Module 3

Climate and Sustainability Responses in Transport Sub-Sectors and Modes

Section 3.1

Integrated Transport Planning

FIGURE 1. Modal split of passenger transport in selected cities, by transport mode, 2022

Source: See endnote 20 for this section.

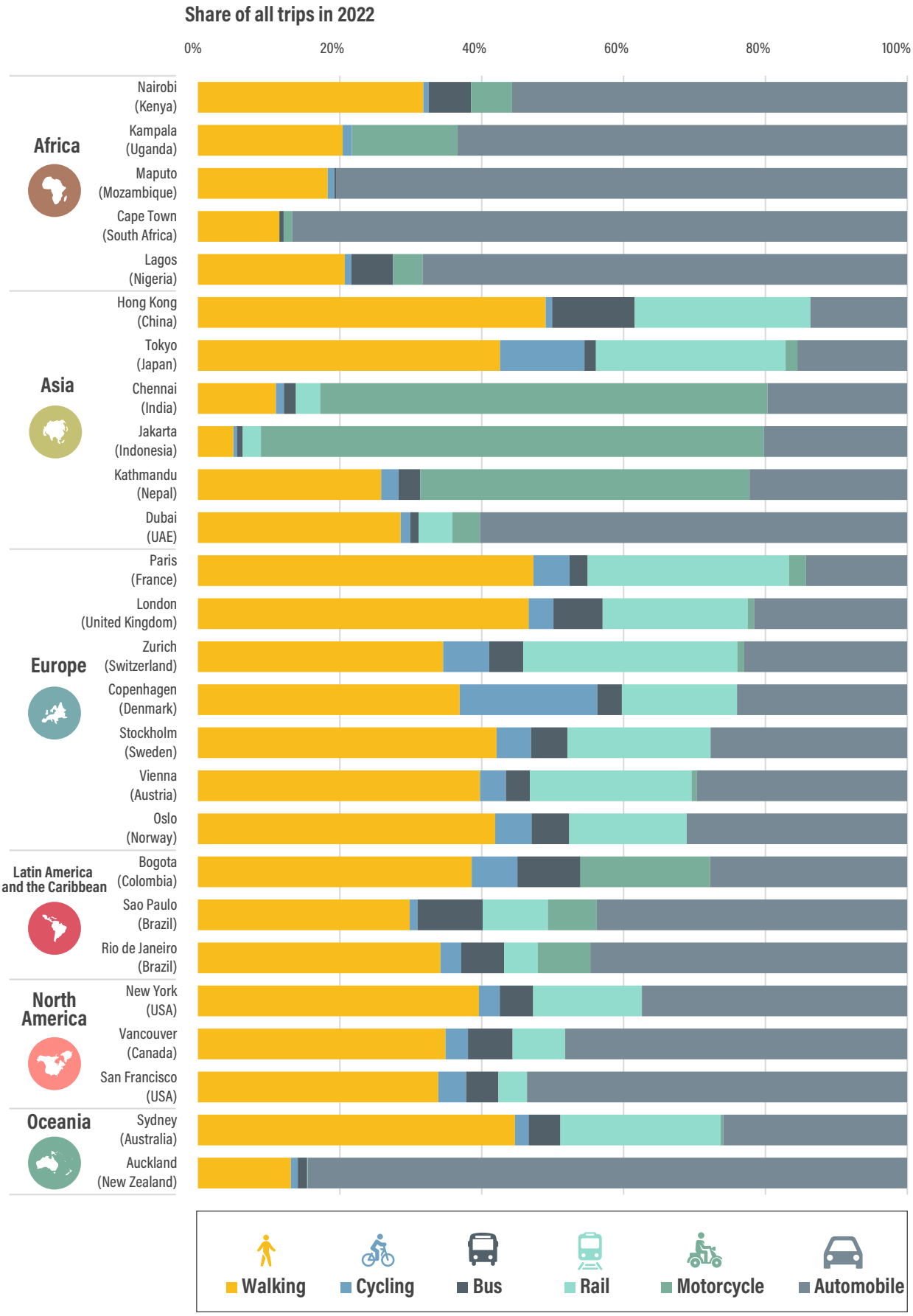


FIGURE 2. Average perceived increase in transport costs across 30 countries, 2021

Source: See endnote 79 for this section.

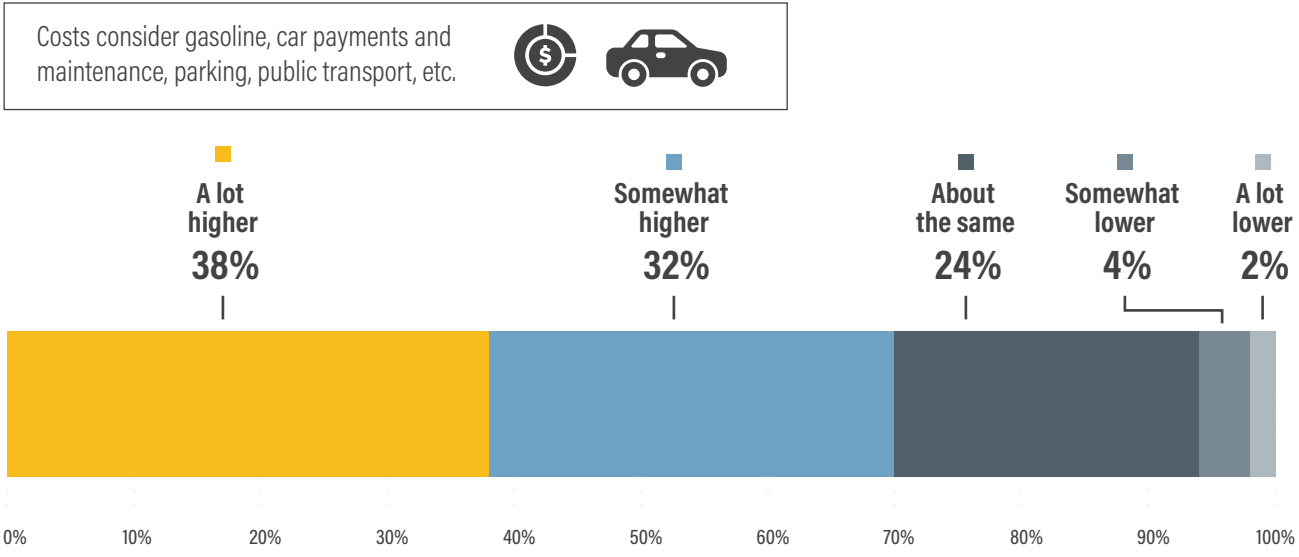


FIGURE 3. Sustainable transport hierarchy

Source: See endnote 113 for this section.

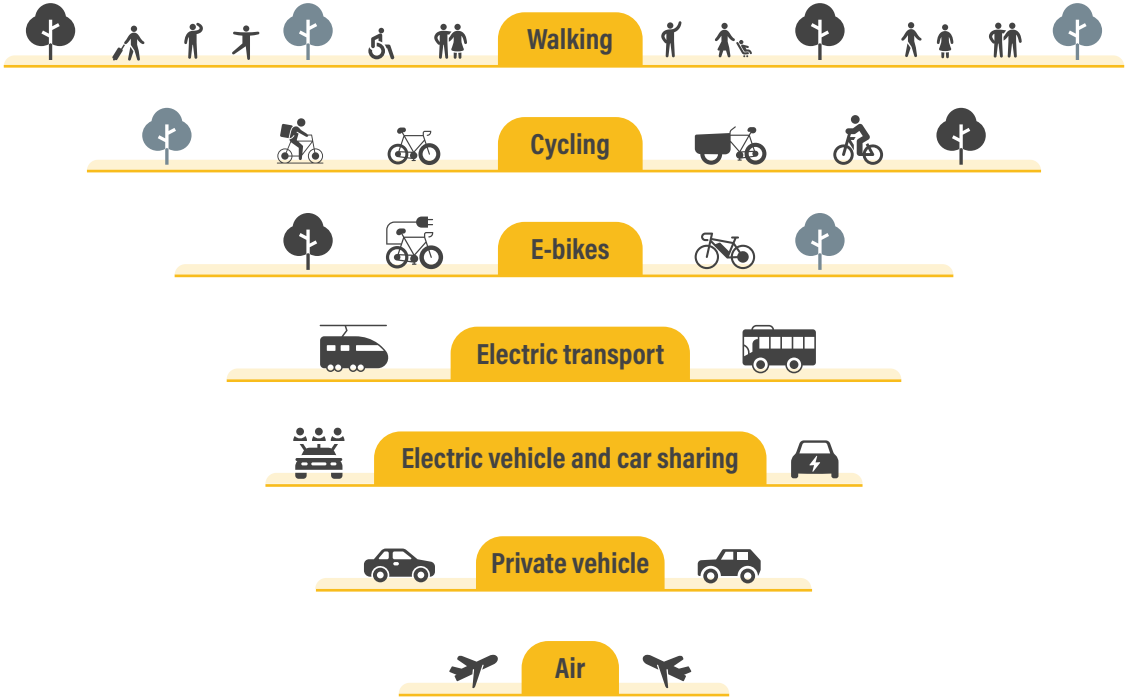


FIGURE 4. Active and planned low-emission zones in Europe, 2019-2025

Source: See endnote 133 for this section.

