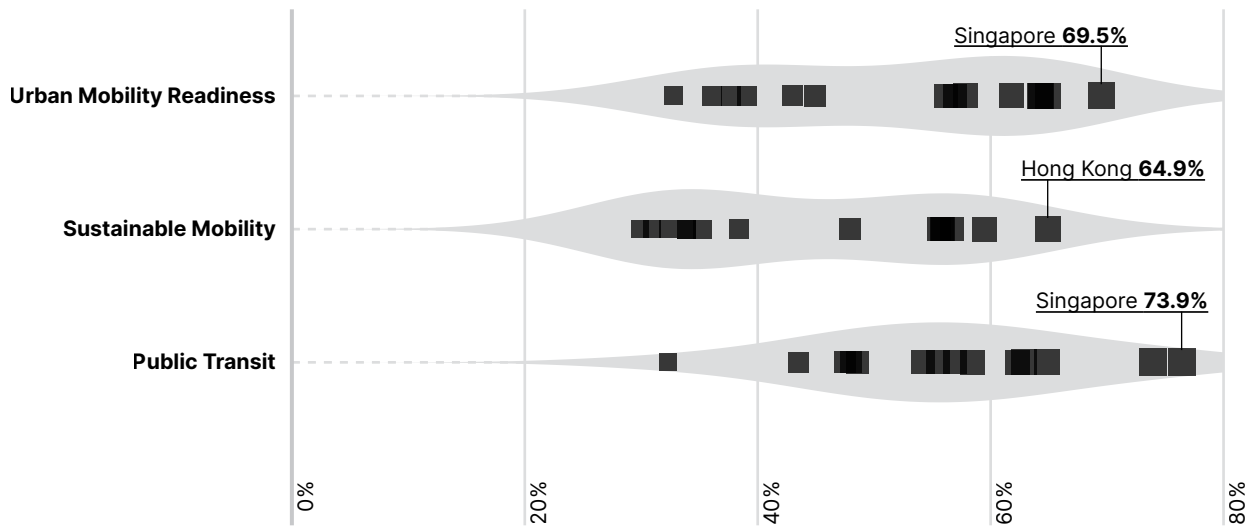
And yet, the region can continue to improve public transit station density. Shanghai, for example, performs below average in this regard, but its plans to increase the number of stations and rail lines demonstrate a path to improvement for the region.¹⁰

Cycling also is not a popular mode of transportation across several Asia Pacific cities, which hampers efforts to reduce comparative levels of noise and light pollution. Both Delhi and Singapore, however, have committed to redesigning city roads to make room for more cyclists and pedestrians.

The region is rebounding in Index rankings after shaking off travel restrictions from the coronavirus pandemic that continued through 2022. These restrictions mostly impacted airport connectivity and passenger volumes — particularly in China. And although

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit

Distribution of Asian Pacific cities' scores in percentage



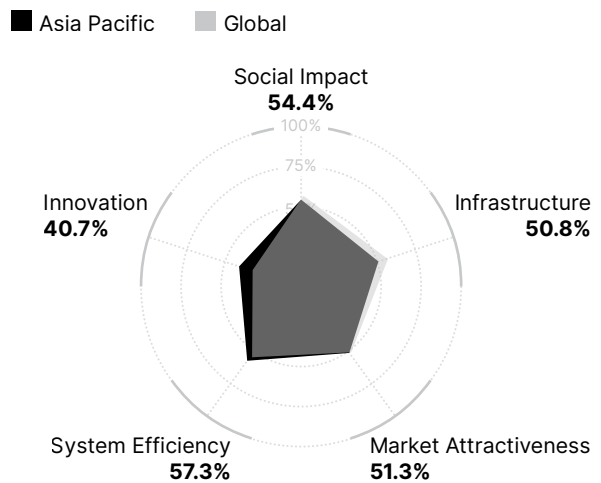
Source: Oliver Wyman Forum and University of California, Berkeley

air travel measurements were still low in the beginning of 2023, numbers have reportedly rebounded in cities like Beijing and Shanghai.

Other regional challenges include a possible shift in supply chain infrastructure in Asia, and a decline of global electric vehicle market sales as Europe accelerates the pivot away from combustion engine vehicles.

Dimensions of the Urban Mobility Readiness Index score

Regional scores in percentage across the five dimensions compared with global average



Source: Oliver Wyman Forum and University of California, Berkeley

Europe

	2023	vs. 2022
Helsinki	1	↑ +2
Amsterdam	2	↑ +4
Stockholm	3	↓ -1
Munich	5	↑ +2
Zurich	7	↓ -2
Paris	8	↑ +1
Copenhagen	9	n/a
Berlin	10	↓ -1
London	11	= 0
Oslo	14	↑ +5
Madrid	20	↑ +1
Barcelona	24	↑ +1
Milan	33	= 0
Dublin	34	= 0
Warsaw	36	↑ +1
Istanbul	37	↑ +1
Moscow	39	↓ -3
Rome	40	n/a

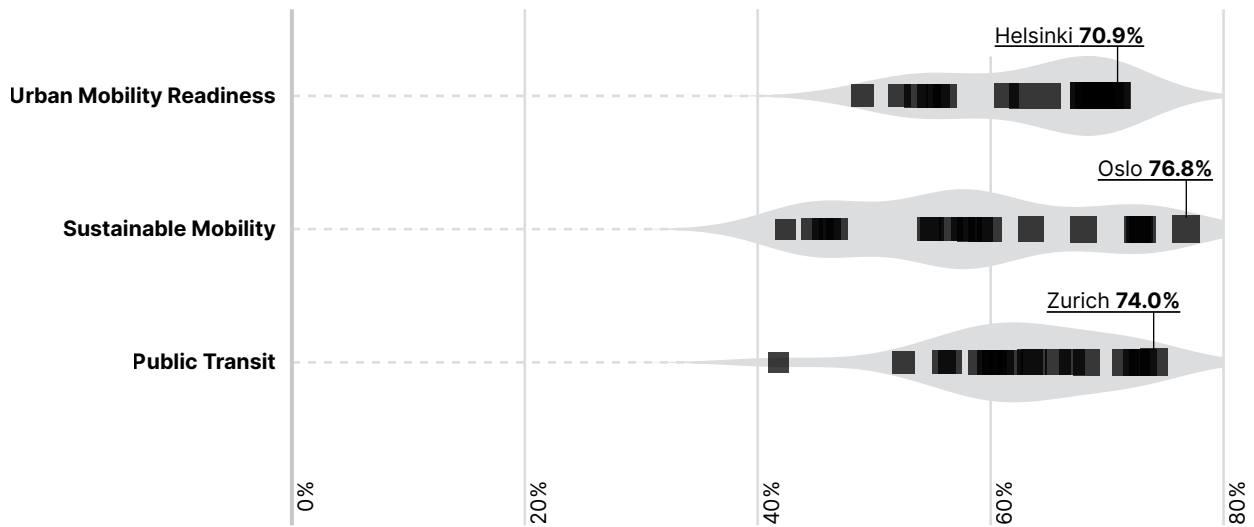
European cities earned the highest scores in the Urban Mobility Readiness Index, claiming most of the top 10 spots in the overall ranking and the Public Transit and Sustainable Mobility sub-indices. Their success is owed to high levels of public transit usage and electric vehicle (EV) market shares, as exemplified by Nordic cities like Helsinki, Stockholm, Oslo, and Copenhagen. Oslo, with its moniker as the “EV capital of the world,” benefits from a national government bent on zero-emission vehicles accounting for all new car registrations in 2025. And even with dense EV penetration, these cities continue to incentivize residents to shift from combustion engine cars. Amsterdam, for example, aims to have one charging station for every four EVs.¹¹

Their public transit networks are efficient and multimodal with national connections, allowing for seamless commuter journeys even with first- and last-mile gaps. Typically, with integrated apps that make planning and payment convenient, European public transit networks are an attractive car alternative for many. European cities can make their public transit networks even stronger by upgrading existing subway systems and implementing autonomous technology.

Active mobility modes, like cycling and walking, are also a popular choice among Europeans. These cities typically have dense cycling infrastructure and car-free zones that empower pedestrians and cyclists. No city better exemplifies this trend than Amsterdam,

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit

Distribution of Asian Pacific cities' scores in percentage

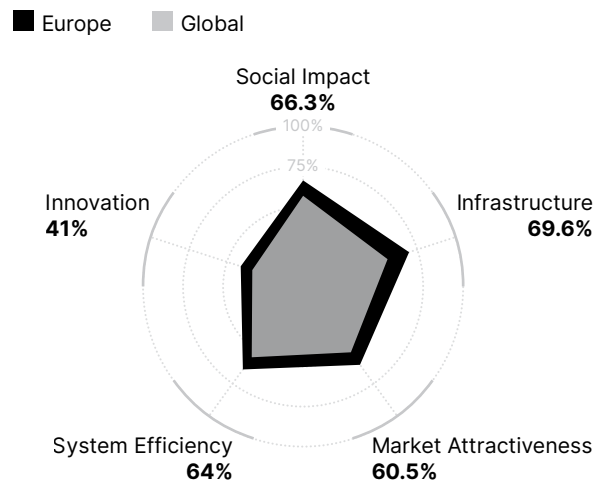


Source: Oliver Wyman Forum and University of California, Berkeley

where more than a quarter of all trips are made by bike, with plans to increase that rate to 35% of all trips by 2030.¹² Continued investments in active mobility infrastructure would raise air quality levels to even greater heights.

Dimensions of the Urban Mobility Readiness Index score

Regional scores in percentage across the five dimensions compared with global average



Source: Oliver Wyman Forum and University of California, Berkeley

Latin America

	2023	vs. 2022
Santiago	43	↓ -1
Buenos Aires	44	= 0
Sao Paulo	46	= 0
Mexico City	50	↓ -2
Rio de Janeiro	52	↓ -1
Bogota	57	↓ -1
Quito	61	= 0
Lima	62	↓ -2
Monterrey	58	n/a

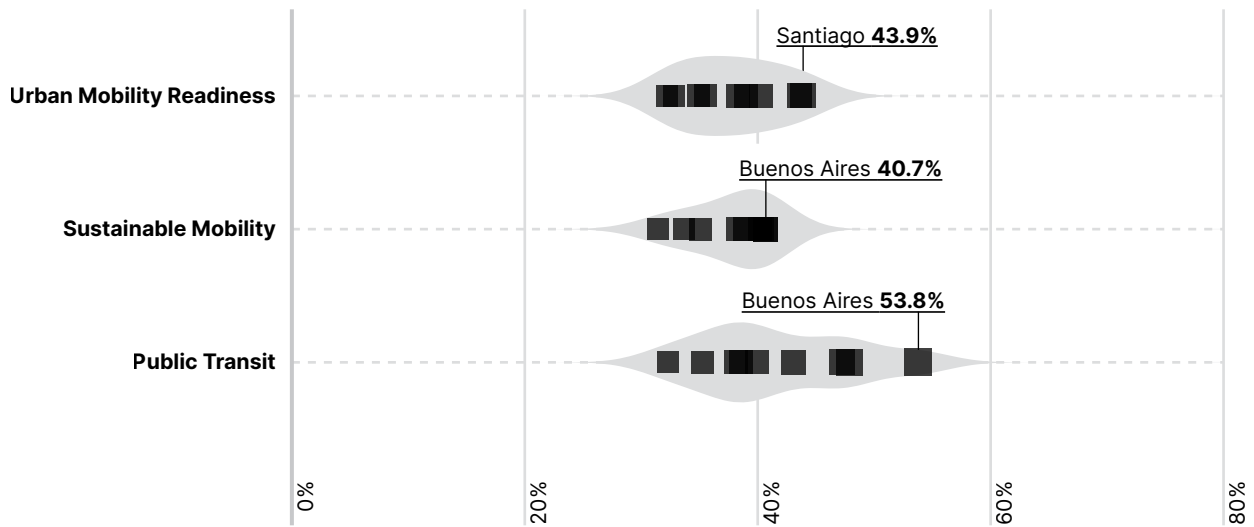
Latin American cities are developing or lagging in their mobility maturity, both in public transit and sustainability measures overall. Yet many cities in the region are improving these dimensions by increasing electric vehicle (EV) use or by expanding public transit offerings.

Bogota, for example, expects to have the largest electric bus fleet of any city in the world outside of China by the end of 2023.¹³ Elsewhere Monterrey will benefit from a \$5.4 billion state-wide plan to double the city’s metro and introduce a new fleet of low-emission buses.¹⁴ And while these efforts will strengthen the region’s already multimodal public transit offerings, the region should seek to improve commute speeds and accessibility with higher station density. Rio de Janeiro, for example, has extended public transit reach to be more accessible for low-income residents.¹⁵

Others are making significant investments in charging infrastructure and consumer purchase incentives for EVs. Sao Paulo, for example, plans to offer tax credits to EV owners, while Mexico City exempts EVs from its “Hoy No Circula” program, which bans commuters from driving on certain days.

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit

Distribution of Asian Pacific cities' scores in percentage



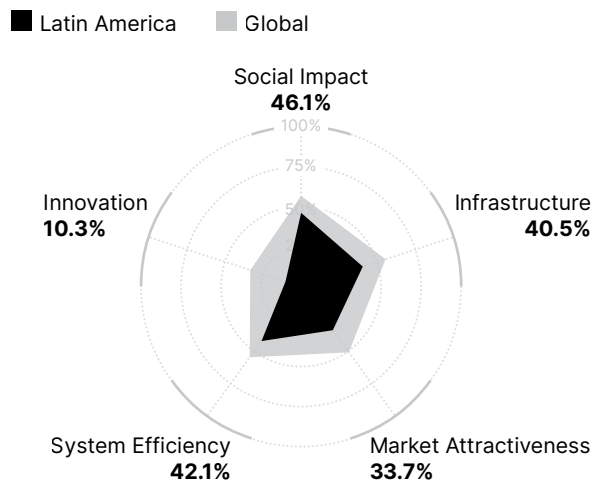
Source: Oliver Wyman Forum and University of California, Berkeley

With low levels of car ownership and many car-free zones, Latin America benefits from high levels of active mobility modes like walking or cycling. Some cities, like Santiago and Sao Paulo, are building on that strength with plans to develop more cycling lanes.

Latin American cities saw minor declines across the Index's scores due to other regions continuing to advance their mobility systems. Fewer investments and academic institutes have limited innovation in the region, particularly in connected vehicle technologies and availability of fully automated services.

Dimensions of the Urban Mobility Readiness Index score

Regional scores in percentage across the five dimensions compared with global average



Source: Oliver Wyman Forum and University of California, Berkeley

Middle East and Africa

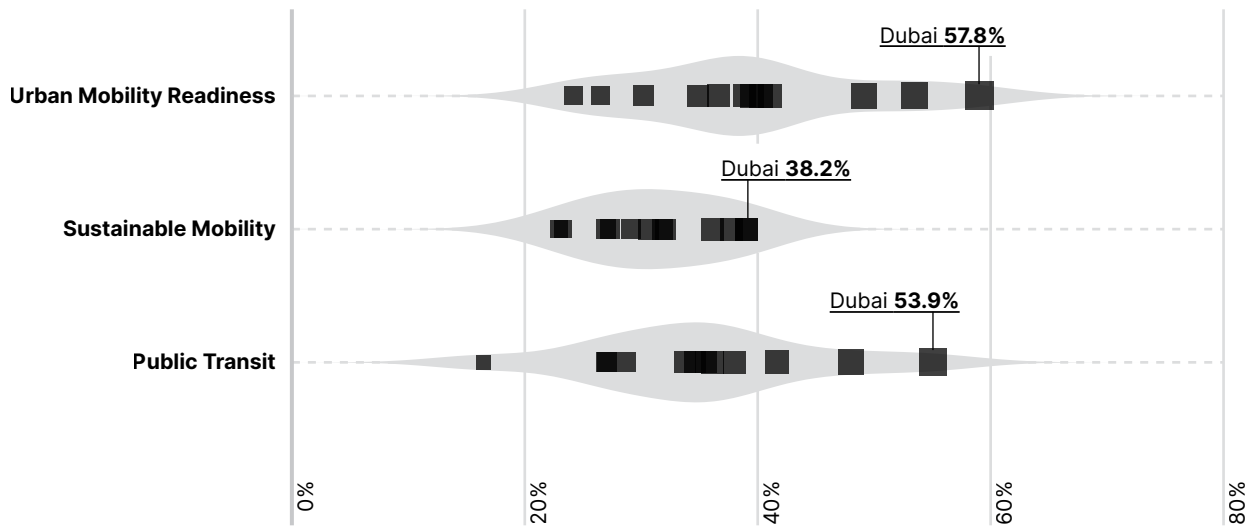
	2023	vs. 2022
Dubai	28	↑ +3
Abu Dhabi	38	↑ +1
Doha	41	= 0
Cape Town	47	↓ -2
Jeddah	48	↑ +6
Johannesburg	51	↓ -1
Riyadh	53	↓ -1
Cairo	56	↑ +2
Casablanca	59	↓ -1
Manama	63	n/a
Nairobi	64	= 0
Lagos	65	= 0

Middle Eastern and African cities are mostly developing or lagging in their urban mobility maturity and fall below the global averages of Index scores — including public transit usage levels. And yet, many of these cities are investing in public transit services to boost ridership. Dubai and Doha are implementing autonomous public transit systems, while Cape Town plans to expand its bus rapid transit system. Elsewhere, Lagos began a new metro rail service in September 2023; and Jeddah is implementing affordable fares and convenient service — efforts that have helped the Saudi Arabian city climb the rankings each year since its inclusion in the Index.

The region performs below average on innovation scores. Further investments in electric vehicles (EVs) would help, although this is not a priority for the region. But some cities, like Riyadh, are making concentrated efforts to increase EV market shares with plans to manufacture EVs domestically and install thousands of charging stations. Other Middle Eastern cities can follow suit with accelerated EV investments, while African cities must begin implementing EVs altogether.

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit

Distribution of Asian Pacific cities' scores in percentage

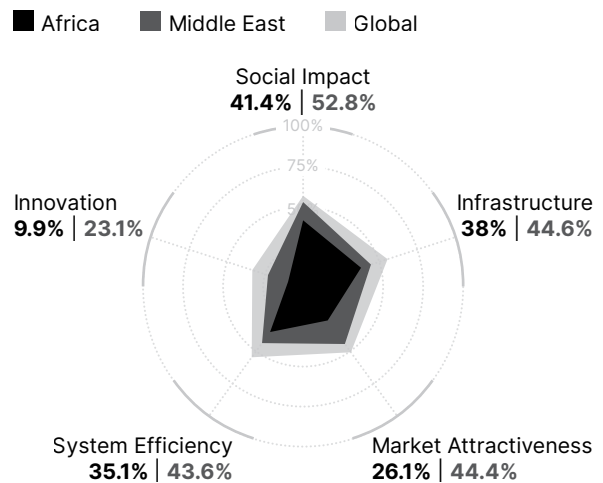


Source: Oliver Wyman Forum and University of California, Berkeley

Car ownership varies greatly in the region. African cities have low rates of car ownership — so much so that it is part of the reason why Casablanca boasts the highest pedestrian modal share in the Index. Middle Eastern cities are often reliant on car travel due to hot climates that make walking and biking difficult. Still, efforts to disincentivize motorized transit with car-free zones remain limited.

Dimensions of the Urban Mobility Readiness Index score

Regional scores in percentage across the five dimensions compared with global average



Source: Oliver Wyman Forum and University of California, Berkeley

North America

	2023	vs. 2022
San Francisco	4	↓ -3
New York	12	= 0
Washington, D.C.	17	↓ -2
Chicago	18	↓ -5
Boston	19	↓ -5
Vancouver	21	↑ +2
Los Angeles	23	↓ -5
Toronto	25	↑ +1
Montreal	26	↑ +1
Atlanta	27	↓ -3
Houston	31	↓ -2
Dallas	35	↓ -5

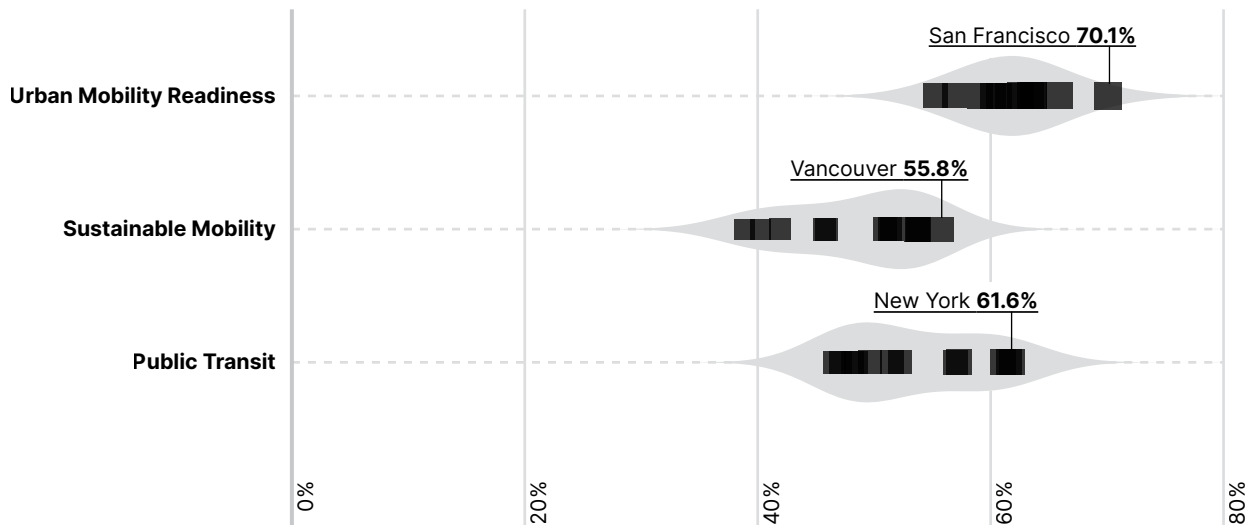
Leading North American cities are among the highest performing cities in the Index thanks to strong infrastructure and system efficiency scores. Strong infrastructure offerings typically include road connectivity, air transport facilities, and providing a multimodal network; while system efficiency strengths include electric vehicle (EV) incentivization, traffic management, and supply chain services.

Canadian cities like Vancouver, Montreal, and Toronto enjoy strong public transit systems and a higher percentage of car-free zones, which lead to a subsequently lower car ownership rate compared to cities in the United States. New York and Chicago, with strong public transit systems, are the exceptions among American cities. However, increased ticket fares and a slight decrease in commute speeds have lowered New York’s public transit scores.

The strength of US cities, however, lies in strong market attractiveness. San Francisco has a higher overall Index ranking than any other North American city thanks to its proximity to Silicon Valley and notable academic institutions like Stanford University and the University of California at Berkeley — creating an ecosystem that embraces emerging technologies like Mobility as a Service and autonomous vehicles. The Bay Area city isn’t alone among US cities: Boston and New York both enjoy a rich talent pool that’s developing next-generation mobility solutions.

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit

Distribution of Asian Pacific cities' scores in percentage



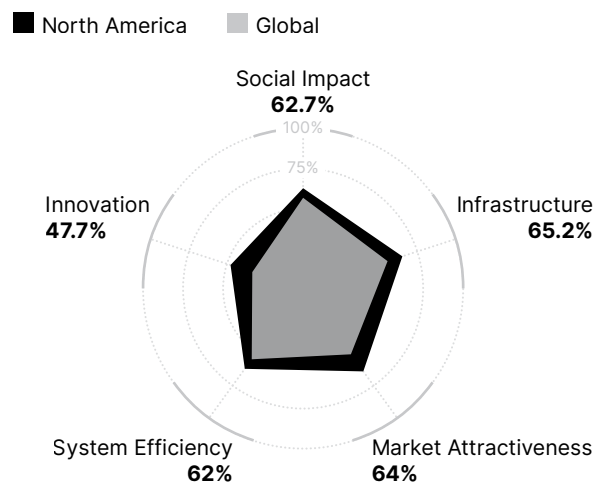
Source: Oliver Wyman Forum and University of California, Berkeley

And yet despite an embrace of innovation, many US cities fell in the Index rankings in 2023. Those who remained stagnant, like San Francisco, Chicago, or Los Angeles, were leapfrogged by other cities that more actively invest in their urban mobility systems — most notably Scandinavian cities like Helsinki and Stockholm or Asian cities like Seoul and Hong Kong. North American cities can keep improving with simple, yet effective methods to be more sustainable, like promoting cycling and walking.

American commuters are also heavily reliant on personal cars because many public transit services have low station density and usage rates. Continued investments in EVs will help offset car emissions. The US Inflation Reduction Act is expected to increase EV use with more resources dedicated to charging infrastructure, but EV market shares have not yet reached those of Europe or China.

Dimensions of the Urban Mobility Readiness Index score

Regional scores in percentage across the five dimensions compared with global average



Source: Oliver Wyman Forum and University of California, Berkeley

City Profiles

No two cities are alike, and none are without their challenges. The challenges of each city should be as instructional as their strengths; revealing the gaps that should inspire business and government leaders to innovate new solutions together.

Helsinki	30
Amsterdam	34
Stockholm	38
San Francisco	42
Munich	46
Singapore	50
Zurich	52
Paris	54
Copenhagen	56
Berlin	58
London	60
New York	62
Seoul	64
Oslo	66
Hong Kong	68
Tokyo	70
Washington, D.C.	72
Chicago	74
Boston	76
Madrid	78
Vancouver	80
Sydney	82

Los Angeles	84	Bangkok	128
Barcelona	86	Sao Paulo	130
Toronto	88	Cape Town	132
Montreal	90	Jeddah	134
Atlanta	92	Jakarta	136
Dubai	94	Mexico City	138
Melbourne	96	Johannesburg	140
Beijing	98	Rio de Janeiro	142
Houston	100	Riyadh	144
Shanghai	102	Delhi	146
Milan	104	Mumbai	148
Dublin	106	Cairo	150
Dallas	108	Bogota	152
Warsaw	110	Monterrey	154
Istanbul	112	Casablanca	156
Abu Dhabi	114	Manila	158
Moscow	116	Quito	160
Rome	118	Lima	162
Doha	120	Manama	164
Kuala Lumpur	122	Nairobi	166
Santiago	124	Lagos	168
Buenos Aires	126		

Helsinki

Urban Mobility Readiness Index

1/65

Sustainable Mobility

4/65

Public Transit

6/65

Population (million)

1.3

Population density (people per km²)

2,486

GDP per capita (US\$)

58,895

Surface area (km²)

515



What Helsinki Does Well in Urban Mobility

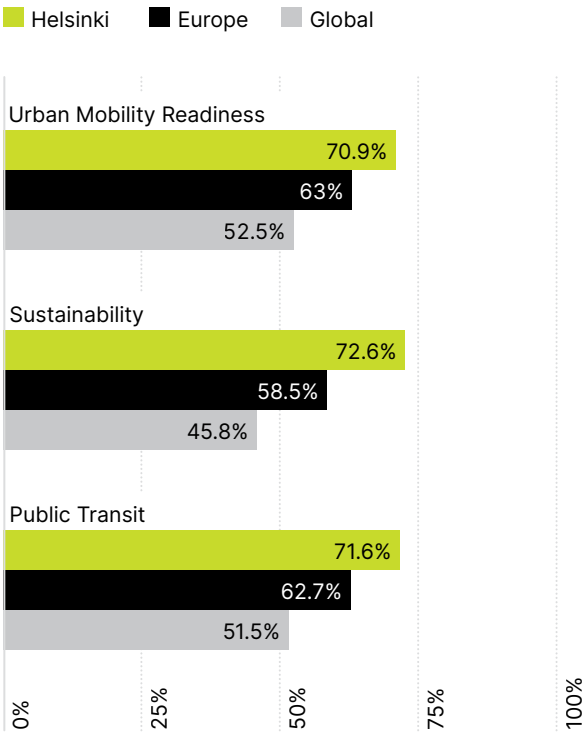
Helsinki claims the top ranking in the 2023 Urban Mobility Readiness Index thanks to strong government commitment to building sustainable transport. Car-free zones, an advanced cycling infrastructure, and a modern national railroad network enable residents to use modes other than personal gasoline-powered cars and give Helsinki a top 10 finish in the sustainable mobility and public transit sub-indices.

The city’s goal of electric cars accounting for 30% of all vehicles by 2030 is supported by its hefty investments in charging infrastructure. Finland allocated roughly \$14 million in funding¹⁶ that will in part support EV charging points, and Helsinki added 200 charging points¹⁷ this year to make access easier.

Helsinki also invested heavily in autonomous vehicle technology, propelling it to global leadership in connected vehicle programs. In recent years, the Finnish Transport Infrastructure Agency (FTIA) supported an autonomous bus pilot in Helsinki and a transportation joint effort with Norway to study the impact of harsh winter conditions on autonomous vehicles.

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

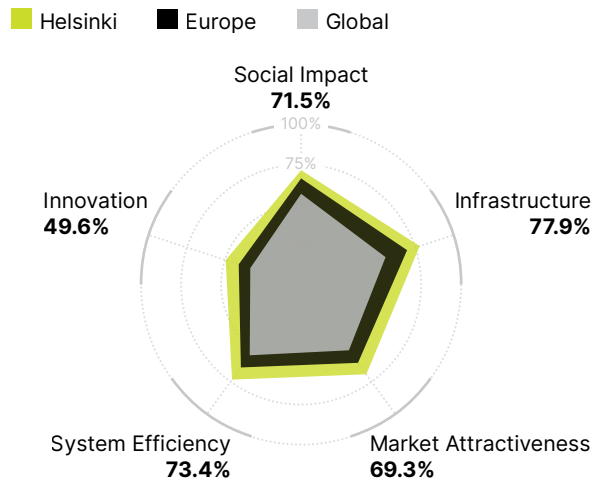
Challenges and Opportunities for Helsinki's Transportation System

Despite a leap forward in embracing autonomous mobility technology, Helsinki does not yet foster an ecosystem of innovation or fully utilize the latest mobility technologies. The Finnish capital is home to few major mobility companies, thus impacting the amount of private investment available for mobility research.

Helsinki's public transit network is not yet operating at its full potential — even with government commitment and investment. Public transport accounts for just under a quarter of trips — far behind walking's percentage of 47%, and just ahead of cars at 20%, according to city estimates.¹⁸ Ridership levels continue to face challenges

Dimensions of the Urban Mobility Readiness Index score

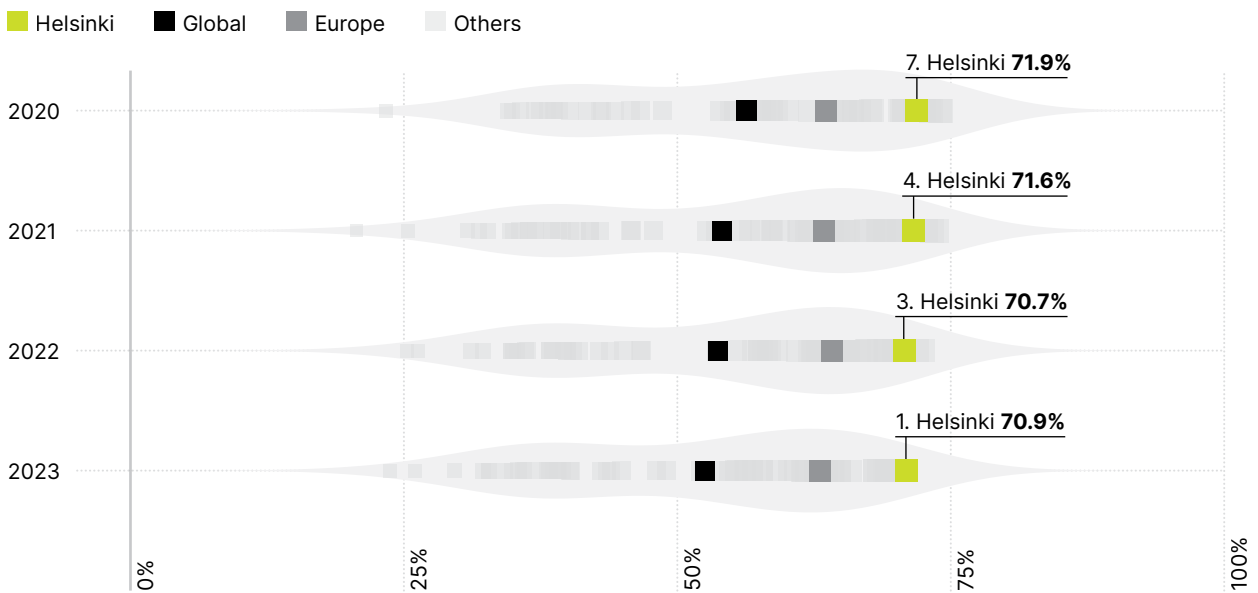
City scores in percentage across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Urban Mobility Readiness Index score evolution (2020-2023)

City scores in percentage compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

stemming from issues such as station density, accessibility, and operating hours. The city's commitment to new light and tram rail projects,¹⁸ however, may help issues in station density and accessibility.

How Helsinki Can Improve Its Public Transportation and Sustainable Mobility

Boosting service hours can help encourage higher public transit ridership, which currently operates for 18 hours per day. Copenhagen, which has a top-tier public transit network, operates 24 hours a day, seven days a week. Following this operating model would require further infrastructure investments, with more trains and additional drivers. Helsinki has plans to expand light and tram rail services, and further efforts would help bolster its overall public transit network.

Helsinki's EV charging network is still developing. To offer a world-class charging network, like Amsterdam's, the city would need to accelerate the deployment of charging stations to multiply its charging station density by fivefold. The city can target this gap by increasing government-backed investments in public charging stations and subsidizing at home station implementation. Helsinki has added 200 charging points this year and may benefit from national funding to further expand infrastructure.



The number of ranks climbed by Helsinki since 2020, showing steady improvements and confirming the city's successful strategy in urban mobility readiness.

Recommendations

- Expand operating hours by investing in additional buses or trains, drivers, and safety enforcement
 - Increase EV charging density by offering city-level incentives for at-home and public charging stations
 - Accelerate deployment by increasing incentives to charging station providers
-

Amsterdam

Urban Mobility Readiness Index

2/65

Sustainable Mobility

2/65

Public Transit

11/65

Population (million)

1.4

Population density (people per km²)

2,904

GDP per capita (US\$)

75,488

Surface area (km²)

487



What Amsterdam Does Well in Urban Mobility

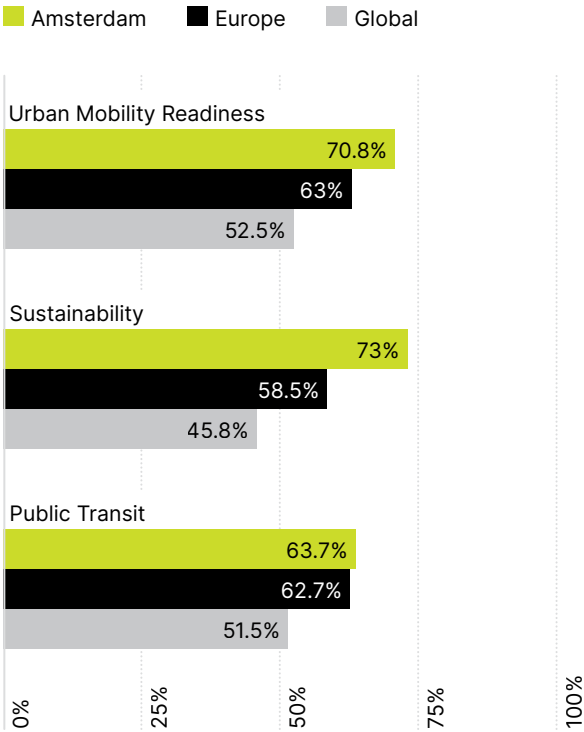
Amsterdam has returned, for the first time since 2021, to an overall top five ranking. It’s not only known as the cycling capital of the world, its mobility network is incredibly efficient thanks to traffic management systems and dense electric vehicle charging networks. Additionally, high cycling and EV use have earned Amsterdam the runner-up ranking in the sustainability sub-index.

Amsterdam’s impressive cycling infrastructure consists of dedicated bike routes and storage facilities. City plans aim for cycling to account for 35%¹⁹ of all trips made in the city by 2030 by building more cycling lanes and parking availability.²⁰ In January 2023, Amsterdam unveiled an underwater garage²¹ below one of the busiest areas of the city that can house 7,000 bicycles.

The city is promoting electric vehicle usage and has become a global leader in charging station density as it strives to eliminate all fossil-fueled transportation by 2030. By the end of the decade, Amsterdam aims to have more than 80,000 charging points²² — up from the 9,600 charging points that the city had in 2020.

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

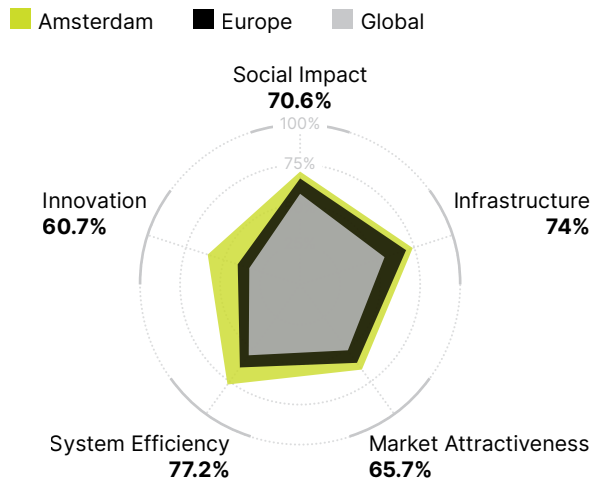
Challenges and Opportunities for Amsterdam's Transportation System

Despite efforts to limit private car ownership, Amsterdam is underperforming in public transit utilization due to difficulties with low station density. That leads to challenges for elderly and disabled commuters who are already unable to benefit from the heavy cycling presence in the city. However, new metro and tram routes are planned along with stations built with accessibility in mind.²³ Cycling's high popularity also may lead to a lower potential public transit ridership.

With many active residents preferring to cycle around the city, pedestrians and ride-sharing options have a low modal share in Amsterdam. The city has committed to a two-meter space

Dimensions of the Urban Mobility Readiness Index score

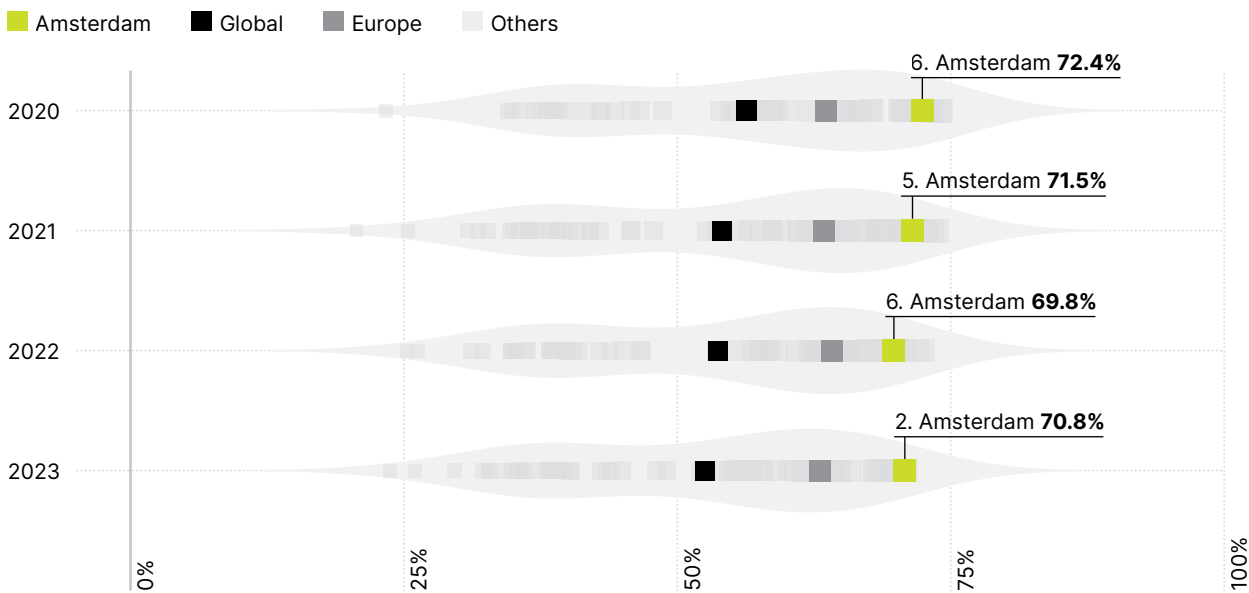
City scores in percentage across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Urban Mobility Readiness Index score evolution (2020-2023)

City scores in percentage compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

for pedestrians whenever there is a street redesign to boost the city’s modal share of pedestrians.

How Amsterdam Can Improve Its Public Transportation and Sustainable Mobility

Amsterdam can make its streets more friendly for walkers by increasing the number of car-free zones. In the long term, Amsterdam can work to increase its pedestrian modal share by introducing 15-minute city concepts, where necessities like work, education, and healthcare are available within a 15-minute walk, cycle, or public transit ride from any point in the city. The city’s plans to remove parked bicycles from walkways with more bicycle storage facilities also will help increase pedestrian modal share.²⁰

Amsterdam’s public transit network operates at 19 hours per day. Should the city want to improve its metro or tram offering, it may consider extending its operating hours. Some cities, like Copenhagen, offer mass transit services 24 hours per day. Moving in that direction would require investments in the infrastructure with more trains and hiring additional drivers.

2nd

Amsterdam’s rank in Sustainable Mobility is the result of an ambitious EV incentivization, dense charging infrastructure, and multiple barriers to combustion engine vehicles.

Recommendations

- Improve pedestrian safety by adding car-free zones and upgrading pedestrian infrastructure
 - Shorten commutes for pedestrians by implementing 15-minute city concepts
 - Expand operating hours by investing in additional buses or trains, drivers, and safety enforcement
-

Stockholm

Urban Mobility Readiness Index

3/65

Sustainable Mobility

5/65

Public Transit

5/65

Population (million)

1.9

Population density (people per km²)

2,256

GDP per capita (US\$)

85,785

Surface area (km²)

847



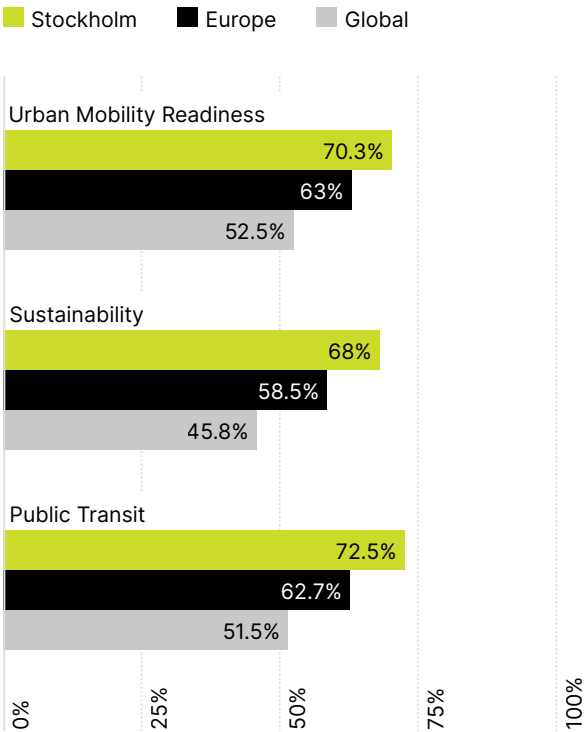
What Stockholm Does Well in Urban Mobility

Claiming the fifth-place ranking in both the sustainability and public transit sub-indices, Stockholm is a global leader in public transit investment, with a focus on affordable fares, reduced walking distance to stations, and shorter travel times. The city reportedly plans to nearly double its mass transit network capacity to serve a booming population — nearly twice the capacity compared to its current level. Stockholm began electrifying its bus fleet in June 2022.