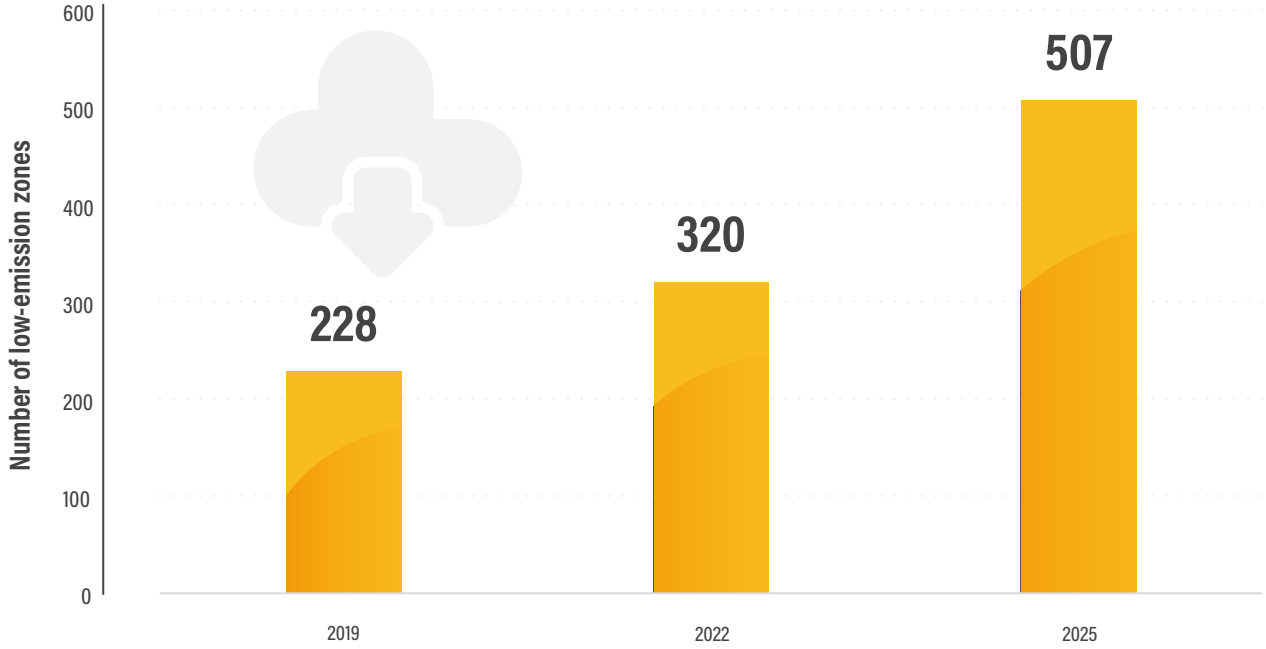
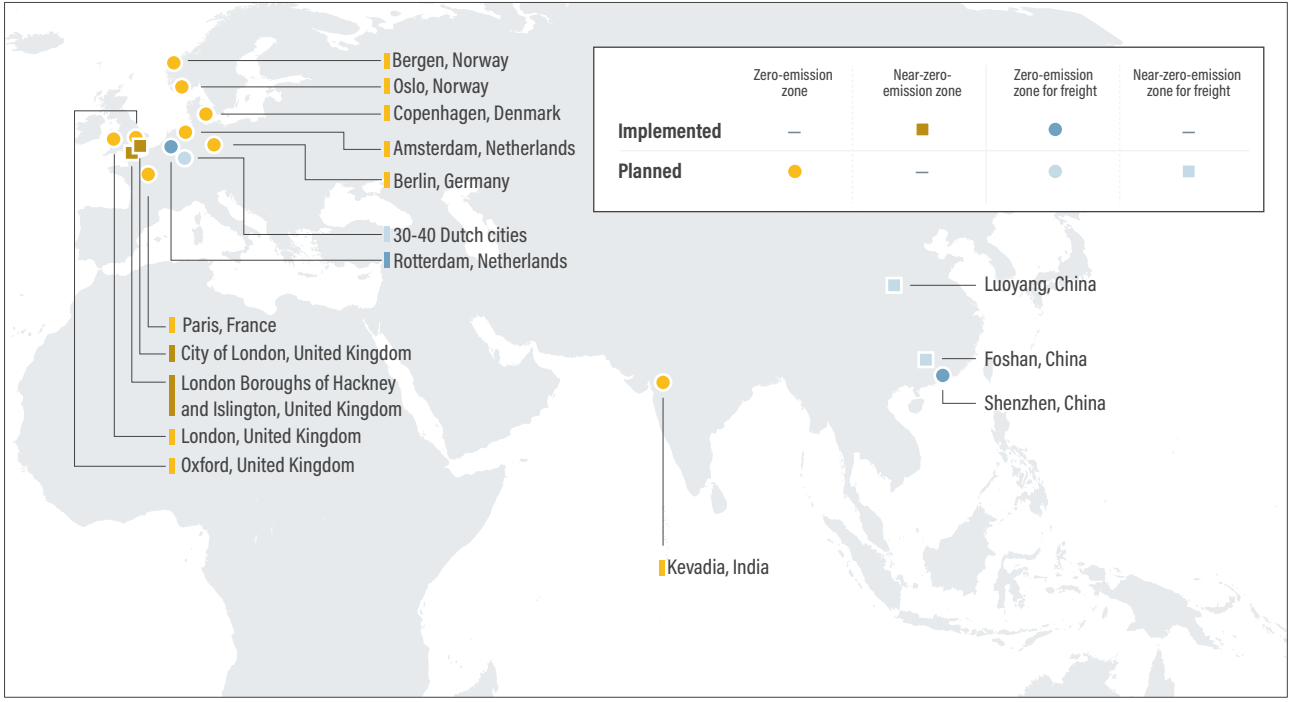


FIGURE 5. Implemented and planned zero-emission zones and variants as of July 2022

Source: See endnote 154 for this section.

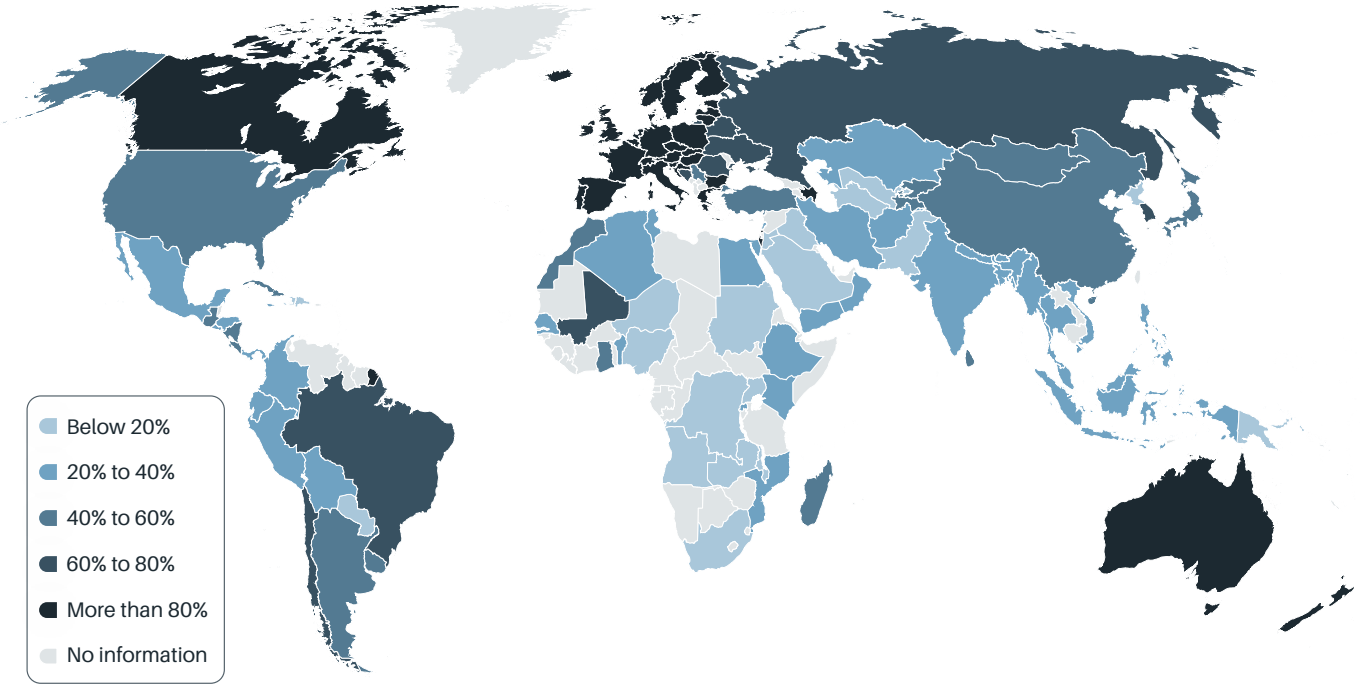


Section 3.2

Walking

FIGURE 1. Average percentage of urban population with convenient access to public transport

Source: See endnote 27 for this section.

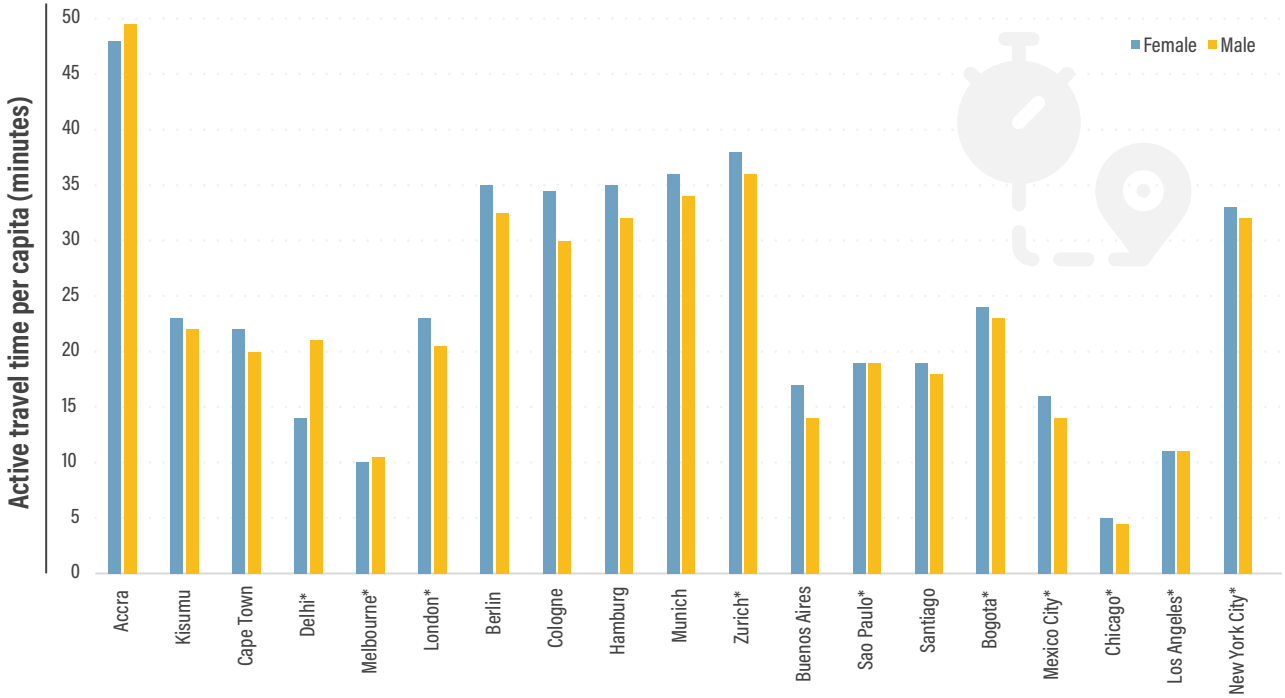


Section 3.3

Cycling

FIGURE 1 Active travel time per capita by gender for all age groups combined, in selected cities

Source: See endnote 75 for this section.



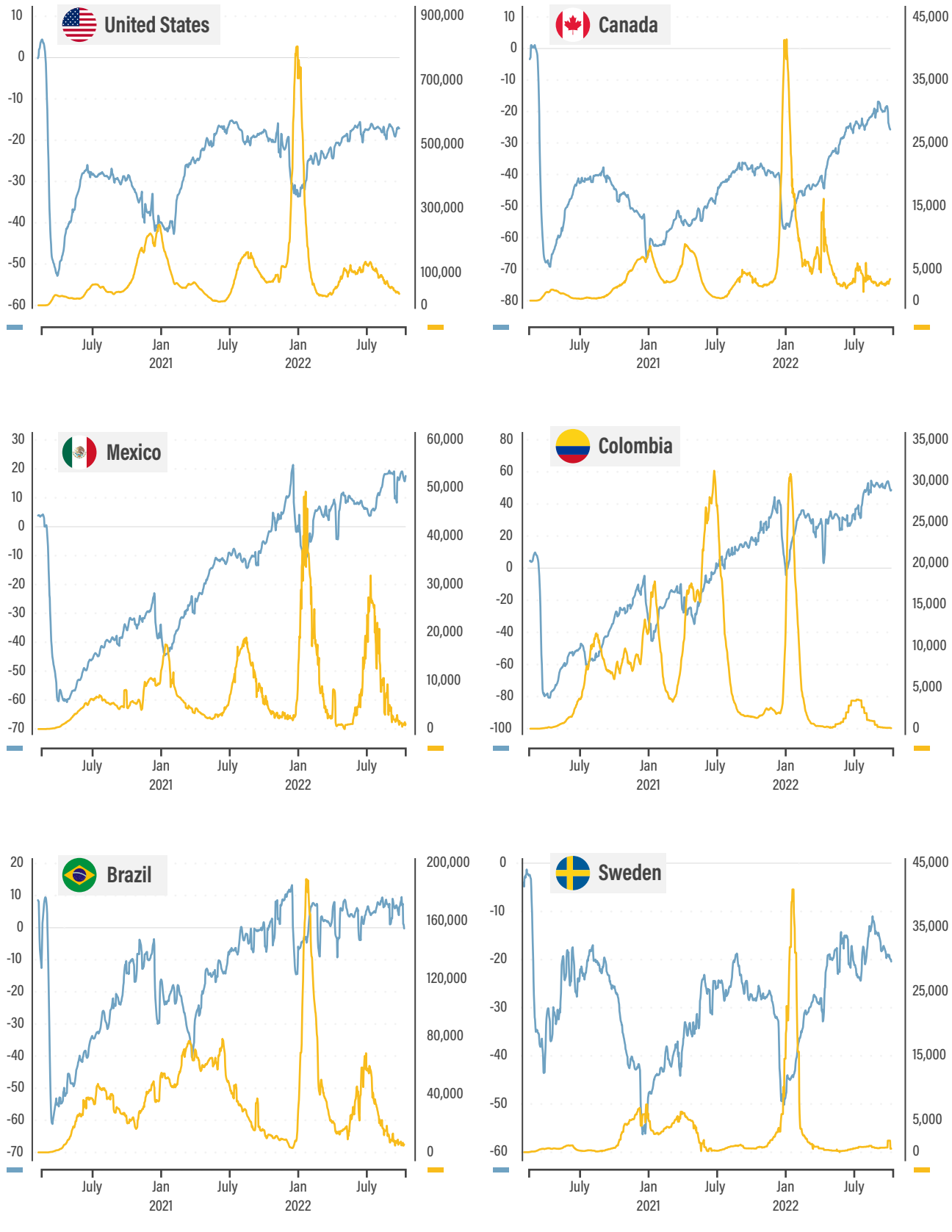
Note: Active time is defined as total walking and cycling duration across all trips divided by the total number of sampled individuals. Cities with an asterisk use reported data, and others represent harmonised estimates.

Section 3.4.1

Public Transport

FIGURE 1. Public transport ridership in selected countries as a percentage of pre-COVID-19 levels, and the number of infected individuals from February 15, 2020 to October 15, 2022

Source: See endnote 5 for this section.



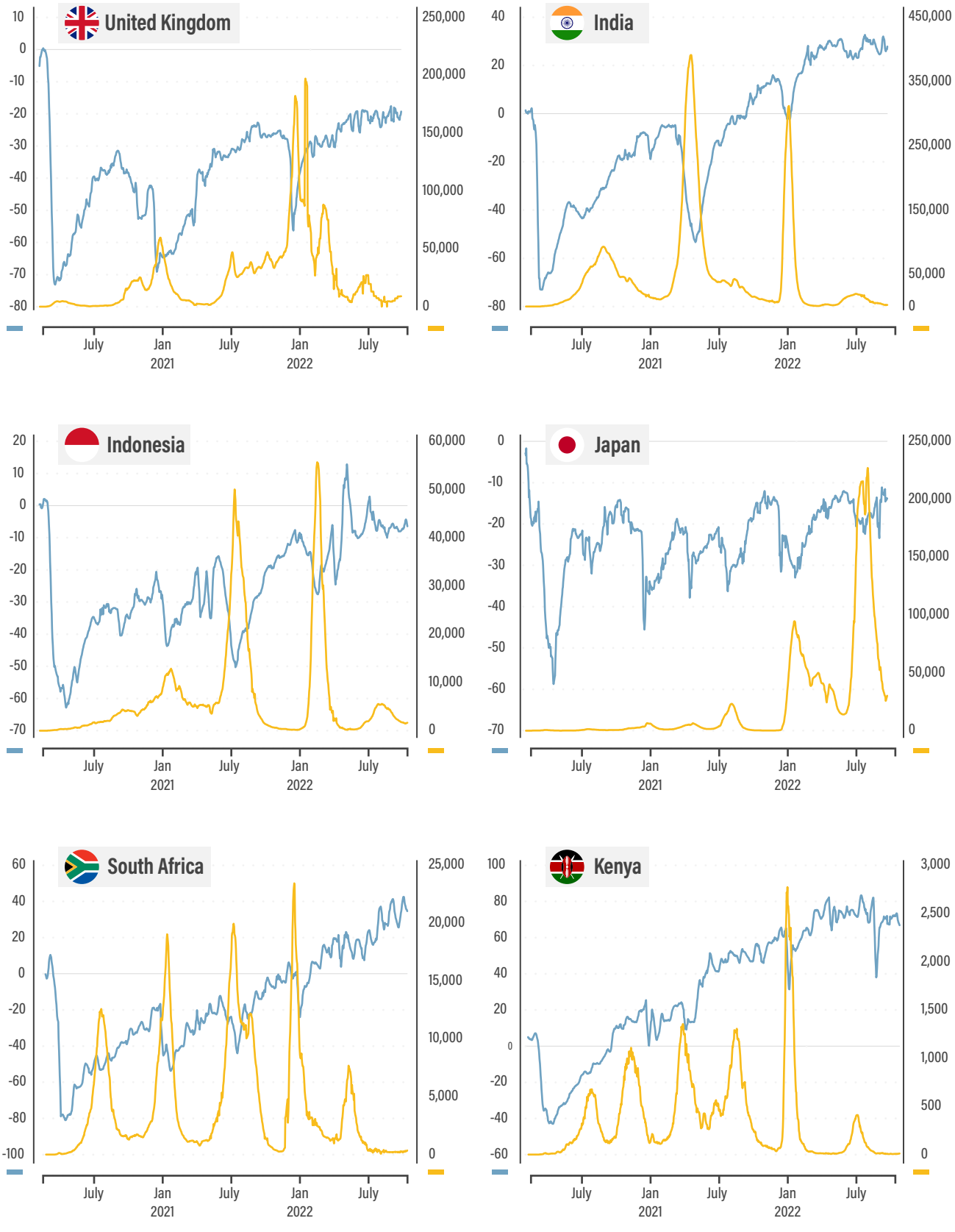
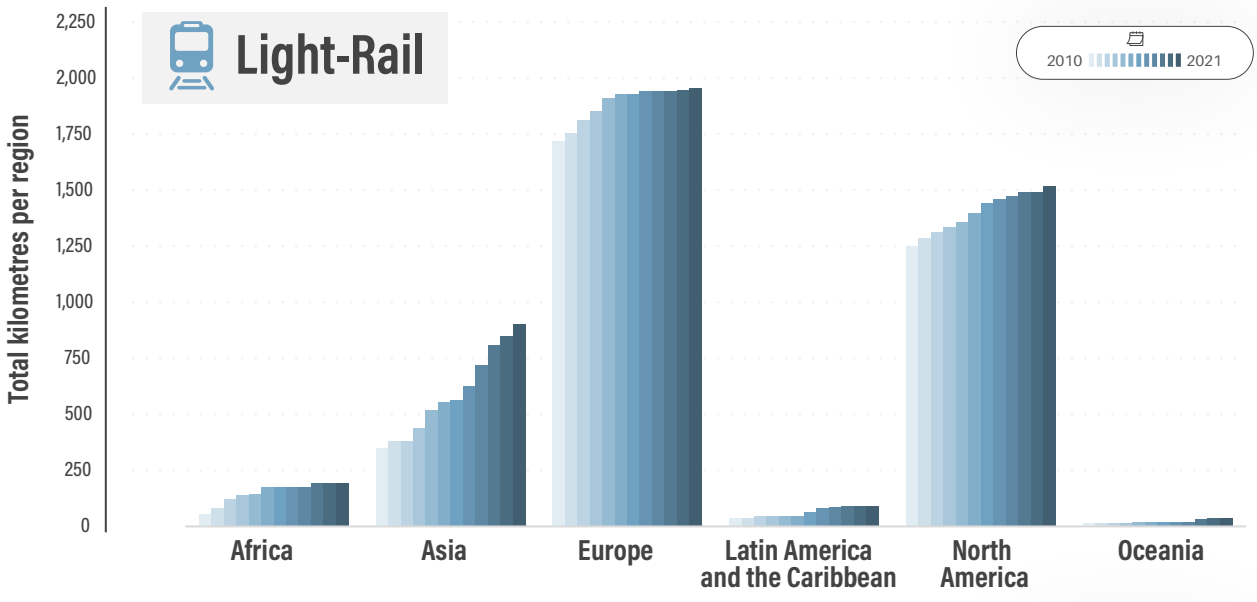
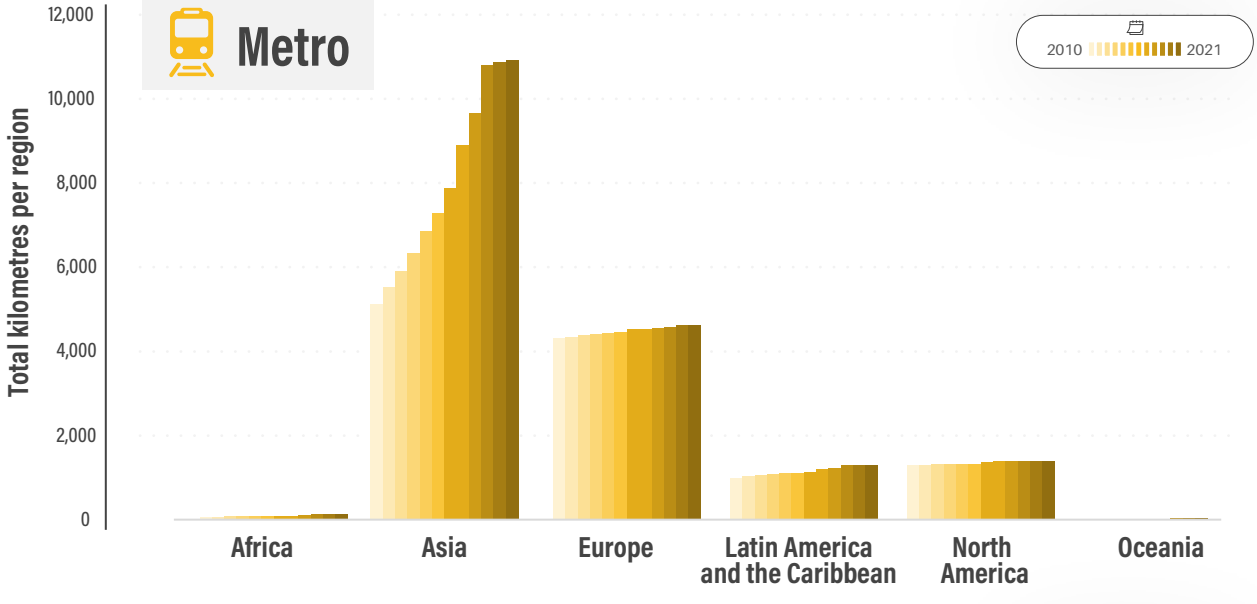