The Swedish government has historically offered subsidies for low-emission vehicles but ended that offering in November 2022.²⁴ There is continued investment, however, in developing more charging stations for electric vehicles (EVs). The combined efforts have accelerated Sweden’s EV market share growth to become one of the leading European cities. By the end of 2022, Stockholm aimed to build at least 4,000 public charging points²⁵ and has pledged support for tenant-owner associations to install charging equipment.

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

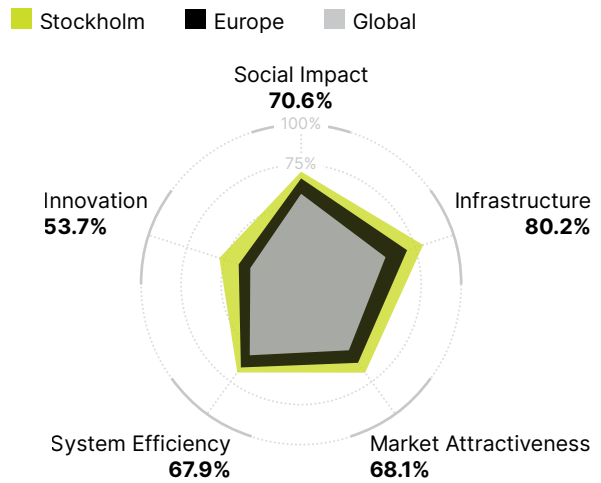
Challenges and Opportunities for Stockholm's Transportation System

Stockholm lags behind many of its European peers in active mobility modal share, with relatively fewer residents walking and cycling around the city. However, with strong public transit ridership, the city estimates between 75-80% of commutes are taken by public transit, cycle or foot²⁵ — demonstrating a limited reliance on cars for travel.

Stockholm's Arlanda Airport is not considered to be a major European hub, with relatively low passenger volumes and international connections. However, several airlines have expanded international connections from Arlanda in the last year.

Dimensions of the Urban Mobility Readiness Index score

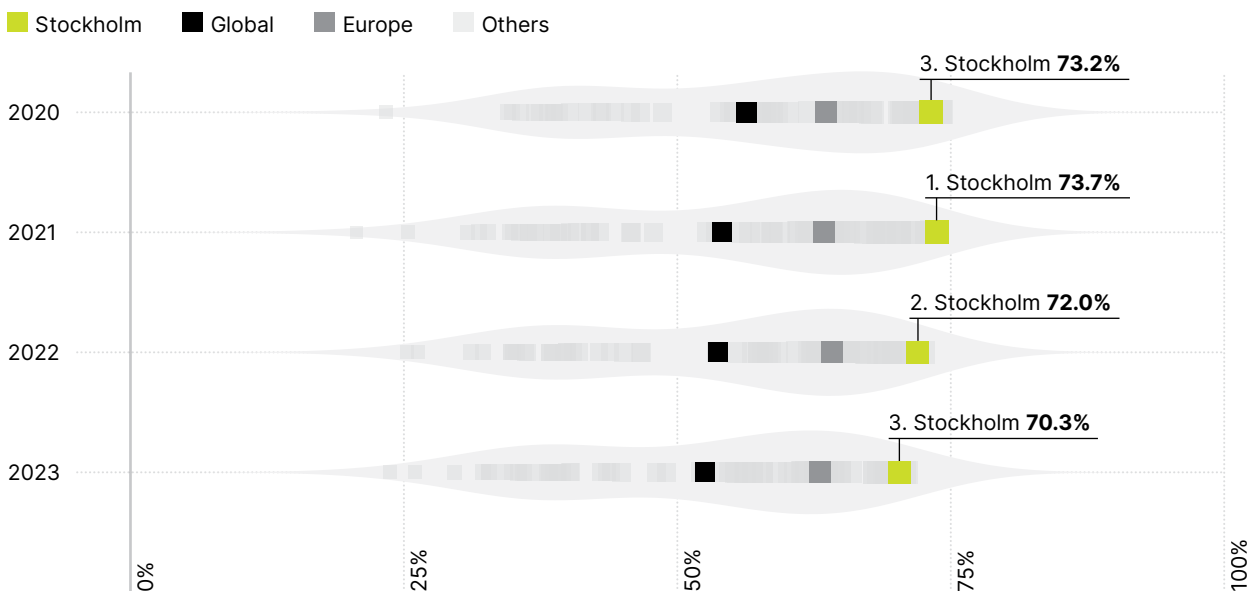
City scores in percentage across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Urban Mobility Readiness Index score evolution (2020-2023)

City scores in percentage compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

How Stockholm Can Improve Its Public Transportation and Sustainable Mobility

Stockholm can encourage cycling throughout the city by expanding the existing low-emission zones and implementing more car-free zones for pedestrians and cyclists. Reports that the city will ban diesel and petrol-fueled cars from the city center in 2025 will help advance those efforts, and the city's 2050 plan considers more congestion tax zones in city suburbs. The city should also consider supporting bike-sharing services and implementing a car buy-back or trade in program where residents can trade or sell their used cars for subsidies for bicycles or e-bikes. Increased accessibility to bicycles, regulation of car usage, and fewer cars on the road will help to encourage cycling adoption.

Stockholm has yet to implement fully automated trains in the city's metro system. Automated trains increase efficiency and speed of metro services, as well as permit longer operating hours and higher ridership levels. If the city were to introduce automated trains to one of its main lines, it would have considerable impact on the efficiency of the city's metro system.

3rd

Stockholm has been in the top three cities since 2020 thanks to an ambitious urban planning blueprint and a balanced mobility playbook.

Recommendations

- Improve safety by expanding cycling infrastructure
 - Increase bike and e-bike access through individual purchase and bike-share subsidies
 - Increase speed by introducing automated metro lines
-

San Francisco

Urban Mobility Readiness Index

4_{/65}

Sustainable Mobility

23_{/65}

Public Transit

18_{/65}

Population (million)

4.8

Population density (people per km²)

1,682

GDP per capita (US\$)

127,185

Surface area (km²)

2,872



What San Francisco Does Well in Urban Mobility

San Francisco remains a global hub for public and private mobility investment with specific emphasis on electric vehicle (EV) incentivization, via charging station installation, and connected and automated vehicles (CAV) technologies. City estimates call for a doubling of public charging stations to 2,000 by 2025,²⁶ and for EVs to account for half of new car registrations by 2026.

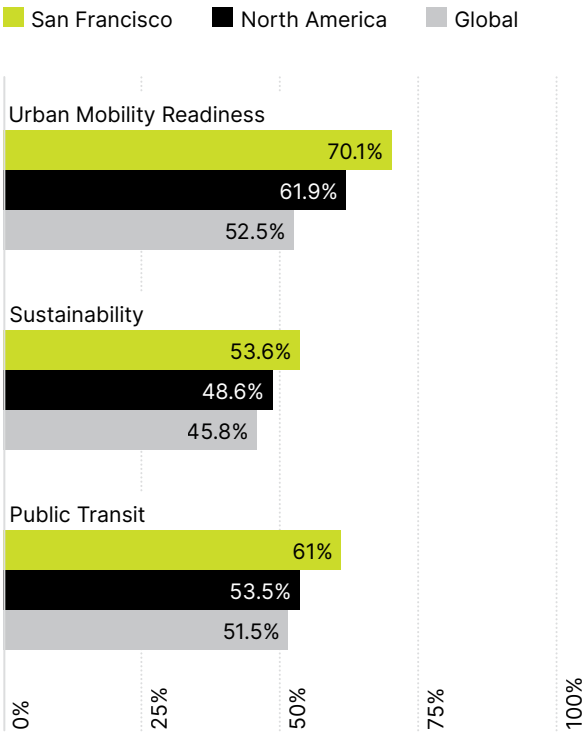
The city is a hotspot for research and development efforts by private institutions in the mobility sector, employing talent from some of the top universities in the world. Two automated vehicle companies were granted in August 2023 permission to begin 24/7 commercial robotaxi operations throughout San Francisco.

Challenges and Opportunities for San Francisco’s Transportation System

With low public transit station density, ridership levels remain relatively low, and San Francisco’s residents rely on private cars to move around the city. The city’s transit plan includes an additional Bayview Caltrain station that may accommodate up to 4,000 daily trips and will be within a half-mile of 2,500 low-income residents.

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



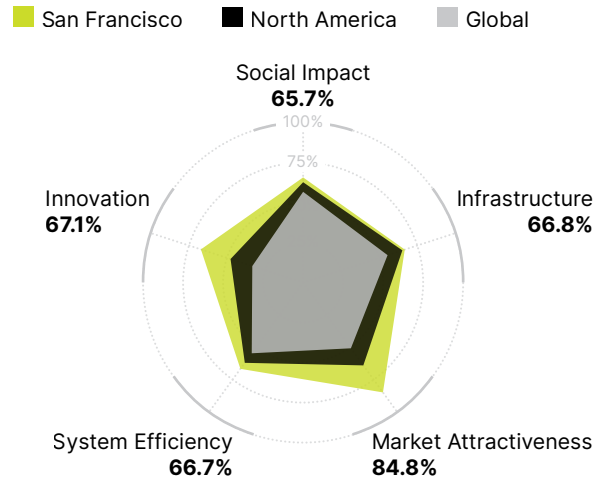
Source: Oliver Wyman Forum and University of California, Berkeley

Separately, San Francisco was awarded more than \$163 million in funding from California authorities in September 2023 to develop more housing, transit improvements, and infrastructure.²⁷

City-wide challenges in active mobility infrastructure continue, with difficulties in cycling stemming from a lack of dedicated car-free zones and cycling infrastructure that is compounded by hilly terrain. However, San Francisco has a 10-15 year plan to allocate funding for new low-vehicle-traffic streets that better serve cyclists and pedestrians and to make e-bike offerings more accessible.²⁸

Dimensions of the Urban Mobility Readiness Index score

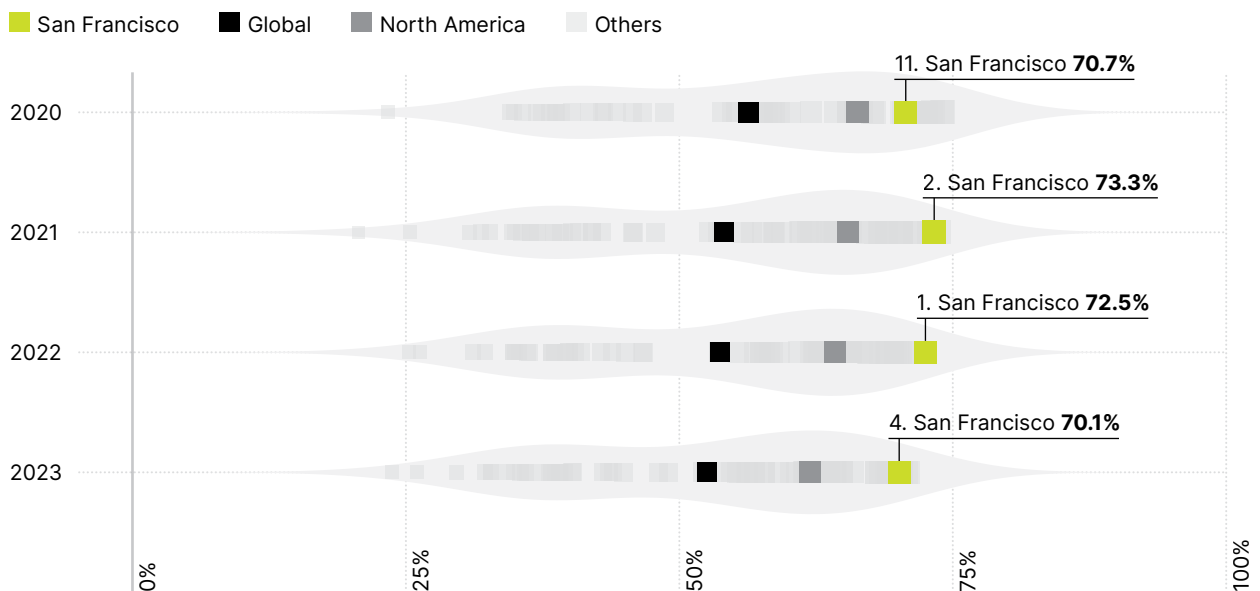
City scores in percentage across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Urban Mobility Readiness Index score evolution (2020-2023)

City scores in percentage compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

How San Francisco Can Improve Its Public Transportation and Sustainable Mobility

San Francisco has been proactive in tackling some of its most pressing issues by bolstering public transport and active mobility offerings, yet further efforts will help.

Nearly half of trips are taken with private cars in San Francisco. The Bay Area city lags behind its peers like New York in terms of reducing car ownership: San Francisco's residents own on average 1.8 times as many cars as New Yorkers. San Francisco can discourage car usage by introducing car-free zones, removing parking availability, and promoting alternatives like public transit, active mobility, and shared mobility. San Francisco can boost active mobility through targeted investments in infrastructure and road safety such as building bike lanes, heightening traffic enforcement, and supporting bike sharing initiatives.

San Francisco can bolster its public transit offering by introducing more stops and stations along its commuting lines. Focusing on bus and tram services would be a resource-efficient option compared to developing additional metro and rail stations. Increasing the number of stations makes the public transit system more accessible to the city's residents and will help to increase ridership and lower car usage.

+7

The number of ranks climbed by San Francisco since 2020. Although the city dropped three ranks in 2023, it remains a leading city with excellent market attractiveness to the private sector.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
 - Encourage use of shared mobility modes as alternatives to cars
 - Improve public transit access by increasing the number of stops along bus routes to underserved areas
 - Develop mass transit in the long-term by expanding bus rapid transit services or metro lines
-

Munich

Urban Mobility Readiness Index

5_{/65}

Sustainable Mobility

7_{/65}

Public Transit

16_{/65}

Population (million)

1.8

Population density (people per km²)

3,749

GDP per capita (US\$)

80,754

Surface area (km²)

482

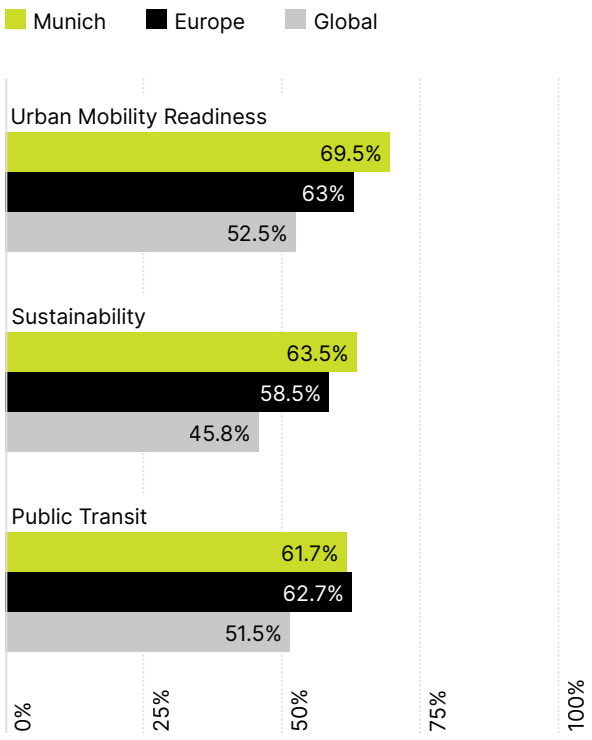
What Munich Does Well in Urban Mobility

Strong infrastructure, like car-free zones and connected, maintained roadways, helped Munich rise in the Index rankings. In February 2023, the city banned diesel vehicles from entering an expanded radius in the city center.²⁹ Munich’s plan to have 80% of roadways reserved for bicycles, public transport, and electric vehicles by 2035³⁰ helped land it in the top 10 of the sustainable mobility sub-index. Munich possesses excellent supply chain infrastructure that attracts large manufacturing companies. In April 2023, one large mobility technology provider expanded its manufacturing facility in Munich to meet more demand for locomotives.

The Bavarian capital maintains a robust multimodal public transit system, with ample operating hours, affordable fares, and short transit times. Affordable transit fares are, in part, due to the national government’s new Deutschland Ticket, which lets commuters use any and all local mass transit offerings for roughly \$52 per month.⁴ In August 2023, the European Investment Bank, with other financial institutions, provided about \$2 billion in credit for Munich’s S-Bahn rail system to add 90 new trains.³¹

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

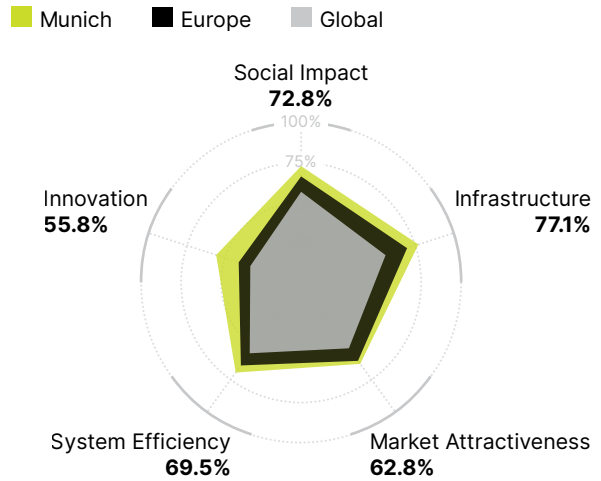
Challenges and Opportunities for Munich's Transportation System

Munich's public transit system has been slow to implement autonomous trains in the city's U-bahn or S-bahn, but the city is exploring a ridepool system powered by automated buses in partnership with the University of Stuttgart.³²

Munich's airport serves a high number of international destinations, and yet the airport suffers from lower international passenger volumes compared to leading European cities. Several airlines began offering new international flights in 2023 to locations like Mexico City to Shanghai and Beijing.³³

Dimensions of the Urban Mobility Readiness Index score

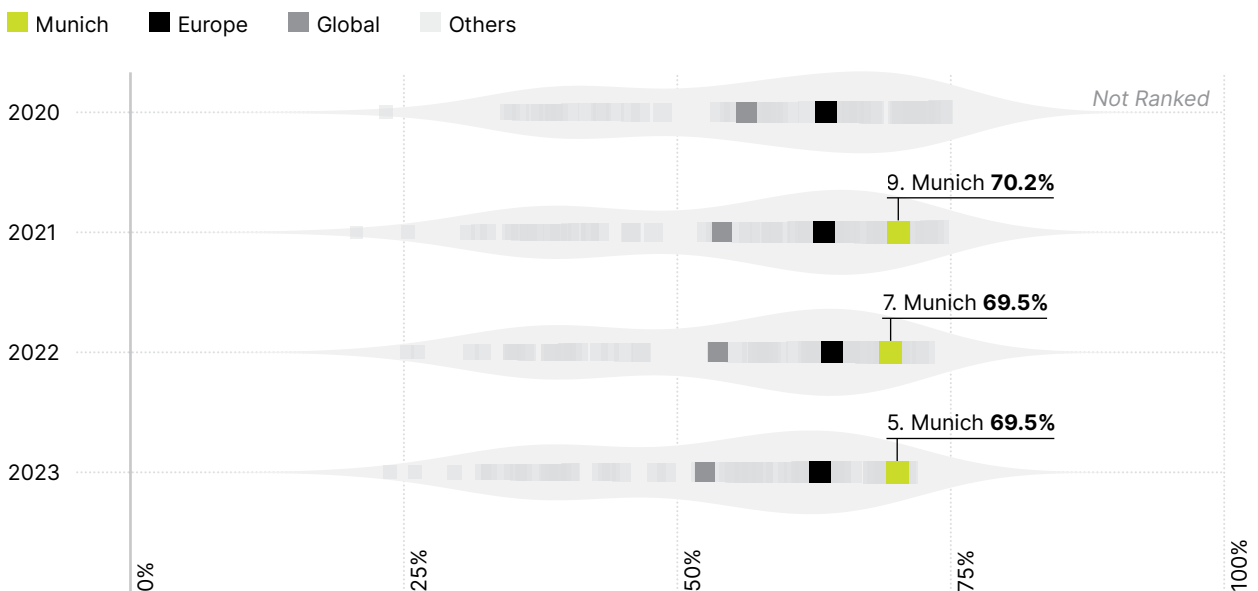
City scores in percentage across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Urban Mobility Readiness Index score evolution (2020-2023)

City scores in percentage compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

How Munich Can Improve Its Public Transportation and Sustainable Mobility

Munich can make its streets more walkable by increasing the number of car-free zones to encourage pedestrian travel without fear of road incidents. The city’s plans commit to increasing pedestrian space by the end of 2023 and envision a car-free “old town” neighborhood.²³ In addition, the city can promote the 15-minute city concept, where key necessities like work, healthcare, and education are available within a 15-minute walk, cycle, or public transit ride from anywhere in the city, by introducing required daily services to previously underrepresented parts of the city. City plans currently envision new neighborhoods that emphasize short trip distances.³⁰

Munich’s EV charging network is still developing. To offer a world-class charging network like its peer, Amsterdam, it would need to accelerate the deployment of charging stations to multiply its charging station density by fourfold. The city can target this gap by increasing government-backed investments in public charging stations and subsidizing at home station implementation. The Munich government reported in 2023 current projects to build charging points in residential districts.³⁰

+4

The number of ranks climbed by Munich since its introduction to the Index in 2021, showing steady improvements and confirming the city’s successful strategy in urban mobility readiness.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
 - Encourage use of shared mobility modes as alternatives to cars
 - Increase EV charging density by offering city-level incentives for at-home and public charging stations
 - Accelerate deployment by increasing incentives to charging station providers
-

Singapore

**Urban Mobility
Readiness Index**

6/65

**Sustainable
Mobility**

9/65

Public Transit

3/65

Population (million)

6.0

Population density (people per km²)

11,533

GDP per capita (US\$)

72,794

Surface area (km²)

523

What Singapore Does Well in Urban Mobility

Singapore’s public transit system is world class, with a diverse selection of modes, affordable fares, fast commute times, and stations within easy walking distance for its residents. A strong public transit network gives Singapore the number three ranking in the public transit sub-index. The city-state aims to further improve accessibility to stations with an expanded rail network that would connect 80% of households to within 10 minutes of a station by 2030 as part of its “45-minute city” plan.³⁴ With a relatively low car ownership rate among residents and a leading traffic management approach, Singapore enjoys comparatively low congestion. Low car ownership rates are in part due to the \$76,000 license residents must purchase before they are permitted to buy a vehicle.

Challenges and Opportunities for Singapore’s Transportation System

Similar to many cities in the region, Singapore is lagging in electric vehicle (EV) charging station density and subsequent EV market share in sales. Over the last few years, the city-state has

taken measures to improve its EV infrastructure, such as deploying more than 600 public charging points in 2022,³⁵ with plans to build another 2,000 by the end of 2023.³⁶ Singapore is also offering discounted car ownership permits for EV purchases as part of a plan to phase out sales of combustion engine vehicles by 2030.³⁷

Few residents opt for walking or biking in their day-to-day transit, and the city-state remains wary about e-scooters which have been restricted to cycling paths since late 2019.³⁸ However, Singapore’s “Friendly Streets” initiative aims to repurpose some roads to accommodate more cyclists and pedestrians.³⁹

How Singapore Can Improve Its Sustainable Mobility

While Singapore has a strong public transit ridership and low car ownership, it has yet to embrace cycling like many of its peers. To close the gap, the city-state can focus on improving its cycling infrastructure by building dedicated and connected bike lanes on popular roadways. Previously mentioned plans to build more cycling infrastructure show progress, but further efforts would increase cycling’s

appeal. In addition, supporting bike-sharing companies (such as Anywheel or HelloRide) by investing in more stations, bikes, and electric bikes, helps remove the barrier of bike ownership. Providing electric bike subsidies can help limit geographic barriers and increase cycling. Previously mentioned plans to build more cycling infrastructure demonstrate acknowledgement and progress in promoting safety and accessibility for cyclists.

Singapore’s EV charging network is still developing. Its previously mentioned efforts to expand charging infrastructure by the end of 2023 demonstrate progress. To increase its offering to become a regional leader, it would need to accelerate the deployment of charging stations to multiply its charging station density by a factor of 14. The city-state could increase

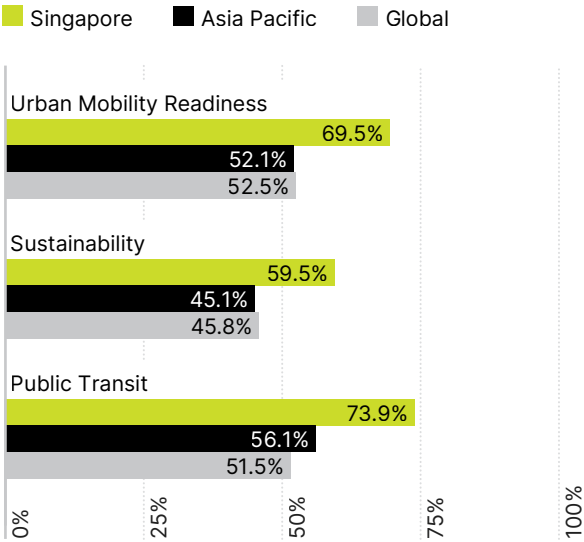
government-backed investments in public charging stations and subsidizing at home station implementation.

Recommendations

- Improve safety by expanding cycling infrastructure
- Increase bike and e-bike access through individual purchase and bike-share subsidies
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Accelerate deployment by increasing incentives to charging station providers

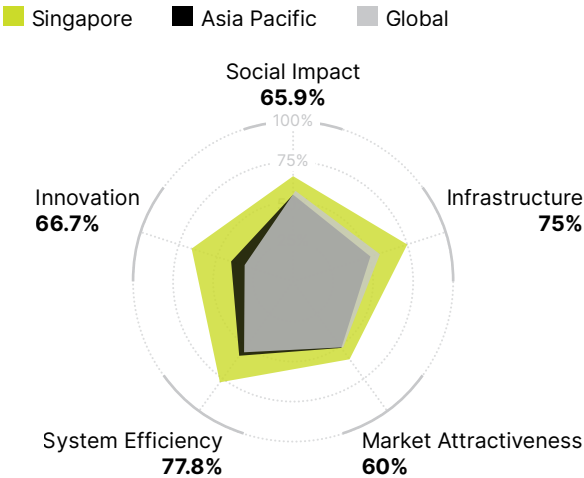
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Zurich

**Urban Mobility
Readiness Index**

7/65

**Sustainable
Mobility**

8/65

Public Transit

2/65

Population (million)

1.2

Population density (people per km²)

4,859

GDP per capita (US\$)

113,754

Surface area (km²)

243

What Zurich Does Well in Urban Mobility

Zurich has a strong, diverse multimodal public transport system, which is known for its efficiency, affordability, and stations that are almost always within easy walking distance. Those features vaulted the city into the second-place spot on the public transit sub-index for the second consecutive year. These strengths contribute to a 41% share of total transportation volume for its public transit network.⁴⁰ Zurich sought to strengthen its multimodal offerings even further in 2023, by piloting an all-in-one trip planner app that routes travel by public transport, bike, car, or walking.⁴¹

The city also is home to a network of well-maintained and interconnected roadways with relatively few road-related fatalities. Zurich is undergoing a 2030 project to lower speed limits to roughly 30 kilometers per hour (18 miles per hour). As of 2022, the Swiss city had reduced the speed limit on about 40 kilometers (25 miles) of road, leading to a perceived improvement in traffic safety.

Challenges and Opportunities for Zurich's Transportation System

Zurich is not home to a thriving ride-share sector, with low usage rates. The city is also challenged by a low walking and cycling modal split, although Zurich's 2030 plan includes the construction of more cycling routes, reducing motor vehicle speeds, and making cyclists a priority at traffic lights.⁴² Despite previous government investments in connected and automated vehicle (CAV) technologies, Zurich still lags behind its European peers in CAV pilot programs. The city's public transport agency held an early-stage demonstration of a driverless electric bus for last mile transit in 2018;⁴³ however, they have been slow to develop and expand this technology into other autonomous mobility programs or initiatives in the years since.

How Zurich Can Improve Its Public Transportation and Sustainable Mobility

Zurich's cycling infrastructure could be improved to make the city more hospitable to cyclists. Installing dedicated bike lanes with safety dividers on main roadways and maintaining them during the winter months

would be immensely helpful to increasing cycling’s modal share. Bikes are permitted on public transit for a fee; however, they are not welcomed during peak travel hours. Relaxing the price and time restrictions would permit more cyclists to utilize public transit and cycling for commuting to and from work during business hours. Lastly, expanding the offerings of Zurich’s ‘Züri rollt’ free city bike service with more stations and bikes, and year-round options could further support cyclists throughout the city. The city plans for a separate, larger-scale bike-sharing operation to begin operating in November 2023.⁴⁴

Zurich’s electric vehicle (EV) charging network is still developing. To offer a world-class network like Amsterdam’s, it would need to accelerate the deployment of charging stations

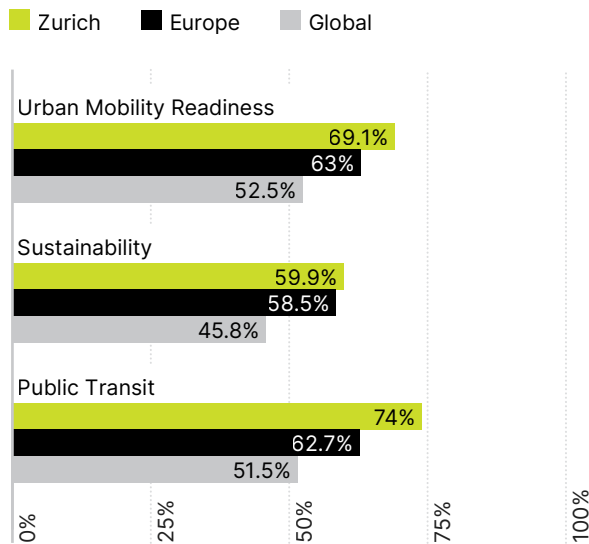
to multiply its charging station density by threefold. The city can target this gap by increasing government-backed investments in public charging stations and subsidizing at home station implementation.

Recommendations

- Build or expand bike lanes with protective barriers in high traffic areas
 - Integrate cycling with public transit networks for better connectivity
 - Increase EV charging density by offering city-level incentives for at-home and public charging stations
 - Accelerate deployment by increasing incentives to charging station providers
-

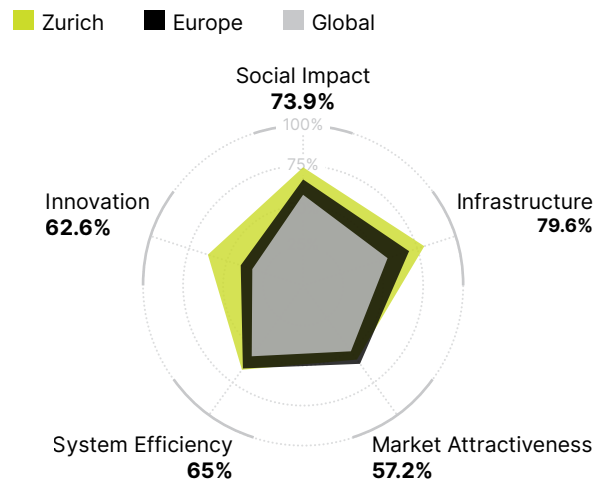
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Paris

**Urban Mobility
Readiness Index**

8/65

**Sustainable
Mobility**

12/65

Public Transit

7/65

Population (million)

11.1

Population density (people per km²)

4,841

GDP per capita (US\$)

64,538

Surface area (km²)

2,300

What Paris Does Well in Urban Mobility

Parisians embraced active mobility by building bike lanes and car-free zones to become one of the most walked cities in the world. Paris allocated more than \$264 million from 2015-2026 to build about 179 kilometers (111 miles) of new cycling lanes.⁴⁵ In advance of the 2024 Summer Olympics, reported infrastructure plans include a way for cyclists to travel from the city center to sports venues in the city outskirts. Innovation in smart mobility and automated vehicle technology flourishes thanks to a strong academic sector, government investment, and the presence of many mobility companies. In 2022, for example, the Paris School of Economics, along with three public and private institutions, co-created a new university research arm to study urban mobility and energy development.⁴⁶ The French capital is also host to a plethora of start-ups in the mobility industry.

Challenges and Opportunities for Paris's Transportation System

Paris lags behind several European peers in direct electric vehicle (EV) incentivization and charging infrastructure, which translates

to a low EV market share in sales — although the city's 2030 plan pledges subsidies to install charging points in condominiums and underground car parks.⁴⁷ Nationally, France currently does not meet the European Union's recommended charging infrastructure targets, according to the International Energy Agency.⁴⁸

City residents complain of high levels of noise and light pollution that are typically associated with the relatively high amount of congestion. A downward trend in car usage — in which there were nearly 7,000 fewer cars used per year between 2018 and 2021 — may help alleviate noise and light pollution.⁴⁹ The city has committed to short-term improvements on noise pollution, with plans to lower vehicle speeds, soundproof infrastructure, support active and electric mobility, and experiment with sound radars.⁵⁰

How Paris Can Improve Its Public Transportation and Sustainable Mobility

While Paris invested heavily in infrastructure development during the last few years, Parisians have not gravitated to cycling in their daily lives. The city is moving in the right direction with

its Olympics-related plans but can do more to incentivize its residents to choose cycling. It can improve cycling safety and infrastructure by adding bike lanes with protective barriers and increasing enforcement of traffic laws. In addition, the city can increase public transit accessibility to cyclists by removing bike restrictions on the metro and RER.

Despite short-term efforts and commitments, Paris could improve its noise and light pollution compared to its peers. The city has laid the groundwork to ban combustion engine vehicles by 2030, increase the size and number of car-free zones, and reduce parking availability. These improvements are slated for 2030, but in the immediate future, the city can continue to incentivize EV purchases, enforce traffic safety for cyclists, and implement its

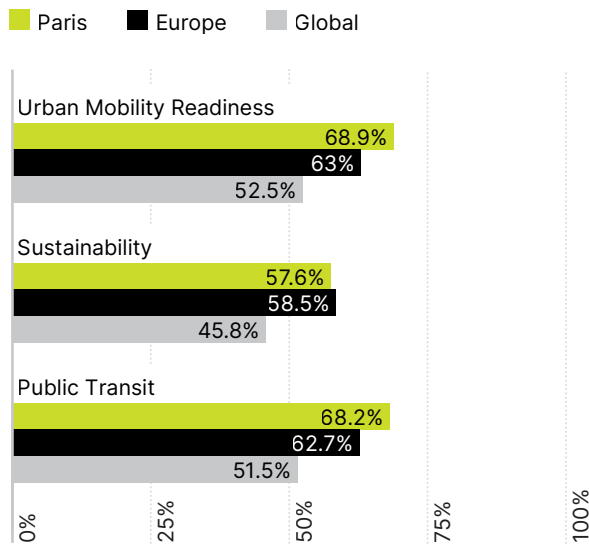
plan to remove traffic and congestion from the city center in 2024 (via the zone à trafic limitée, or ZTL). Paris published plans to lower noise and light pollution to be completed in 2026, but further efforts may help.

Recommandations

- Improve safety by expanding cycling infrastructure
- Increase bike and e-bike access through individual purchase and bike-share subsidies
- Limit motorized access to city centers through car-free zones
- Introduce congestion pricing to mitigate pollution during traffic peaks

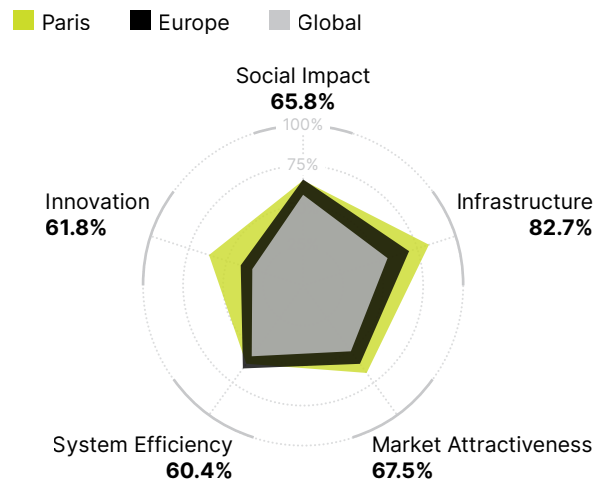
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Copenhagen



**Urban Mobility
Readiness Index**

9/65

**Sustainable
Mobility**

3/65

Public Transit

4/65

Population (million)

1.5

Population density (people per km²)

2,681

GDP per capita (US\$)

67,744

Surface area (km²)

565

What Copenhagen Does Well in Urban Mobility

A new addition to the Index in 2023, Copenhagen is a bright spot for sustainable mobility. It boasts dedicated car-free zones and cycling infrastructure that have enabled residents to opt for bikes in place of cars. In 2022, Copenhagen opened five additional “Cycle Superhighways” — roads that allow commuters to cycle across municipal borders — that collectively span 25 kilometers (15 miles).⁵¹ Enabling active mobility has helped reduce light and noise pollution and improve air quality. The city also boasts one of the world’s strongest multimodal public transit systems, known for affordable fares and ample operating hours. These elements land Copenhagen in the top five of the sustainability and public transit sub-indices. A new light rail system that serves the greater metro area, in which trains will run every five minutes in each direction during the daytime, will open in 2025.⁵²

Challenges and Opportunities for Copenhagen’s Transportation System

Unlike many of its European counterparts, Copenhagen is not a world leader in innovation,

with few government investments in connected and automated vehicles (CAV) technologies. As a result, there has been limited roll out of autonomous cars and public transit. Copenhagen held a seven-month pilot program of an autonomous minibus in 2020 and 2021 as part of a European Union-funded project⁵³ but has yet to implement more pilots or test programs in the years since. Despite being home to one of the top public transit systems in the world, the city struggles with low ridership because commuters often have long walks between stations. However, five new metro stations are opening in 2024 that will better connect the southern part of Copenhagen to its metro system and give residents broader access to its public transit network.⁵⁴

How Copenhagen Can Improve Its Public Transportation and Sustainable Mobility

Copenhagen’s public transit system is underutilized with commuters often opting for different transportation options. Copenhagen can increase its transit offerings by increasing the station density, incentivizing further transit fares, or facilitating connectivity with other

modes of transport such as cycling. Adding bike-friendly policies to public transit — like removing time restrictions for bikes on the metro and removing bike fares — can boost ridership.

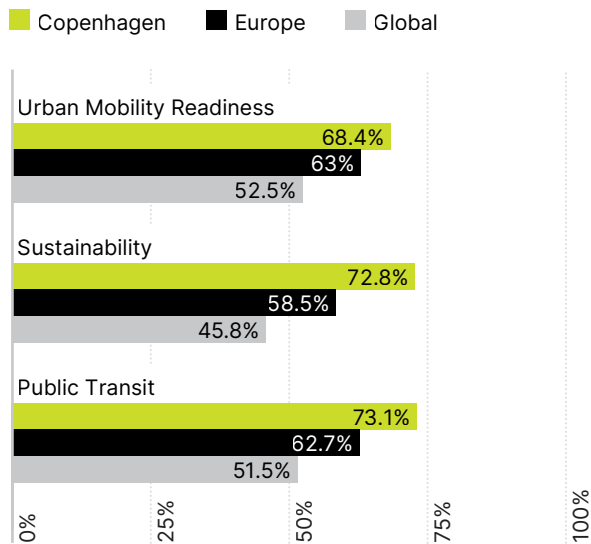
To help increase the pedestrian modal split, Copenhagen can make its streets more walkable by increasing the number of car-free zones. In addition, the city could promote the 15-minute city concept — where key necessities like work, healthcare, and education are available within a 15-minute walk, cycle, or public transit ride from anywhere in the city — by introducing these services to previously underrepresented parts of the city.

Recommendations

- Improve ridership by developing the public transit offering such as longer operating hours and greater station density
- Stimulate the demand for public transit by limiting car use and lowering transit fares
- Improve pedestrian safety by adding car-free zones and upgrading pedestrian infrastructure
- Shorten commutes for pedestrians by implementing 15-minute city concepts

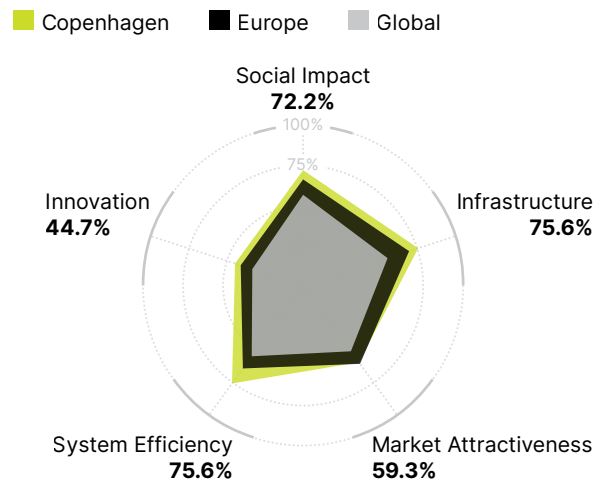
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Berlin

**Urban Mobility
Readiness Index**

10/65

**Sustainable
Mobility**

10/65

Public Transit

9/65

Population (million)

4.0

Population density (people per km²)

1,072

GDP per capita (US\$)

48,636

Surface area (km²)

3,743

What Berlin Does Well in Urban Mobility

Berlin’s public transit system is known for its diverse and multimodal selection of transit options that are affordable, widely accessible, and easily navigated by the city’s residents via the integrated VBB app. Affordable transit fares are, in part, due to the national government’s new Deutschland Ticket, which lets commuters use any and all local mass transit offerings for roughly \$52 per month.⁴ Berlin finishes in the top 10 in the public transit and sustainable mobility sub-indices.