United Kingdom
10
0
-10
-20
-30
-40
-50
-60
-70
-80
250,000
200,000
150,000
100,000
50,000
0
July
Jan
2021
July
Jan
2022
July
India
40
20
0
-20
-40
-60
-80
450,000
350,000
250,000
150,000
50,000
0
Indonesia
20
10
0
-10
-20
-30
-40
-50
-60
-70
60,000
50,000
40,000
30,000
20,000
10,000
0
Japan
0
-10
-20
-30
-40
-50
-60
-70
250,000
200,000
150,000
100,000
50,000
0
South Africa
60
40
20
0
-20
-40
-60
-80
-100
25,000
20,000
15,000
10,000
5,000
0
Kenya
100
80
60
40
20
0
-20
-40
-60
3,000
2,500
2,000
1,500
1,000
500
0
Public transport ridership changes (%)
Infected (individuals)

FIGURE 2. Growth of major public transport systems by region, 2010-2021

Source: See endnote 44 for this section.





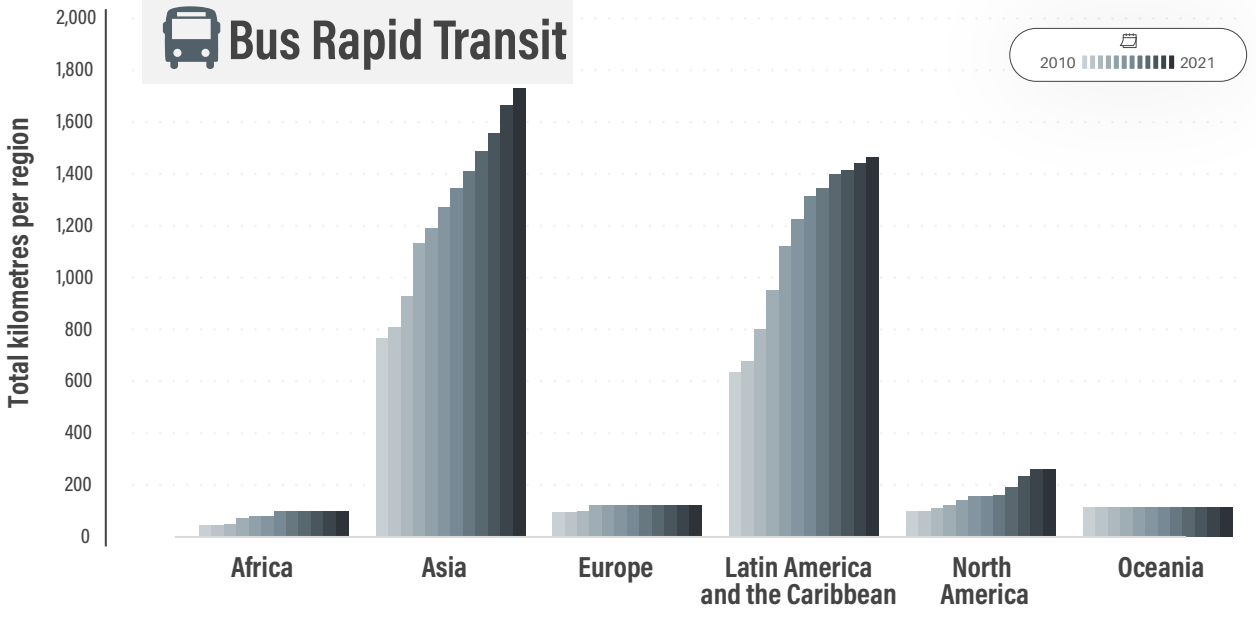


FIGURE 3. Emissions from public transport (including buses, rails, subways and trams) versus other modes (automobiles and motorcycles) in selected cities, 2018-2021

Source: See endnote 49 for this section.

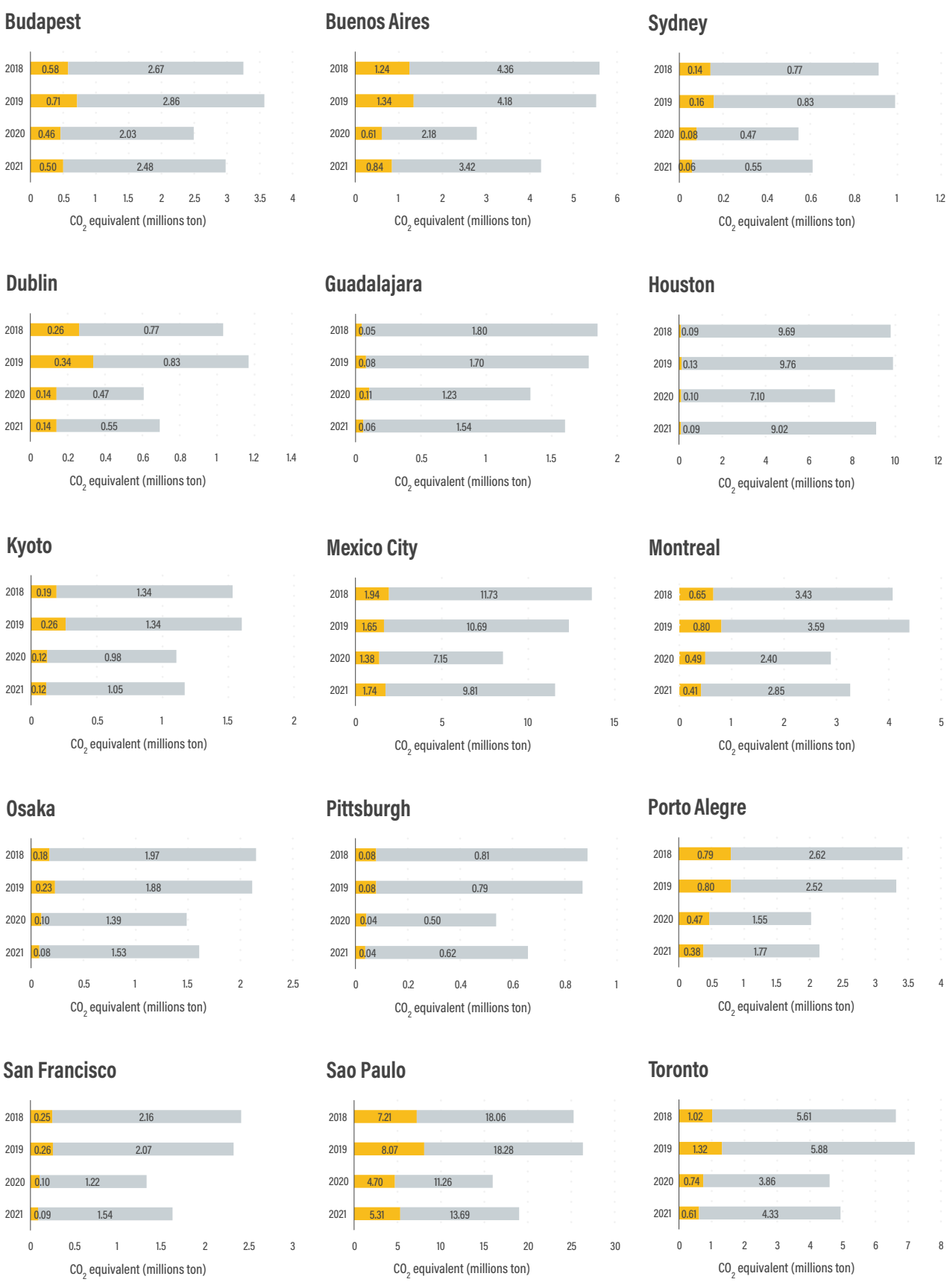


FIGURE 4. Modal share of selected cities, by total number of trips, 2021

Source: See endnote 49 for this section.