With an emphasis on active mobility infrastructure like car-free zones for pedestrians, Berlin has one of the highest pedestrian modal shares in the Index. Berlin’s 2030 climate plan calls for allocating more than \$200 million to expand existing cycling infrastructure.⁵⁵

Challenges and Opportunities for Berlin’s Transportation System

Despite a strong and affordable public transit system, Berlin suffers from low ridership. Berlin’s sizable sprawl often presents a

challenge to residents looking to take public transit as low station density makes for longer and less convenient commutes. One of Berlin’s public transit operators partnered with a tech firm in 2022 to launch an on-demand public transport offering,⁵⁶ which may help residents more easily connect to transit hubs.

Berlin lags behind many of its European counterparts in its effort to incentivize electric vehicle (EV) uptake, with relatively few available charging stations and a lower market share of EV sales. At the end of 2022, the European Commission approved a nearly \$2 billion German plan to deploy 8,500 fast charging points across 900 locations nationwide that may include Berlin.⁵⁷

How Berlin Can Improve Its Public Transportation and Sustainable Mobility

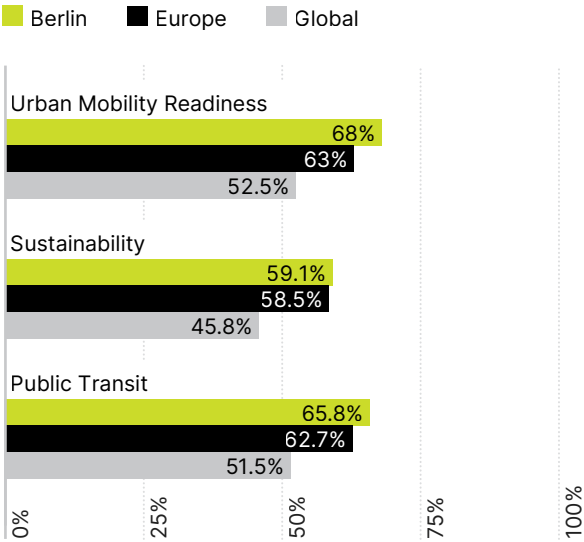
While Berlin is home to a strong public transit system, some residents are faced with long walks to stations. To improve station density and encourage ridership, the city can add more stops along its existing bus and tram routes — a cost effective improvement that

would drive benefit for its residents. Adding bus lines is another relatively simple solution to reach underserved areas of the city. In the long run, adding new metro stations will be key to building out their public transit offering, but that effort will be a timely and expensive undertaking. A planned extension of its rapid transit system would demonstrate progress.⁵⁸

Berlin’s EV charging network is underdeveloped compared to its peers. To offer a world-class charging network like Amsterdam’s, it would need to accelerate the deployment of charging stations to multiply its charging station density by a factor of 14. The city can target this gap by introducing city-level incentives, expanding on existing federal government-backed investments in public charging stations, and subsidizing at home station implementation.

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



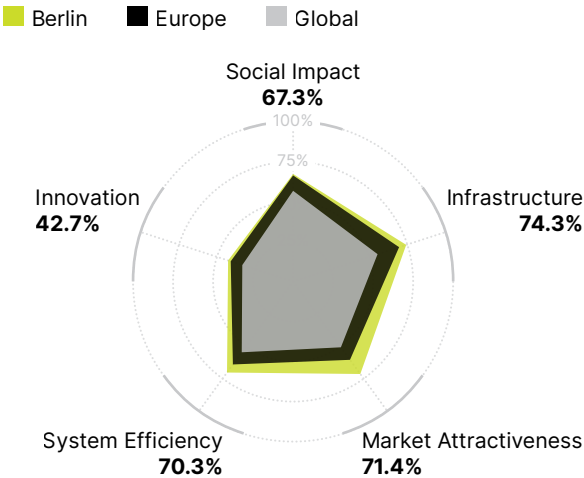
Source: Oliver Wyman Forum and University of California, Berkeley

Recommandations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Accelerate deployment by increasing incentives to charging station providers

Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



London

**Urban Mobility
Readiness Index**

11/65

**Sustainable
Mobility**

11/65

Public Transit

12/65

Population (million)

10.5

Population density (people per km²)

6,016

GDP per capita (US\$)

82,407

Surface area (km²)

1,738

What London Does Well in Urban Mobility

The combination of electric vehicle (EV) investments and incentive programs, modest car ownership, congestion pricing, and the expansion of the city’s Ultra Low Emission Zone improved London’s air quality, as compared to 2022. Planned expansions of infrastructure, which aim to have 80% of journeys taken by walking, cycling, or public transport by 2041, will further improve air quality.⁵⁹

London is home to a strong, efficient, and affordable public transit system that includes the Underground metro, light and heavy rail, tram, and buses — including the recently finished Elizabeth line, as part of the national railroad network. Plans to better connect residents in outer London to public transit offerings are underway, with new bus lanes and more frequent light rail service.⁶⁰

Challenges and Opportunities for London’s Transportation System

Although the city has a good cycling infrastructure, the overall density remains limited due to its large surface area. As a consequence,

few Londoners choose to cycle. However, in July 2023, London opened 10 new low-traffic cycleways — the most that London’s transport authority has ever opened at once.⁶¹ City plans aim for 40% of Londoners to live within 400 meters of cycling routes by 2030 — up from 22% in 2022.⁶² London’s public transit authorities have been slow to implement autonomous trains in the city’s Underground metro. London Mayor Sadiq Khan said in 2022 that driverless trains were not a priority.⁶³

How London Can Improve Its Public Transportation and Sustainable Mobility

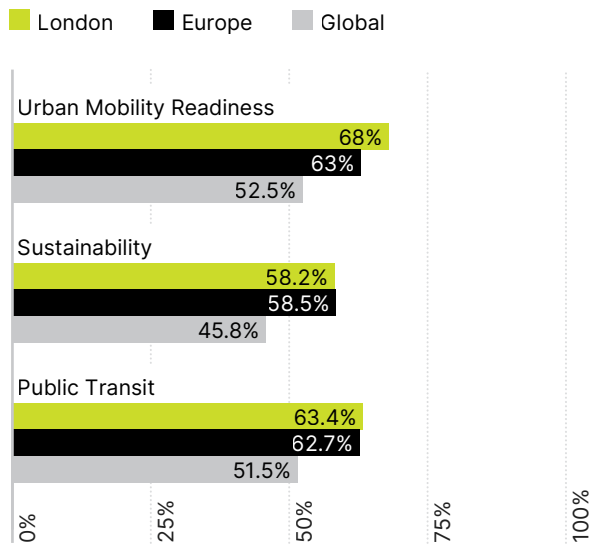
While London is home to a strong public transit system, some residents walk long distances to stations. To improve station density and encourage ridership, the city can add more stops along the famous London bus routes — a cost effective improvement that would benefit residents. Adding bus lines is another relatively simple solution to reach more areas of the city. In the long run, adding new Underground stations will be key to expanding public transit offering, but that effort will be a time-intensive and expensive undertaking.

London’s new Elizabeth Underground line, for example, took 11 years and was part of a \$23 billion project.

Compared to many of their European peers, Londoners have been slow to gravitate to cycling in their daily lives. To encourage its residents to cycle more, the city can improve cycling safety and infrastructure by adding connected bike lanes with protective barriers and increasing enforcement of traffic laws. In addition, the city can increase public transit accessibility to cyclists by removing peak time bike restrictions. Lastly, expanding bike sharing offerings with more stations and bikes and providing electric bike subsidies, which help to limit geographic barriers and increase accessibility for older residents, would further support cycling throughout the city.

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



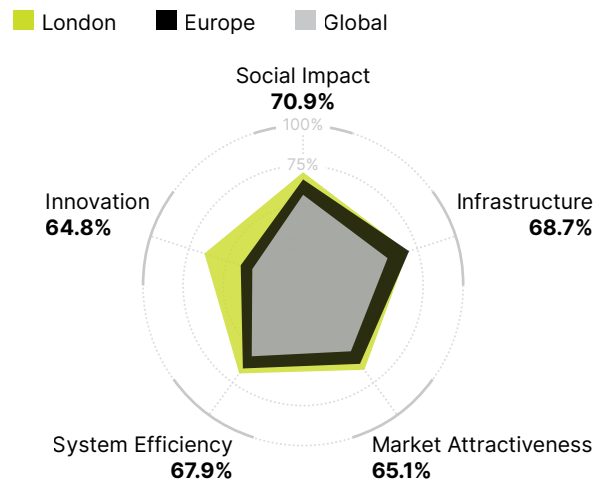
Source: Oliver Wyman Forum and University of California, Berkeley

Recommandations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus rapid transit services or Underground lines
- Improve safety by expanding cycling infrastructure
- Increase bike and e-bike access through individual purchase and bike-share subsidies

Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



New York

**Urban Mobility
Readiness Index**

12_{/65}

**Sustainable
Mobility**

25_{/65}

Public Transit

17_{/65}

Population (million)

20.2

Population density (people per km²)

2,136

GDP per capita (US\$)

119,303

Surface area (km²)

9,469

What New York Does Well in Urban Mobility

The city boasts several major multimodal hubs, park-and-ride infrastructure, and allows bikes on public transit. Its balanced modal share across all modes of transport provides the city with multiple levers to address some of its urban mobility challenges.⁶⁴ New York received a roughly \$7 million grant in 2022 to enable more multimodal options and provide greater access to transit stations.⁶⁵ to enable more multimodal options and provide more access to transit stations. New York is a major hub that continues to attract millions of people thanks to three major international airports. Massive investment in facility upgrades should boost international connections and passenger volumes even further.

The city also remains a pioneer in active urban air mobility operations. The Port Authority of New York and New Jersey, an interstate transit operator, announced in April 2023 an agreement with NASA, a federal space agency, to plan urban mobility flights.⁶⁶ Several private air mobility providers also aim to start service in the New York area in the next few years.

Challenges and Opportunities for New York's Transportation System

The implementation of tap-and-go payment technology has streamlined public transit convenience; however, ridership levels are still below pre-pandemic levels. Fare hikes for subway and bus use may hamper efforts to recover ridership.

Low electric vehicle (EV) market share and high traffic levels throughout the city may further challenge ongoing issues with noise and light pollution. Congestion pricing plans for Manhattan's central business districts may help alleviate some of the pollution if commuters turn to car alternatives.⁶⁷

How New York Can Improve Its Public Transportation and Sustainable Mobility

While New York is home to a strong public transit system, some residents, in particular those in the outer boroughs, have long walks to stations. To improve station density and connectivity and encourage ridership, the city can add bus routes and stops to help connect residents with the subway lines that service

these areas — a cost-effective improvement that would benefit residents. In the long run, adding new subway stations and lines will be key to building out its public transit offering for residents outside of Manhattan, but that effort will be a timely and expensive undertaking.

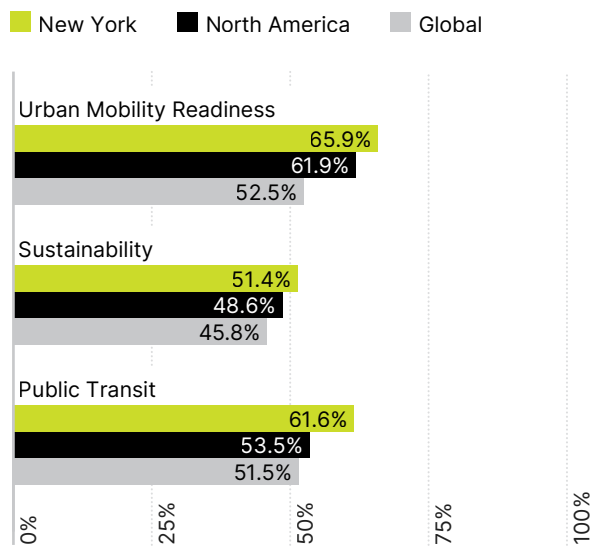
While many New Yorkers utilize cycling and walking to move around the city, there are relatively few dedicated car-free zones for pedestrians and cyclists. The city can improve its active mobility offering by expanding existing initiatives that close streets for day-long street fairs into longer and more permanent closures. Closing roads to cars would allow mobility to flourish and limit congestion related pollution.

Recommendations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus rapid transit services or subway lines
- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars

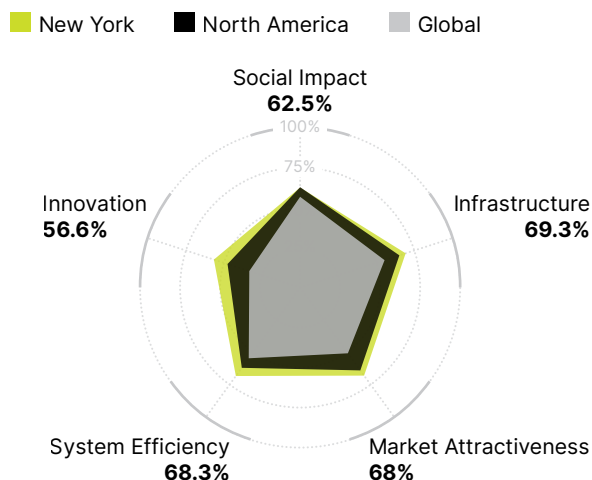
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Seoul

**Urban Mobility
Readiness Index**
13 /65

**Sustainable
Mobility**
17 /65

Public Transit
13 /65

Population (million) 20.2
Population density (people per km²) 2,136
GDP per capita (US\$) 119,303
Surface area (km²) 9,469

What Seoul Does Well in Urban Mobility

Seoul’s affordable, efficient, and timely public transit system sustains one of the highest ridership levels in the world. An unlimited mass transit pass that would allow riders to use all subway and bus lines and the city’s bike-sharing service is planned for release in 2024 and may help boost ridership further.⁶⁸ The city’s 2030 plan envisions an expanded and speedier rail network with more frequent bus service.⁶⁹ In 2022, Seoul expanded nightly bus service.⁷⁰

The combination of the presence of top university talent and government investment in mobility technology and infrastructure has made Seoul a leader in mobility innovation and utilization. In July 2023, Seoul National University and a large automaker co-created a new research institute to study electric vehicle battery technology.⁷¹

Challenges and Opportunities for Seoul’s Transportation System

Despite having a strong electric vehicle (EV) charging station network, Seoul lags behind

many of its peers on EV representation in total car sales. In February 2023, the Korean government raised the criteria for subsidies on EV purchases from vehicles priced at about \$40,000 to those priced at roughly \$42,000.⁷²

Walking and cycling are not popular in Seoul due to the limited number of car-free zones, under-developed cycling infrastructure, and a lack of incentives. However, the city’s 2030 mobility plan includes expanded cycling and pedestrian paths equipped with traffic management systems specifically for active mobility travelers.

How Seoul Can Improve Its Public Transportation and Sustainable Mobility

While Seoul is home to a strong public transit system, some residents have long walks to stations. To improve station density and encourage ridership, the city could add bus routes and stops to help connect residents to the public transit system — a cost effective improvement that would benefit residents. In the long run, adding new subway and rail stations and lines will be key to building out

their public transit offering for residents outside of the existing lines, but that effort will be a long and expensive undertaking. The city has plans to add more rail service and better connect bus services to metro hubs by 2030.⁶⁹

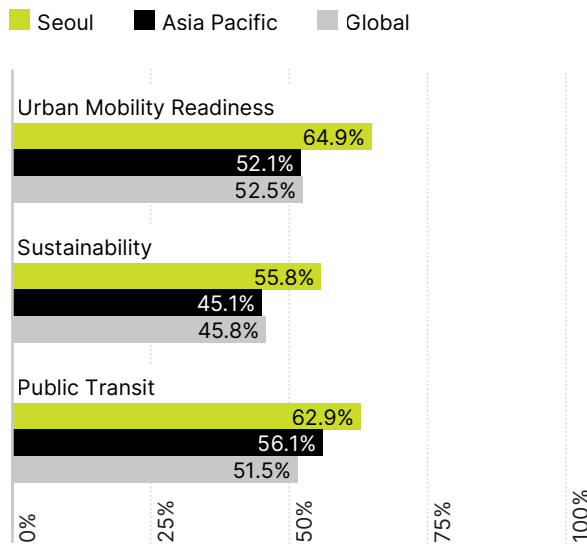
While Seoul is home to a strong mobility sector, few residents opt to walk around the city. Compared to Helsinki, where there are tenfold more walking trips, the city has room for improvements for its walking population. Seoul could implement more car-free zones. Nearly three-times more Helsinki residents live near a car-free zone compared to those in Seoul. The city has begun work on expanded pedestrian infrastructure,⁶⁹ but further efforts would help boost the walking modal share.

Recommendations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus rapid transit services or subway lines
- Improve pedestrian safety by adding car-free zones and upgrading pedestrian infrastructure
- Shorten commutes for pedestrians by implementing 15-minute city concepts

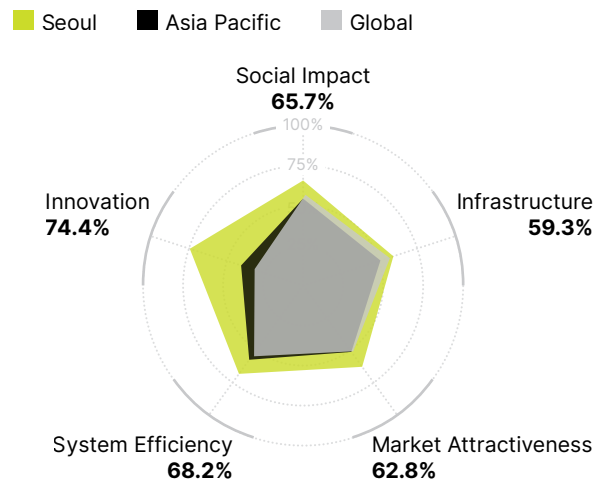
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Oslo

**Urban Mobility
Readiness Index**

14/65

**Sustainable
Mobility**

1/65

Public Transit

8/65

Population (million)

1.1

Population density (people per km²)

3,323

GDP per capita (US\$)

91,253

Surface area (km²)

324

What Oslo Does Well in Urban Mobility

The top city in our sustainability sub-index, Oslo has benefited from government investment and incentive policies to become a global leader in electric vehicle (EV) market share, earning its moniker as the “EV capital of the world.” EVs reportedly accounted for more than 80% of new car sales in the second quarter of 2023.

Norway also plans for zero-emission vehicles to account for all new car registrations beginning in 2025. The city has become a world leader in air quality and has made great progress in limiting light and noise pollution. City government plans for 2023 commit to adding more stringent benchmarks⁷³ in measuring air quality, maintaining speed limits of about 60 kilometers per hour (37 miles per hour) to reduce air pollution, and building more anti-noise barriers along roadways.

Challenges and Opportunities for Oslo’s Transportation System

Oslo lags behind many of its European peers in cycling infrastructure, and subsequently has relatively few residents riding bikes around the

city. However, by the end of 2023, the city aims to have built 100 kilometers (62 miles) worth of cycling roads and at least 4,000 bike racks.⁷³

While the city has bolstered sustainable mobility via EV incentivization, it would benefit from continuing to encourage public transit ridership to lower the share of personal cars in the modal mix. Oslo’s commitment to reducing the price of single tickets by 20% and expanding bus, metro, and tram services may help boost ridership.⁷³ The city’s public transit operator unveiled in 2023 a flexible ticket plan⁷⁴ that sizes individual discounts based on how many single tickets a commuter purchased each month. Oslo sits at the eighth spot in our public transit sub-index.

How Oslo Can Improve Its Public Transportation and Sustainable Mobility

While Oslo is home to a strong sustainability culture, especially for EV usage, the city has yet to embrace cycling like many of its European peers. To close the gap to a peer like Amsterdam — modal share is approximately four times that of Oslo — the city could focus on

improving its cycling infrastructure by building dedicated bike lanes on popular roadways. Oslo's previously mentioned, new cycling roads show strong progress, but further efforts will help. The city can also expand its car-free zones to cover larger areas and to lower traffic, promoting safety and accessibility for cyclists.

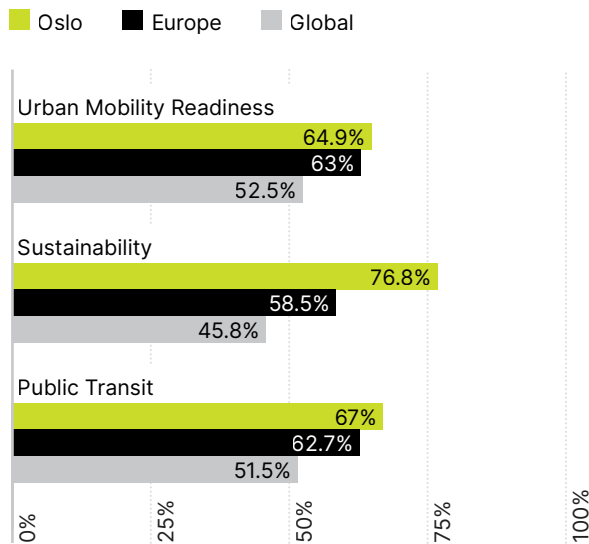
Oslo scores well on the public transit sub-index, but the city can do more to boost ridership, as only one third of Oslo's residents ride public transit. The city would need to increase its ridership share by 1.6 to become best-in class among its European peers. Oslo should focus on extending operating hours by increasing the size of its fleet and staff, increasing transit speed to improve rider experience, and investing in autonomous solutions for the long-term development of its public transit system.

Recommandations

- Improve safety by expanding cycling infrastructure
- Increase bike and e-bike access through individual purchase and bike-share subsidies
- Improve ridership by developing the public transit offering such as longer operating hours and greater station density
- Stimulate the demand for public transit by limiting car use and lowering transit fares

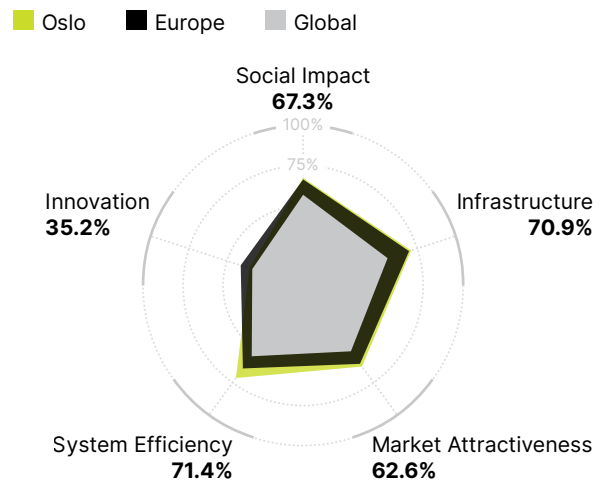
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Hong Kong

Urban Mobility Readiness Index	Sustainable Mobility	Public Transit	Population (million)	7.6
15/65	6/65	1/65	Population density (people per km²)	26,094
			GDP per capita (US\$)	48,984
			Surface area (km²)	290

What Hong Kong Does Well in Urban Mobility

Hong Kong remains the top city in our public transit sub-index. Its efficiency, affordability, and accessibility make it home to the best transit system in the world. Hong Kong also has one of the highest public transit ridership levels globally, an impressive 71% of all distance traveled within the city. To increase its station density and connectivity, the city began work in 2023 on a new station that would anchor an upcoming railway loop to bridge a connection between the eastern and western parts of the New Territories, a major region of Hong Kong. As its residents generally prefer to ride public transit, car ownership levels in Hong Kong are well below its peers. Hong Kong’s urban design facilitates more efficient travel via public transit rather than cars. Parking is also very expensive in Hong Kong.

Challenges and Opportunities for Hong Kong’s Transportation System

With the majority of Hong Kong’s residents riding public transit, few opt for active mobility options like walking and cycling. And while Hong Kong lacks dedicated

cycling infrastructure, the city has pledged to incorporate cycling tracks into 13 major harbor-front development projects before 2030.⁷⁵ In 2022, Hong Kong showcased a street sign system that helps pedestrians plan their journeys.⁷⁶ The city has ambitious plans to restrict the sale of fossil-fueled cars by 2035 in favor of electric vehicles (EVs); however, it has much work to do to improve the existing EV charging infrastructure to meet this future demand. Efforts are underway to bolster that infrastructure: City plans include a US\$2 billion package to subsidize charging points in existing private residential buildings, installing EV chargers at 30% of parking spaces at new government buildings, and a US\$120 million package to add more than 1,000 chargers at government car parks.⁷⁷

How Hong Kong Can Improve Its Public Transportation and Sustainable Mobility

Few metro lines are automated. Automated trains increase efficiency and speed of metro services, as well as permit longer operating hours and higher ridership levels. Increasing the number of automated trains on the system’s

main lines would have considerable impact on the efficiency of the metro system to accommodate more passengers.

Hong Kong has yet to embrace cycling like many of its peers. In order to close the gap to a city like Tokyo — where cycling modal share is more than 10 times that of Hong Kong — the city could focus on improving its cycling infrastructure by building dedicated and connected bike lanes on popular roadways. Hong Kong’s previously mentioned cycling lane additions will help, but further efforts can make cycling a more popular choice. In addition, supporting bike sharing companies helps to provide the infrastructure for commuters to try cycling, without having to purchase a bicycle. The city can increase public transit accessibility to cyclists by removing bike restrictions on the bus and metro or investing

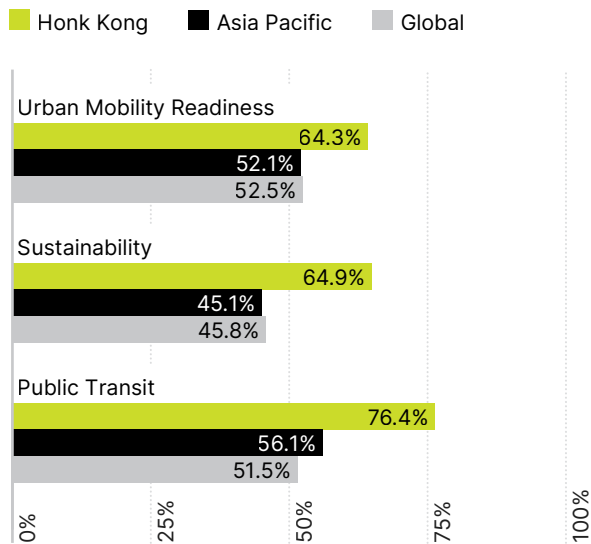
in a bike friendly bus fleet to further harmonize these mobility modes. The city also can expand its car-free zones to cover larger areas and decrease car traffic, promoting safety and accessibility for cyclists.

Recommendations

- Increase speed by introducing automated rail lines
- Improve safety by expanding cycling infrastructure
- Increase bike and e-bike access through individual purchase and bike-share subsidies

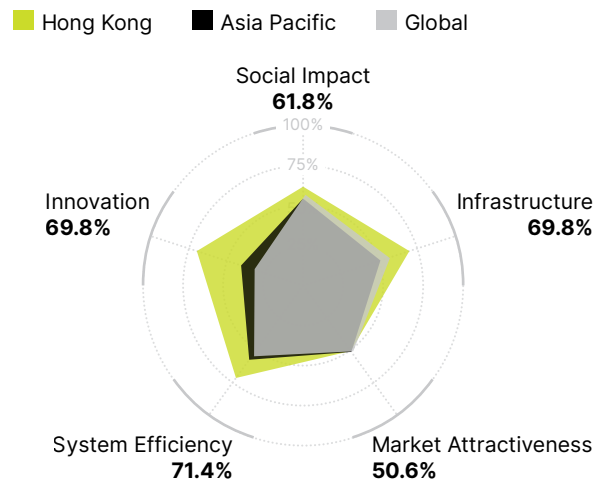
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Tokyo

**Urban Mobility
Readiness Index**

16_{/65}

**Sustainable
Mobility**

15_{/65}

Public Transit

10_{/65}

Population (million)

37.5

Population density (people per km²)

17,099

GDP per capita (US\$)

42,841

Surface area (km²)

2,191

What Tokyo Does Well in Urban Mobility

Home to an efficient, on-time, and diverse public transit system, Tokyo ranks tenth in the public transit sub-index. The extensive urban rail network also connects to city buses, trams, monorails and the national high-speed bullet trains. The city is reportedly building a new rail line that extends from its waterfront areas to the city center by 2040. A leader in road safety, Tokyo diligently enforces traffic laws and records few fatalities from road accidents. Street parking restrictions and historically strong investments in rail have led to fewer car drivers that are at risk of suffering a traffic accident.

Challenges and Opportunities for Tokyo's Transportation System

Despite government investment, charging infrastructure remains somewhat underdeveloped in Tokyo and consequently EV uptake has been relatively slow. The Japanese government is reportedly considering a plan to install 300,000 charging points by 2030. The city also is encouraging implementation, including requiring chargers to be installed in new apartment buildings, according to reports.

Owing to its large surface area, the city's cycling infrastructure is underdeveloped. And yet, there is still relatively good cycling adoption among its residents. City plans aim to build 468 kilometers (290 miles) of cycling lanes by 2026 — up from the 339 kilometers (210 miles) in 2021 — can boost cycling ridership even higher.⁷⁸

How Tokyo Can Improve Its Public Transportation and Sustainable Mobility

While Tokyo is home to a strong public transit system, its large area forces some residents to take long walks to stations. To improve station density and encourage ridership, the city can add bus routes and stops to help connect people to the public transit system — a cost-effective improvement that would benefit residents. In the long run, adding new metro and rail stations and lines will be key to building out their public transit offering for residents outside of the existing lines, but that effort will be a time-intensive and expensive undertaking. Japan's previously mentioned plans to extend rail lines are a step in the right direction.

Japan’s government has announced that by 2035 all new vehicle sales will be Clean Energy Vehicles (CEVs) — which includes hybrids and hydrogen- and electric-powered vehicles. Despite this commitment and the heavy presence of automobile manufacturing in Japan, Tokyo is lagging behind its peers with an EV market share 14 times smaller than that of Shanghai. To meet its target, Tokyo can expand its existing EV incentivization and charging installation subsidy programs like tax breaks, registration fees exemption, toll exemptions, or special access lanes to encourage residents to consider EVs for their next car. In addition, introducing low-emission zones will further discourage non-CEV usage and purchases. Charging station availability is another major factor in EV purchase decisions. Tokyo would need to multiply its charging station density

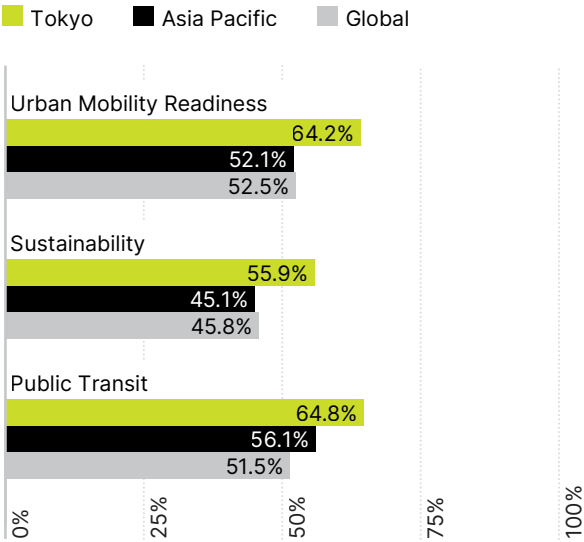
by a factor of 3.7 to offer a region-leading charging network.

Recommendations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines
- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations

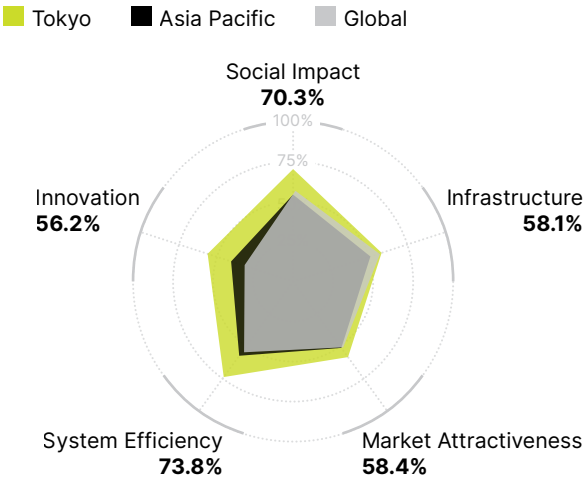
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Washington, D.C.

Urban Mobility Readiness Index	Sustainable Mobility	Public Transit	Population (million)	5.5
17/65	21/65	25/65	Population density (people per km²)	1,507
			GDP per capita (US\$)	110,204
			Surface area (km²)	3,644

What Washington, D.C. Does Well in Urban Mobility

Road infrastructure is strong in Washington, D.C., with residents enjoying well-connected and maintained roads and a robust traffic management system. The city is enhancing its traffic management systems even further. It's currently converting its streetlights to LED technology that allows remote monitoring and control to improve traffic safety and ensure timely street light repairs.⁷⁹

The city's public transit network caters to commuters by offering affordable prices and convenient connections to other modes. The latter will be bolstered even further: Washington's near-term plans to expand last-mile connectivity and optimize service schedules to allow for seamless transfers will help its strong multimodal offerings.⁸⁰

Challenges and Opportunities for Washington, D.C.'s Transportation System

Despite high government investment to encourage electric vehicle (EV) usage, EV charging stations are hard to find in the city

that relies heavily on cars as its main mode of transportation. However, Washington was granted nearly \$17 million by the federal Department of Transportation to build more charging infrastructure over the next five years.⁸¹

Active mobility, such as walking and cycling, is difficult due to the city's large surface area and limited cycling infrastructure. Efforts are underway, as the city is undergoing construction of 20 miles of new, protected bike lines by 2024.⁸²

How Washington, D.C. Can Improve Its Public Transportation and Sustainable Mobility

Washington, D.C., along with neighboring states Maryland and Virginia, have announced plans to follow California's 2035 ban of combustion engine vehicle sales. And yet, Washington is still lagging in EV market share, as the sales share is just over half of that in San Francisco. To get closer to meeting its target of zero-emissions vehicles (ZEV) accounting for all new car sales by 2035, Washington can expand its existing EV incentivization and charging station installation subsidy programs

to encourage more residents to choose an EV for their next car purchase. In addition, the nation's capital can plan to implement interim bans of combustion engine car sales ahead of California's schedule to become a leader in ZEV sales. Lastly, introducing low-emission zones will further discourage non-ZEV usage and purchases.

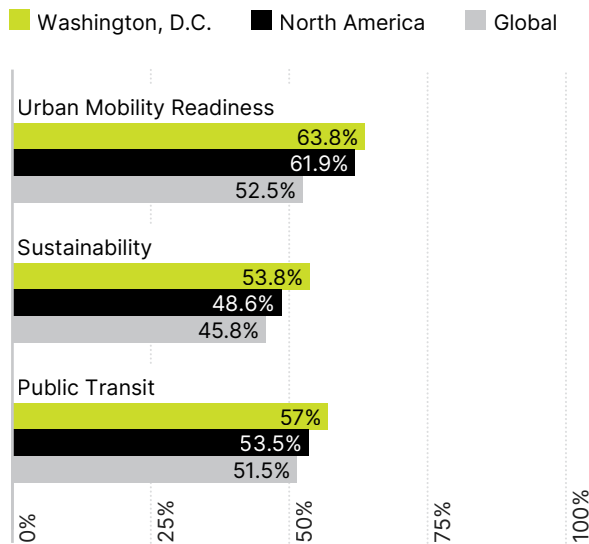
Commuters in Washington often face long public transit commute times. Encouraging residents to bring their bikes on public transit for last-mile trips while also increasing the number of stations, bus lanes, and service frequency can increase convenience and efficiency. Finally, further investments in the metro infrastructure would greatly improve connectivity for residents living near stations.

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours

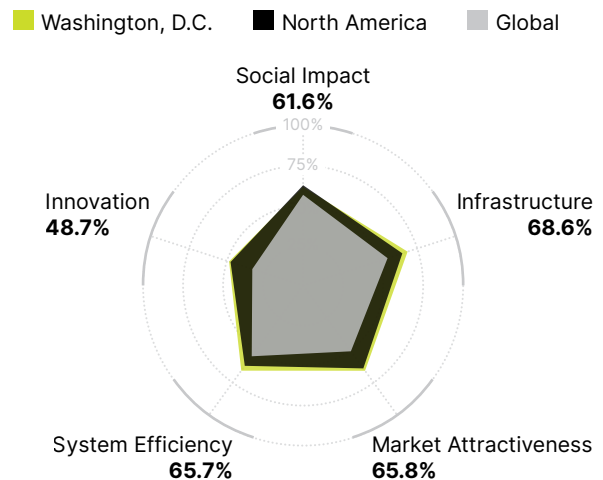
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



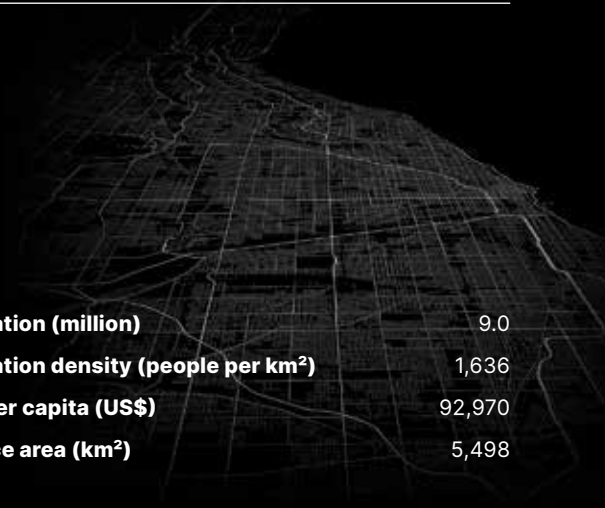
Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Chicago



**Urban Mobility
Readiness Index**
18/65

**Sustainable
Mobility**
30/65

Public Transit
15/65

Population (million) 9.0
Population density (people per km²) 1,636
GDP per capita (US\$) 92,970
Surface area (km²) 5,498

What Chicago Does Well in Urban Mobility

Chicago has a strong multimodal public transit system that includes long operating hours, quick commute times, and an advanced app that seamlessly integrates trip planning and payment. The Chicago Transit Authority is proposing a rail extension that would add four new stations, each with multimodal hubs that include bike, bus, and park and ride facilities.⁸³ Chicago has a well-connected, maintained road network with a robust traffic management system; and similar to other cities in the region, residents often prefer to use it. The Chicago Metropolitan Agency For Planning’s 2040 plan calls for congestion pricing and increasing parking fees to help better manage traffic.⁸⁴

Challenges and Opportunities for Chicago’s Transportation System

Chicago’s large surface area and lack of car-free zones and bike lanes have led to a city-wide dependence on cars. However, in 2023 the city announced plans to build 150 miles of new cycling infrastructure in the next few years.⁸⁵ The additional lanes will bring 70% of Chicagoans living within half a mile of a bikeway, compared

to just half of residents who currently do.⁸⁵ Despite government investment in electric vehicle (EV) charging, Chicago is well behind its American peers in EV usage and lacks automated vehicles in its public transit system. To address this, Illinois in 2022 launched a \$4,000 cash back rebate for EV purchases as part of a plan to have one million EVs deployed across the state by 2030.⁸⁶

How Chicago Can Improve Its Public Transportation and Sustainable Mobility

EV market share in Chicago still lags behind many peers, with approximately a quarter of market share compared to that of San Francisco. Illinois can join the other nine states that have committed to following California’s lead in banning all combustion engine car sales by 2035. In the interim, Chicago can expand its existing monetary incentives by increasing subsidies for purchase, charger installation, and toll discounts or introduce non-monetary incentives such as special access lanes to encourage more EV uptake. In addition, introducing low-emission zones will further discourage non-Zero-Emission Vehicle usage and purchases.

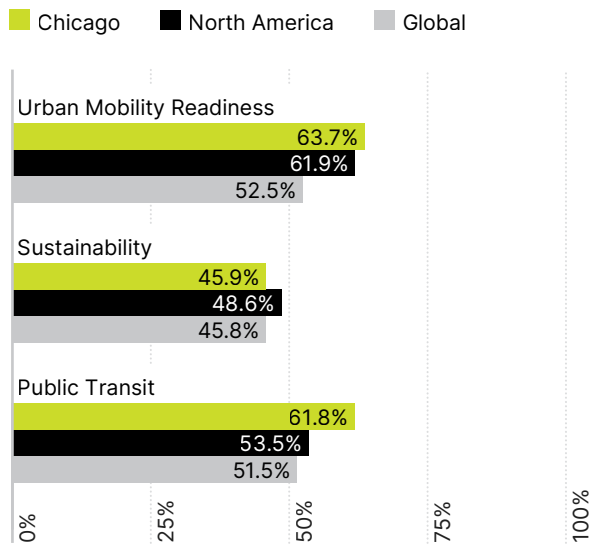
Chicago’s cycling infrastructure could be improved to make the city more hospitable to cyclists. Installing dedicated bike lanes with safety dividers on main roadways and maintaining them during the winter months would increase cycling’s modal share. Previously mentioned plans to expand cycling infrastructure show intention to improve. Bikes are permitted on public transit; however, they are not welcomed during peak travel hours. Relaxing the time restriction would permit more cyclists to utilize public transit and cycling (for first- and last-mile transit) for commuting during business hours. Expanding the offerings of Divvy, the city’s bike sharing service, would further support cycling throughout the city. Divvy plans on adding more than 250 stations by 2025, which will help increase cycling’s modal share.⁸⁷

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Build or expand bike lanes with protective barriers in high traffic areas
- Integrate cycling with public transit networks for better connectivity

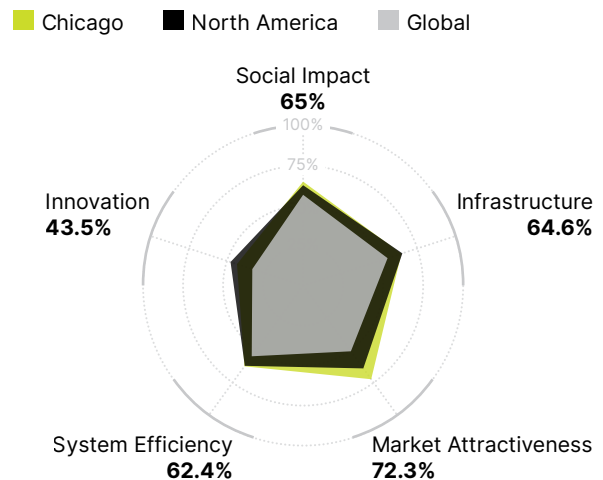
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Boston

**Urban Mobility
Readiness Index**

19/65

**Sustainable
Mobility**

26/65

Public Transit

34/65

Population (million)

5.9

Population density (people per km²)

2,989

GDP per capita (US\$)

127,184

Surface area (km²)

1,971

What Boston Does Well in Urban Mobility

Boston offers affordable public transit across multiple modes. It may become more affordable for low-income commuters: In 2023, the Massachusetts Bay Transportation Authority was granted \$5 million in funding to study the feasibility of flexible transit fares based on income.⁸⁸

Built on government investments and top university talent, the city is a hub for mobility innovation. The Massachusetts Institute of Technology and the Department of Transportation, for example, unveiled in 2023 a new research and development center to study next-generation transportation.⁸⁹

Challenges and Opportunities for Boston’s Transportation System

Despite an innovative culture, Boston lags in the transition to electric vehicles (EVs) with a limited supply of charging stations. However, the city is seeking business partners to bolster the number of public charging stations and equitably ensure that every household is within a 10-minute walk of a charger by 2030.⁹⁰

The city’s legacy transit infrastructure will make any transition to autonomous transportation difficult to implement. The only two autonomous shuttle companies that were operating in Boston shut down in 2022 — a reflection of how difficult it may be to establish an autonomous mobility foothold.