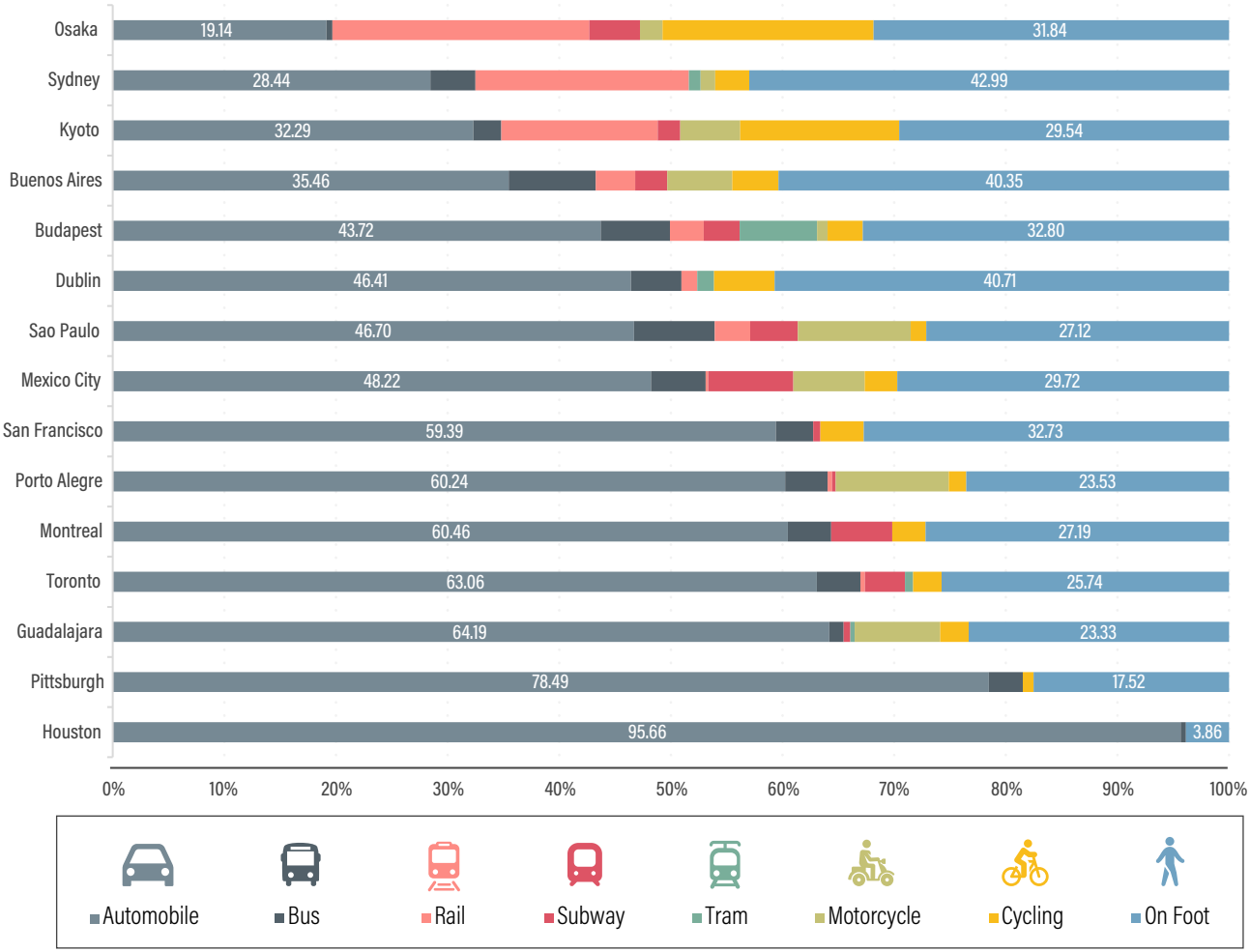
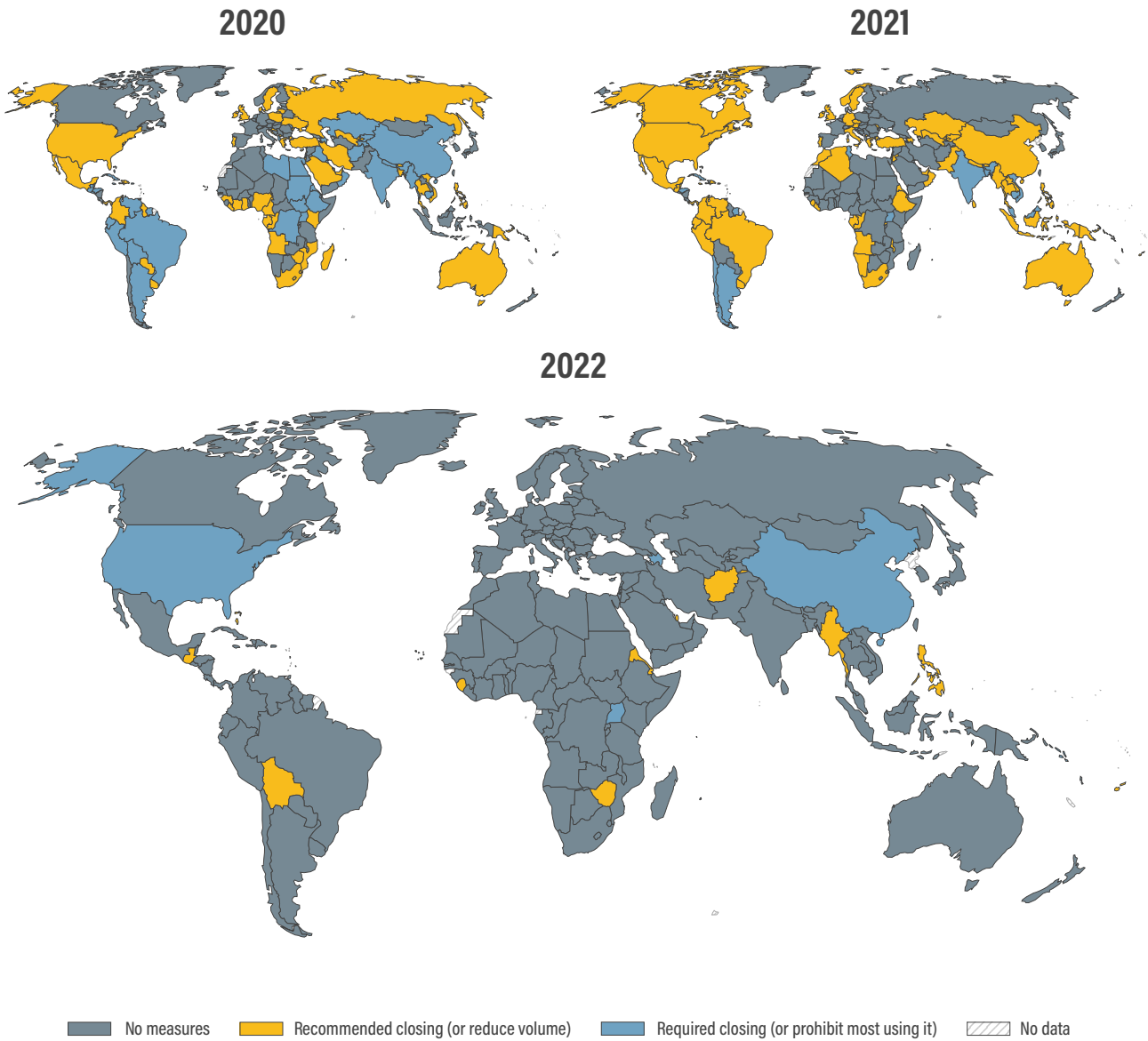


FIGURE 5. Snapshots of public transport closure policies on June 30 of 2020, 2021 and 2022

Source: See endnote 74 for this section.



Note: The response level of the strictest sub-national level is shown if policies vary within a country.

FIGURE 6. Allocation of green stimulus funding, March 2020 to February 2021

Source: See endnot5e 76 for this section.