How Boston Can Improve Its Public Transportation and Sustainable Mobility

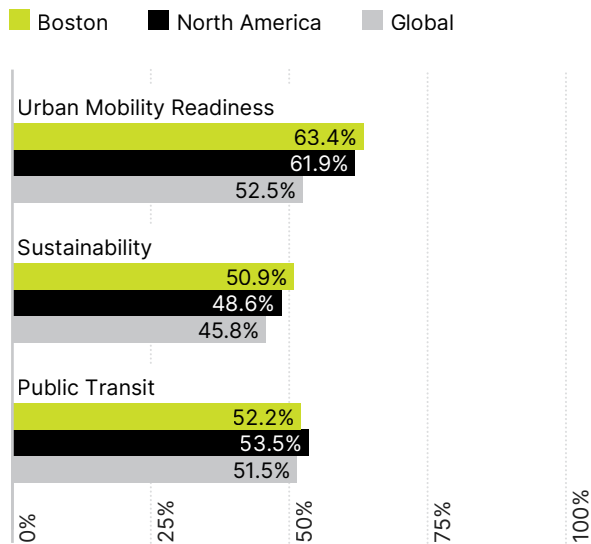
While the state of Massachusetts has agreed to follow California’s 2035 combustion engine car sales ban, Boston is still lagging in EV market share, with shares less than half those of San Francisco. To close this gap, Boston can expand its existing monetary incentives package — such as increased subsidies for purchase and charger installation or toll discounts — although Massachusetts residents already can receive up to \$7,500 in tax credits for buying an EV.⁹¹ Introducing non-monetary incentives, such as special access lanes, can help encourage more residents to choose an EV for their next car purchase. The city can implement interim bans of combustion engine car sales — ahead of California’s schedule — to

become a leader in Zero-Emission Vehicle (ZEV) sales. Lastly, introducing low-emission zones will further discourage non-ZEV usage and purchases.

Throughout Boston, and in particular the areas further from the city center, many residents have long walks to T stations or bus stops. To improve station density and encourage ridership, the city can add bus stops and new routes to help connect residents with T lines — a cost-effective improvement that would help lower walking distances and overall commute times. Boston has made headway in this effort, with plans to rollout 25% more bus services between 2023 and 2028.⁹² In the long run, extending existing T lines and adding new line options will be key to building out the city’s public transit offering for residents, but that effort will be a time-intensive and expensive undertaking.

Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



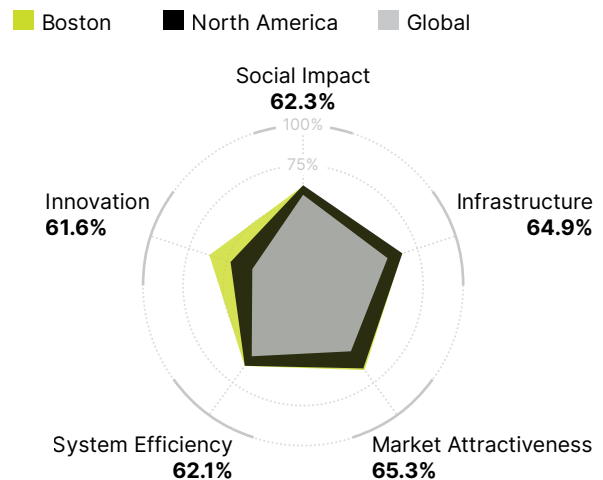
Source: Oliver Wyman Forum and University of California, Berkeley

Recommendations

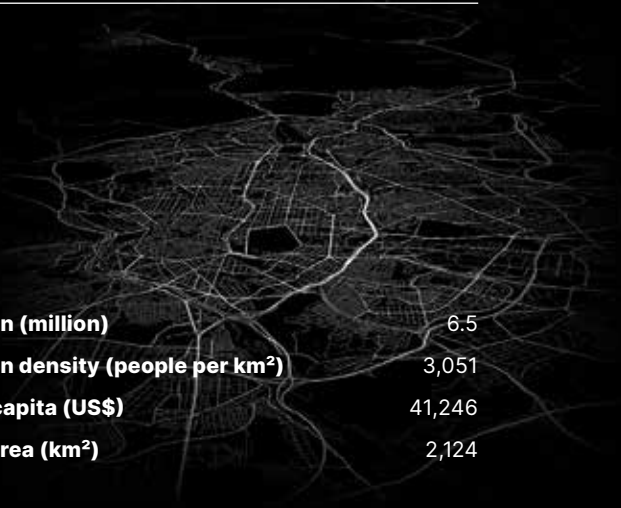
- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus rapid transit services or subway lines

Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Madrid



**Urban Mobility
Readiness Index**

20_{/65}

**Sustainable
Mobility**

19_{/65}

Public Transit

28_{/65}

Population (million)

6.5

Population density (people per km²)

3,051

GDP per capita (US\$)

41,246

Surface area (km²)

2,124

What Madrid Does Well in Urban Mobility

Madrid is a leader among its European peers in autonomous vehicle investments and has implemented several automated transit lines as part of its metro system. In March 2023, Madrid’s transit operator opened an automated warehouse for train maintenance and has an automated traffic and station control center.⁹³ The city continues to support clean air initiatives as it pushes residents to transition to electric vehicles (EVs) through investment in charging stations, a growing low-emission zone, and other restrictions on fossil-fueled vehicles. In March 2023, Madrid announced an extension of its EV subsidy program and also reported that nearly half of sustainable vehicles registered in Spain did so in the Madrid region.⁹⁴

Challenges and Opportunities for Madrid’s Transportation System

Madrid lacks a diverse set of mobility modes with challenges stemming from dispersed public transit stations and a lackluster cycling infrastructure. Efforts are underway to expand its station density: The city announced in 2022

plans to build 40 kilometers (25 miles) of metro lines along with a new station by 2029.⁹⁵ Madrid lacks an extensive presence of top universities and labs working on mobility and is home to few mobility companies, contributing to a more muted mobility innovation ecosystem. However, Jaguar Land Rover announced in February 2023 plans to develop an autonomous vehicle engineering hub in Madrid.⁹⁶

How Madrid Can Improve Its Public Transportation and Sustainable Mobility

With many of Madrid’s residents opting to use private cars, residents own on average about twice as many vehicles as residents in its peer city Helsinki. Madrid can discourage car usage by introducing car-free zones to heavy foot-traffic areas and by limiting car parking.

Madrid would need to offer alternative mobility options by promoting public transit, active mobility, and shared mobility such as car-sharing or ride-hailing. The city can improve its active mobility infrastructure by building bike lanes, supporting bike sharing initiatives, and increasing accessibility and

safety for pedestrians and cyclists. Madrid’s 2022 implementation of pedestrian-only zones shows solid progress, but further efforts will help.⁹⁷

Despite a strong national EV incentivization and subsidy program, Madrid still lags in EV market share, as its peer city Munich boasts an EV market share that is three and a half times higher than Madrid’s. Madrid could add city-wide incentives such as tax breaks, registration fee exemptions, toll exemptions, and special access lanes to support and encourage EV purchases and charging station availability. A plan to cover all public roads in Madrid by January 1, 2024, will be a significant step forward in incentivizing EVs.⁹⁸ Charging station availability is another major factor in EV purchase decisions. To offer a charging network

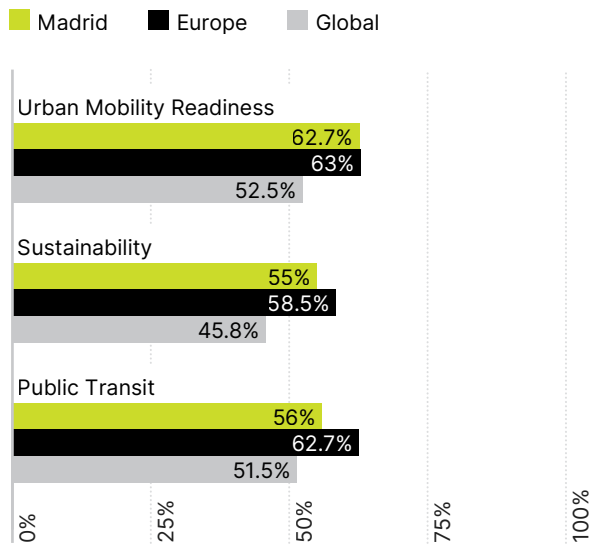
on par with Munich, Madrid would need to accelerate the deployment of charging stations to increase its station density by a factor of 5.6.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars
- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations

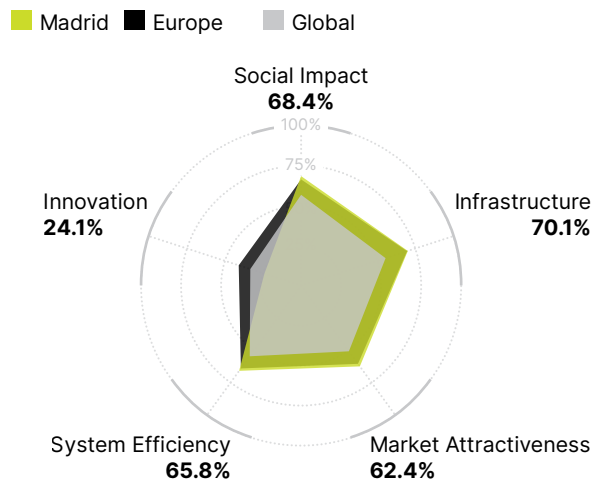
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Vancouver

**Urban Mobility
Readiness Index**
21_{/65}

**Sustainable
Mobility**
16_{/65}

Public Transit
24_{/65}

Population (million)	2.6
Population density (people per km²)	2,805
GDP per capita (US\$)	40,613
Surface area (km²)	912

What Vancouver Does Well in Urban Mobility

Renowned for its approach to traffic management, Vancouver has a vast, interconnected network of safe and well-maintained roads. Its ambitious 2040 plan aims for zero traffic-related fatalities by implementing street features like highly visible crosswalks, raised sidewalks, separated bike lanes, and more speed humps.⁹⁹ Vancouver has invested in public transportation, notably with the fully autonomous Skytrain, which has multiple lines passengers can use to travel throughout the city. TransLink, Vancouver’s metro operator, plans to quadruple its rapid transit network to about 400 kilometers (250 miles) of total coverage and to put transit within a short distance of most homes and jobs by 2050.¹⁰⁰

Challenges and Opportunities for Vancouver’s Transportation System

Vancouver’s residents have limited charging station availability, although the city recently mandated that by January 2025 all gas stations and commercial parking lots must have charging stations to avoid paying a higher business licensing fee.¹⁰¹ Vancouver also plans to expand

its public charging network so that there is one fast charger within a 10-minute drive of every resident. These efforts are a positive step toward EV adoption, as charging station availability is a key consideration for potential EV customers. Vancouver does not have a strong cycling infrastructure, and few residents opt to cycle. However, the city has 10 projects planned from 2023 to 2027 to improve active mobility infrastructure.¹⁰²

How Vancouver Can Improve Its Public Transportation and Sustainable Mobility

Despite having one of the strongest public transit systems in the region, many Vancouver residents have lengthy walks to metro stations and bus stops. Vancouver could add bus routes and stops to help connect residents with metro lines — a cost-effective method to lower walking distances and overall commute times. Efforts are underway, as TransLink plans on redistributing bus stop locations to reduce wait and travel times.^{103,104} In the long run, extending existing subway lines and adding new options will be key to enhancing public transit offerings, but that effort will be time consuming and expensive.

However, Vancouver already has started by constructing six new underground subway stations, which are scheduled to open in 2026.

In Vancouver, nearly half of trips are taken with personal cars. The city lags behind its peer New York in terms of car ownership with New Yorkers owning an average of 2.5 times fewer cars than residents of Vancouver. Introducing car-free zones to heavy foot-traffic areas and limiting parking can lower car usage. City officials plan to pilot a car-free area in 2023 or 2024.¹⁰⁵ The city would need to offer alternative mobility options by promoting public transit, active mobility, and shared mobility such as car-sharing or ride-hailing. Vancouver can improve its active mobility infrastructure by building bike lanes, expanding its bike-sharing program, and heightening traffic enforcement.

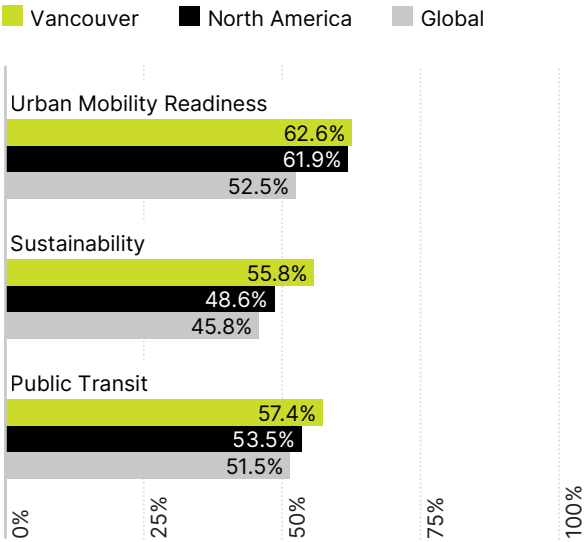
Vancouver’s previously mentioned plans to enhance cycling infrastructure show progress, but further efforts would help boost active mobility.

Recommendations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours
- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars

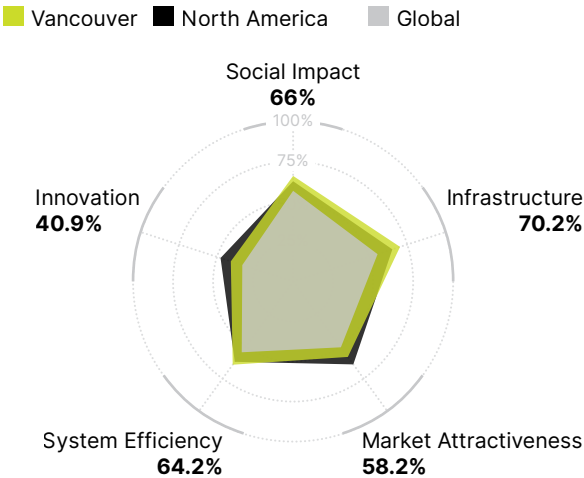
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Sydney

**Urban Mobility
Readiness Index**
22_{/65}

**Sustainable
Mobility**
27_{/65}

Public Transit
14_{/65}

Population (million) 4.9
Population density (people per km²) 2,257
GDP per capita (US\$) 47,438
Surface area (km²) 2,178

What Sydney Does Well in Urban Mobility

Sydney possesses a fast, affordable, and diverse multimodal network, led by the city’s fully automated Sydney Metro system, which opened in 2019. Sydney Metro is undergoing an expansion that will total 46 stations and 113 kilometers (70 miles) worth of new rail across four lines by 2030.¹⁰⁶

Sydney is home to a well-connected and maintained road network and robust traffic management system. Sydney’s intelligent traffic management system synchronizes traffic signals to optimize traffic flow, which has reduced travel time 28% and emissions 15%.

Challenges and Opportunities for Sydney’s Transportation System

City-wide challenges in active mobility infrastructure continue, with shortcomings in walkability, dedicated car-free zones, and cycling infrastructure. However, the city’s 2022-23 budget allocated more than US\$43 million over the next four years to build cycling infrastructure.¹⁰⁷ Sydney’s 2030 cycling plan aims for 10% of all trips to be made by bike.¹⁰⁸

Sydney also is creating car-free space in the city center¹⁰⁹ and aims to spend more than US\$9 million each year to enhance and add new footpaths.¹⁰⁸ Sydney’s airport has low international passenger volumes and relatively few connections, although some airlines added new routes in 2023, according to reports. The new Western Sydney Airport, set to open in 2026, is designed to accommodate 10 million passengers per year.¹¹⁰

How Sydney Can Improve Its Public Transportation and Sustainable Mobility

While Sydney has set a target of doubling the number of active mobility trips, like cycling and walking, over the next two decades, the city’s cycling infrastructure still lags behind many of its peers.¹¹¹ Previously mentioned improvements to Sydney’s cycling infrastructure show progress, but further efforts would help meet the city’s goal. Installing and maintaining dedicated bike lanes with safety dividers on main roadways would help increase cycling’s modal share. Bikes are permitted on most forms of public transit; however, they are not allowed onboard buses due to space restrictions.

Investing in a bus fleet with bike racks would help to integrate cycling (for first- and last-mile transit) with public transit even further. Lastly, supporting the expansion of existing bike-sharing services, like more stations, bikes, and e-bikes, would further encourage cycling adoption.

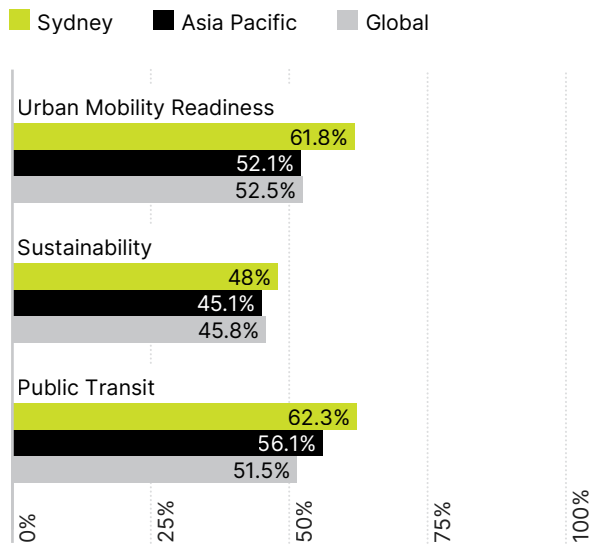
Currently, Sydney residents are often faced with long walks to metro stations or bus stops. The city is undergoing an extensive project to add three metro lines (for a total of four) to help alleviate this issue.¹¹² Until this project is completed, the city can add bus routes and stops to help connect residents with the current and future metro lines — a cost effective improvement that would help to lower walking distances and overall commute times.

Recommendations

- Build or expand bike lanes with protective barriers in high traffic areas
- Integrate cycling with public transit networks for better connectivity
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours

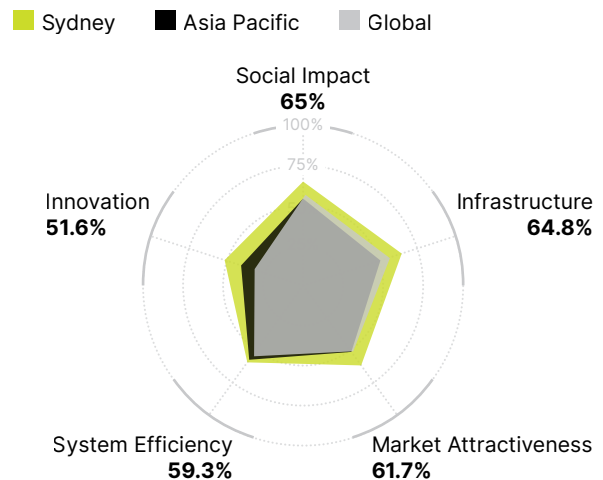
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Los Angeles

**Urban Mobility
Readiness Index**

23_{/65}

**Sustainable
Mobility**

31_{/65}

Public Transit

38_{/65}

Population (million)

13.9

Population density (people per km²)

2,184

GDP per capita (US\$)

86,459

Surface area (km²)

6,351

What Los Angeles Does Well in Urban Mobility

Top universities and government investment make Los Angeles a hub for mobility innovation and advancement, most notably with the city’s plan to introduce new forms of air mobility for the 2028 Olympic Games.¹¹³ The Federal Aviation Administration has outlined a plan to regulate air mobility by 2028. With government investment in electric vehicle (EV) charging stations and its generous incentives, Los Angeles and California are well on their way to meeting the state’s goal of ending the sale of all combustion engine cars by 2035. Los Angeles County has committed to building 10,000 charging stations at county facilities by 2030, with interim goals of 150 stations at public housing sites and 120 at multi-family housing sites by 2024.¹¹⁴

Challenges and Opportunities for Los Angeles’ Transportation System

The city has historically high levels of car use, accounting for 93% of distance traveled, and is known for highly congested roads.¹¹⁵ In May 2023, Los Angeles implemented 27 new and upgraded traffic signals to better manage traffic

flow. The Los Angeles transit system suffers from low ridership levels because of slow commute speeds and low station density, which leads to long walks between stations. However, Los Angeles Metro’s 2020 plan outlines expanding the metro rail network to more than 200 stations over 285 kilometers.¹¹⁶

How Los Angeles Can Improve Its Public Transportation and Sustainable Mobility

With four out of five trips in LA taken via personal car, the city lags behind its peer New York in car ownership, with LA residents owning nearly 2.5 times as many cars on average as New Yorkers. The city can discourage car usage by limiting car parking and introducing car-free zones to heavily walked areas. Los Angeles would need to offer alternative mobility options by promoting public transit, active mobility, and shared mobility. Los Angeles can build bike lanes, introduce car-free zones, heighten traffic enforcement, support bike-sharing, or subsidize e-bike purchases, to improve accessibility and safety. The Los Angeles’ Metro 2020 plan includes \$7 billion in funding for protected pedestrian and cycling infrastructure.¹¹⁶

With Los Angeles' considerable area and reliance on personal cars for travel, the city lags behind its peers in public transit station density. Los Angeles can bolster its public transit by introducing more stops and stations along its commuting lines. The city can increase its public transit offering by expanding the number of routes and stops to reach more residents — and an in-progress transit plan aims to double bus lines.¹⁷ Introducing bus lanes would lower commute times and encourage residents to take the bus to avoid the city's infamous traffic. In the long term, adding new metro stations will be key to building out Los Angeles' public transit offering, but that effort will be a more time-intensive and expensive undertaking. Increasing the number of stations and lines would make the public transit system more accessible to the city's

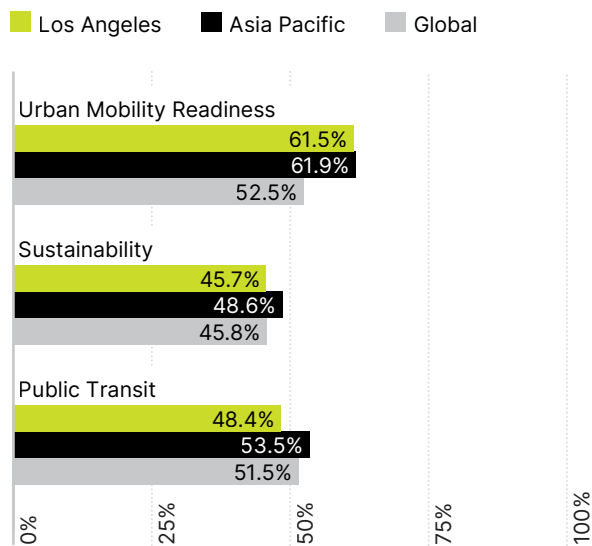
residents and will help to increase ridership and lower car usage.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
 - Encourage use of shared mobility modes as alternatives to cars
 - Improve public transit access by increasing the number of stops along bus routes to underserved areas
 - Develop mass transit in the long-term by expanding bus rapid transit services or metro rail lines
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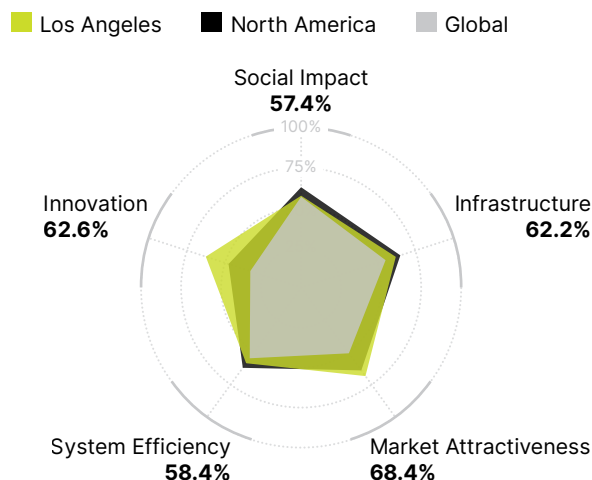
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Barcelona



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit	Population (million)	5.2
24 _{/65}	20 _{/65}	22 _{/65}	Population density (people per km²)	4,891
			GDP per capita (US\$)	34,821
			Surface area (km²)	1,072

What Barcelona Does Well in Urban Mobility

Thanks to investments in road infrastructure, Barcelona is home to a world class roadway system focused on safety, quality, and connectivity.

Barcelona has been scaling up implementation of car-free “superblocks” — dedicated areas for pedestrians that make it one of the most walked cities in Europe.¹¹⁸ The superblock program also includes 245 kilometers (152 miles) of cycling lanes that make the city appealing for cyclists.

Challenges and Opportunities for Barcelona’s Transportation System

Despite the city government’s investment in low-emission zones and electric vehicle (EV) incentives, EV market share remains moderate compared to European peers, and Barcelona offers comparatively limited charging station density. However, Barcelona’s charging provider plans to have 1,000 charging points by the end of 2023.¹¹⁹

Commuters in Barcelona using public transit are often faced with long walks due to low station density throughout the city. Seven new metro stations are expected to be built by 2025, which

should help with station density challenges, as part of the city’s vision to have 65% of all trips be made via public transportation.¹²⁰

How Barcelona Can Improve Its Public Transportation and Sustainable Mobility

Despite a strong national EV incentivization and subsidy program, Barcelona still lags in EV sales, with a market share 3.6 times smaller than that of Munich. Barcelona can add city-wide incentives, such as tax breaks, registration fees and toll exemptions, or special access lanes, to support and encourage EV purchases and charging station installation. Charging station availability is another major factor in EV purchase decisions, and to catch up to Munich, Barcelona would need to accelerate the deployment of charging stations to multiply its charging station density by a factor of 3.5. The city has acknowledged this, and its previously mentioned plan to add charging points demonstrates progress.

Public transit riders in Barcelona often struggle with long commutes due to low transit speeds.

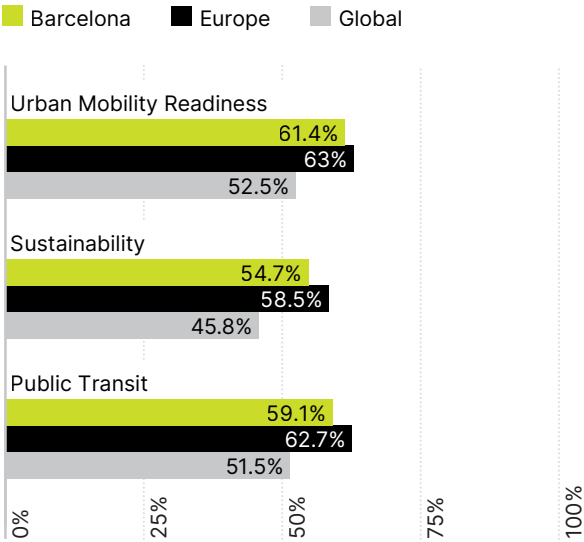
To help close the gap with other cities, it can build dedicated bus lanes to help avoid congestion. Bus lanes and permitting buses in car-free zones, as applicable, is an efficient and effective way to shorten travel times for commuters. By 2025, Barcelona aims to complete work on new traffic light rules, bus lanes, and routes to achieve a 10% speed increase on main bus lines.¹²⁰ In addition, expanding Barcelona’s already impressive number of automated metro lines (currently three out of their 12 lines are automated) will help to expedite travel.

Recommandations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Lower commute times by increasing public transit speeds through dedicated bus lanes
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines

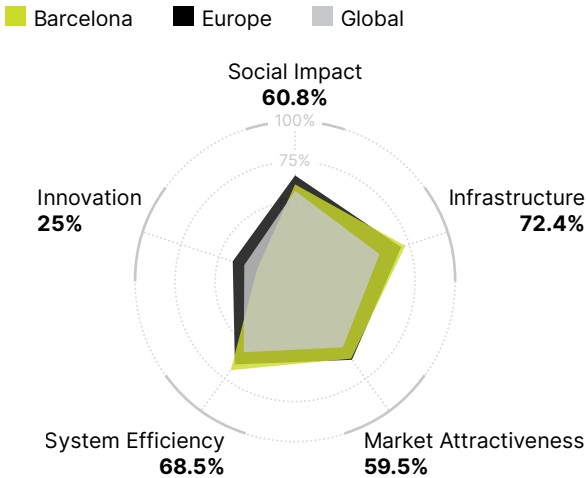
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Toronto



**Urban Mobility
Readiness Index**
25_{/65}

**Sustainable
Mobility**
24_{/65}

Public Transit

Population (million)	6.6
Population density (people per km²)	2,804
GDP per capita (US\$)	42,836
Surface area (km²)	2,344

What Toronto Does Well in Urban Mobility

Toronto is committed to mobility innovation with its strong, multimodal transit system and government investments in electric vehicle (EV) charging stations and connected and automated (CAV) technologies. The city aims to have 850 public charging points by the end of 2025.¹²¹ Separately, Ontario in June 2023 built EV fast chargers along the province’s busiest highways that are local to Toronto.¹²²

The city possesses leading, high-quality infrastructure, from extensive and interconnected roadways to manufacturing, warehousing, and other supply chain infrastructure. Ontario is undergoing several road construction projects in Toronto,¹²³ namely highway extensions, as part of a US\$135 billion infrastructure scheme.¹²⁴

Challenges and Opportunities for Toronto’s Transportation System

Toronto lacks a dedicated app that would seamlessly integrate its multimodal public transit system. And yet, Toronto’s public transit system was rated as the most efficient by the

World Conference on Transport Research Society in 2023 — and received a similar award from the American Public Transportation Association in 2017. The city is not home to a thriving active mobility sector with challenges to on-the-go residents who struggle to navigate the city’s limited walking and cycling infrastructure. However, Toronto aims to finish approximately 100 kilometers (62 miles) of new bikeways, as well as enhancements to existing routes, by 2024.¹²⁵ Its underground walkway network is an innovative method to support pedestrians during the winter months.¹²⁶

How Toronto Can Improve Its Public Transportation and Sustainable Mobility

With over half of Toronto’s trips completed via personal cars, the city lags behind its peer New York. Toronto residents own more than twice as many cars on average than New Yorkers. The city can discourage car usage by introducing car-free zones to heavily walked areas and by limiting car parking. The city could offer alternative mobility options by promoting public transit, active mobility, and shared mobility such as car-sharing or

ride-hailing. Toronto can improve its active mobility infrastructure by expanding its bike lanes, increasing its affordable and reliable bike-sharing program service areas, and heightening traffic enforcement.

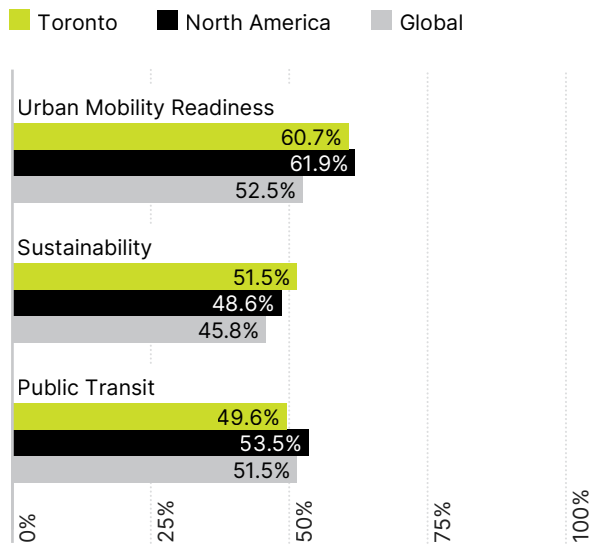
Many of Toronto’s residents have lengthy walks to subway stations or bus and streetcar stops. To improve station density and encourage ridership, the city could add routes and stops for buses and streetcars to help connect residents with subway stations and other destinations — a cost-effective improvement that would help lower walking distances and overall commute times. In the long term, extending existing subway lines and adding new line options will be key to building out the city’s public transit offering, but that effort will be a time-intensive and expensive undertaking.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus rapid transit services or subway lines

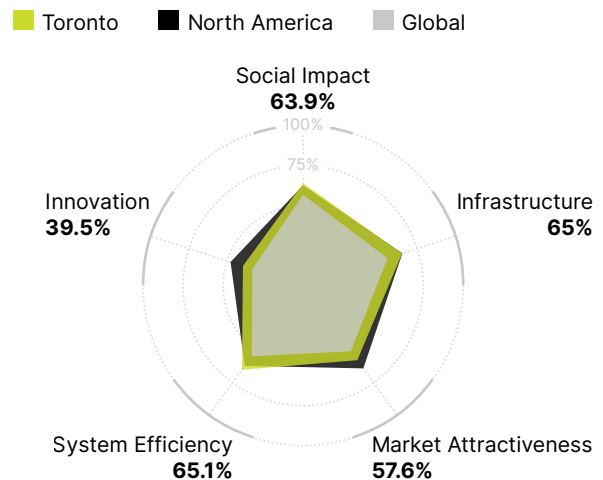
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



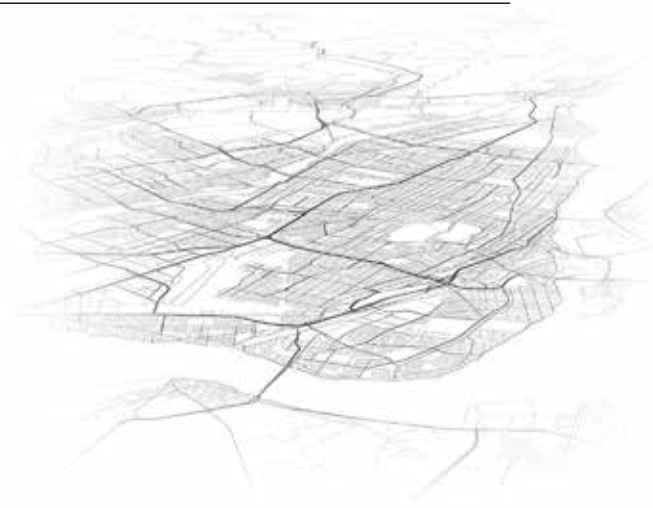
Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Montreal



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
26 _{/65}	22 _{/65}	35 _{/65}
Population (million)	4.0	
Population density (people per km²)	2,898	
GDP per capita (US\$)	35,515	
Surface area (km²)	1,383	

What Montreal Does Well in Urban Mobility

Montreal is home to a strong multimodal public transit system known for its affordable fares. The city is currently building five new metro stations and two bus terminals that are expected to be completed in 2030.¹²⁷ Montreal’s roadways are world class with a commitment to safety, maintenance, and efficient traffic management. Quebec’s 2028 safety plan aims to reduce speed limits to 30 kilometers per hour (20 miles per hour) in school zones.¹²⁸

Challenges and Opportunities for Montreal’s Transportation System

Montreal’s airport is not an international hub, with relatively low passenger volumes and international connections. The airport chose not to build an additional runway as part of a 2037 plan due to lower passenger volumes post-pandemic.¹²⁹ The city is not home to a thriving active mobility sector with challenges stemming from a lack of dedicated

infrastructure for walkers and cyclists. However, Montreal is building 191 kilometers (118 miles) worth of bike lanes that are expected to be completed by 2027.¹³⁰

How Montreal Can Improve Its Public Transportation and Sustainable Mobility

With over half of Montreal’s trips done via personal cars, the city lags in personal car ownership with New Yorkers owning an average of 2.5 fewer cars than Montreal residents. The city has already taken some steps to limit its car usage, including seasonal car-free streets and a plan to remove cars from parts of Old Montreal in 2024. It can expand these initiatives even further, with larger zones, year-round closures, limiting parking, or more car-free areas. Previously mentioned cycling infrastructure plans show progress but expanding bike-sharing and heightening traffic enforcement would further support cyclists.

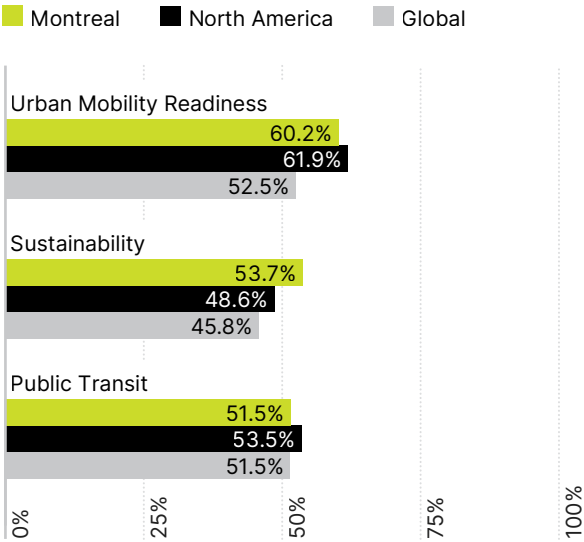
Many residents are faced with lengthy walks to metro stations and bus stops. Montreal can add routes and stops for buses to help connect residents with metro stations and other destinations — a cost-effective improvement that would help lower walking distances and overall commute times. In the long term, extending existing metro lines and adding new line options — as it is currently doing — will be key, but that effort will be a time-intensive and expensive undertaking.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours

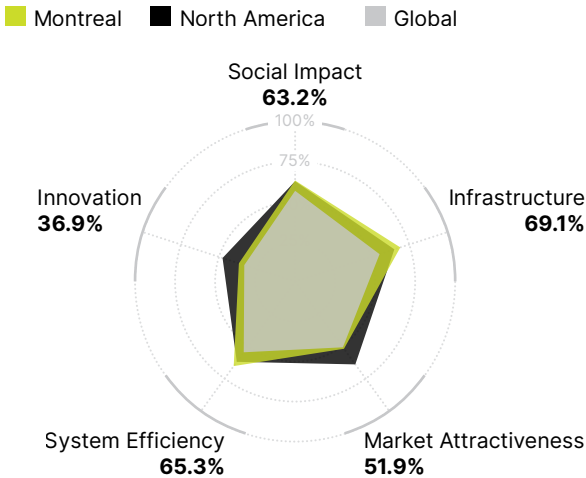
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Atlanta



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
27 _{/65}	35 _{/65}	39 _{/65}
Population (million)	5.8	
Population density (people per km²)	783	
GDP per capita (US\$)	88,089	
Surface area (km²)	7,400	

What Atlanta Does Well in Urban Mobility

Atlanta’s multimodal public transit system provides fast and affordable service to its residents. The city began construction in 2023 on a new, five-mile (eight kilometers) Bus Rapid Transit system with 14 new stations that is expected to be completed in 2025.¹³¹

The city is a leader in mobility innovation in part due to continued government investment in electric vehicle (EV) charging infrastructure and connected and automated vehicle (CAV) technologies. In April 2023, the city entered into a public-private partnership with a car rental company to expand EV charging infrastructure.¹³²

Challenges and Opportunities for Atlanta’s Transportation System

Atlanta has struggled to promote active mobility modes, like walking and cycling, as residents prefer cars. Poor cycling

infrastructure and lack of car-free zones have impeded progress. Despite efforts to make cycling safer and more convenient, it has not taken off.¹³³

With the combination of residents opting to drive and highway-heavy roadways, Atlanta has become infamous for large volumes of traffic accidents and fatalities. However, Georgia has a 2024 traffic management plan that will establish road safety goals and emphasize where improvements can be made.¹³⁴

How Atlanta Can Improve Its Public Transportation and Sustainable Mobility

Despite a strong state EV incentivization and subsidy program, Atlanta still lags in sales, with a market share four times smaller than that of San Francisco. Atlanta can add incentives like tax breaks, registration fee and toll exemptions, or special access lanes to encourage EV purchases. Charging station availability is

another major factor in EV purchase decisions, and to offer a top regional charging network, it would need to multiply its charging station density by fivefold.

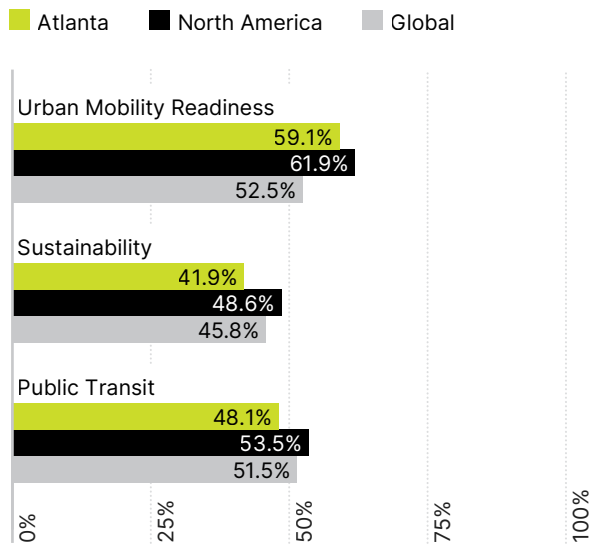
Many Atlanta residents are faced with lengthy walks to rail (MARTA) stations and bus stops. To improve station density and encourage ridership, the city can add routes and stops for buses and streetcars to help connect residents with MARTA stations — a cost-effective improvement that would help lower walking distances and overall commute times. Extending existing MARTA lines and adding new lines — which is already underway — will be key, but that effort will be a time-intensive and expensive undertaking.¹³⁵

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus services or subway lines

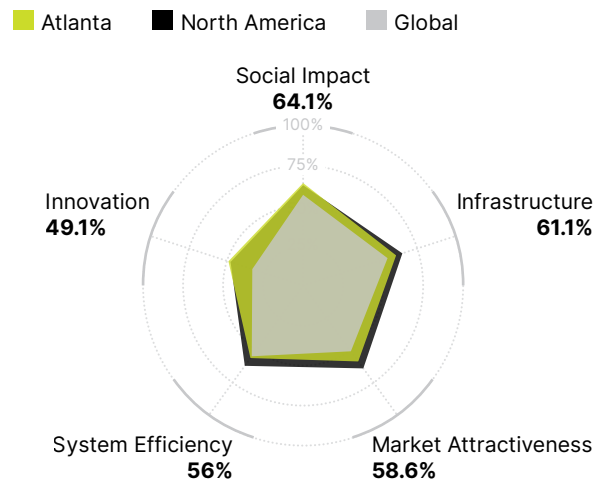
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Dubai



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
28 _{/65}	46 _{/65}	31 _{/65}
Population (million)	4.7	
Population density (people per km²)	3,123	
GDP per capita (US\$)	45,321	
Surface area (km²)	1,507	

What Dubai Does Well in Urban Mobility

Dubai has sought to develop an affordable and efficient public transit system on par with leading global cities. Its metro is advanced, with fully automated trains and is supplemented with a comprehensive, multimodal app. Dubai aims to automate a quarter of all transportation, including metro, buses and taxis, by 2030, and expects the technology to significantly lower transportation costs, traffic accidents, and travel times.¹³⁶ Dubai International Airport has a large volume of international travelers every year, connecting passengers from North America, Europe, and Asia. The airport has a renovation plan with a long-term goal of being able to process nearly 260 million passengers per year.¹³⁷

Challenges and Opportunities for Dubai's Transportation System

Dubai's residents prefer to use private cars or taxis to travel around the city rather than active mobility modes like walking or cycling.

However, Dubai has a vision for a 20-minute walkable city that will enable residents to reach essential services, like education or public transit, by walking or cycling.¹³⁸

Despite continued government investment in electric vehicle (EV) charging infrastructure, Dubai's drivers have not made the switch to EVs and have a subsequently low market share of EV sales. Dubai has limited charging options, but it has plans to add 1,000 chargers by 2025.¹³⁹

How Dubai Can Improve Its Public Transportation and Sustainable Mobility

Like many cities in the region, Dubai's electric vehicle (EV) charging network remains underdeveloped. To become a leader, it would need to accelerate the deployment of charging stations. The city can target this gap by increasing government-backed investments in public charging stations and subsidizing station deployment in private parking. In July

2023, a Dubai authority joined the Charging Interface Initiative, a non-profit for e-mobility advancement, which shows commitment.¹³⁹

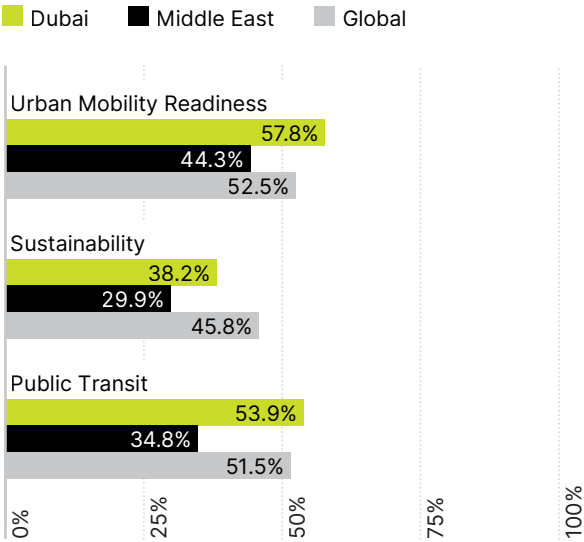
Despite efforts in recent years to curb pollution, Dubai has worse air quality than many of its peers. To help improve air quality and close the gap with other cities, Dubai can look to limit its residents' reliance on private cars for transportation and instead encourage more sustainable mobility modes. In addition, introducing dedicated parks and lawns to allow local species of greenery and flora to flourish will help support cleaner air quality.

Recommandations

- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Accelerate deployment by increasing incentives to charging station providers
- Introduce low-emission zones or promote active mobility modes
- Accelerate electric vehicles investments

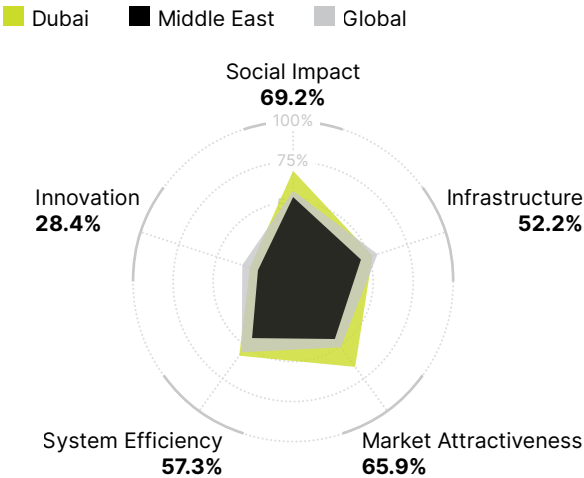
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



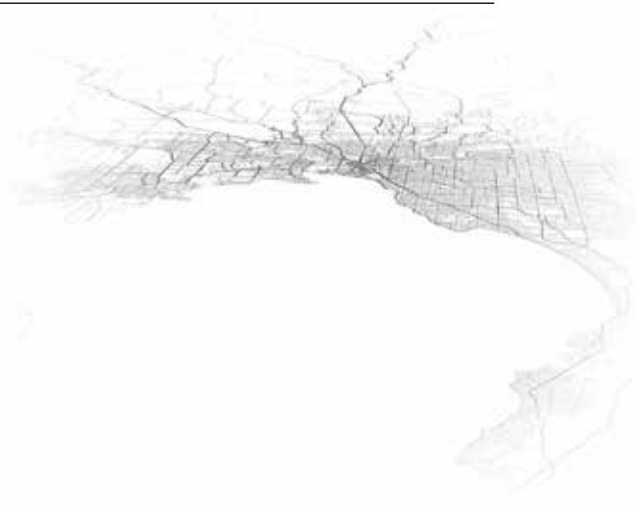
Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Melbourne



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
29 _{/65}	43 _{/65}	29 _{/65}
Population (million)	5.0	
Population density (people per km²)	1,841	
GDP per capita (US\$)	50,382	
Surface area (km²)	2,704	

What Melbourne Does Well in Urban Mobility

Melbourne is home to well-maintained and interconnected roadways, with relatively few fatalities. In 2023, the Victoria state began a US\$127 million road infrastructure program to improve road safety.¹⁴⁰ The city’s public transit system is known for its efficiency, affordability, and diverse transportation modes. Melbourne’s roads and mass transportation are going to be made stronger with “Victoria’s Big Build,” a, US\$57 billion road and rail expansion project to bolster public transit with more stations, airport and suburb connections, and a new metro tunnel.¹⁴¹

Challenges and Opportunities for Melbourne’s Transportation System

Melbourne has limited government investment in electric vehicle (EV) incentivization, charging station development, and connected and automated vehicle (CAV) technologies.

The city’s lack of active mobility infrastructure, like bike lanes or dedicated car-free zones, pushes residents to prefer cars instead. However, Melbourne has built more than 19 kilometers (11 miles) of cycling lanes since 2020 as part of its 2030 strategy to have more than 50 kilometers (31 miles) of cycleways.¹⁴²

How Melbourne Can Improve Its Public Transportation and Sustainable Mobility

While other states are increasing their electric (EV) subsidy offering, Victoria recently ended its 2021 subsidy and is now falling well behind its peer Sydney in EV incentivization.¹⁴³ The state, or Melbourne itself, can reinstitute the subsidy for EVs to ensure it stays on target for zero-emission vehicle (ZEV) sales composing 50% of the market share by 2030. The city also could increase the size of available grants for EV charging stations, such as reintroducing the Destination Charging Across Victoria program, which provided US\$3 million for public

stations¹⁴⁴ — a promising start but not enough to offer a charging network comparable to its peers. To become a regional leader in charging networks, Melbourne would need to accelerate deployment to double its current station density.

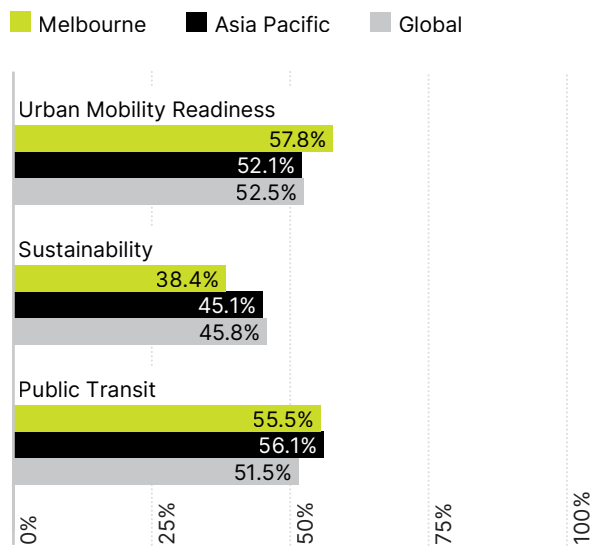
Many of Melbourne’s residents have lengthy walks to metro stations and bus stops. The city is undergoing a large-scale public transit project, the previously mentioned “Victoria’s Big Build,” to improve station density and encourage ridership of its metro system. In the interim, the city should add routes and stops for buses and trams to help connect residents with metro stations and other destinations — a cost-effective improvement that would help lower walking distances and overall commute times.

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines

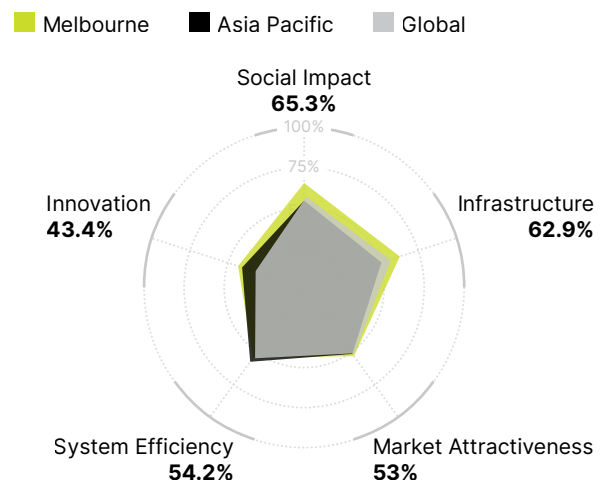
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Beijing



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
30 _{/65}	18 _{/65}	30 _{/65}
Population (million)	20.1	
Population density (people per km²)	4,702	
GDP per capita (US\$)	36,131	
Surface area (km²)	4,284	

What Beijing Does Well in Urban Mobility

Beijing has become a regional leader in electric vehicle (EV) investment through purchase incentives and charging station implementation. The Chinese government in 2023 announced an acceleration of charging station construction, according to reports. Beijing’s roads are safe and well-connected; and its regional connectivity is strengthened by China’s excellent rail network. Its road connectivity is going to be enhanced, as Beijing is undergoing construction of what will become China’s longest highway tunnel through its sub-center, spanning 7.4 kilometers (4.5 miles).¹⁴⁵

Challenges and Opportunities for Beijing’s Transportation System

COVID-19 related travel restrictions drastically reduced the number of passengers until early 2023. With the phasing out of restrictions, 2023 showed a quick recovery of the industry with commercial flights having almost recovered

their pre-pandemic levels this summer.¹⁴⁶

Despite regulating when people can drive their cars in an effort to lower air pollution, Beijing still suffers from noise and light pollution. However, a national 2025 plan aims to lower noise pollution from transportation, according to reports. Separately, a reported plan from the surrounding Hebei province aims to end levels of severely polluted air by 2025.

How Beijing Can Improve Its Public Transportation and Sustainable Mobility

Given the city’s sprawl, many Beijing residents have lengthy walks to subway stations and bus stops despite a good transit system. Beijing can add bus routes and stops to help connect residents with subway lines — a cost-effective improvement that would help lower walking distances and overall commute times. In the long term, extending existing subway lines, and adding new line options will be key, but that effort will be a timely and expensive undertaking.

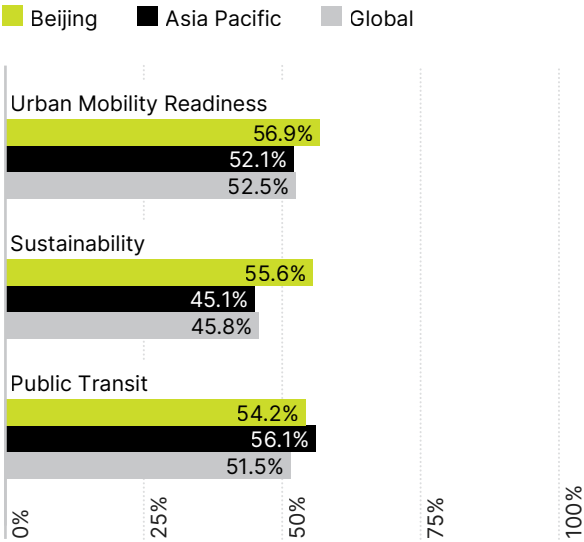
While Beijing has a large network of dedicated bike paths, the city’s considerable sprawl continues to challenge cyclists. Increasing the number of maintained bike lanes with safety dividers on main roadways could help drive up cycling’s modal share. In addition, bikes are not permitted on buses or the subway. Removing restrictions for bikes would help integrate cycling with public transit even further. Providing e-bike subsidies can help limit geographic barriers and increase cycling accessibility. Lastly, investing in the expansion of bike-sharing services like DidiBike or Hello Bike, such as more stations, bikes, and e-bikes, would further support cyclists throughout the city.

Recommandations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours
- Build or expand bike lanes with protective barriers in high traffic areas
- Integrate cycling with public transit networks for better connectivity

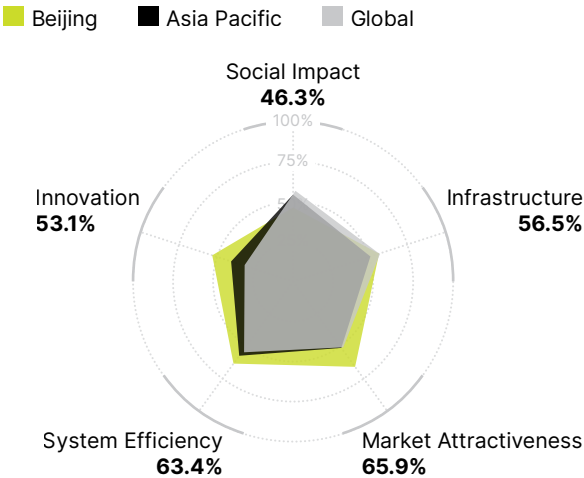
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Houston



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
31 _{/65}	40 _{/65}	44 _{/65}
Population (million)	6.6	
Population density (people per km²)	1,339	
GDP per capita (US\$)	83,557	
Surface area (km²)	4,931	

What Houston Does Well in Urban Mobility

Houston has well-connected and maintained roads and a robust traffic management system. The city is undergoing a \$9 billion highway reconstruction plan that will enable more multimodal options like walking and cycling.¹⁴⁷ Government investment in connected and automated vehicle technologies has fostered an innovative ecosystem, with an automated rideshare service to enter the city’s mobility market in 2023.

Challenges and Opportunities for Houston’s Transportation System

Limited active mobility infrastructure and an insufficient public transit system have inhibited commuters’ ability to shift from private car usage. However, the city’s \$7.5 billion plan to expand its mobility offering in parallel with an expected population growth includes 16 miles of light rail and 75 miles of rapid bus service.¹⁴⁸

Despite continued government investment in electric vehicles (EVs), residents have been slow to switch to EVs partially due to limited charging station availability. Texas’ plan to implement charging points every 50 miles on most interstate highways will boost station availability.¹⁴⁹

How Houston Can Improve Its Public Transportation and Sustainable Mobility

With most of Houston’s trips completed by personal cars, the city lags behind its peer Boston in terms of car ownership: Houston residents own an average of 1.5 times more cars than Bostonians. The city can discourage personal car use by limiting parking and introducing car-free zones to heavily walked areas. The city would need to offer alternative mobility options by promoting public transit, active mobility, and shared mobility such as car-sharing or ride-hailing. Houston can also improve its public transit offering and

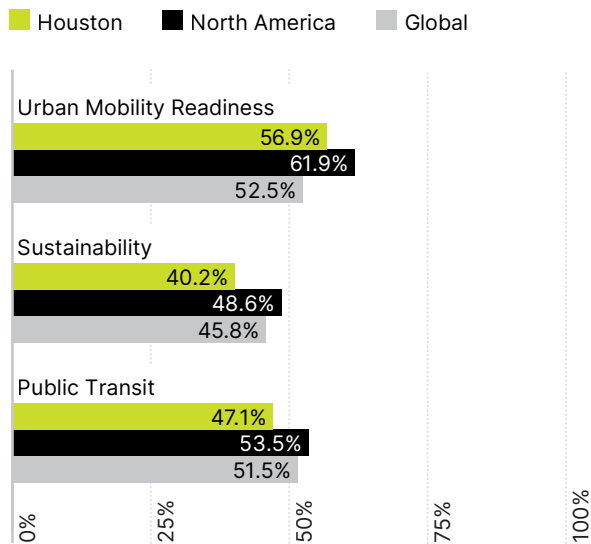
develop bike lanes or bike-sharing expansions. Houston’s public transit system is underutilized, with commuters often opting for different transportation options. Houston would need to increase their ridership sevenfold to be a leading public transit city in North America. The city can increase station density to limit walk times for commuters by adding routes and stops for buses and streetcars to help connect residents with metro stations — a cost-effective improvement that would help lower walking distances and overall commute times. In the long term, extending existing metro lines and adding new lines will be key to building out the city’s public transit offering for residents, but that effort will be a time-intensive and expensive undertaking. However, Houston’s previously mentioned plans shows strong progress.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars
- Improve ridership by developing the public transit offering such as longer operating hours and greater station density
- Stimulate the demand for public transit by limiting car use and lowering transit fares

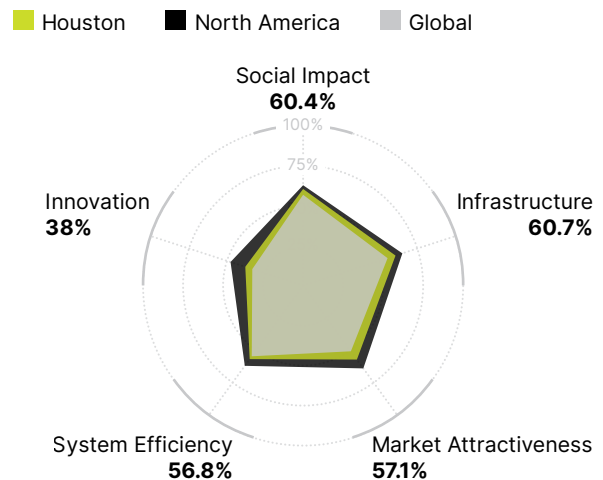
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



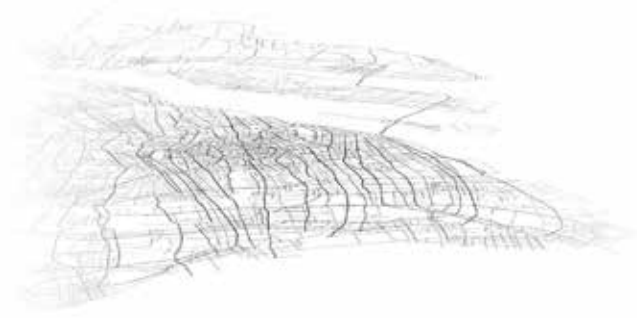
Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Shanghai



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
32 _{/65}	13 _{/65}	26 _{/65}

Population (million)	26.6
Population density (people per km ²)	6,149
GDP per capita (US\$)	33,062
Surface area (km ²)	4,333

What Shanghai Does Well in Urban Mobility

Shanghai's strong electric vehicle (EV) market share has benefitted from government investment in charging stations, a vibrant consumer market with many EV models available, and purchase incentives for residents even as many EVs are already available at competitive prices. The Chinese government in 2023 announced an acceleration of charging station construction, according to reports. Shanghai has well-maintained and interconnected roadways with relatively few road-related fatalities and a strong regional rail network. In 2023, the city continued to build on this strength when it unveiled plans to build tunnels and passages that allow drivers to cross the Huangpu River.¹⁰

Challenges and Opportunities for Shanghai's Transportation System

Shanghai's public transit system lags behind many of its Asian peers with underdeveloped

offerings. Shanghai aims to improve this with 17 total rail transit lines that span 84 stations and 160 kilometers (99 miles),¹⁰ and its 2035 plan targets a public transit modal share of more than 50%.¹⁵⁰

As a coastal city, Shanghai is at risk of natural disasters and is ill-prepared to handle their damage. Shanghai's 2035 plan details flood control measures like enhanced systems to measure surface sinking.¹⁵⁰

How Shanghai Can Improve Its Public Transportation and Sustainable Mobility

Given its sprawl, many Shanghai residents have lengthy walks to metro stations and bus stops. Shanghai can add bus routes and stops to help connect residents with metro lines — a cost-effective improvement that would help lower walking distances and overall commute times. That said, its 2035 plan aims to lower distances between stops. Adding new lines

or extending existing metro lines will bolster public transit offerings, but that effort will be a time-intensive and expensive undertaking.

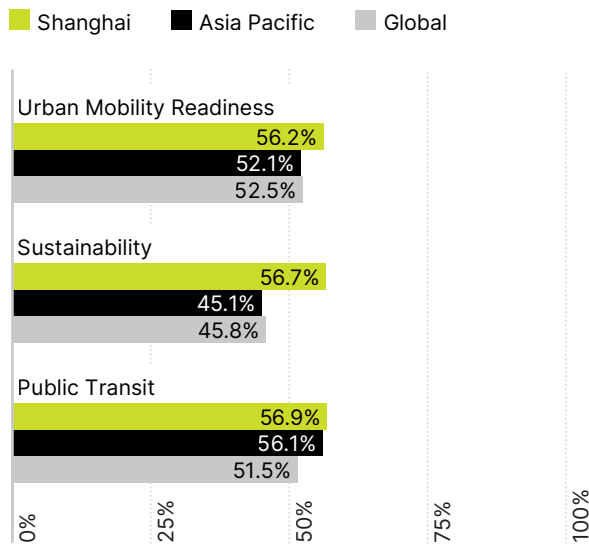
Shanghai has a large network of dedicated bike paths, but its sprawl challenges cyclists. Increasing the number of maintained bike lanes with safety dividers would help encourage cycling. Separately, bikes are not permitted on public transit. Removing these restrictions would help integrate cycling with public transit. Providing e-bike subsidies can help limit geographic barriers and increase cycling accessibility. Lastly, investing in the expansion of bike-sharing services, like more stations, bikes, and e-bikes would further support cyclists.

Recommendations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours
- Build or expand bike lanes with protective barriers in high traffic areas
- Integrate cycling with public transit networks for better connectivity

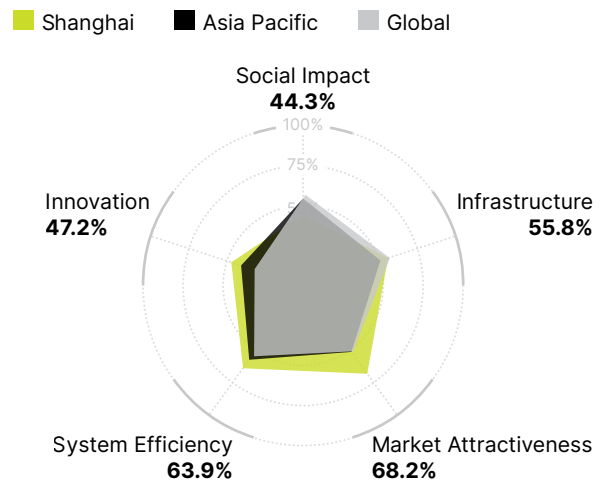
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Milan



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
33 _{/65}	29 _{/65}	20 _{/65}
Population (million)	4.3	
Population density (people per km²)	1,942	
GDP per capita (US\$)	60,810	
Surface area (km²)	2,225	

What Milan Does Well in Urban Mobility

Milan implemented many car-free zones and placed restrictions on combustion engine vehicles to reduce emissions and improve air quality. In addition, investment in charging stations and electric vehicle (EV) incentivization have helped push the city toward more sustainable mobility modes.

The city’s roadways are safe, efficient, and well-maintained, leading to relatively few road traffic fatalities. Milan’s plans include implementing a 30 kilometer (18 miles) per hour speed limit for about 60% of its roads to improve traffic safety.¹⁵¹

Challenges and Opportunities for Milan’s Transportation System

The city’s public transit system’s stations are spread throughout the city with some residents experiencing long walks to stations. However, it finished a metro extension in 2023 that

adds 15 kilometers (nine miles) of tracks and 21 stations that has the capacity to serve 86 million passengers a year.¹⁵² Milan has limited access to top universities and labs working on mobility and is home to few mobility companies, contributing to a more muted mobility innovation ecosystem. The lack of mobility cultivation in the city has led to relatively few connected and automated vehicle (CAV) testing program initiatives.

How Milan Can Improve Its Public Transportation and Sustainable Mobility

Despite a recent increase in the country’s EV incentivization and subsidy program, Milan still lags in EV sales compared to other European cities, with a market share 3.5 times smaller than that of Munich. The city can add incentives such as tax breaks, registration fee exemptions, toll exemptions, or EV-dedicated lanes to encourage EV purchases. Charging station availability is another major factor in EV purchase decisions

and to offer a region leading charging network, Milan would need to multiply its charging station density by fourfold.

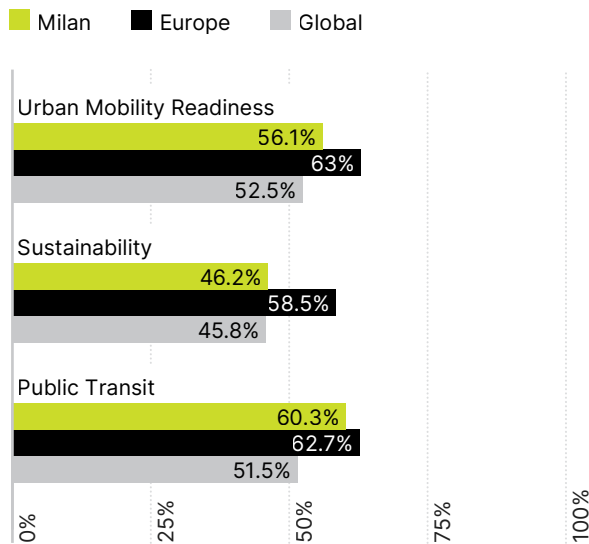
While Milan is home to a strong public transit system, some residents have long walks to stations. To improve station density and encourage ridership, the city can add more stops along bus routes and increase the number of operators and buses in its fleet — a cost-effective improvement that would benefit its residents. Adding more bus lines is another relatively simple solution to improve station accessibility. In the long run, adding metro stations will be key to building out their public transit offering, but that effort will be a more time-intensive and expensive undertaking.

Recommandations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines

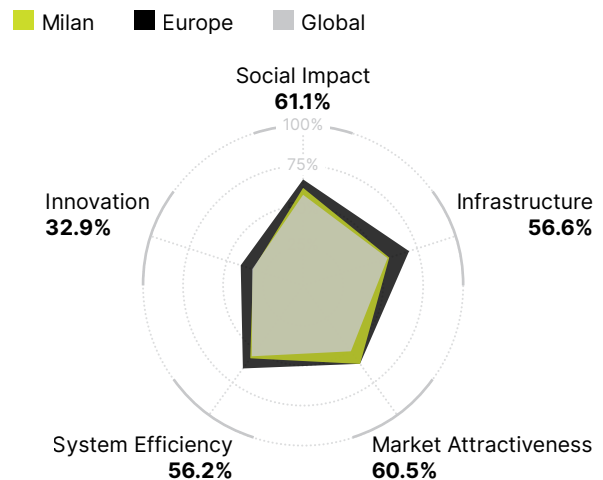
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Dublin



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
34 _{/65}	14 _{/65}	33 _{/65}
Population (million)	1.3	
Population density (people per km²)	2,882	
GDP per capita (US\$)	115,094	
Surface area (km²)	461	

What Dublin Does Well in Urban Mobility

Dublin’s implementation of car-free zones and dedication to electric vehicle (EV) investment have helped reduce emissions and improve the city’s air quality. A plan to redesign western parts of Dublin into a 15-minute city concept may further improve air quality.¹⁵³ Separately, the city plans to install 1,650 EV charging points by 2025,¹⁵⁴ and currently offers grants of more than \$5,000 for the purchase of a new EV. The city experiences few road fatalities, and its roadways are well-connected with Ireland’s robust road network. A 2030 city plan aims to improve road safety by building separated infrastructure for cyclists and pedestrians, promoting modal shifts away from motor vehicles, and reducing vehicle speeds.¹⁵⁵

Challenges and Opportunities for Dublin’s Transportation System

With residents preferring to drive personal cars over cycling and public transit, congestion

remains an issue throughout the city. However, a 2028 plan aims for a 40% reduction in traffic while increasing walking, cycling, and public transport usage.¹⁵⁶ Dublin is not home to a strong mobility innovation ecosystem, with few leading universities, labs, and companies operating in the mobility space. Dublin’s transportation spending is a low percentage of its gross domestic product.

How Dublin Can Improve Its Public Transportation and Sustainable Mobility

Dublin’s public transit riders often struggle with long commutes due to low transit speeds. The city can build dedicated bus lanes to help avoid traffic slowdowns. Adding bus lanes is an efficient and effective way to shorten travel times for commuters. In the long term, investing in the infrastructure to build a metro system would greatly improve transit speed; however, this would be a lengthy and expensive undertaking.

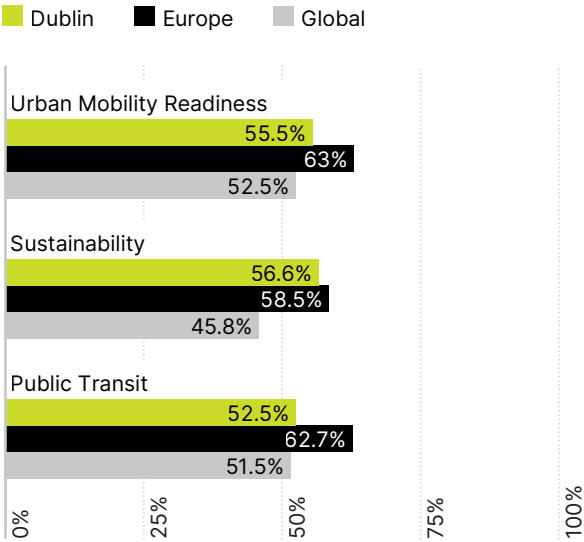
With many of Dublin’s residents opting to travel via personal car, the city lags behind its peer Helsinki in terms of car ownership, with Dubliners owning an average of 1.7 times as many vehicles as residents of Helsinki. The city can discourage car usage by introducing car-free zones to heavy foot-traffic areas and by limiting car parking. Dublin would need to offer alternative mobility options by promoting public transit, active mobility, and shared mobility such as car-sharing or ride-hailing — although previously mentioned 2028 plans aim to do just that. Additionally, Dublin can improve its active mobility infrastructure through bike lanes or a bike-sharing program expansion.

Recommandations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours
- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars

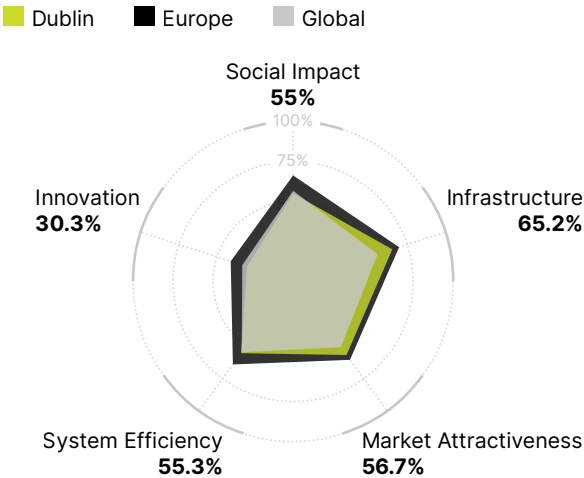
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Dallas



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
35 _{/65}	41 _{/65}	46 _{/65}
Population (million)	6.8	
Population density (people per km²)	1,281	
GDP per capita (US\$)	87,592	
Surface area (km²)	5,278	

What Dallas Does Well in Urban Mobility

As the city continues to grow in population and area, the Dallas government has invested in autonomous vehicles. Cruise, an automated ride-hailing service, expected to hit the streets by the end of 2023.

Dallas has well-connected and maintained roadways with a robust traffic management system. Its 2030 vision for a 50% reduction in crash injuries aims to improve this by lowering speed limits on residential streets to 25 miles (40 kilometers) per hour.¹⁵⁷

Challenges and Opportunities for Dallas' Transportation System

An emphasis on car infrastructure, a sprawling area, and a lack of car-free zones and bike paths leave residents discouraged from walking or cycling. Dallas is preparing a new plan to outline new cycle roadway improvements.¹⁵⁸

Despite high government investment in electric vehicle (EV) charging infrastructure, station density remains low and challenges residents looking to switch to EVs. However, city plans aim to install 1,500 chargers by 2030.¹⁵⁹

How Dallas Can Improve Its Public Transportation and Sustainable Mobility

With most of Dallas' trips completed via personal cars, the city lags behind Boston in car ownership, with Dallas' residents owning an average of 1.75 times more cars than Bostonians. Dallas can discourage personal car usage by introducing car-free zones to heavily walked areas and by limiting car parking. Dallas would need to offer alternative mobility options by promoting public transit, active mobility, and shared mobility such as car-sharing or ride-hailing. The city can improve its public transit offering and develop its active mobility infrastructure through bike lanes or bike-sharing program expansions.

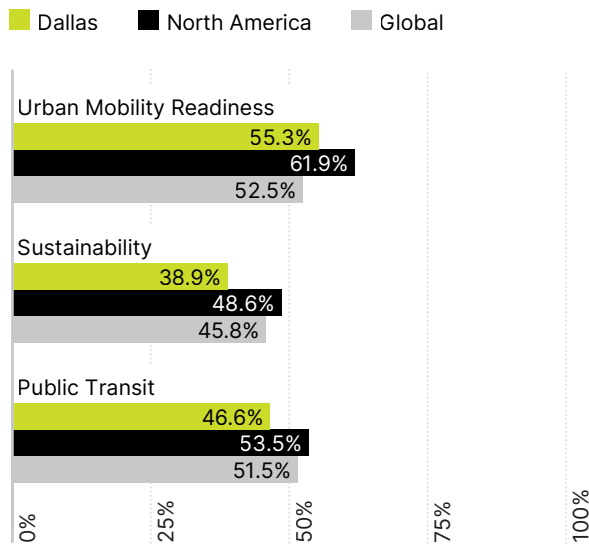
With a public transit modal share roughly 12% the size of Boston, Dallas lags behind its peers. The city should look to improve its public transit offering by increasing station density to limit walk times for commuters. Adding routes and stops for buses and streetcars can help connect residents with rail stations — a cost-effective improvement that would help lower walking distances and overall commute times. In the longer run, adding or extending existing rail lines will be key to building out the city’s public transit offering for residents, but that effort will be a time-intensive and expensive undertaking.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars
- Improve ridership by developing the public transit offering such as longer operating hours and greater station density
- Stimulate the demand for public transit by limiting car use and lowering transit fares

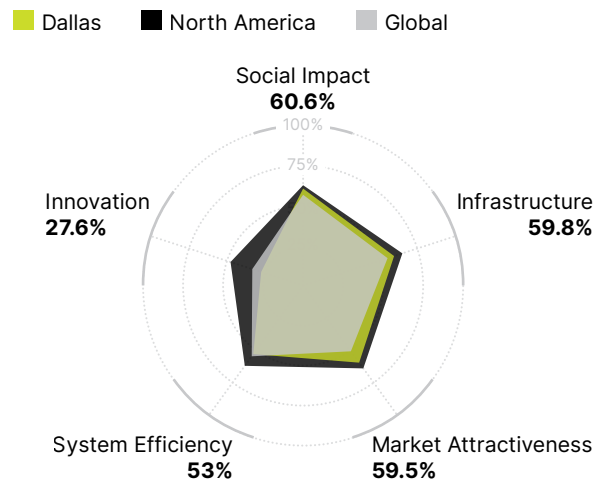
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Warsaw



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
36 _{/65}	32 _{/65}	19 _{/65}
Population (million)	1.9	
Population density (people per km²)	3,444	
GDP per capita (US\$)	35,951	
Surface area (km²)	546	

What Warsaw Does Well in Urban Mobility

Multimodality flourishes in Warsaw, with extensive car-free zones, safe and connected roads, and affordable and accessible public transit. Building on this strength, in 2022, Warsaw unveiled three new metro stations and 17 new trains.¹⁶⁰ Warsaw has introduced car-free zones and stringent restrictions on emissions in the city’s center to help limit congestion and pollution. Warsaw announced in 2023 plans to create a “clean transport zone” that will ban diesel-powered cars more than 18 years old in the central district beginning in 2024.¹⁶¹

Challenges and Opportunities for Warsaw’s Transportation System

Warsaw lacks an extensive presence of top universities and labs working on mobility and is home to few mobility companies, contributing to a more muted mobility innovation ecosystem.

Limited government investment in electric and automated vehicle infrastructure has led to limited charging station availability and low autonomous transit adoption. However, Warsaw’s 2030 plans include halving its number of conventional buses by replacing them with low- and zero-emission vehicles¹⁶² and bolstering its e-mobility options.¹⁶³

How Warsaw Can Improve Its Public Transportation and Sustainable Mobility

While Warsaw has ambitions to increase electric vehicle (EV) fleets, it is still lagging in sales, with a market share six times smaller than that of Munich. The city can increase its existing incentives, by reinstating registration tax exemptions, increasing purchase subsidies, or offering free parking opportunities to support and encourage EV purchases and charging station availability. Station availability is another major factor in EV purchase decisions, and Warsaw’s station density is well below

its peers. To offer a comparable charging infrastructure to Munich's, Warsaw would need to accelerate the deployment of charging stations to multiply its charging station density by a factor of 11.

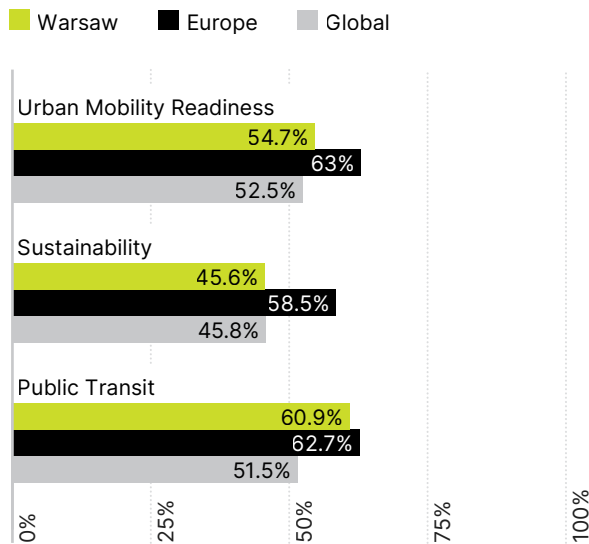
Public transit riders in Warsaw often struggle with long commute times due to low transit speeds. To help close the gap with other cities, Warsaw can build dedicated bus lanes to help avoid traffic slowdowns for bus riders. Adding bus lanes is an efficient and effective way to shorten travel times for commuters. In addition, introducing autonomous transit to the city's metro would help increase speed and efficiency; however, this requires a large upfront investment.

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Lower commute times by increasing public transit speeds through dedicated bus lanes
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines

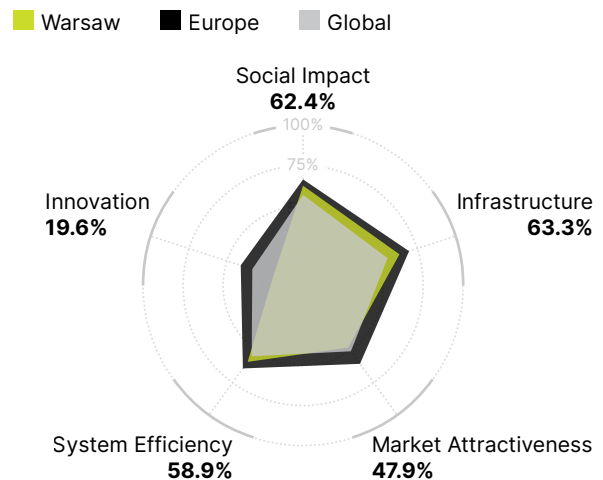
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



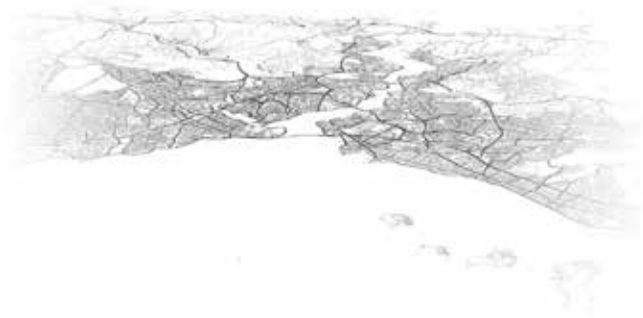
Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Istanbul



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
37 _{/65}	33 _{/65}	27 _{/65}

Population (million)	16.0
Population density (people per km ²)	10,852
GDP per capita (US\$)	15,666
Surface area (km ²)	1,471

What Istanbul Does Well in Urban Mobility

Istanbul's airport is an international hub, connecting passengers from all corners of the globe. A new airport in Istanbul will reportedly be able to accommodate about 150 million passengers a year by 2028.¹⁶⁴

With an effort to reduce private car ownership, Istanbul boasts one of the highest shares of walking trips in the region. Istanbul's 2050 plan commits to regulating parking to reduce personal car demand even further.¹⁶⁵

Challenges and Opportunities for Istanbul's Transportation System

A lack of dedicated car-free zones and bike lanes alongside hilly terrain has discouraged residents from choosing to cycle around the city. However, Istanbul's 2050 vision includes plans to build more cycling and walking paths and expand bike-sharing offerings.¹⁶⁵

Istanbul lags behind many of its peers on electric vehicle (EV) incentive options, contributing to a low EV market share. However, Turkey has reportedly allocated roughly \$1 million to support charging station investment.

How Istanbul Can Improve Its Public Transportation and Sustainable Mobility

Public transit travelers in Istanbul often struggle with long commute times due to low transit speeds. To help close the gap with leading cities, Istanbul can build dedicated bus lanes to help avoid traffic slowdowns for bus riders. Adding bus lanes is an efficient and effective way to shorten travel times for commuters. Introducing autonomous transit to the city's metro also would help increase speed and efficiency; however, this requires a large upfront investment.