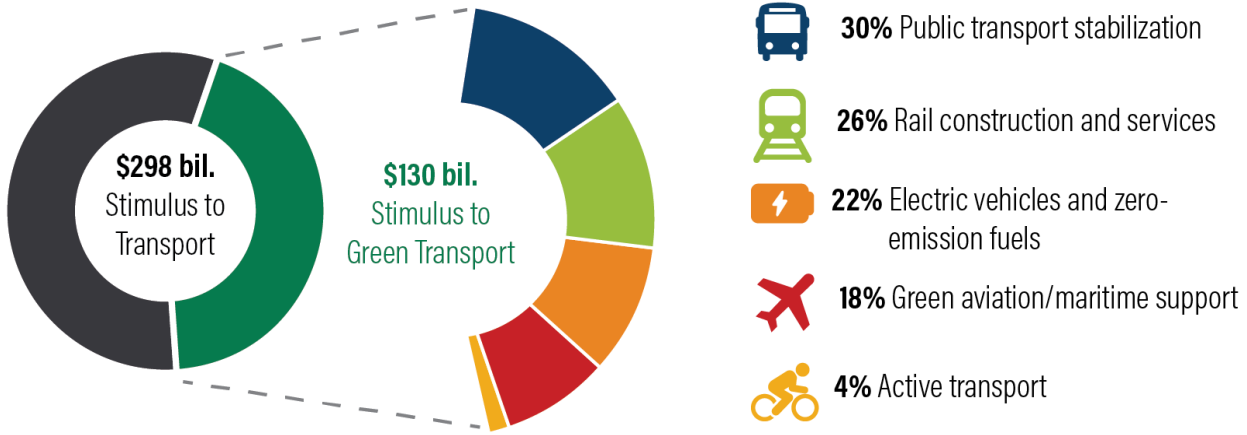
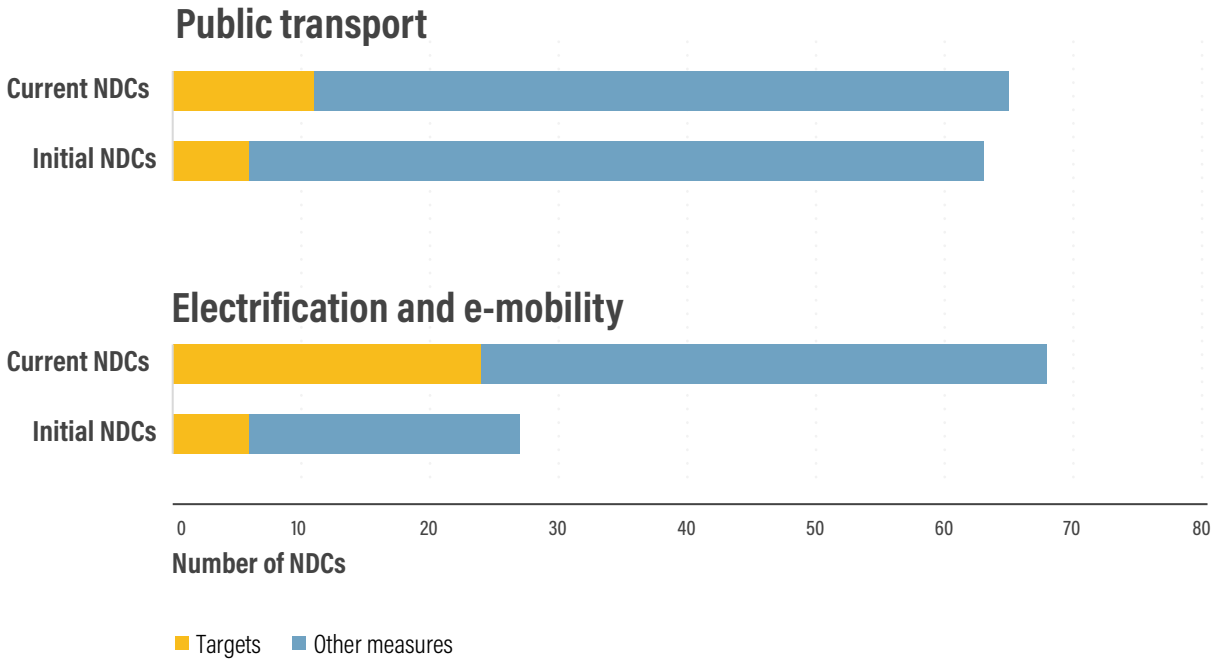


FIGURE 7. Number of initial and updated Nationally Determined Contributions that included public transport, as of end-2022

Source: See endnote 85 for this section.



Section 3.4.2

Informal Transport

FIGURE 1. Market shares of informal transport in 30 cities among motorised trips, selected years

Source: See endnote 5 for this section.

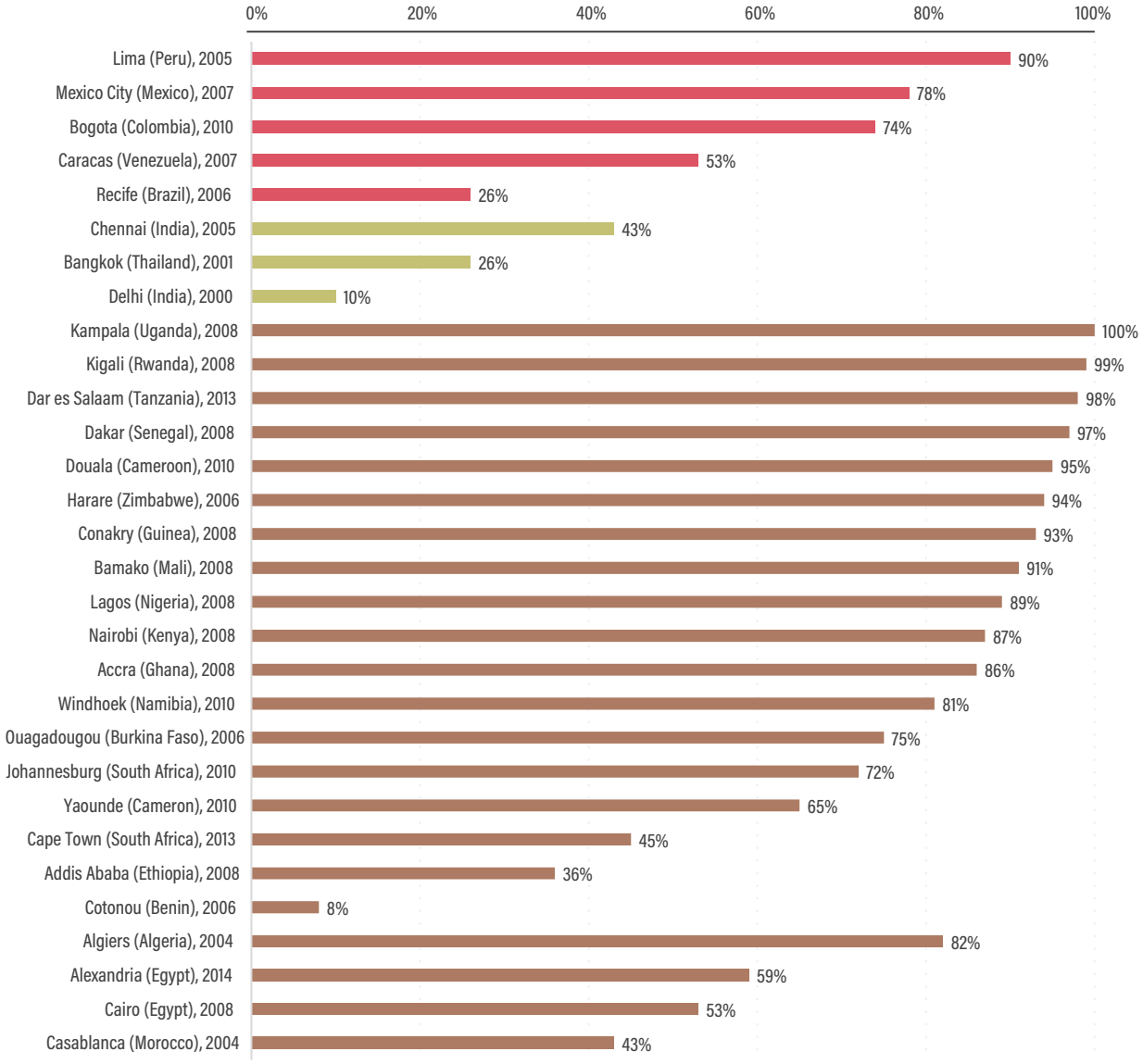
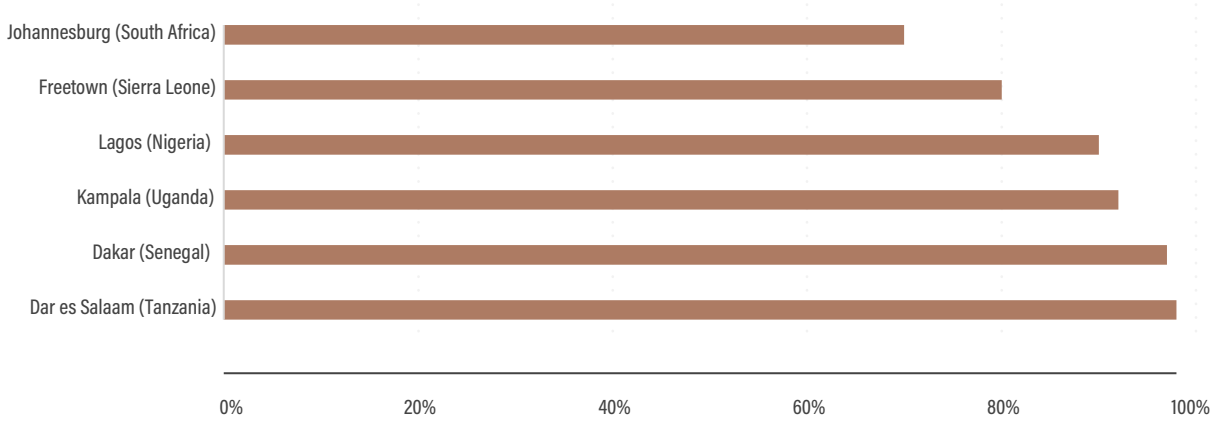


FIGURE 2. Share of road-based motorised trips made by informal transport services in six African cities, selected years

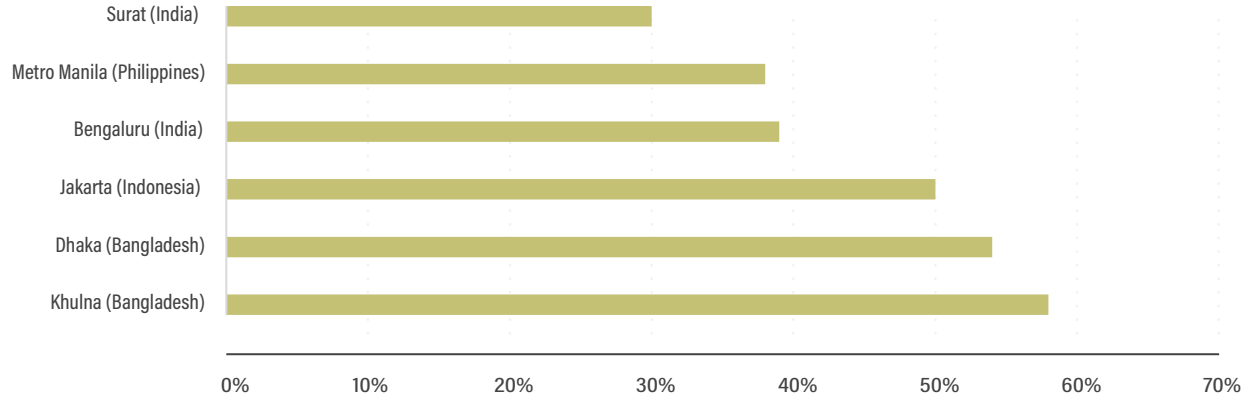
Source: See endnote 13 for this section.