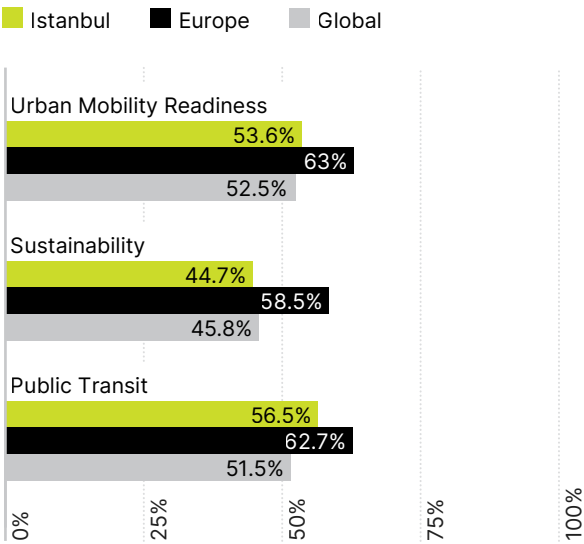
Improvements to Istanbul’s cycling infrastructure would help encourage cycling around the city. Installing and maintaining bike lanes with safety dividers on main roadways would help increase cycling trips. Istanbul acknowledges this shortcoming and the city’s previously mentioned plans to build more cycling infrastructure would be a positive step. Investing in a bus fleet with bike racks would help integrate cycling (for first- and last-mile) with public transit even further. Given the city’s hilly geography, an e-bike subsidy would prove highly effective, allowing residents to traverse the challenging terrain easily. Lastly, supporting the expansion of existing bike sharing services, such as more stations, bikes, and e-bikes would further support cyclists throughout the city.

Recommandations

- Lower commute times by increasing public transit speeds through dedicated bus lanes
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines
- Build or expand bike lanes with protective barriers in high traffic areas
- Integrate cycling with public transit networks for better connectivity

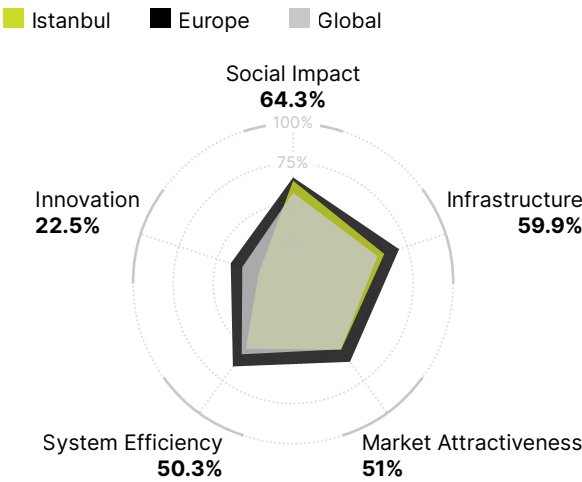
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



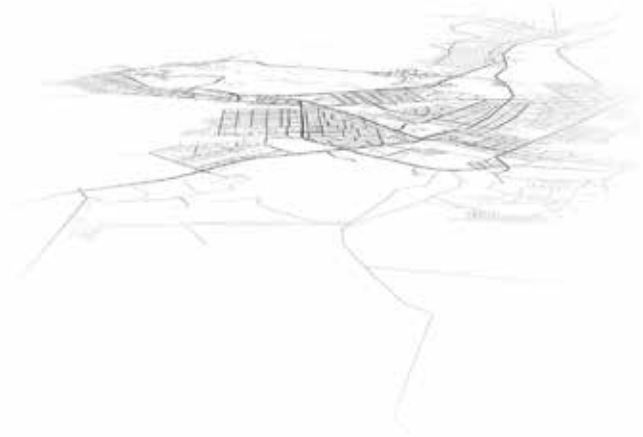
Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Abu Dhabi



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
38 _{/65}	48 _{/65}	54 _{/65}

Population (million)	1.5
Population density (people per km ²)	1,382
GDP per capita (US\$)	116,111
Surface area (km ²)	1,064

What Abu Dhabi Does Well in Urban Mobility

Abu Dhabi’s interconnected roadway system is world class, and the city is known for having little traffic and low fatality rates bolstered by strict enforcement of traffic laws. The city’s 2030 plan aims to reduce traffic growth and congestion by shifting residents away from personal motorized vehicles.¹⁶⁶

In a city accustomed to cars for hire, residents have been quick to embrace mobility sharing, in particular ride-hailing. In August 2023, Abu Dhabi announced that its self-driving taxi fleet — the first in the United Arab Emirates — completed 17,000 passenger journeys as of November 2022.¹⁶⁷

Challenges and Opportunities for Abu Dhabi’s Transportation System

Abu Dhabi has low public transit ridership due to limited operating hours and low station

density, although its 2030 plan aims to create a multimodal public transit network.¹⁶⁶ The city lacks active mobility options, with limited car-free zones and cycling infrastructure, and its climate discourages outdoor activity for large parts of the year.

How Abu Dhabi Can Improve Its Public Transportation and Sustainable Mobility

While the United Arab Emirates aims for electric vehicles (EVs) to account for half of all cars by 2050, Abu Dhabi lags behind in offering EV incentives. Abu Dhabi can increase its monetary incentives package — purchase subsidies or tax exemptions — or introduce non-monetary incentives, like EV-only lanes. In addition, the city could implement a low-emission zone (LEZ) to limit combustion engine car usage and encourage EV adoption by providing priority access to key areas in the city. That said, Abu Dhabi already has waived toll fees for EV drivers.

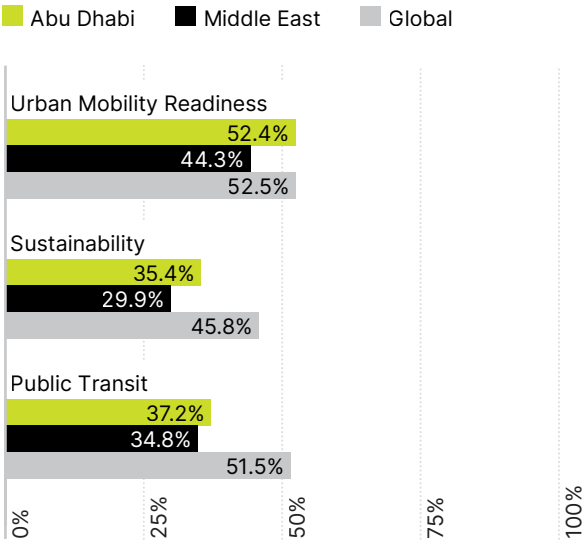
Abu Dhabi’s public transit system is underutilized with commuters often opting for personal cars. To become a regional leader, the city would need to increase its public transit modal share by more than double. Abu Dhabi could focus on closing this gap by increasing its transit offerings and limiting car usage, which the city has begun to do. Abu Dhabi can increase mass transit operating hours and commute speeds (via priority bus lanes) and invest in the infrastructure required to build a metro system.

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Discourage combustion engine use by introducing low-emission zones
- Improve ridership by developing the public transit offering such as longer operating hours and greater station density
- Stimulate the demand for public transit by limiting car use and lowering transit fares

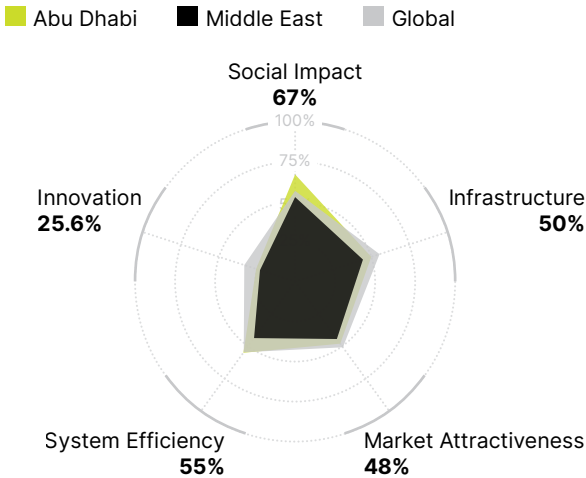
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Moscow



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
39 _{/65}	28 _{/65}	21 _{/65}
Population (million)	15.0	
Population density (people per km²)	5,857	
GDP per capita (US\$)	30,513	
Surface area (km²)	2,562	

What Moscow Does Well in Urban Mobility

Moscow has a diverse, multimodal public transit network with high ridership levels driven by its affordable fares and quick commutes. In 2023, Moscow reportedly completed a 70-kilometer (43 miles) metro line that links 31 stations. The project cost an estimated \$6.6 billion and is one of the largest Russian infrastructure projects in decades, according to reports. Despite its considerable size and population, Moscow has high air quality levels that have been improving since 2010. To improve air quality even further, the city government has supported implementing low-emission zones.¹⁶⁸

Challenges and Opportunities for Moscow’s Transportation System

International geopolitical events, such as the war in Ukraine, have had a significant impact on the number of international connecting flights. The city’s supply chain infrastructure

and services also have weakened since the conflict began. More than 1,000 companies have curtailed operations in Russia since the war began, according to some estimates.

How Moscow Can Improve Its Public Transportation and Sustainable Mobility

While the city has become a leader in electrified transit with one of the largest electric bus fleets in Europe, Moscow still lags in consumer electric vehicle (EV) sales with a market share 24 times smaller than its European peers. The city can increase its existing incentives for EVs, such as registration tax exemptions, larger purchase subsidies, or special access lanes. Station availability is another major factor in EV purchase decisions, and Moscow’s charging station density is well below its peers. To improve its charging network to the level of its European peers, the city would need to accelerate the deployment of charging stations to multiply its charging station density by a factor of 37.

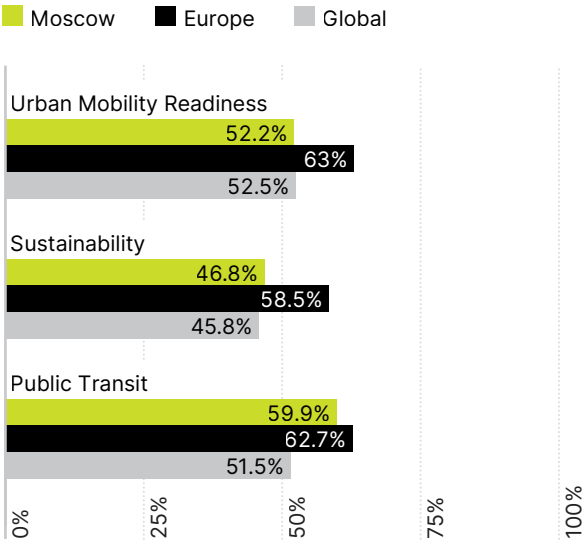
While Moscow has a strong public transit offering, its large surface area and low station density challenges residents who are outside of the city center. To improve station density and encourage ridership, the city could add routes and stops for buses and trams to help connect residents with metro stations — a cost-effective improvement that would help lower walking distances and overall commute times. In the long run, adding new or extending existing metro and rail lines will be key to building out the city’s public transit offering for residents, but that effort will be a time-intensive and expensive undertaking.

Recommandations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines

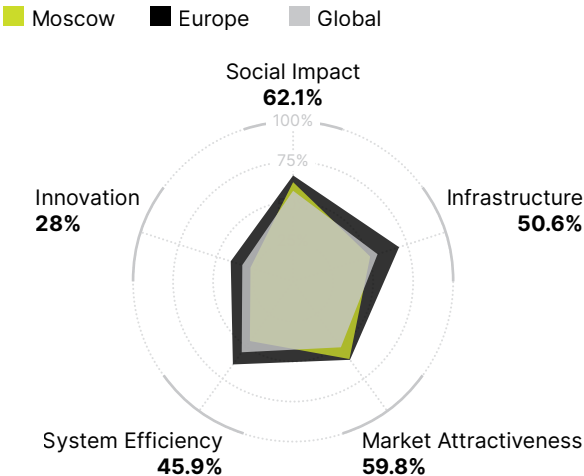
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Rome



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
40 _{/65}	34 _{/65}	49 _{/65}
Population (million)	3.8	
Population density (people per km²)	3,288	
GDP per capita (US\$)	55,385	
Surface area (km²)	1,145	

What Rome Does Well in Urban Mobility

Rome has taken steps to move away from combustion engine cars, with ambitious electric vehicle (EV) investment and incentivization. As part of these efforts, it partnered with a large technology company to install 120 charging stations.¹⁶⁹ The city is home to a diverse and multimodal public transit system with good operating hours and affordable fares. Construction is expected to begin in 2024 on a that will travel more than eight kilometers (five miles).¹⁷⁰

Challenges and Opportunities for Rome’s Transportation System

With limited dedicated cycling infrastructure, few residents opt to cycle around the city. However, Rome is planning to finish 150 kilometers (93 miles) of cycling infrastructure by 2026.¹⁷¹

Lack of government investment in connected and automated vehicle (CAV) technologies has

limited the development of automated vehicles in Rome. Italy has been slow to embrace regulation for autonomous driving.

How Rome Can Improve Its Public Transportation and Sustainable Mobility

Rome’s cycling infrastructure could be improved to make the city more hospitable to cyclists. Installing and maintaining dedicated bike lanes with safety dividers on main roadways would be immensely helpful to increasing cycling’s modal share. Previously mentioned plans to expand cycling infrastructure demonstrate acknowledgement and progress. Bikes are permitted on public transit; however, there are size restrictions and limitations during peak hours. Relaxing these restrictions would permit more cyclists to utilize public transit and cycle for commuting. Lastly, expanding Rome’s various bike-sharing companies would further support cycling throughout the city.

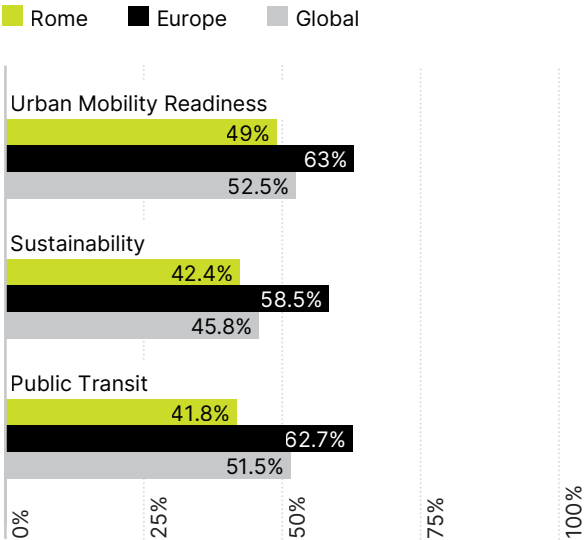
With many of Rome’s residents opting for personal cars, the city lags behind its peer Helsinki in terms of car ownership, with Romans owning twice as many vehicles on average as Helsinki’s residents. Rome can discourage car usage by introducing car-free zones to heavily walked areas and by limiting car parking. It would need to offer alternative mobility options by promoting public transit, active mobility, and shared mobility such as car-sharing or ride-hailing. The city can improve its active mobility infrastructure through bike lanes or bike-sharing program expansions.

Recommandations

- Build or expand bike lanes with protective barriers in high traffic areas
- Integrate cycling with public transit networks for better connectivity
- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars

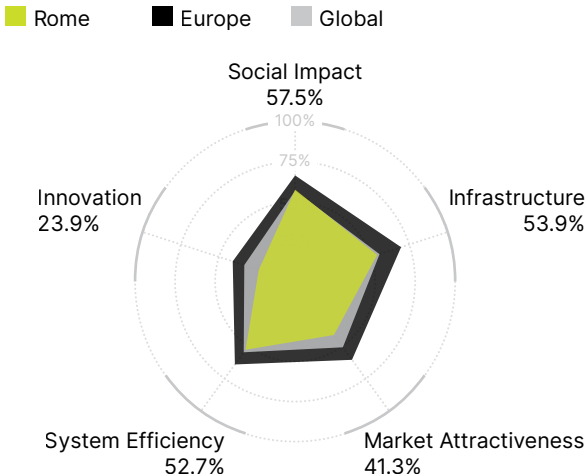
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Doha



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
41 _{/65}	59 _{/65}	45 _{/65}
Population (million)	1.3	
Population density (people per km²)	2,212	
GDP per capita (US\$)	83,393	
Surface area (km²)	575	

What Doha Does Well in Urban Mobility

The Qatari capital provides the latest example of how hosting a major global event can do wonders for urban mobility. In preparation for the 2022 FIFA World Cup, authorities built a metro system with automated lines and improved bus and light-rail infrastructure to enable residents and tourist to travel easily around the city.¹⁷² The city also has a well-connected network of roadways. Qatar is expanding the Al Wakra Main Road, a main artery connecting the capital to the coastal city of Al Wakra just to the south, to increase its capacity by 50%.¹⁷³ The project, scheduled for completion by the end of 2023, intersects with two metro stations and includes cycling and pedestrian paths.

Challenges and Opportunities for Doha’s Transportation System

As in much of the Middle East, Doha has struggled to promote active mobility modes, like walking and cycling, as residents prefer cars.

Poor cycling infrastructure and lack of car-free zones have impeded progress. Authorities are taking steps to encourage those alternatives. Doha boasts one of the most affordable public transit systems and provides free bus and van services to major metro stations.

Only a small proportion of personal cars are electric vehicles (EVs), and the government hasn’t invested heavily to incentivize purchases or develop charging stations. The authorities are promoting the electrification of the public bus network and development of associated charging infrastructure, though, with the aim of having a fully electric fleet by 2030.¹⁷⁴

How Doha Can Improve Its Public Transportation and Sustainable Mobility

Doha could increase monetary incentives for EVs with purchase subsidies or tax exemptions. It also could introduce non-monetary incentives like EV-dedicated lanes or a

low-emission zone to limit combustion engine cars. In June, Qatari firm EcoTranzit announced plans to design and manufacture a line of electric vehicles with international partners, with a goal of converting 25% of personal cars to EVs.

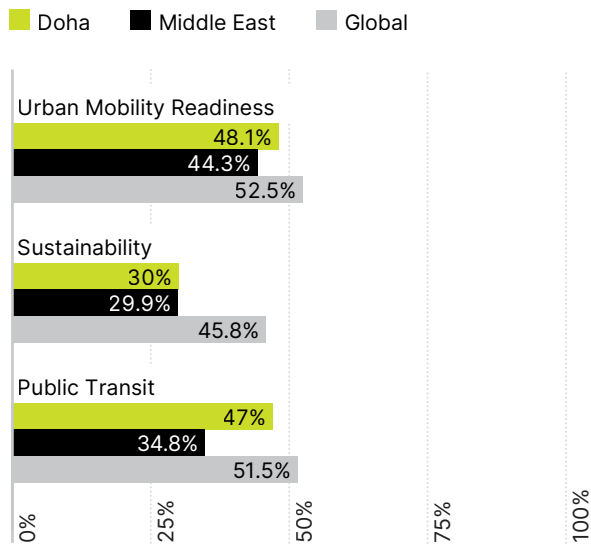
Doha’s public transit system is underutilized. To increase its attractiveness, the city can increase operating hours and commute speeds, and invest in expanded metro infrastructure. Current plans call for extending metro lines and introducing a new line. Implementing car-free zones, meanwhile, can encourage commuters to use public transit.

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Discourage combustion engine use by introducing low-emission zones
- Improve ridership by developing the public transit offering such as longer operating hours and greater station density
- Stimulate the demand for public transit by limiting car use and lowering transit fares

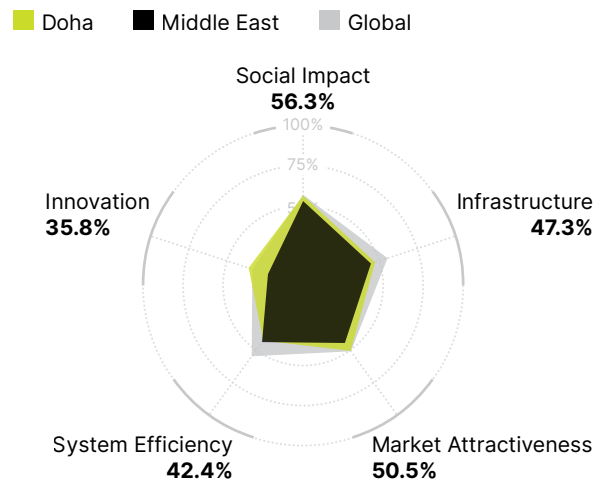
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Kuala Lumpur



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
42 _{/65}	54 _{/65}	23 _{/65}
Population (million)	8.8	
Population density (people per km²)	4,053	
GDP per capita (US\$)	36,485	
Surface area (km²)	2,163	

What Kuala Lumpur Does Well in Urban Mobility

Kuala Lumpur is building a diverse multimodal public transit system known for its affordable and fast service. The network spans commuter trains, light and mass rapid transit lines, monorail, and buses. It boasts three fully automated rail lines, the latest of which was completed in 2022.¹⁷⁵ The city also has a region-leading transit app that allows users to plan ahead for their journey with schedules, estimated time of arrival, and trip durations, receive trip updates such as delays, and pay for their rides without needing to purchase a physical ticket.

Challenges and Opportunities for Kuala Lumpur's Transportation System

Once a popular destination for international passengers and flights, Kuala Lumpur's airport has declined in volume in the last few years, with the number of tourists visiting Malaysia at around 40% of the level in 2019.¹⁷⁶

The number of road traffic accidents is high, and the city has low regional connectivity given Malaysia's fragmented road network. The national government has adopted a road safety plan that aims to reduce traffic fatalities by 50% by 2030.¹⁷⁷

How Kuala Lumpur Can Improve Its Public Transportation and Sustainable Mobility

The city lags behind peers in incentivizing the purchase of electric vehicles (EVs), contributing to low EV use. Kuala Lumpur could increase monetary incentives or introduce non-monetary ones, such as special access lanes or a low-emission zone (LEZ) to limit combustion engine car usage. The government in 2023 introduced an initiative allowing foreign companies to sell EVs without meeting permit requirements with the goal of having 150,000 EVs on the road by 2030.

Some residents face long walks to get to mass transit stations. The city can bolster its

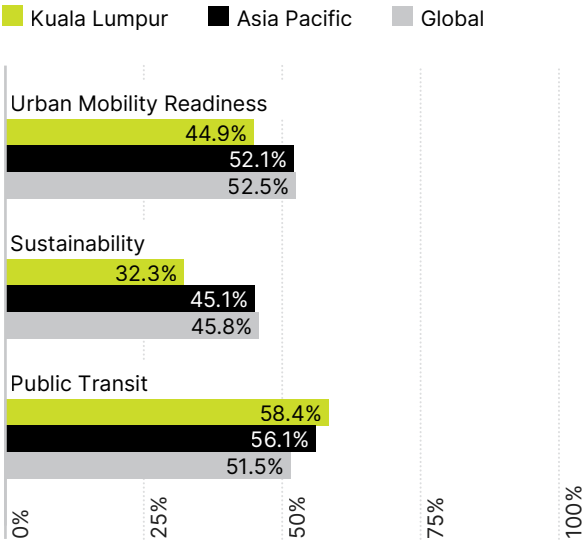
public transit offering by introducing more stops and stations along its commuting lines. Focusing on expanding rapid bus and minibus services would be a resource-efficient option compared to developing additional rail stations. Increasing the number of stations makes the public transit system more accessible to the city’s residents and will help increase ridership and lower car usage. In the long run, extending the reach of the Rapid Rail network will be key to building out the public transit offering, but that effort will be a timely and expensive undertaking.

Recommandations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Discourage combustion engine use by introducing low-emission zones
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours

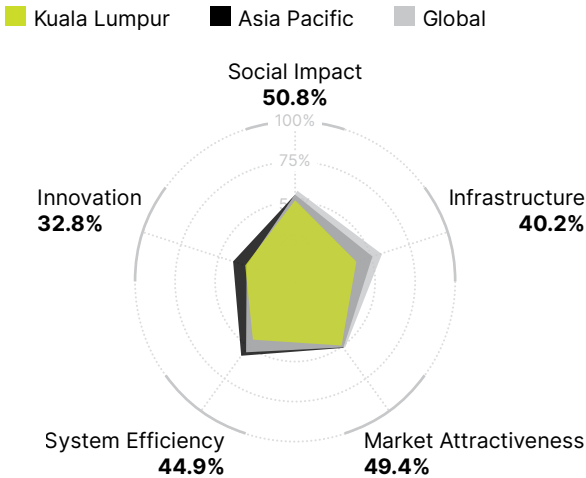
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



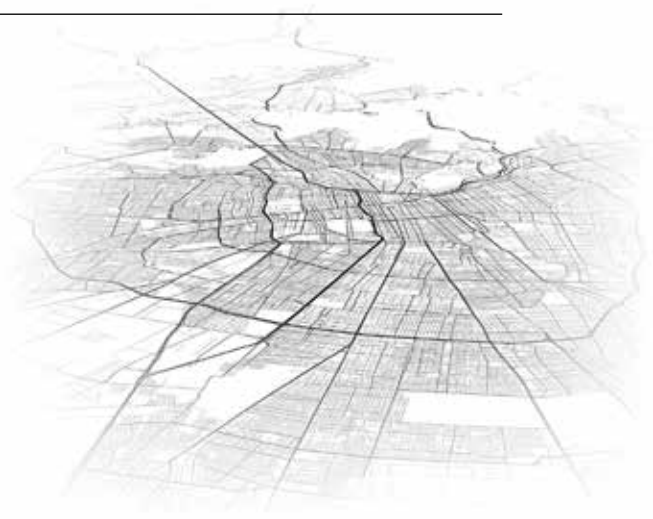
Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Santiago



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
43 _{/65}	42 _{/65}	43 _{/65}
Population (million)	7.0	
Population density (people per km²)	8,398	
GDP per capita (US\$)	14,777	
Surface area (km²)	838	

What Santiago Does Well in Urban Mobility

The Chilean capital has successfully promoted active mobility under a National Urban Development Policy that promotes shared use of public space and encourages pedestrian traffic and bicycle use.¹⁷⁸ The city began widening sidewalks, restricting on-street parking, and creating pedestrian-only zones well before the pandemic prompted similar changes around the world, and walking today is the most-popular mobility mode.

Car ownership levels in Santiago are well below many of its peers. Its residents generally choose to walk or active mobility modes of transport when commuting.

Challenges and Opportunities for Santiago’s Transportation System

Santiago does not have a strong cycling infrastructure and relatively few residents opt to cycle around the city. However, the city aims

to complete new bike paths by 2025 as part of a national infrastructure plan.¹⁷⁹

The city’s airport is not a hub for international travel with relatively few connecting flights and travelers. However, Santiago opened a new international airport in 2022 and began modernization work on its domestic terminal in 2023 in an effort to accommodate more passengers.

How Santiago Can Improve Its Public Transportation and Sustainable Mobility

The city lacks a strong multimodal network, relative to its peers. To improve its mobility options, Santiago can introduce a park-and-ride program to allow residents to access the city center from suburban and rural areas. Permitting bikes aboard buses and the metro would encourage greater use of public transit by allowing commuters to use their bikes for the first and last miles of their journeys.

Investing in buses with bike racks would provide additional support for multimodality. The government in 2023 signed an agreement with the United Kingdom to strengthen national railways with an emphasis on multimodality.¹⁸⁰

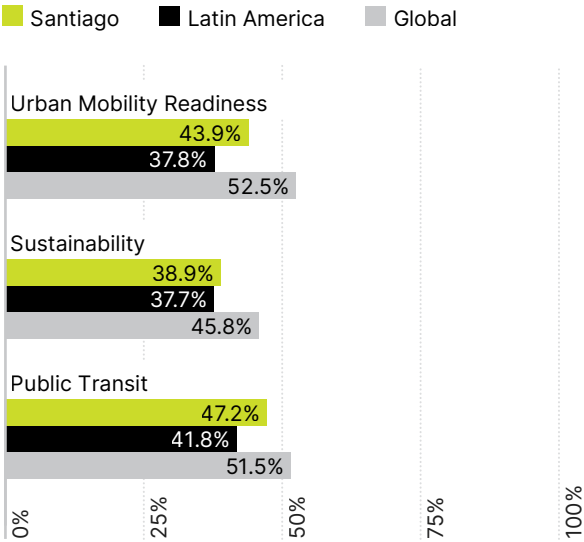
Santiago also can consider extending the operating hours of its public transit network to encourage ridership. The system operates an average of 16 hours a day, well behind the 20 hours of regional peer Sao Paulo. Extending hours would require investments in more trains, additional drivers, and increased police and security presence during night-time hours.

Recommandations

- Encourage multimodality by introducing a park-and-ride system and reducing car use in the city center
- Easing public transit access for cyclists with bike racks and lower fares
- Expand operating hours by investing in additional buses or trains, drivers, and safety

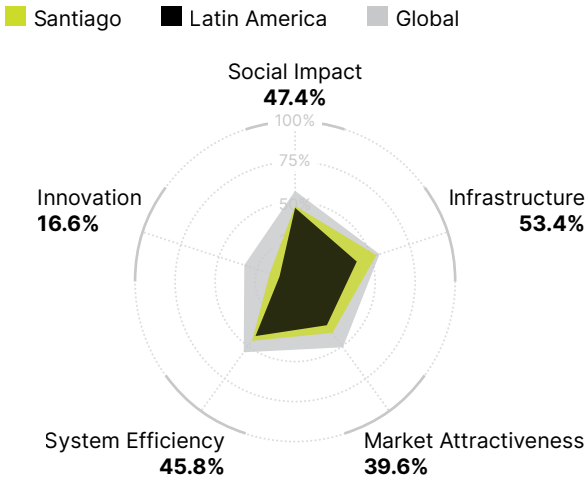
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Buenos Aires



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
44 _{/65}	37 _{/65}	32 _{/65}
Population (million)	16.1	
Population density (people per km²)	4,684	
GDP per capita (US\$)	9,619	
Surface area (km²)	3,437	

What Buenos Aires Does Well in Urban Mobility

With affordable fares and a diverse selection of public transit modes to choose from, it is not surprising that Buenos Aires has some of the highest public transit ridership levels in the region. The creation of seven corridors of exclusive bus lanes over the last decade has reduced commuting times by as much as 50% and decreased carbon emissions.¹⁸¹

The Argentine capital also has created more than 270 kilometers (168 miles) of bike lanes, and cycling accounted for just over 10% of all trips last year. This is a positive step to boost the cycling adoption among commuters.

Challenges and Opportunities for Buenos Aires' Transportation System

The city's large surface area and low station density make it difficult to increase transit ridership, and plans to expand the Subte

underground system with a new automated line remain stalled more than 20 years after it was authorized by the state government. The city has managed to extend some existing lines and add 14 new stations since 2010. Buenos Aires lacks an extensive presence of top universities and labs working on mobility and is home to few mobility companies, contributing to a muted mobility innovation ecosystem.

How Buenos Aires Can Improve Its Public Transportation

Riders of Buenos Aires' Metrobus often struggle with long commutes due to low transit speeds. To help close the gap with other cities, the city can continue to build dedicated bus lanes to help avoid traffic slowdowns. Adding bus lanes is an efficient and effective way to shorten travel times for commuters. In the long term, it can introduce automated trains to the Subte (underground transit), which was reportedly part of the Line F expansion plan that was canceled in 2022.

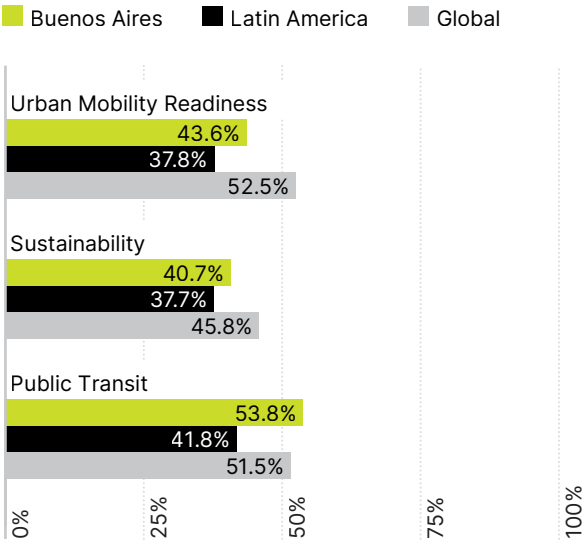
Buenos Aires has a strong public transit system, but its large size means there are not enough stations throughout the city. To improve public transportation, more stops and stations can be added along the commuting lines. Expanding bus service would be a cost-effective option compared to building more rail stations. Increasing the number of stations will make public transit more accessible, encourage more people to use it, and reduce car usage. However, extending the Subte Underground network will require significant time and money.

Recommandations

- Lower commute times by increasing public transit speeds through dedicated bus lanes
- Develop mass transit in the long-term by expanding Metrobus services or Subte lines
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours

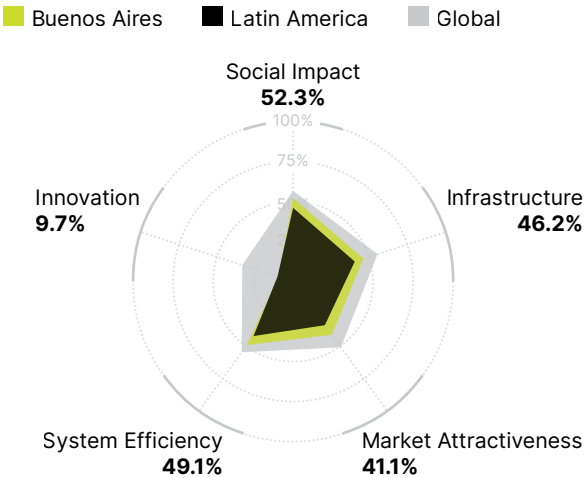
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Bangkok



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
45 _{/65}	49 _{/65}	42 _{/65}

Population (million)	14.5
Population density (people per km ²)	4,545
GDP per capita (US\$)	17,783
Surface area (km ²)	3,199

What Bangkok Does Well in Urban Mobility

From light rail to river taxis, Bangkok is linked by a strong multimodal network that enables residents to park at commuter lots and bring bicycles on public transportation. The government continues to invest in expanding the network to support growth, reduce traffic congestion, and make Bangkok a greener, more livable city.¹⁸² Two new monorail lines are reportedly due to open by mid-2024 and the first portion of a new mass rapid transit line is slated to open in 2025.

Commuters in Bangkok often opt for public transit instead of personal car usage, in part, because of the diverse range of reliable and fast options, led by the city's driverless rail lines.

Challenges and Opportunities for Bangkok's Transportation System

Once a hub for international travel, Bangkok's airline passenger volume declined the last few

years, in part due to lingering travel restrictions related to COVID-19. However, Suvarnabhumi Airport reportedly opened a new terminal in 2023 that is expected to boost capacity by a third, to 60 million passengers a year, to accommodate an expected surge of tourism.

Despite low car ownership levels among residents, Bangkok's government has been slow to build infrastructure like car-free zones or cycleways to support more active forms of mobility.

How Bangkok Can Improve Its Public Transportation and Sustainable Mobility

Bangkok lags behind many of its peers with few car-free zones. The city can follow the example of others by piloting car-free zones in small increments at first, such as on specific days of the week or during summer months, and later expand them based on public perception and utilization.

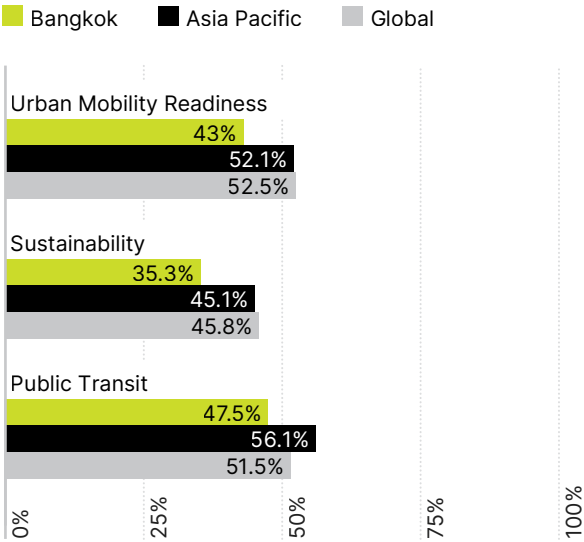
With relatively high fares compared with household income, Bangkok has one of the least affordable public transit systems in the region. To help close this gap with other Asia-Pacific cities, Bangkok can provide subsidies for transit fares. This can be accomplished in multiple ways, including lowering fares for all travelers, lowering fares on an income basis, or selling long-term passes (monthly or quarterly, perhaps) that discount fares for regular transit users. The government is working to address the issue, and in October 2023 it reduced fares on one line.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars
- Focus on public transit affordability by maintaining or expanding subsidies
- Introduce specific fares for lower-income commuters

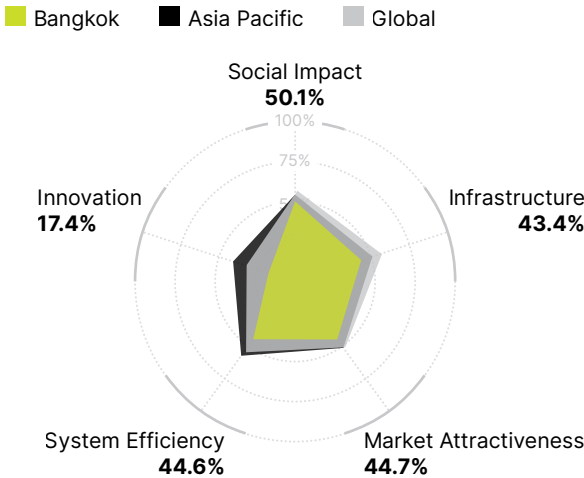
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Sao Paulo



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
46 _{/65}	39 _{/65}	48 _{/65}
Population (million)	22.9	
Population density (people per km²)	6,263	
GDP per capita (US\$)	17,803	
Surface area (km²)	3,649	

What Sao Paulo Does Well in Urban Mobility

Walking and public transit are popular modes of transportation with few residents owning a car. That allows the city to contain car-related emissions and ensure clean air. Sao Paulo is connected by a strong multimodal network, including the region’s largest urban rail network, and has bike-friendly rules on public transportation.

Challenges and Opportunities for Sao Paulo’s Transportation System

Sao Paulo has a network of undermaintained roads with limited cycling infrastructure and insufficient traffic enforcement, discouraging the use of bikes. However, the city plans to develop 140 kilometers (87 miles) of new bike lanes by 2024.¹⁸³

Residents complain of high levels of noise and light pollution typically associated with the city’s relatively high traffic congestion.

To address this issue, Brazil has implemented various policies to regulate noise in public spaces and at night, but additional efforts are needed.

How Sao Paulo Can Improve Its Public Transportation

With relatively high fares compared with household income, Sao Paulo underperforms its regional peers on affordability. To help close the gap, the city can provide government-backed subsidies for transit fares. This can be accomplished in multiple ways, including lowering fares for everyone, lowering fares on an income basis, or selling long-term passes (monthly or quarterly, for example) that discount fares for regular transit users.

Sao Paulo’s bus riders often struggle with long commutes due to low transit speeds. In the last few years, Sao Paulo developed its Bus Rapid Transit (BRT) network by building additional bus lanes across the city with the aim of

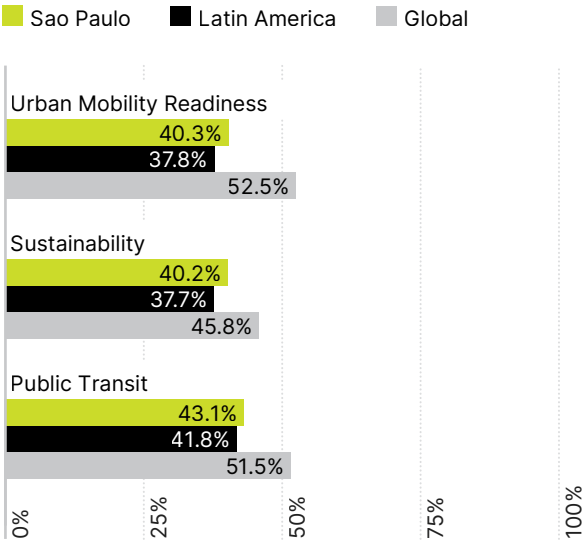
doubling bus speeds. To help close the gap with other cities, the city can expand its BRT to further decrease traffic slowdowns. Adding bus lanes is an efficient and effective way to shorten travel times for commuters. In the long term, Sao Paulo can continue to invest in automated transit by expanding driverless trains to more metro lines to increase its speed and efficiency.

Recommendations

- Focus on public transit affordability by maintaining or expanding subsidies
- Introduce specific fares for lower-income commuters
- Lower commute times by increasing public transit speeds through dedicated bus lanes
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines

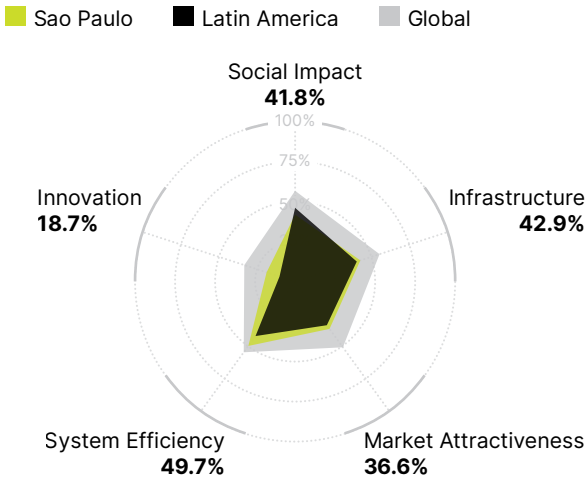
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Cape Town



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
47 _{/65}	45 _{/65}	59 _{/65}

Population (million)	4.7
Population density (people per km ²)	5,565
GDP per capita (US\$)	7,507
Surface area (km ²)	839

What Cape Town Does Well in Urban Mobility

Cape Town’s bus rapid transit system has strong multimodal linkages, with park-and-ride connections and permissive rules around bikes on transit. The city’s Comprehensive Integrated Transport Plan (CITP) for 2023-2028 calls for continued expansion to provide access to a range of sustainable options.¹⁸⁴

Cape Town is a regional leader in mobility-related spending and employment, with many of its residents working in the transportation sector.

Challenges and Opportunities for Cape Town’s Transportation System

With high fatality rates and insufficient enforcement of transport safety, Cape Town’s roads are considered generally unsafe for travel, limiting residents’ ability to walk and cycle. One of the key objectives of the CITP is to improve safety for pedestrians and cyclists.¹⁸⁴

Cape Town’s airport is not an international hub and has relatively low passenger volumes and connecting flights. However, airport upgrades are underway to boost tourism.

How Cape Town Can Improve Its Public Transportation and Sustainable Mobility

Many residents have lengthy walks to metro stations and bus stops. The city can add bus routes and stops to better connect residents with rail stations and lines and to encourage transit ridership. In the long run, extending existing rail lines and adding new ones will be key to increasing public transit offerings, but that effort will be a timely and expensive undertaking.

Cape Town can increase the number of car-free zones to encourage pedestrian travel without fear of road incidents. In addition, the city can promote the 15-minute city approach, where daily necessities are available within

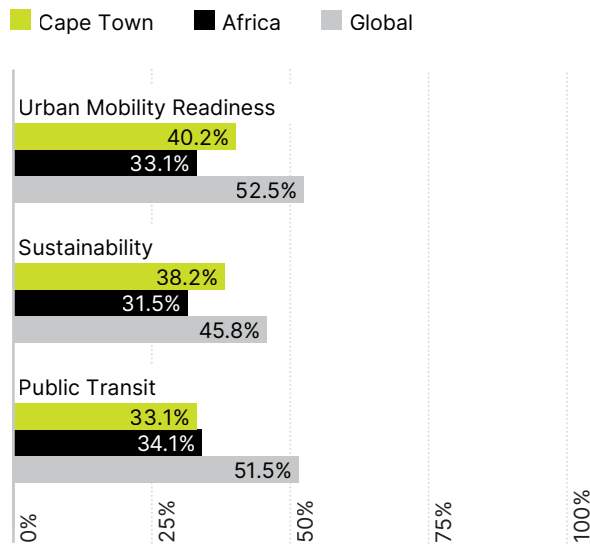
a 15-minute walk, cycle or public transit ride, by introducing regularly used services to underserved areas. The city is taking steps in this direction with the previously mentioned CITP, which reportedly calls for an expansion of walkways and cycling lanes separated from road traffic.¹⁸⁴ Increasing policing and enforcement of traffic laws also would improve pedestrian safety.

Recommendations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours
- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars

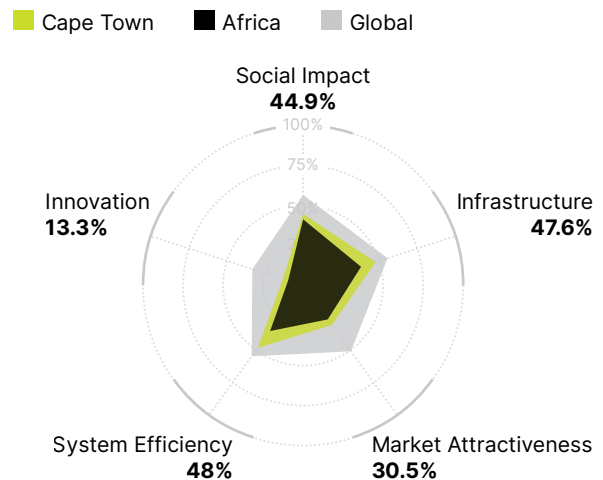
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Jeddah



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
48 _{/65}	63 _{/65}	62 _{/65}
Population (million)	4.7	
Population density (people per km²)	3,724	
GDP per capita (US\$)	22,654	
Surface area (km²)	1,261	

What Jeddah Does Well in Urban Mobility

This Red Sea coastal city offers high-quality road infrastructure and good connections with Saudi Arabia’s highway network. In recent years, Jeddah has improved the quality of its roads and aims to have one of the best road networks in the world by 2030.

Jeddah is trying to increase public transit ridership by providing affordable bus fares and investing in a city-wide metro to be completed in the next few years.

Challenges and Opportunities for Jeddah’s Transportation System

Jeddah does not have strong electric vehicle (EV) penetration, with few EV purchase incentives and limited charging options. However, Saudi Arabia’s Public Investment Fund has launched an EV infrastructure company with plans to install over 5,000 charging stations across the country by 2030.¹⁸⁵

As with much of the region, Jeddah’s residents prefer cars over more active modes of mobility such as walking and cycling. The city has tried to increase active mobility utilization with the introduction of a network of cycling paths that connect residential areas with commercial and recreational areas.

How Jeddah Can Improve Its Sustainable Mobility

While the Saudi government has invested more in recent years in EVs and charging infrastructure, Jeddah still lags behind many of its peers in EV incentives. To help close this gap, the city could increase its purchase subsidies, tax exemptions, and grants for charging station installation, or introduce non-monetary incentives like dedicated EV lanes. The previously mentioned plans to build charging infrastructure show the country’s intent to expand EV access. In addition, the city could implement a low-emission zone to limit combustion engine car usage and encourage EV adoption.

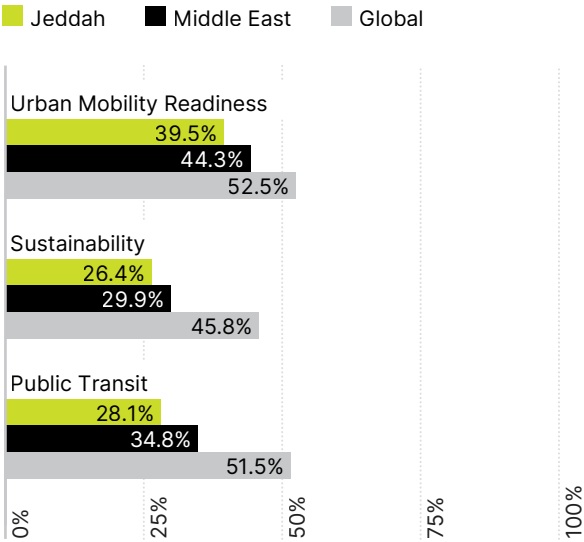
Jeddah lags behind many of its peers with few car-free zones. Such zones support pedestrian and cyclist safety by removing cars from specific roads and increasing the efficiency of foot and bike traffic. The city can follow the example of other cities by piloting car-free zones in small increments at first, such as during cooler months or on specific days of the week, and then look to expand them based on public perception and utilization.

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Discourage combustion engine use by introducing low-emission zones
- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars

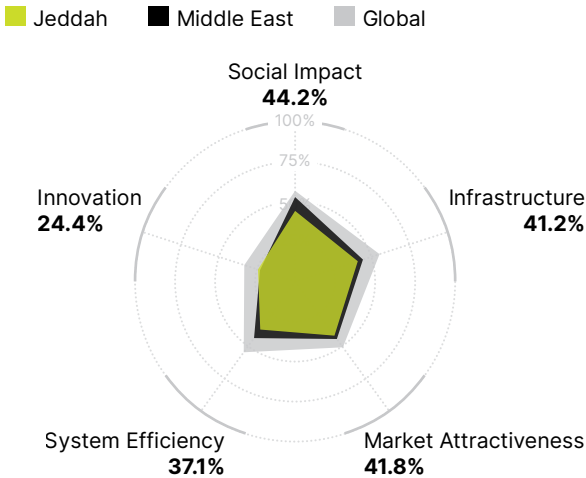
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Jakarta



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
49 _{/65}	58 _{/65}	37 _{/65}
Population (million)	22.5	
Population density (people per km ²)	6,346	
GDP per capita (US\$)	22,520	
Surface area (km ²)	3,546	

What Jakarta Does Well in Urban Mobility

The public transit system offers diverse modes, extended operating hours, affordable pricing, and an integrated payment program for a range of modes, including bus rapid transit (BRT), metro, light rail, and commuter rail.¹⁸⁶

The city has relatively low road fatality rates, in part due to stern enforcement of traffic laws. Jakarta’s odd-even policy — which restricts private car access to certain roads during busy hours — also helps limit congestion and promotes road safety.¹⁸⁷

Challenges and Opportunities for Jakarta’s Transportation System

Jakarta’s mobility infrastructure limits the available options for some residents. Low station density on public transit networks is a challenge for transit ridership while a shortage of car-free zones and dedicated bike lanes constrain active mobility efforts.

Government investments in innovative mobility initiatives, such as mobility sharing, electric vehicle (EV) charging stations, and connected and automated technologies, are lacking compared with many of Jakarta’s peers.

How Jakarta Can Improve Its Public Transportation and Sustainable Mobility

To help increase the pedestrian modal split, Jakarta can increase the number of car-free zones to encourage pedestrian travel without fear of road incidents. In 2019, the city converted a highway underpass into a pedestrian only tunnel that links six different modes of public transportation at one of Jakarta’s busiest multimodal hubs, increasing safety and accessibility for pedestrians. In addition, authorities can promote the 15-minute city approach, where daily necessities are available within a 15-minute walk, cycle, or public transit ride, by introducing regularly used services to underserved parts of the city.

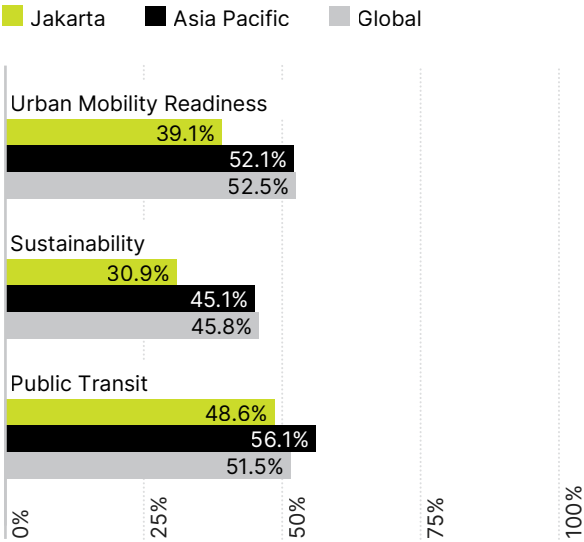
Jakarta can bolster its public transit offering by introducing more stops and stations along its commuting lines. Focusing development on its bus rapid transit (BRT) service, Transjakarta, would be a resource-efficient option in the near term. Increasing the number of stations can make bus service more accessible to residents, helping to increase ridership and lower car usage. In the long run, extending the reach of the mass rapid transit network, MRT Jakarta, will be key to building out the city’s public transit offering, but that will be a time intensive and expensive undertaking.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars
- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Develop mass transit in the long-term by expanding bus and rail rapid transit lines

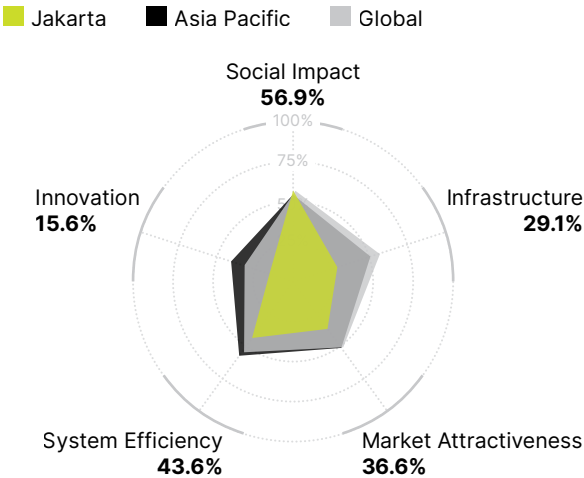
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Mexico City



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
50 _{/65}	44 _{/65}	52 _{/65}

Population (million)	22.0
Population density (people per km ²)	8,713
GDP per capita (US\$)	22,823
Surface area (km ²)	2,530

What Mexico City Does Well in Urban Mobility

The Mexican capital’s public transit system offers frequent and affordable service across a range of bus and rail services.

Mexico’s national government is investing significantly in mobility across the country, exemplified by the high level of road quality, connectivity, and safety, from which Mexico City benefits. Between 2019 and 2022, the city allocated US\$5.5 billion for transit infrastructure, maintenance, and development.

Challenges and Opportunities for Mexico City’s Transportation System

High congestion levels and poor traffic management systems make driving difficult. Cycling accounts for a negligible share of trips taken, but the city is continuing to expand its network of cycling lanes.

The legacy infrastructure and the city’s sprawling size exacerbate cars’ dominance with more than 75% of all passenger kilometers traveled via car.¹⁸⁸ Despite strong incentives for electric vehicle (EV) purchases, market share remains low in part due to a lack of government investment in charging infrastructure. To limit pollution from combustion engine cars, the city has implemented No-drive days (Hoy No Circula), that restrict when cars can drive in the city based on an emissions test — EVs are exempt from this policy.¹⁸⁹

How Mexico City Can Improve Its Public Transportation and Sustainable Mobility

While other cities and countries in Latin America are expanding their EV charging networks, Mexico City has not invested heavily in building chargers and has fallen behind its peers. To close this widening gap, the city can introduce grants for charging station installation in private homes, public businesses

and parking lots. To become a regional leader, the city would need to accelerate the deployment of charging stations to double its charging station density.

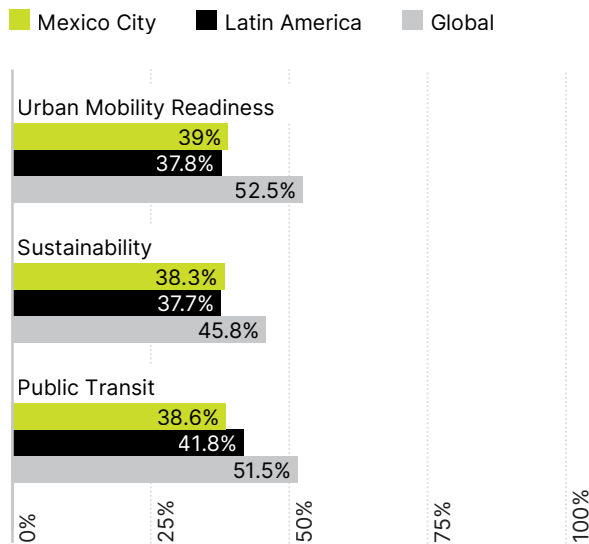
Riders of the city’s Metrobus rapid transit service often struggle with long commutes due to low speeds. To help close the gap with other cities, the city can add bus lanes to help decrease traffic slowdowns. In the long term, Mexico City can invest in the infrastructure required to introduce automated trains to the metro system to increase its speed and efficiency.

Recommendations

- Increase EV charging density by offering city-level incentives for at-home and public charging stations
- Lower commute times by increasing public transit speeds through expanded bus lanes
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines

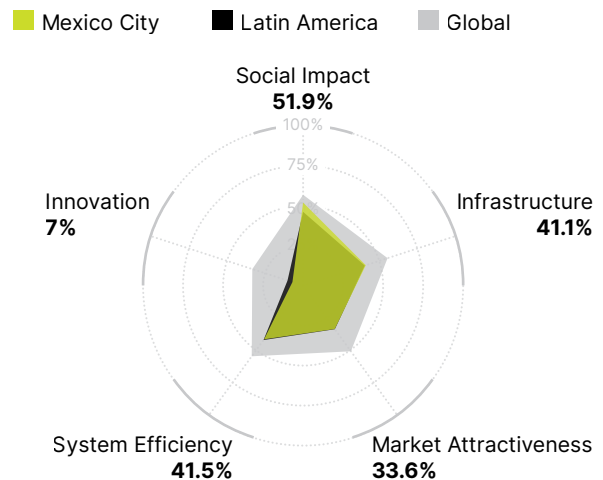
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Johannesburg



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
51/65	55/65	57/65
Population (million)	10.4	
Population density (people per km²)	2,572	
GDP per capita (US\$)	8,418	
Surface area (km²)	4,040	

What Johannesburg Does Well in Urban Mobility

With the combination of a strong network of well-maintained and interconnected roadways and relatively low car ownership levels, Johannesburg offers well-managed traffic and comparatively low levels of congestion. Similar to Cape Town, the city has relatively clean air. In 2021, Johannesburg implemented city-wide restrictions on pollution that empower local authorities to enforce the rules with vehicle emission tests.¹⁹⁰

Challenges and Opportunities for Johannesburg’s Transportation System

Residents have been slow to embrace mobility sharing as relatively few companies in the sector operate in the city. Commuter rail and bus services are poorly connected to densely populated low-income neighborhoods, leaving residents of those areas reliant on privately operated minibus taxis.

Despite being shared with the nation’s administrative capital, Pretoria, Johannesburg’s airport is not a major hub with relatively few international flights and passengers.

How Johannesburg Can Improve Its Public Transportation and Sustainable Mobility

Many residents have lengthy walks to Metrorail stations and bus stops. To encourage ridership, the city can add bus routes and stops to help connect residents with Metrorail stations — a cost effective improvement that would help reduce walking distances and commute times. The government in surrounding Gauteng province is taking steps in this direction with a 2030 plan that includes using smart mobility technology to integrate minibus services more closely with the formal transit system.¹⁹¹

In the long run, extending existing Metrorail lines and adding new ones will be key to building out the city’s public transit offering, but that effort will be a timely and expensive undertaking.

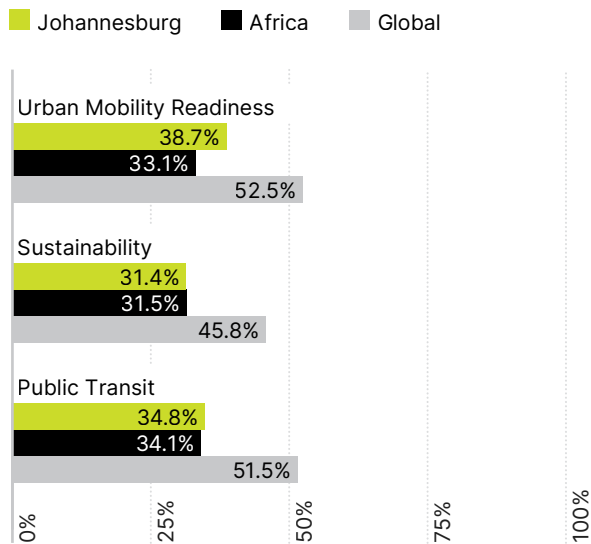
Johannesburg lags behind many of its peers with few car-free zones. Such zones support pedestrian and cyclist safety and increase the efficiency of foot and bike traffic. The city can follow the example of other cities by piloting car-free zones in stages, starting with specific days of the week or during summer months, and looking to expand them based on public perception and utilization.

Recommendations

- Improve public transit access by increasing the number of stops along bus routes to underserved areas
- Increase public transit offering with more frequent stops and extended operating hours
- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars

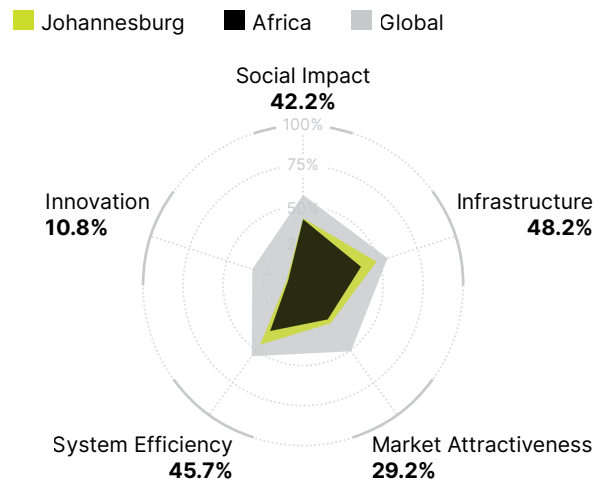
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Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Rio de Janeiro



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
52/65	50/65	41/65

Population (million)	13.2
Population density (people per km ²)	6,515
GDP per capita (US\$)	13,737
Surface area (km ²)	2,020

What Rio de Janeiro Does Well in Urban Mobility

Rio de Janeiro's public transit system spans metro, commuter rail, buses, minibuses and ferries. It offers frequent service, and stations and stops are generally within a short walk for residents. Rio de Janeiro has moderate levels of car ownership among residents, which may help contain congestion and maintain good air quality in the future.

Challenges and Opportunities for Rio de Janeiro's Transportation System

With poor road safety and enforcement of traffic laws and a lack of dedicated car-free zones, Rio's streets are not conducive to cycling. In 2022, authorities reportedly published a plan to triple the size of the city's 425-kilometer (264 mile) network of bike lanes to improve this.

The government has made limited investment in electric vehicle (EV) purchase incentives and charging infrastructure, contributing to a low market share of EVs.

How Rio de Janeiro Can Improve Its Public Transportation and Sustainable Mobility

Compared with its peers, Rio de Janeiro lags in integrating the city's various transportation options for easy use by residents. To help improve multimodality, Rio can introduce a park-and-ride program to allow residents to access the city center from suburban and rural areas while limiting the time spent driving. Expanding bike access on buses and the metro would enable more cyclists to utilize public transit while using their bikes for the first and last mile of their journeys.

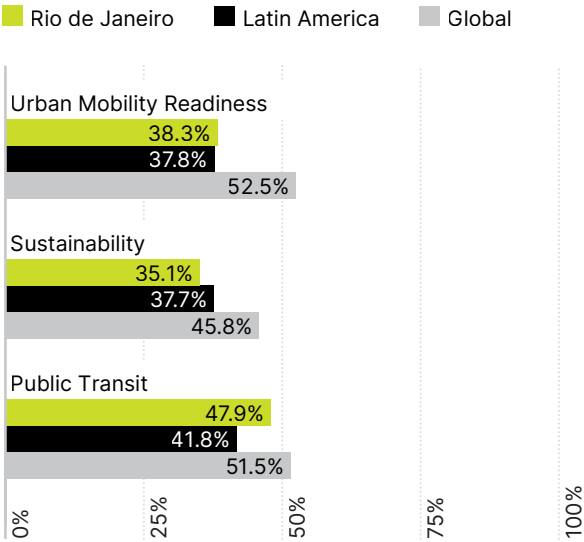
With high fares relative to household income, Rio de Janeiro has one of the least affordable public transit systems in the region. To help close the gap with Latin American peers, Rio can provide government-backed subsidies for transit fares. This can be accomplished by lowering the price of fares for everyone, lowering fares on an income basis, or selling long-term passes (such as monthly or quarterly) that discount fares for regular transit users.

Recommendations

- Encourage multimodality by introducing a park-and-ride system and reducing car use in the city center
- Easing public transit access for cyclists with bike racks and lower fares
- Focus on public transit affordability by maintaining or expanding subsidies
- Introduce specific fares for lower-income commuters

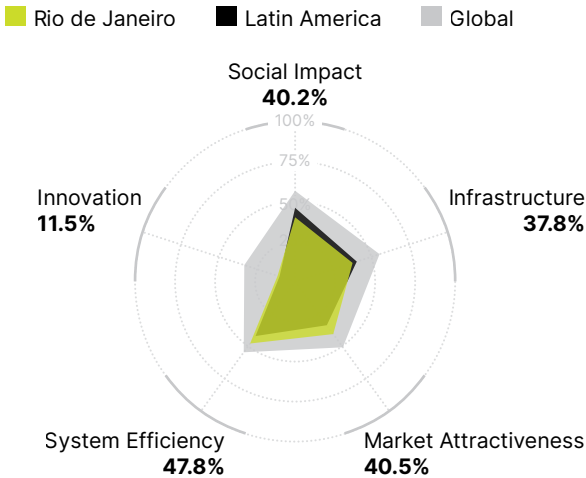
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

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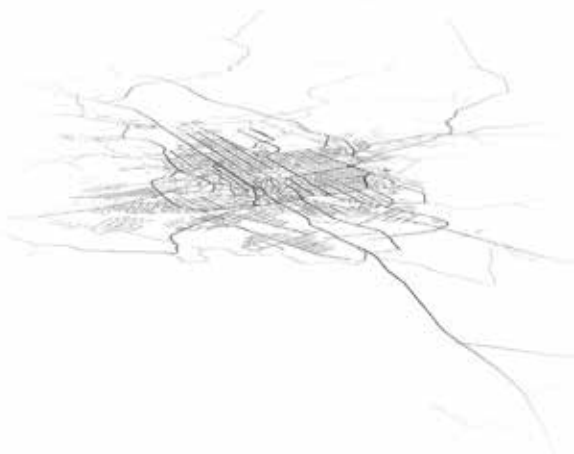
Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Riyadh



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
53 _{/65}	62 _{/65}	64 _{/65}

Population (million)	7.5
Population density (people per km ²)	4,459
GDP per capita (US\$)	31,235
Surface area (km ²)	1,673

What Riyadh Does Well in Urban Mobility

The Saudi capital is making significant investments in public transit with the first phase of an automated metro system expected to open in 2024.¹⁹² In a city accustomed to cars for hire, residents have been quick to embrace ride-hailing options. Streamlining regulation and addressing high congestion levels would allow the ride-hailing industry to serve more users.

Challenges and Opportunities for Riyadh's Transportation System

Mobility in Riyadh has long been car-focused with an underdeveloped transit system, limited enforcement of traffic rules, and a high rate of traffic fatalities. The completion of the King Abdulaziz Project in 2024, which includes a major bus expansion along with the new metro, will give residents greater options.

Like Jeddah, Riyadh provides few incentives for purchases of electric vehicles (EVs) and

limited charging options, resulting in a low EV market share. However, Saudi Arabia's Public Investment Fund (PIF) has launched an EV infrastructure company with plans to install over 5,000 charging stations across the country by 2030.¹⁹³ It also is reportedly partnering with South Korea's Hyundai Motor and US-based Lucid Motors, which is majority-owned by the fund, to produce EVs in the kingdom.

How Riyadh Can Improve Its Public Transportation and Sustainable Mobility

While Riyadh aims to have 30% of all cars on the road be electric by 2030, the city still lags behind many of its peers in EV incentives. To help close this gap, the city could increase EV purchase subsidies, tax exemptions, and grants for charging stations. It also could introduce non-monetary incentives like dedicated EV lanes or implement a low-emission zone to limit combustion engine car usage and prioritize EVs in key areas in the city.

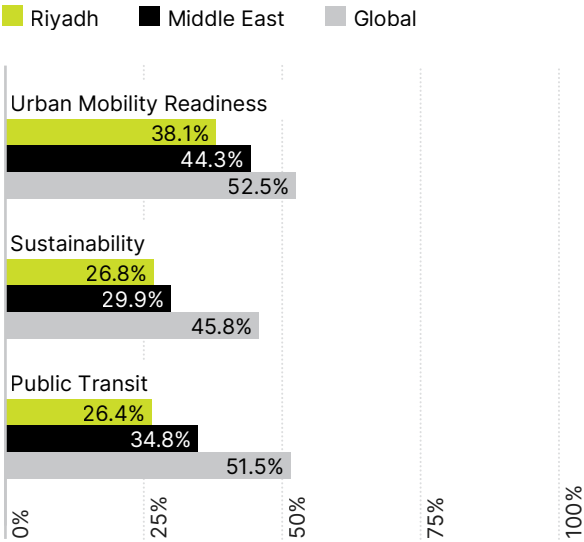
To become a regional leader in public transportation, Riyadh would need to increase transit’s ridership modal share sevenfold. Completing the ambitious metro and bus project will provide a good start. The city also can increase operating hours of the transit system and implement car-free zones to get commuters to opt for public transit over personal cars.

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Discourage combustion engine use by introducing low-emission zones
- Improve ridership by developing the public transit offering such as longer operating hours and greater station density
- Stimulate the demand for public transit by limiting car use and lowering transit fares

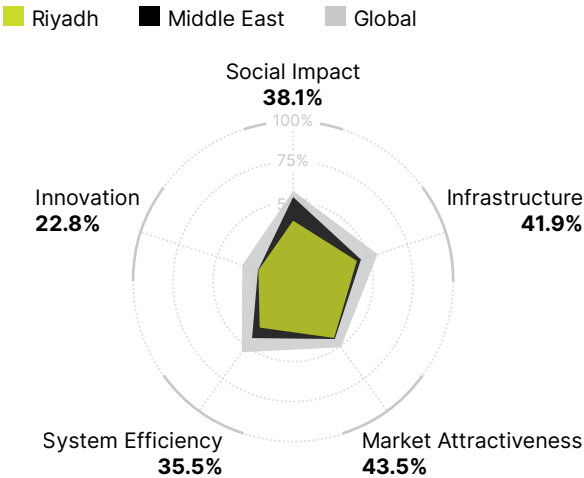
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Delhi



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
54 _{/65}	52 _{/65}	40 _{/65}
Population (million)		32.6
Population density (people per km²)		13,901
GDP per capita (US\$)		8,324
Surface area (km²)		2,344

What Delhi Does Well in Urban Mobility

Delhi’s public transit system has a diverse selection of transportation options and an easy-to-use multimodal app to navigate across the system. Delhi is a leader among its peers in mobility-related spending, notably with government investment in electric vehicle (EV) charging stations and incentives for EV purchases and usage.¹⁹⁴

Challenges and Opportunities for Delhi’s Transportation System

The growing use of personal cars and motorbikes has worsened Delhi’s air quality and traffic safety. The city is investing in public transit to attract more riders. An expansion of the metro to increase its length by nearly a third, to 457 kilometers (284 miles), is due to come into service starting in 2025. A combination of hot, rainy weather and a lack of dedicated cycling infrastructure makes Delhi a challenging city for cyclists.

Recent efforts to upgrade the infrastructure focused on connecting neighborhoods with commercial centers.

A project from the Delhi Development Authority to redesign 540 kilometers (335 miles) of city roads will include additional cycling lanes, in particular in the city’s large suburb of Dwarka.

How Delhi Can Improve Its Public Transportation and Sustainable Mobility

Delhi’s public transit network operates an average of 18 hours a day. The city could improve its metro and tram offering by extending operating hours; Sydney’s network, for example, operates on average 21 hours a day. Going in that direction would require investments in more trains, hiring additional drivers, and increasing police and security presence on trains and platforms during night hours.

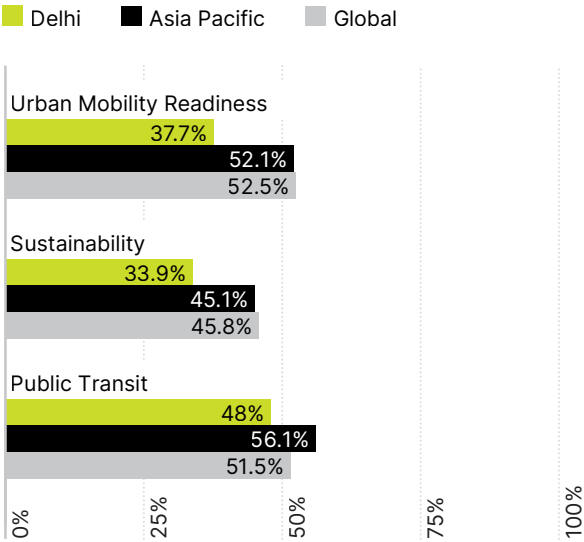
With relatively high fares compared with household income, Delhi has one of the least affordable public transit systems in the region. To help close this gap with other Asia-Pacific cities, Delhi can provide government backed subsidies for transit fares. This can be accomplished in multiple ways, including lowering the price of fares for everyone, lowering fares on an income basis, or selling long-term passes, such as monthly or quarterly, that discount fares for heavy transit users. The city introduced subsidies for e-rickshaws in 2020 to improve first- and last-mile connectivity for commuters.

Recommandations

- Expand operating hours by investing in additional buses or trains, drivers, and safety enforcement
- Focus on public transit affordability by maintaining or expanding subsidies
- Introduce specific fares for lower-income commuters

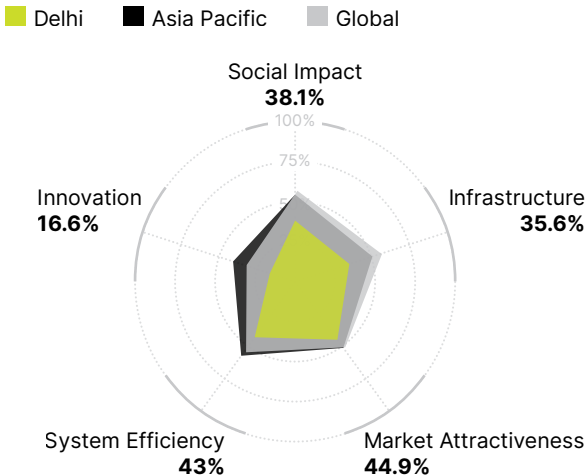
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Source: Oliver Wyman Forum and University of California, Berkeley

Mumbai



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
55 _{/65}	60 _{/65}	47 _{/65}

Population (million)	21.3
Population density (people per km ²)	21,820
GDP per capita (US\$)	6,791
Surface area (km ²)	976

What Mumbai Does Well in Urban Mobility

India's commercial capital has an interconnected network of roadways that are known for having very few traffic fatalities. A 29-kilometer (18-mile) coastal expressway linking the business district of South Mumbai with the western suburb of Kurla is reportedly due to be completed in 2024 and aims to reduce congestion and travel times.

Mumbai also has been investing in a modern metro system to ease congestion. A new automated underground line is expected to open in 2024; the entire project, with 14 lines spanning 300 kilometers (186 miles), is reportedly coming later this decade.

Challenges and Opportunities for Mumbai's Transportation System

One of the most densely populated cities in the world, Mumbai struggles with poor air quality and large amounts of light and noise pollution.

Brihanmumbai Municipal Corporation (BMC) recently issued guidelines to limit dust and air pollution, but additional efforts will be needed.

While its elective vehicle (EV) sales have grown in recent years, overall numbers are low. Charging stations are relatively scarce, reflecting limited government investment in incentives and charging infrastructure.

How Mumbai Can Improve Its Public Transportation and Sustainable Mobility

In addition to completing the city's metro, Mumbai can improve the attractiveness of its public transit system by extending operating hours. The network operates an average of 16 hours a day, considerably less than the 21 hours that Sydney operates its system. Increasing hours would require investments in more trains, additional drivers, and an increased police and security presence on trains and platforms during nighttime hours.

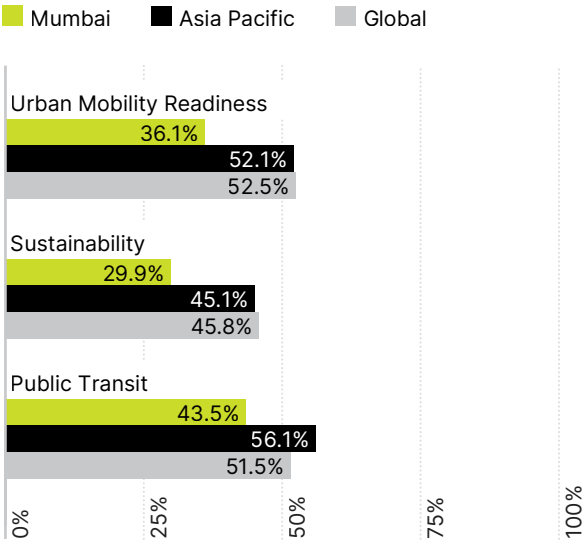
With high fares relative to household income, Mumbai has one of the least affordable public transit systems in the region. To help close this gap with other Asia-Pacific cities, Mumbai can provide subsidies for transit fares. This can be accomplished by lowering fares for everyone, reducing them on an income basis, or selling discounted long-term passes (monthly or quarterly, for example) for heavy transit users.

Recommendations

- Expand operating hours by investing in additional buses or trains, drivers, and safety enforcement
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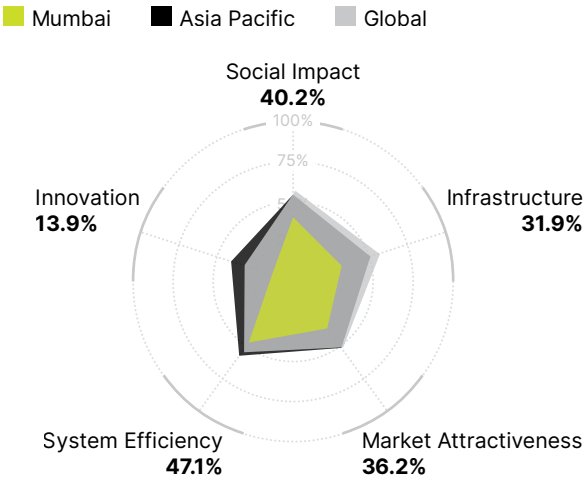
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Source: Oliver Wyman Forum and University of California, Berkeley

Cairo



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
56 _{/65}	57 _{/65}	50 _{/65}
Population (million)	21.2	
Population density (people per km²)	10,567	
GDP per capita (US\$)	7,886	
Surface area (km²)	2,010	

What Cairo Does Well in Urban Mobility

Cairo’s diverse public transit system is known for quick travel times and long operating hours, leading to some of the highest ridership levels in the world. The government has invested in its infrastructure with an upgrade of its metro system, an extension of its third line, as well as a light rail project between Cairo and Egypt’s new administrative capital.

Egypt’s extensive national road network gives Cairo solid linkages to other regions of the country. The government is expanding the capital’s ring road and equipping it with a bus rapid transit system to reduce congestion and improve travel times.¹⁹⁵

Challenges and Opportunities for Cairo’s Transportation System

Similar to other cities in the region, active mobility in Cairo is limited by a lack of car-free zones and dedicated walking

and cycling infrastructure. However, some historic streets in Old Cairo are limited to pedestrian travel only.

Cairo has not invested heavily in electric vehicles (EVs), with limited government funding for charging infrastructure and subsequent low market share. In 2023, the Arab Academy for Science, Technology & Maritime Transport university reportedly announced plans to launch two locally manufactured and affordable EVs in the Egyptian market.

How Cairo Can Improve Its Public Transportation and Sustainable Mobility

Cairo lags behind many other cities in terms of electric vehicle (EV) incentives. To help close this gap, Cairo could increase purchase subsidies and tax exemptions or introduce non-monetary incentives like dedicated EV lanes. In addition, the city could implement a low-emission zone to limit combustion

engine car usage and give EVs priority access to key areas in the city. The government has announced it would offer subsidies for locally manufactured EVs.

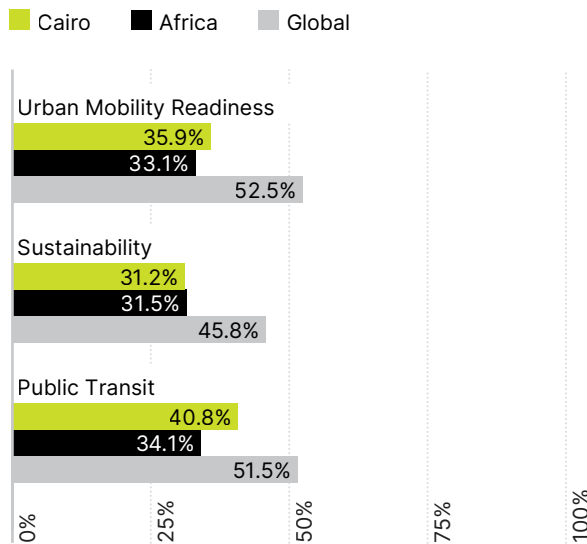
Compared with its peers, Cairo does not have a strong multimodal network, and residents face challenges integrating the city’s various transportation options. To improve multimodality, Cairo can introduce a park-and-ride program to increase access to the city center. Permitting bikes aboard buses and metro or investing in a bus fleet with bike racks would allow more cyclists to utilize public transit.

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Discourage combustion engine use by introducing low-emission zones
- Encourage multimodality by introducing a park-and-ride system and reducing car use in the city center
- Easing public transit access for cyclists with bike racks and lower fares

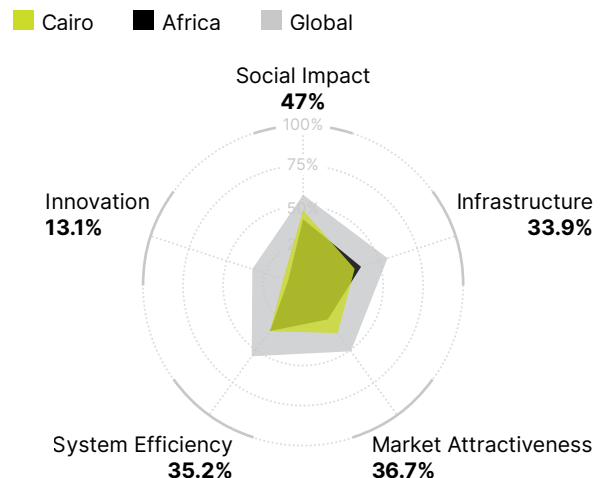
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Source: Oliver Wyman Forum and University of California, Berkeley

Bogota



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
57 _{/65}	36 _{/65}	53 _{/65}
Population (million)	10.8	
Population density (people per km²)	19,211	
GDP per capita (US\$)	6,148	
Surface area (km²)	562	

What Bogota Does Well in Urban Mobility

Bogota has become a regional leader in electrification efforts with significant investments in charging infrastructure, consumer incentives, and an electric bus fleet the city claims is the largest outside China.¹³ In an effort to limit congestion-related emissions and keep the air clean, residents are driving less and walking in car-free zones to get around town. The Ciclovía, a flagship initiative held every Sunday and on holidays, closes 128 km (79 miles) of city streets to cars from 7 a.m. to 2 p.m. to create space for cycling, walking, roller skating, and other activities.¹⁹⁶

Challenges and Opportunities for Bogota's Transportation System

Bogota lacks a strong, multimodal network of diverse public transit options. Authorities are addressing the issue by building a metro and commuter rail that is scheduled to start service in 2028.¹⁹⁷

Bogota's roadways are not well-maintained, and traffic laws are not strictly enforced across the city. Authorities are planning to expand four major roads to ease traffic congestion.¹⁹⁸

How Bogota Can Improve Its Public Transportation and Sustainable Mobility

Compared with its peers, Bogota residents face challenges integrating the city's various transportation options. To help improve multimodality, authorities can introduce a park-and-ride program to allow residents to access the city center from suburban and rural areas while limiting time spent driving. The construction of two commuter rails, the western and northern, as well as the completion of the first green corridor in the country in 2025 should improve connectivity.¹⁹⁸ Expanding bike access aboard buses would allow more cyclists to utilize public transit and cycle for the first and last mile of their journeys.

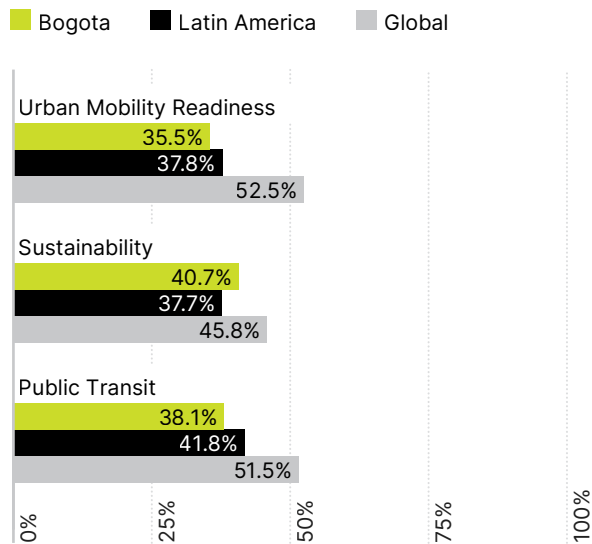
Frequent riders of Bogota’s TransMilenio bus service often struggle with long commutes due to low transit speeds. To help close the gap with peers, the city can build dedicated bus lanes to help avoid traffic slowdowns. Adding bus lanes is an efficient and effective way to shorten travel times for commuters. In the long term, Bogota can invest in the infrastructure required to introduce automated trains to the city’s metro and increase its speed and efficiency.