Note: Data for Dakar reflect the percentage of daily trips made using informal transport, and data for Freetown refer to the percentage of passenger transport trips using informal transport. Data for Dar es-Salaam and Johannesburg are from 2013; for Dakar, Kampala and Lagos are from 2008; and for Freetown are from 2019.

FIGURE 4. Estimated modal shares of informal transport in commuting trips in six Asian cities

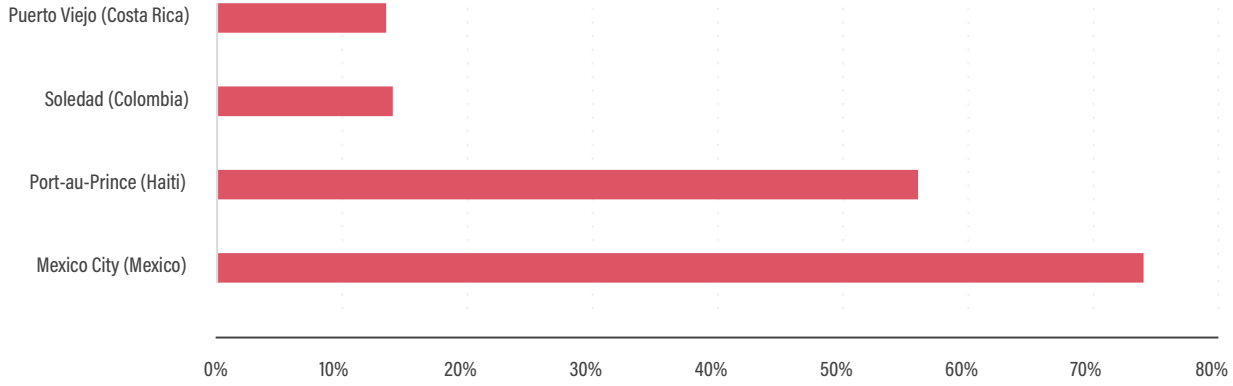
Source: See endnote 25 for this section.



Note: Data for Bengaluru are specifically for two-wheelers and auto-rickshaws. Data for Metro Manila are from 2021, for Khulna are from 2019, for Dhaka and Surat are from 2018, and for Bengaluru and Jakarta are from 2017.

FIGURE 7. Estimated modal shares of informal transport in cities in Latin America and the Caribbean

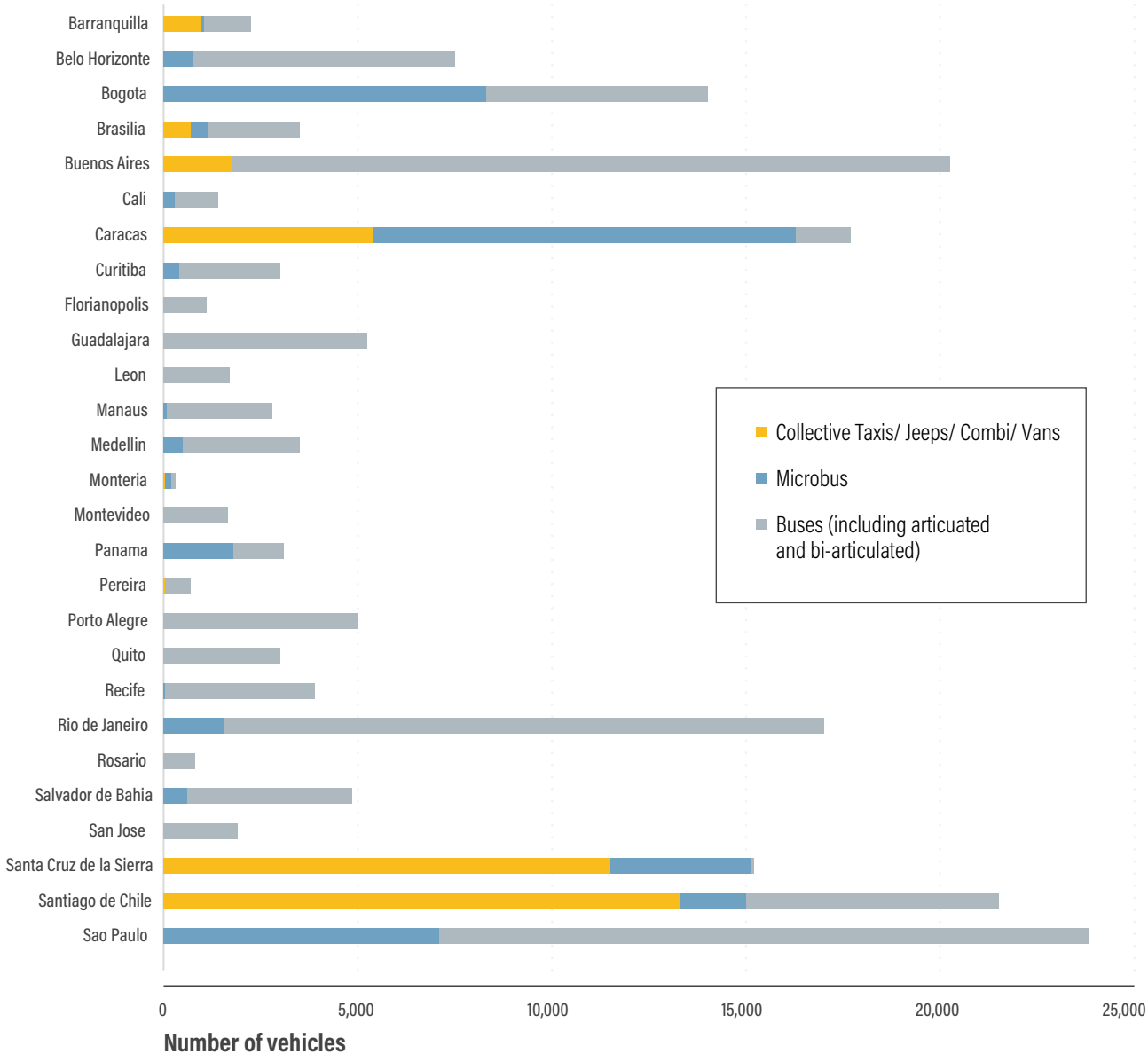
Source: See endnote 33 for this section.



Note: Data for Port-au-Prince correspond to the city's Metropolitan Area, data for Puerto Viejo and Soledad reflect the percentage of all passenger travel carried out using three-wheelers, and data for Mexico City are for the percentage of public transport trips completed on "colectivos". Data for Puerto Viejo and Soledad are from 2022, and for Mexico City and Port-au-Prince are from 2018.

FIGURE 8. Motorised collective transport vehicle fleets in different cities in Latin America and the Caribbean, 2020

Source: See endnote 34 for this section.

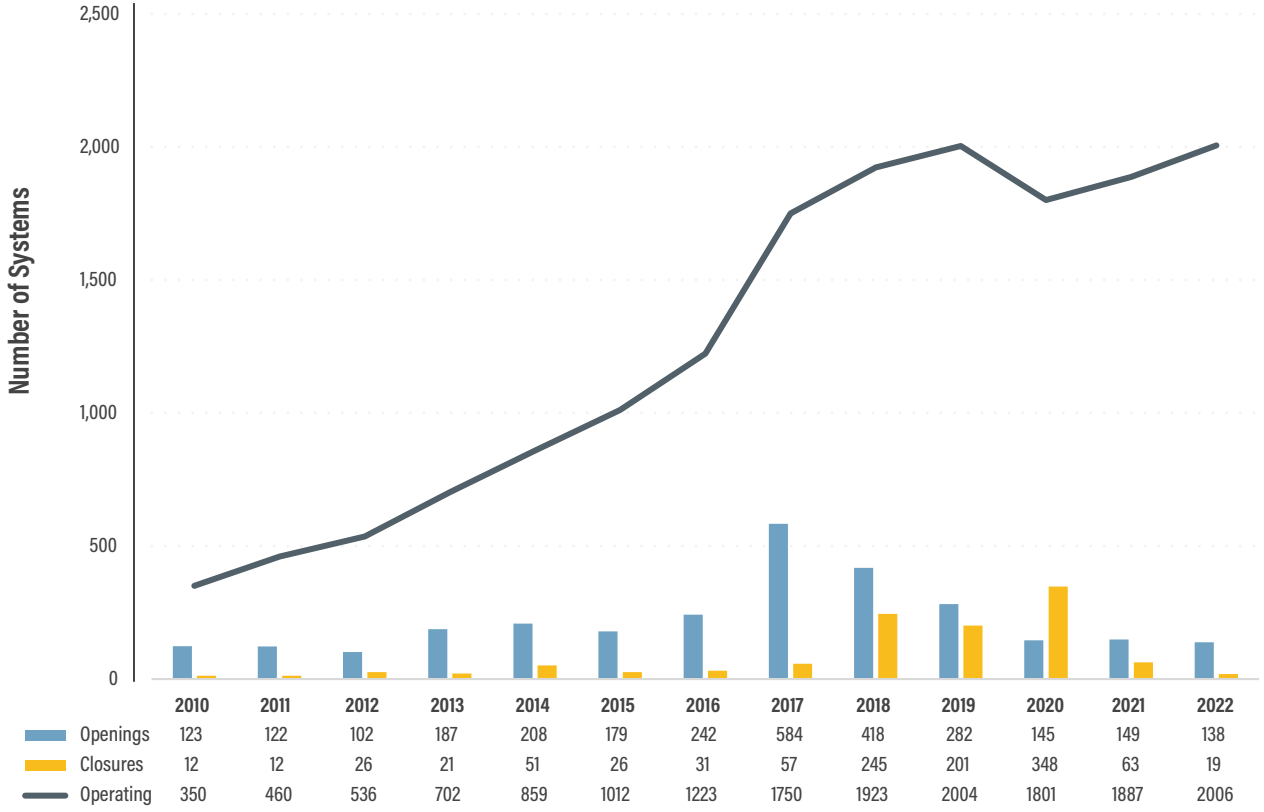


Section 3.4.3

App-Driven Shared Transport

FIGURE 1. Number of bike-sharing systems worldwide, 1995-2022

Source: See endnote 33 for this section.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Openings	123	122	102	187	208	179	242	584	418	282	145	149	138
Closures	12	12	26	21	51	26	31	57	245	201	348	63	19
Operating	350	460	536	702	859	1012	1223	1750	1923	2004	1801	1887	2006

FIGURE 2. Number of cities with dockless shared micromobility operations, 2019-2022

Source: See endnote 34 for this section.