Recommendations

- Encourage multimodality by introducing a park-and-ride system and reducing car use in the city center
- Easing public transit access for cyclists with bike racks and lower fares
- Lower commute times by increasing public transit speeds
- Develop mass transit in the long-term by expanding bus rapid transit services or rail lines

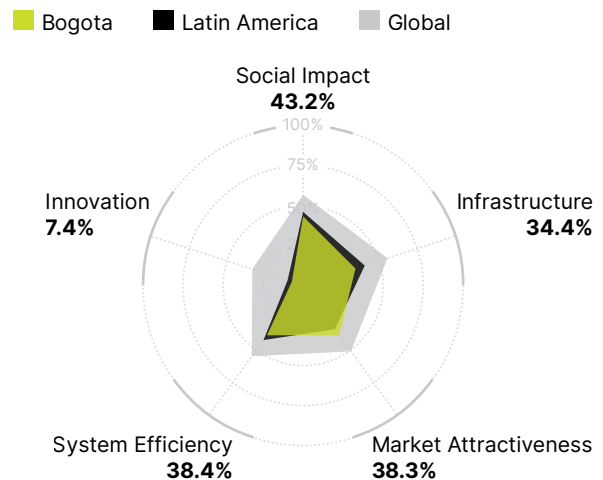
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Dimensions of the Urban Mobility Readiness Index score

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Source: Oliver Wyman Forum and University of California, Berkeley

Monterrey



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
58 _{/65}	53 _{/65}	61 _{/65}

Population (million)	5.4
Population density (people per km ²)	6,027
GDP per capita (US\$)	19,992
Surface area (km ²)	896

What Monterrey Does Well in Urban Mobility

Mexico is a global leader in mobility-related spending, much to Monterrey’s benefit. The city has a network of well-maintained and interconnected roadways. Under a six-year, \$5.4 billion Mobility Master Plan announced last year, the state of Nuevo Leon aims to nearly double the size of the city’s metro by building three new lines and investing in a new fleet of low-emission buses.¹⁴ The share of car ownership among residents is moderate, limiting emissions. The Master Plan’s “Complete Streets” initiative aims to further support active mobility by modifying certain streets with wide sidewalks, urban furniture, green areas, and other amenities.¹⁹⁹

Challenges and Opportunities for Monterrey’s Transportation System

With limited enforcement of traffic laws and transport safety rules, many residents feel

unsafe on the roads. The Complete Streets initiative should enhance safety by improving roadway design, discouraging the use of private vehicles, and reducing commuting times.

Given high ticket prices relative to local income levels, public transit remains out of reach for Monterrey’s poorest residents.

How Monterrey Can Improve Its Public Transportation and Sustainable Mobility

Monterrey lags behind many of its peers in terms of incentives for electric vehicles (EVs). To help close this gap, Monterrey could increase its purchase subsidies or tax exemptions, or introduce non-monetary incentives such as dedicated EV lanes. In addition, the city can expand the No-drive days (Hoy No Circula) program to further limit combustion engine car usage and encourage EV adoption via priority access lanes.²⁰⁰

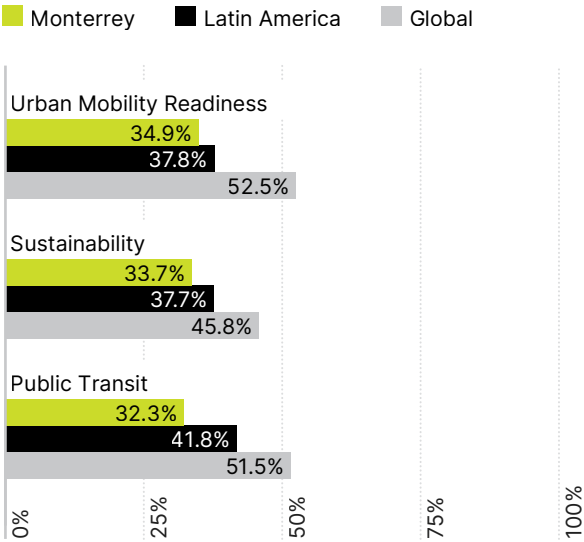
With its relatively high fares, Monterrey underperforms its regional peers on affordability. To help close this gap with other Latin American cities, Monterrey can provide government-backed subsidies for transit fares. This can be accomplished in multiple ways, including lowering the price of fares for everyone, lowering fares on an income basis, or selling long term passes (such as monthly or quarterly) that discount fares for heavy transit users. The city’s metro currently offers discounts for multi-trip tickets.

Recommandations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Discourage combustion engine use by introducing low-emission zones
- Focus on public transit affordability by maintaining or expanding subsidies
- Introduce specific fares for lower-income commuters

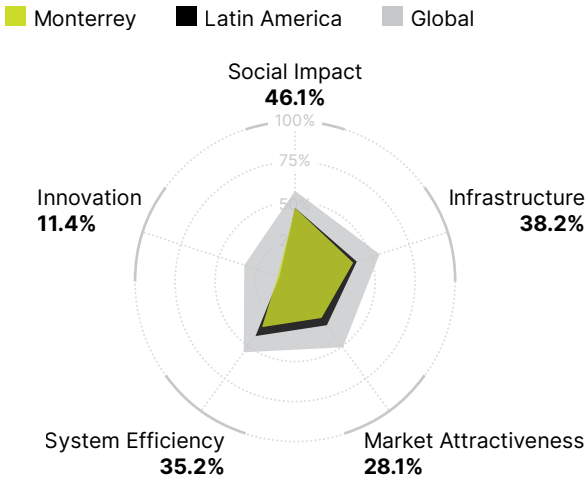
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City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Casablanca



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
59 _{/65}	47 _{/65}	58 _{/65}
Population (million)	4.1	
Population density (people per km²)	8,749	
GDP per capita (US\$)	6,589	
Surface area (km²)	469	

What Casablanca Does Well in Urban Mobility

For the second consecutive year and three of the last four, Casablanca leads other cities with the highest percentage of pedestrian travel. One recent survey reportedly found that 62% of journeys in the city are made on foot.²⁰¹

The city has a network of well-maintained roads and a strong traffic management system that helps to keep traffic fatalities down. The city also is investing in public transit and expects to complete two new tram lines and two rapid bus transit routes in 2024.²⁰²

Challenges and Opportunities for Casablanca's Transportation System

Notwithstanding low car ownership rates and high pedestrian activity, the city lacks dedicated cycling infrastructure and car-free zones.

Casablanca has limited international airline service and an inefficient and underdeveloped supply-chain infrastructure. However, the city's airport has reportedly returned to nearly pre-pandemic levels of passengers, an indication of promising years ahead.²⁰³

How Casablanca Can Improve Its Public Transportation and Sustainable Mobility

With high fares relative to household income, the city underperforms its regional peers on affordability. To help close the gap, Casablanca can provide government backed subsidies for transit fares. This can be accomplished in multiple ways, including lowering fares for everyone, reducing them on an income basis, or selling discounted long-term passes (monthly or quarterly, for example) for heavy transit users.

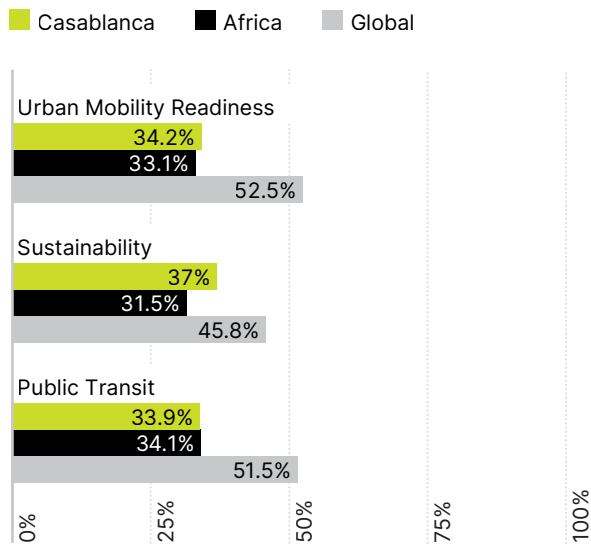
Casablanca lags behind many of its peers with few car-free zones throughout the city. Car-free zones support pedestrian and cyclist safety by removing cars from specific roads, increasing efficiency of foot and bike traffic. The city can follow the example of other cities by piloting car-free zones in small increments at first such on specific days of the week or during temperate months and expand them based on public perception and utilization.

Recommendations

- Focus on public transit affordability by maintaining or expanding subsidies
- Introduce specific fares for lower-income commuters
- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars

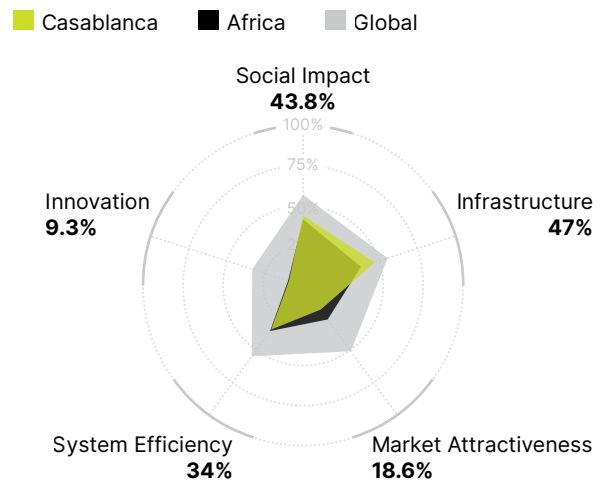
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Source: Oliver Wyman Forum and University of California, Berkeley

Manila



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
60 _{/65}	51 _{/65}	60 _{/65}
Population (million)	14.7	
Population density (people per km²)	7,675	
GDP per capita (US\$)	11,614	
Surface area (km²)	1,911	

What Manila Does Well in Urban Mobility

The Philippines capital has a multimodal transportation system that ranges from open-air jeepney minibuses to bus and light rail networks. It also is building an underground metro that is scheduled to begin service later this decade. Car ownership levels are low, and many residents walk to get around, helping alleviate pollution and congestion. Recent plans to widen pedestrian walkways and protected bi-directional bike lanes should further promote active mobility.²⁰⁴

Challenges and Opportunities for Manila’s Transportation System

Despite low car ownership levels, the city has not invested in active mobility infrastructure, such as bike lanes and car-free zones. The Department of Transportation has set a target of building over 1,840 kilometers (1,100 miles) of protected bike lanes by 2028, with more than one quarter due to be finished in 2023.²⁰⁵

Manila has a low density of public transit stations, a limited rail network, and an undermaintained road network. In recent years, however, the city has made progress by introducing a new generation of light rail trains, extending the light rail network to accommodate more passengers and shorten travel times, starting work on the Metro Manila Subway Project, with completion targeted for 2027.^{206, 207}

How Manila Can Improve Its Public Transportation and Sustainable Mobility

Riders of Manila’s bus service often struggle with long commutes due to low transit speeds. To help improve service, the city can build dedicated bus lanes to avoid traffic slowdowns. During the pandemic, the government converted a section of one of the city’s busiest highways, Epifanio delos Santos Avenue, into a dedicated busway.²⁰⁸ In the long term, Manila can continue to invest in building more underground lines to increase the reach and efficiency of its rapid transit network.

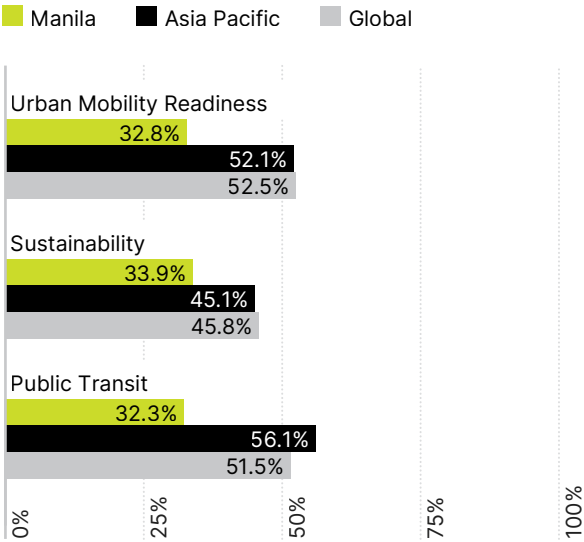
Manila lags many of its peers with few car-free zones. To promote active mobility and improve safety for pedestrians and cyclists, the city can pilot car-free zones in stages, starting on specific days of the week or during temperate months, for example, and then expanding them based on public perception and utilization.

Recommendations

- Lower commute times by increasing public transit speeds through dedicated bus lanes
- Develop mass transit in the long-term by expanding bus rapid transit services or subway lines
- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars

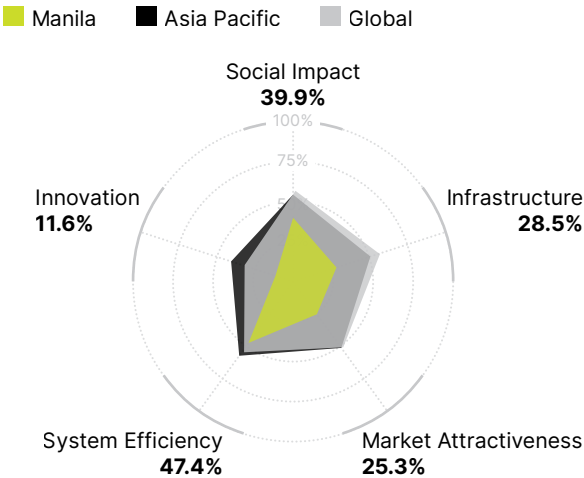
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Quito



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
61 _{/65}	38 _{/65}	51 _{/65}
Population (million)	2.4	
Population density (people per km²)	4,430	
GDP per capita (US\$)	9,701	
Surface area (km²)	536	

What Quito Does Well in Urban Mobility

Ecuador’s capital has a strong and affordable multimodal public transit system. The city expects to open its first metro line in 2024 and is modernizing its trolleybus network and renovating two major roads, both reportedly due to be completed in 2024. Quito is home to one of the highest public transit ridership levels, both regionally and globally, with the majority of trips taken via transit. City leadership is reportedly exploring opportunities to expand the metro system to accommodate the high demand.

Challenges and Opportunities for Quito’s Transportation System

Quito lacks the necessary cycling infrastructure, such as bike lanes and car-free zones, for residents to utilize cycling as a popular mobility mode. To encourage cycling, the city implemented a free bike-sharing service, BiciQ, allowing residents to cycle throughout the capital more easily.

Ecuador’s busiest airport, Mariscal Sucre, has few international passenger flights. The airport has expanded its terminal and cargo facilities in recent years and attracted new airlines, with Mexico’s Viva Aerobus opening a Quito-Cancun route in 2023.^{209, 210}

How Quito Can Improve Its Sustainable Mobility

Quito lags behind many of its peers with few car-free zones throughout the city. Such zones support pedestrian and cyclist safety by removing cars from specific areas. The city can expand its car-free zones to cover larger areas and reduce traffic, promoting safety and accessibility. The city currently closes some streets for cyclists, skateboarders, and pedestrians each week on Sunday Cycle (Ciclopaseo).²¹¹

Quito has yet to embrace cycling like many of its regional peers. To close the gap to a city like Buenos Aires, where cycling’s share of travel

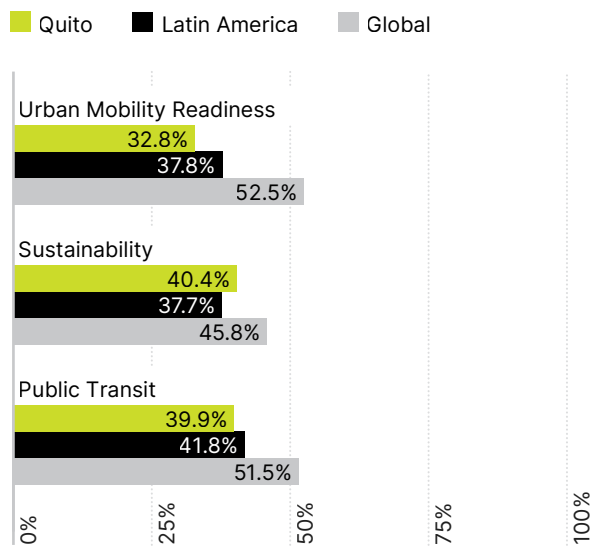
is approximately seven times that of Quito, the city could focus on improving cycling infrastructure by building dedicated bike lanes on popular roadways. Previously mentioned efforts including the BiciQ are going in the right direction, but more can be done to accelerate cycling adoption.

Recommendations

- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars
- Improve safety by expanding cycling infrastructure
- Increase bike and e-bike access through individual purchase and bike-share subsidies

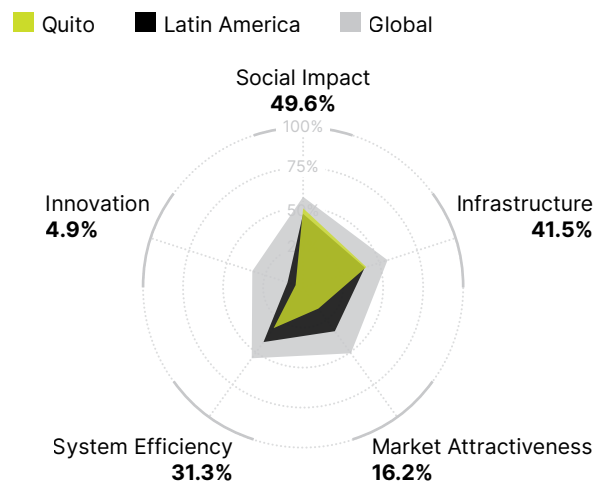
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City scores in percentage compared with global and regional averages



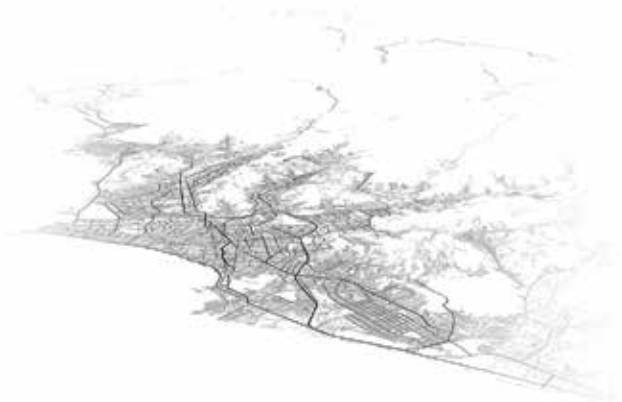
Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Lima



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
62 _{/65}	56 _{/65}	56 _{/65}
Population (million)	10.8	
Population density (people per km²)	12,079	
GDP per capita (US\$)	13,862	
Surface area (km²)	891	

What Lima Does Well in Urban Mobility

The Peruvian capital boasts one of the highest public transit utilization rates in the Index, and the city continues to expand its bus rapid transit network that carries 700,000 passengers a day on dedicated lanes.²¹² A \$93 million loan from the World Bank aims to further improve the network with a 10-kilometer (6-mile) extension.²¹³

The city is home to a strong mobility sector with many of its residents working in the transportation business.

Challenges and Opportunities for Lima's Transportation System

With limited dedicated cycling infrastructure and poor enforcement of transportation safety, Lima does not boast a strong cycling culture. The city set up temporary bike lanes on major avenues during the pandemic, but they need to be formally legalized in order to last.

With few international flights, a weak supply chain infrastructure, and a lack of top university presence, Lima is not a hub for mobility innovation. The airport was upgraded with a new control tower and a second runway, and a new passenger terminal should be completed by January 2025.²¹⁴

How Lima Can Improve Its Public Transportation and Sustainable Mobility

Bus riders often struggle with long commute times due to low transit speeds. To help close the gap with other cities, Lima can expand its dedicated bus lanes to help avoid traffic slowdowns. Adding bus lanes is an efficient and effective way to shorten travel times for commuters.

Compared with its peers, Lima does not have a strong multimodal network. It can boost its multimodality by completing a long-delayed second Metro line, which will cross the city

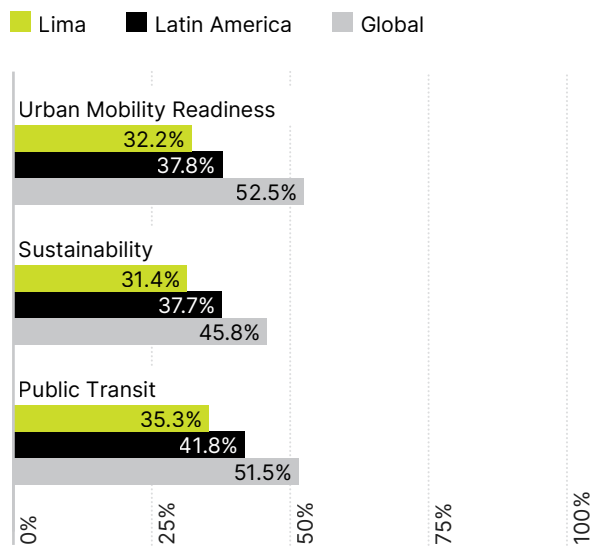
from east to west, and implementing an integrated ticketing system for use across all public transit systems. Lima also can introduce a park-and-ride program to enable residents to access the city center from suburban and rural areas while limiting driving. Expanding access for bikes aboard buses and metro would allow more cyclists to utilize public transit and cycling for the first and last miles of their journeys.

Recommandations

- Lower commute times by increasing public transit speeds through dedicated bus lanes
- Develop mass transit in the long-term by expanding bus rapid transit services or metro lines
- Encourage multimodality by introducing a park-and-ride system and reducing car use in the city center
- Easing public transit access for cyclists with bike racks and lower fares

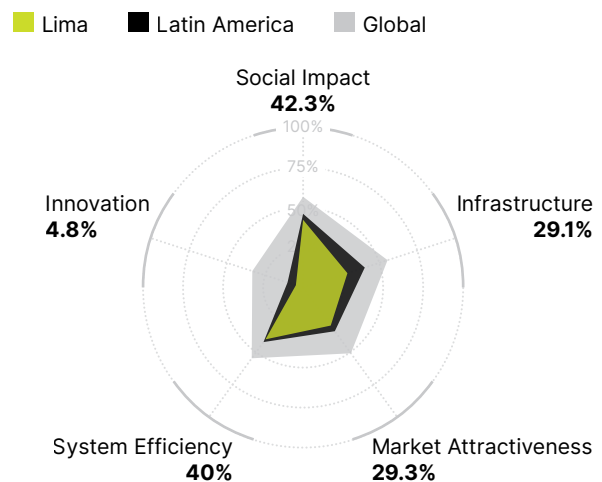
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Manama



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
63 _{/65}	64 _{/65}	65 _{/65}
Population (million)	0.7	
Population density (people per km²)	1,680	
GDP per capita (US\$)	29,103	
Surface area (km²)	388	

What Manama Does Well in Urban Mobility

The Bahraini capital boasts a strong network of safe and well-maintained roadways with relatively few traffic fatalities. Efforts to develop and upgrade 146 kilometers (90 miles) of roads in the last few years demonstrate a strong commitment to improve road connectivity.²¹⁵

The government began construction in 2023 on a metro system to provide residents with more sustainable travel options.²¹⁵ The first 29 kilometers (about 18 miles) of the planned 109-kilometer system are reportedly expected to come into service in 2025.

Challenges and Opportunities for Manama’s Transportation System

Unlike many cities in the region, Manama is not a hub for international air travel and has relatively few international passengers and connecting flights. Bahrain International

Airport opened a new terminal in 2021 to boost capacity to 14 million passengers a year.²¹⁶

Similar to other cities in the region, a lack of car-free zones and dedicated walking and cycling infrastructure impedes active mobility in Manama. The Kingdom has announced plans to develop bike and e-bike lanes throughout the country.²¹⁵

How Manama Can Improve Its Public Transportation and Sustainable Mobility

Despite efforts to reduce carbon emissions, Manama lags behind many of its peers in terms of its incentives for electric vehicles (EVs). To help close this gap, Manama could increase its purchase subsidies or tax exemptions, or introduce non-monetary incentives such as dedicated EV lanes. The city also could implement a low-emission zone to limit combustion engine car usage and give EVs priority access to key areas in the city. The

government is developing an EV strategy to help meet its 30% decarbonization goal and signed a contract for the installation of five charging stations, a sizeable boost of its current charging capacity.²¹⁷

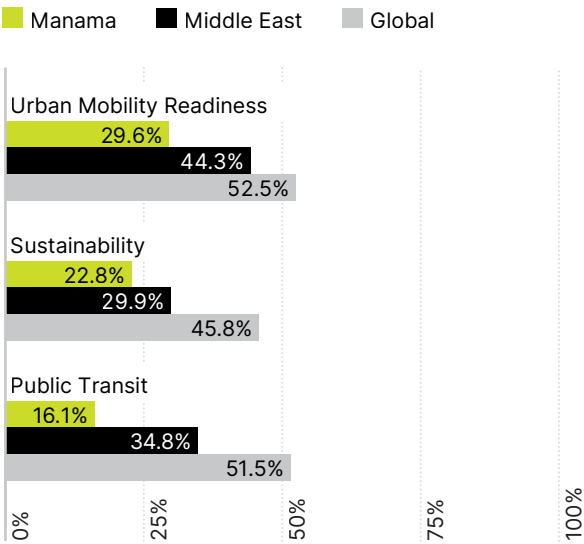
Manama’s public transit system is underutilized with commuters often using private cars. To become a regional leader in public transit ridership, Manama would need to increase its ridership modal share by 3.5. The city can look to do so by continuing to invest in its metro project. The authorities also can discourage car usage by implementing car-free zones to encourage people to use public transit in their day-to-day travel.

Recommendations

- Encourage EV adoption through incentives, like tax breaks, registration or toll exemptions, and special access lanes
- Discourage combustion engine use by introducing low-emission zones
- Improve ridership by developing the public transit offering such as longer operating hours and greater station density
- Stimulate the demand for public transit by limiting car use and lowering transit fares

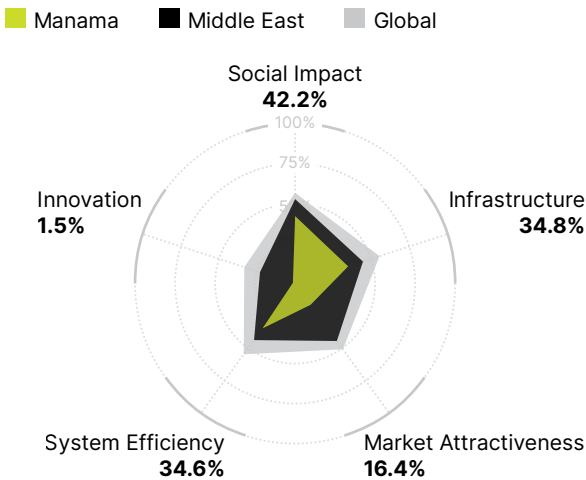
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City scores in percentage compared with global and regional averages



Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Nairobi



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
64 _{/65}	61 _{/65}	63 _{/65}
Population (million)	6.0	
Population density (people per km²)	6,998	
GDP per capita (US\$)	4,781	
Surface area (km²)	852	

What Nairobi Does Well in Urban Mobility

Nairobi has a network of well-connected roads with ongoing upgrades to further improve connectivity. The 2022 opening of the elevated Nairobi Expressway provides a modern link between Jomo Kenyatta International Airport and the central business district. The government also is improving the city’s connections with the national road network as part of its Vision 2030 program, which aims to build or rehabilitate 5,500 kilometers (3,400 miles) of roads.²¹⁸ The Kenyan capital has low car ownership rates. According to the Metropolitan Area Transportation Authority, 40% of trips are walking, which is one of the highest shares among cities in the Index.²¹⁹

Challenges and Opportunities for Nairobi’s Transportation System

Nairobi’s public transportation system is underdeveloped, and most passengers rely on private matutus (minibuses) or boda bodas

(two-wheel motorbike taxis).²¹⁹ The government is building the first of five planned bus rapid transit lines with the support of the European Investment Bank²²⁰ while a local startup has begun making e-buses available to operators on a subscription basis.²²¹ Walking is the most-popular form of mobility, but cycling adoption will remain low without adequate bicycle infrastructure. Kenya’s National Road Safety Action Plan 2023 — 2027 prioritizes the development of bike paths and road crossings for cyclist safety.²²²

How Nairobi Can Improve Its Public Transportation

With relatively high fares compared with household income, Nairobi has an expensive public transit system. To help close this gap compared to peers, the city can provide subsidies for transit fares. Options include lowering fares for everyone, lowering fares on an income basis, or selling discounted long-term passes for heavy transit users.

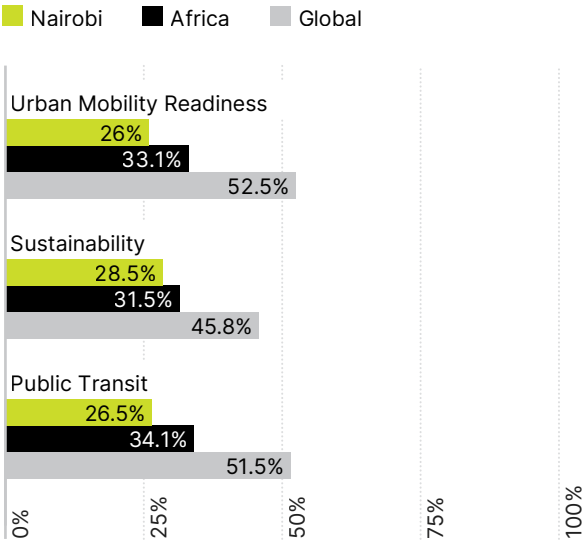
Nairobi’s public transit system is underutilized with commuters often opting for walking or using private cars. The city can grow public transit ridership by expanding its bus service to cover a larger area of the city. In addition, incorporating matutus and boda bodas into the public transit offering would help standardize fares and service reliability for riders. Lastly, the city can follow the example of Lagos and invest in the infrastructure required to build a metro to ease road congestion.

Recommendations

- Focus on public transit affordability by maintaining or expanding subsidies
- Introduce specific fares for lower-income commuters
- Improve ridership by developing the public transit offering such as longer operating hours and greater station density
- Stimulate the demand for public transit by limiting car use and lowering transit fares

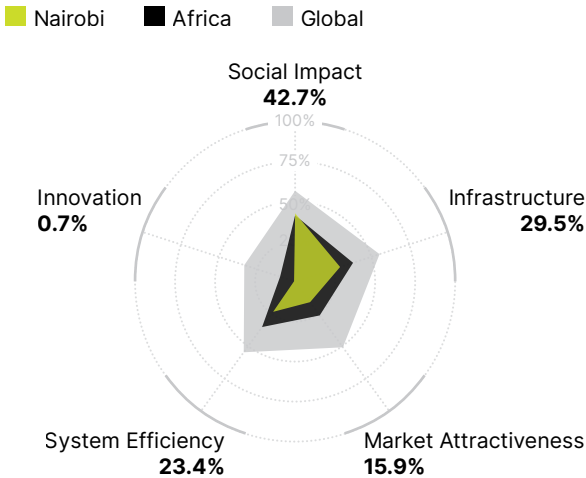
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Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

Lagos



Urban Mobility Readiness Index	Sustainable Mobility	Public Transit
65/65	65/65	55/65

Population (million)	16.3
Population density (people per km ²)	8,287
GDP per capita (US\$)	5,044
Surface area (km ²)	1,966

What Lagos Does Well in Urban Mobility

Active mobility is well developed with a large percentage of Lagos residents walking to their destinations. Lagos opened its first light-rail line in September 2023, slashing commute times between the mainland part of the city, where most people live, and Lagos Island, where many businesses are located. Lagos also offers a network of well-connected roads, and the city continues to invest in infrastructure modernization.

Challenges and Opportunities for Lagos' Transportation System

Congestion clogs the city's streets and makes life difficult for commuters, who reportedly spend an average of 30 hours a week in traffic. Lagos state has reportedly secured US\$1.35 billion in investment from the African Export-Import Bank and local lender Access Bank for infrastructure projects, including a bridge to reduce congestion and an extension of the light-rail line.

High fares prevent many residents from using the city's public transit system, and Lagos' airport receives a limited number of international flights. The government opened a new terminal at Murtala Muhammad International Airport in 2022 and approved the construction of a new airport on Lekki peninsula.

How Lagos Can Improve Its Public Transportation and Sustainable Mobility

With relatively high fares compared with household income, Lagos' public transit system is one of the priciest in the region. To help close the gap with other African cities, Lagos can provide more subsidies for transit fares. This can be accomplished by lowering fares for all travelers, lowering fares on an income basis, or selling long-term passes that discount fares for regular transit users. The Lagos State government reportedly cut bus fares by 50% in August 2023, but more can be done.

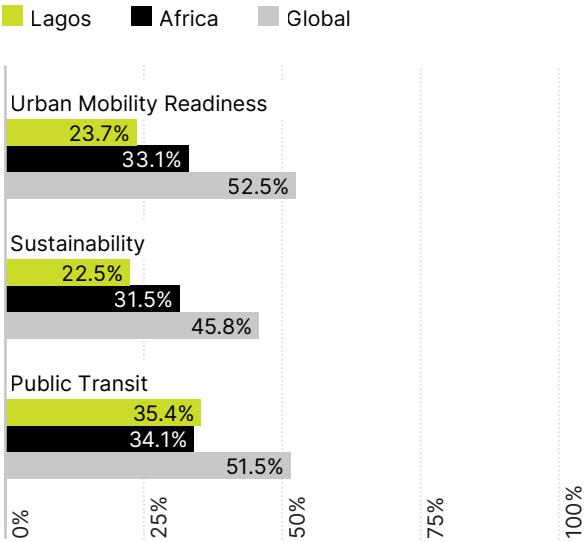
Lagos lags behind many of its peers with few car-free zones, which promote pedestrian and cyclist activity by increasing safety. The city can follow the example of other cities by piloting car-free zones in small increments, starting on specific days of the week or during summer months, for instance, and then expanding them based on public perception and utilization.

Recommendations

- Focus on public transit affordability by maintaining or expanding subsidies
- Introduce specific fares for lower-income commuters
- Limit combustion engine car use with car-free zones or limited car parking
- Encourage use of shared mobility modes as alternatives to cars

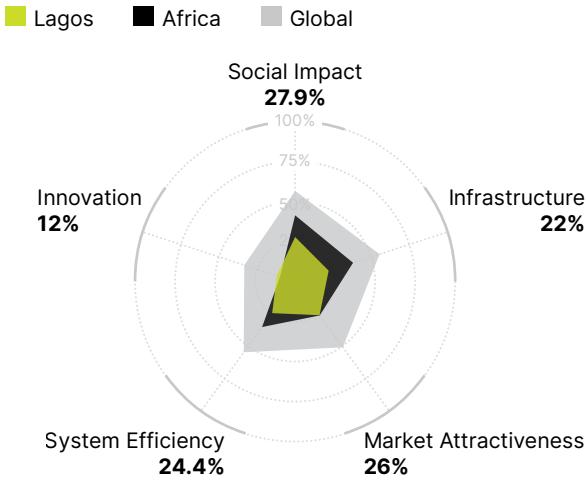
Urban Mobility Readiness Index, Sustainable Mobility and Public Transit scores

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Dimensions of the Urban Mobility Readiness Index score

City scores across the five dimensions compared with global and regional averages



Source: Oliver Wyman Forum and University of California, Berkeley

About the Index

The 2023 edition of the Urban Mobility Readiness Index provides an in-depth analysis of 65 global cities. These cities are geographically diverse, representing six regions — North America, Latin America, Europe, the Middle East, Asia Pacific, and Africa. They range from sprawling megacities like Tokyo and Delhi, to more compact cities such as Oslo and Washington D.C., to fast-developing metropolises like Nairobi. They were selected because of their distinct mobility challenges and the varied solutions they are pursuing. They understand the importance of mobility and serve as economic epicenters for their regions, making their efforts to improve mobility vital to the growth of much larger areas. The cities also were chosen because data is available to assess, compare, and track the evolution of their mobility capabilities. The fifth edition of the index includes five new cities — Copenhagen, Manama, Melbourne, Monterrey, and Rome — as part of the ongoing effort to broaden the research and ensure representation of a diverse population.

In developing the UMR Index, we began with a vision of what cities need to be striving for — the characteristics that businesses, consumers, and policymakers consider indispensable today and will pursue a decade from now. That approach continued to inspire the two sub-indices: The Sustainable Mobility sub-index groups compares a subset of metrics such as the strength of the multi-modal network, public transit usage, electric vehicle (EV) ownership and infrastructure, share of pedestrians, and the cycling infrastructure. The Public Transit sub-index considers metrics such as the transit commute speed, public transit station density, strength of the multimodal network, and the public transit utilization rate.

From that vision comes action. For the fifth edition of the UMR index, we included recommendations to improve sustainability and public transit systems that are unique to each city. Some, like London and San Francisco, could build additional public transit stations, while others like Munich and Singapore can expand EV charging networks. This new dimension provides actionable tool cities can use to improve their performance.

The criteria are focused on internal discussions and conversations with leading professionals and experts, the research team arrived at the six key attributes of future mobility ecosystems.

- **Integrated:** Mobility should be intermodal, one-stop services that provide seamless travel, commutes, and delivery experiences.
- **Accessible:** Mobility should be easy to use, affordable, convenient, efficient, and available to everyone.
- **Sustainable:** Systems and solutions should not degrade the environment or health of city residents and can even offer economic benefits to them.
- **Innovative:** Cities should encourage innovation and take advantage of the latest technologies, reinterpreting them to fit their needs.
- **Collaborative:** Municipalities need to create coalitions with private-sector enterprises both large legacy players and start-ups — so they can work together to shape the future.
- **Resilient:** As disasters and other risks challenge urban mobility resilience, it is important that cities emphasize

Leading cities in the mobility revolution are likely to expand their public transportation modes, availability and linkages; provide safe roads, reliable services, and employment opportunities; enable emerging technologies, like electric and autonomous vehicles; emphasize digitization and sustainability; bolster their risk preparedness; and align municipal policies, regulations, and budgets accordingly.

Ranking dimensions

The Urban Mobility Readiness Index uses five basic dimensions to rank the 65 cities — infrastructure, social impact, market attractiveness, system efficiency, and innovation. These five dimensions, in turn, are comprised of 56 metrics, — key performance indicators — that collectively identify which cities are ready to excel in meeting future mobility challenges.

Sustainable Mobility

Along with the 2023 UMR Index, our results also display a sub-index on Sustainable Mobility. It is based on the following 16 KPIs drawn from the UMR Index:

- Air quality
- Car-free zones
- Car ownership moderation
- Climate-related losses
- Cycling adoption
- Cycling infrastructure
- Direct EV incentivization
- Disaster-risk informed development
- Electric charging station density
- Electric vehicle market share in sales
- Government investment in charging stations
- Noise and light pollution restraint
- Public transit utilization
- Rail network
- Strength of multimodal network
- Walkability

Public Transit

The Public Transit sub-index is based on the following 13 KPIs drawn from the UMR Index:

- Autonomous transit in operation
- Diversity of public transit modes
- Length of walk to public transit
- Multimodal app maturity
- Public transit affordability
- Public transit operating hours
- Public transit station density
- Public transit utilization
- Rail network
- Share of time in public transit
- Strength of multimodal network
- Transit commute speed
- Transit estimated time of arrival

2023 Index Methodology

The UMR Index uses five basic dimensions to rank the cities—infrastructure, social impact, market attractiveness, systems efficiency, and innovation. Below, find the 56 metrics that fall under these five dimensions—KPIs that identify which cities will excel in mobility. With the addition of five new cities to the 2023 Index, the year-on-year movement in rankings has been adjusted to accurately reflect each city’s net change in ranking. Research was completed as of August 2023, based on various sets of data that may not reflect more recent developments.

Social Impact	
Does the city maximize societal benefits while minimizing harmful qualities like poor air quality?	
Social benefits	<ul style="list-style-type: none"> • Road safety • Enforcement of transport safety
Environmental benefits	<ul style="list-style-type: none"> • Air quality • Noise and light pollution restraint
Economic benefits	<ul style="list-style-type: none"> • Transit commute speed • Public transit affordability
Business benefits	<ul style="list-style-type: none"> • Mobility employment • Mobility-related spend • International airport volumes

Infrastructure	
Has the city developed robust infrastructure and expanded connectivity to support future mobility?	
Micromobility enablement	<ul style="list-style-type: none"> • Walkability • Pedestrian friendliness • Cycling Infrastructure
Public transit accessibility	<ul style="list-style-type: none"> • Rail network • Public transit station density • Length of walk to Public transit
Regional connectivity	<ul style="list-style-type: none"> • Road connectivity • Strength of multimodal network
International connectivity	<ul style="list-style-type: none"> • International airport connectivity
Quality of infrastructure	<ul style="list-style-type: none"> • Road quality • Air transport facilities • Supply chain infrastructure

Market Attractiveness

How well does the city engage the private sector and secure diverse investments to build out mobility?

Public transit offering	<ul style="list-style-type: none">• Diversity of public transit modes• Public transit operating hours• Transit estimated time of arrival
Smart mobility activation	<ul style="list-style-type: none">• Mobility sharing economy competitiveness and penetration• Multimodal app maturity
Mobility headquarters	<ul style="list-style-type: none">• Market capitalization of mobility companies headquartered in city
Public funding availability	<ul style="list-style-type: none">• Government investment in the mobility sharing economy, charging stations, and connected and autonomous vehicles technologies

Systems Efficiency

How well does the municipal government coordinate and enhance the city's mobility network through things like traffic management systems or investment in e-charging stations?

Demand and transport planning	<ul style="list-style-type: none">• Information and communication technology preparedness• Innovation grade• Direct electric vehicle incentivization• Electric charging station availability
Modal mix optimization	<ul style="list-style-type: none">• Public transit utilization• Car ownership moderation• Cycling adoption• Share of time in public transit
Operational efficiency	<ul style="list-style-type: none">• Traffic management grade• Traffic fluidity• Supply chain efficiency
Risk preparedness	<ul style="list-style-type: none">• Disaster-risk informed development• Natural hazard preparedness• Catastrophe insurance• Institutional capacity and access to resources
Service continuity	<ul style="list-style-type: none">• Disaster management/business continuity• Annual deaths from natural disaster• Annual attacks on facilities/infrastructure• Supply chain services

Innovation

How well does the city leverage local talent and resources to drive technological advances?

Quality of human capital

- Top university/lab presence
- University quality
- Information and communication technology patents

Technology adoption

- Connected and autonomous vehicles adoption grade
- Autonomous transit in operation
- Electric market share in sales

Index Structure and Reliability

In the process of constructing the UMR Index, the KPIs that make up each dimension have been assigned a weight based on their relative importance to the ultimate task of building urban mobility ecosystems that can thrive in the future. The UMR Index gives extra weight to factors that capture the ability of a city to become a future leader and ensure rankings reflect performance prospects rather than the competitive status quo.

Weights of the KPIs were determined based on discussions that our UMR Index team conducted with a wide range of experts including urban planners, traffic managers, transportation finance specialists, and mobility technology executives as well as data collected by the Oliver Wyman Forum and the Institute of Transportation Studies at UC Berkeley. As part of the construction and testing of the UMR Index, convex optimization techniques were used to understand the proper weight structure needed to benchmark cities against each other. The extensive testing yielded results similar to the weights chosen by our team, reinforcing our confidence in the UMR Index composition and metrics' weighting.

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