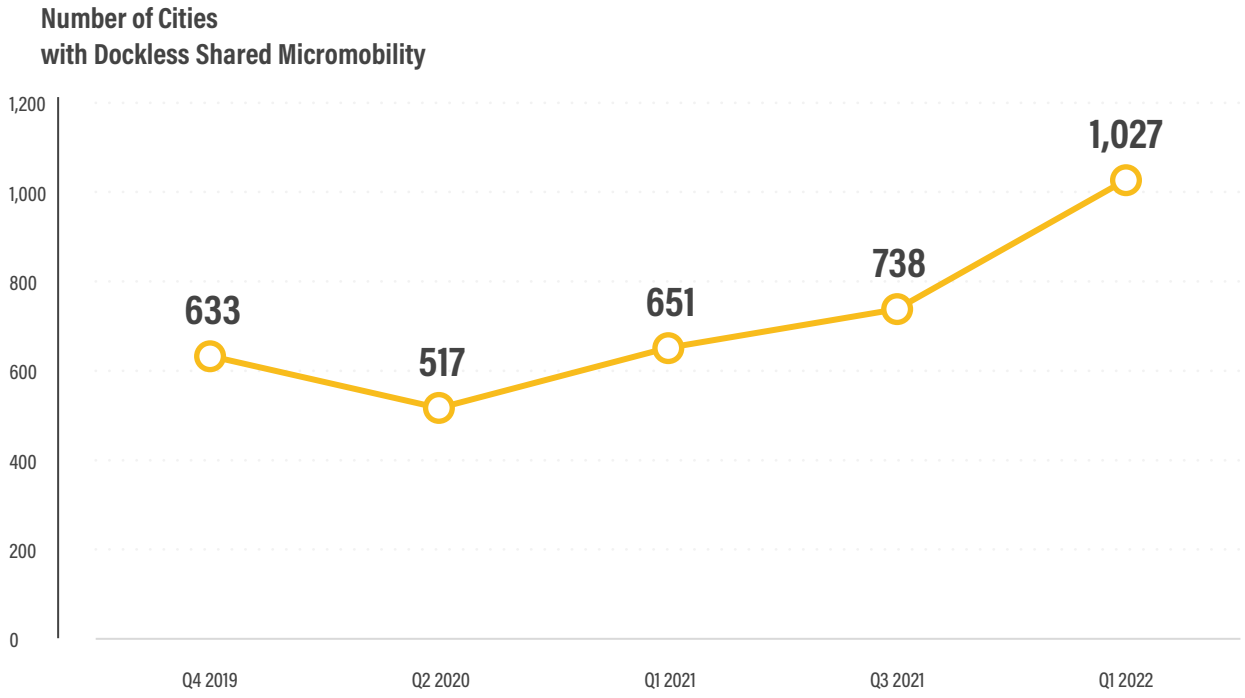
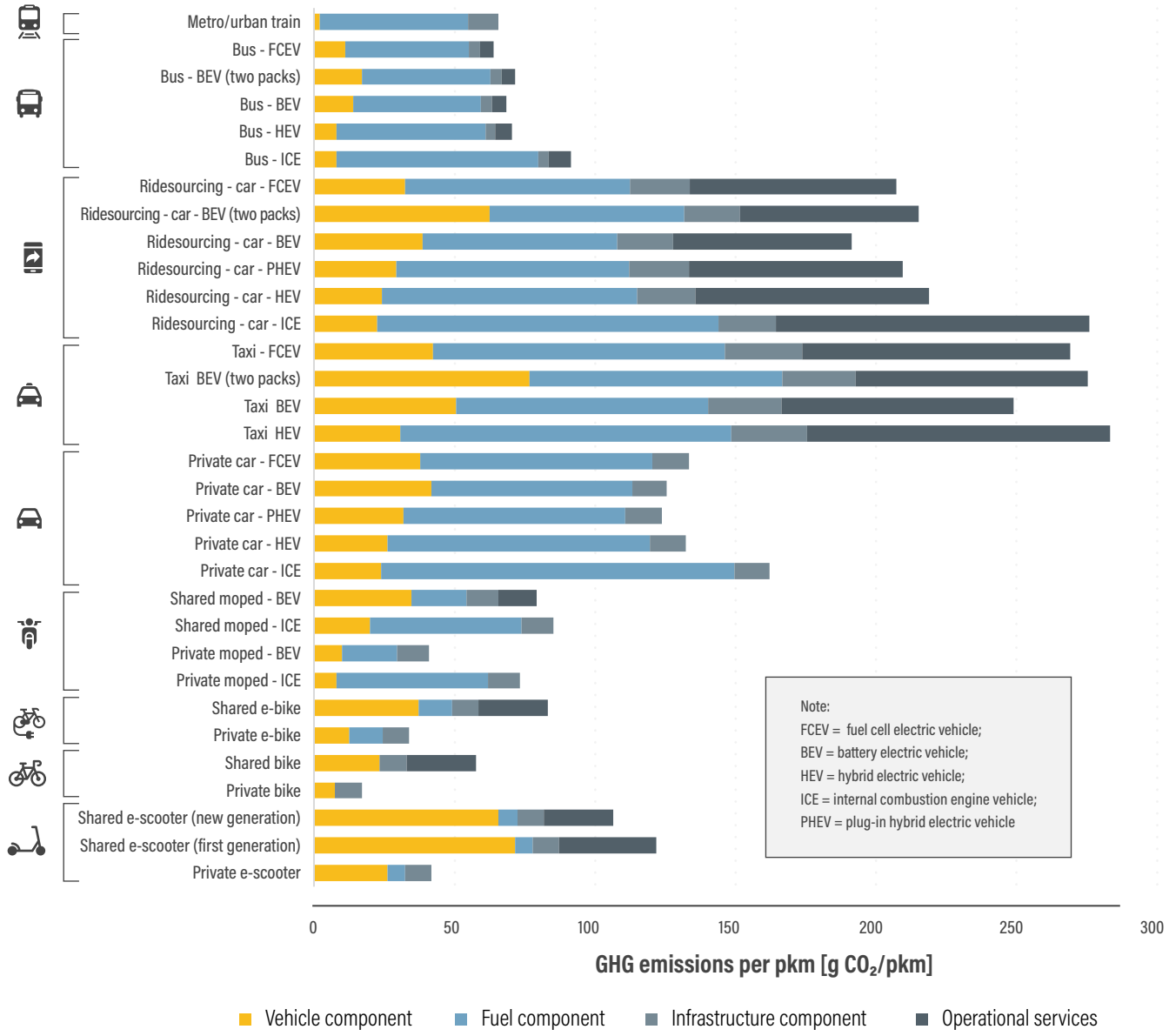


FIGURE 3. Estimated life-cycle greenhouse gas emissions per passenger-kilometre, by urban transport mode

Source: See endnote 57 for this section.



Section 3.5

Rail

FIGURE 1 Passenger rail activity by region, 2004-2020

Source: See endnote 9 for this section.

Passenger rail activity (million pkm) by region, 2010-2020

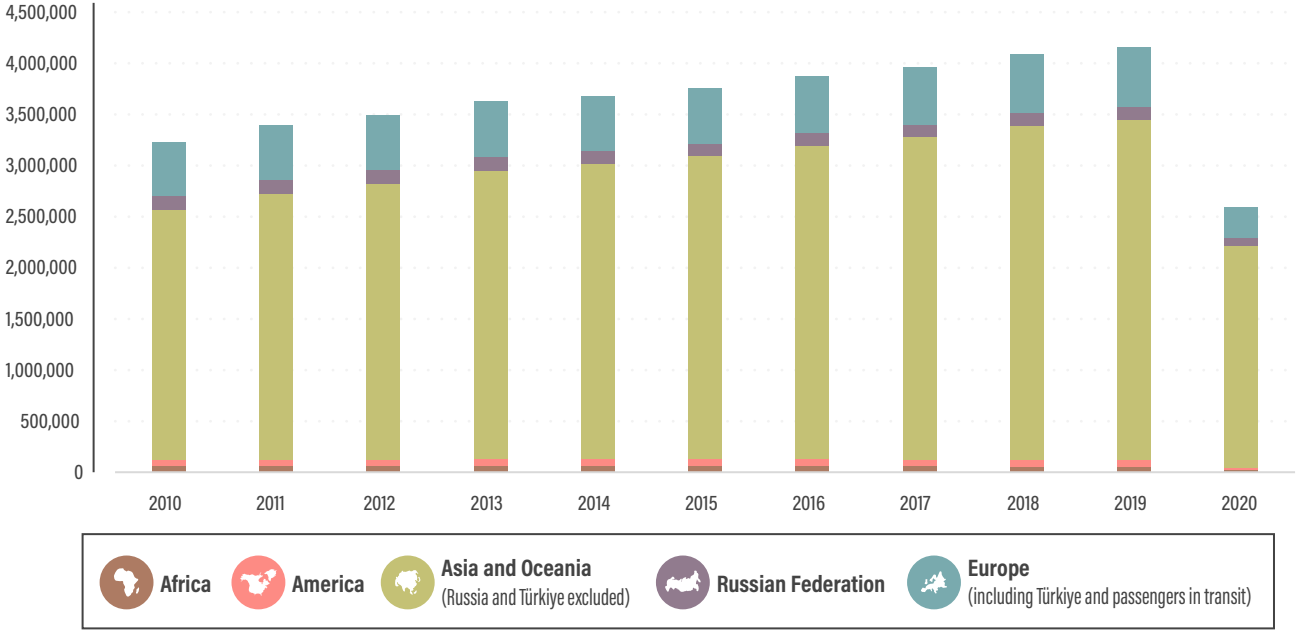


FIGURE 2 Freight rail activity by region, 2004-2020

Source: See endnote 19 for this section.

Freight rail activity (million tonne-km) by region, 2010-2020

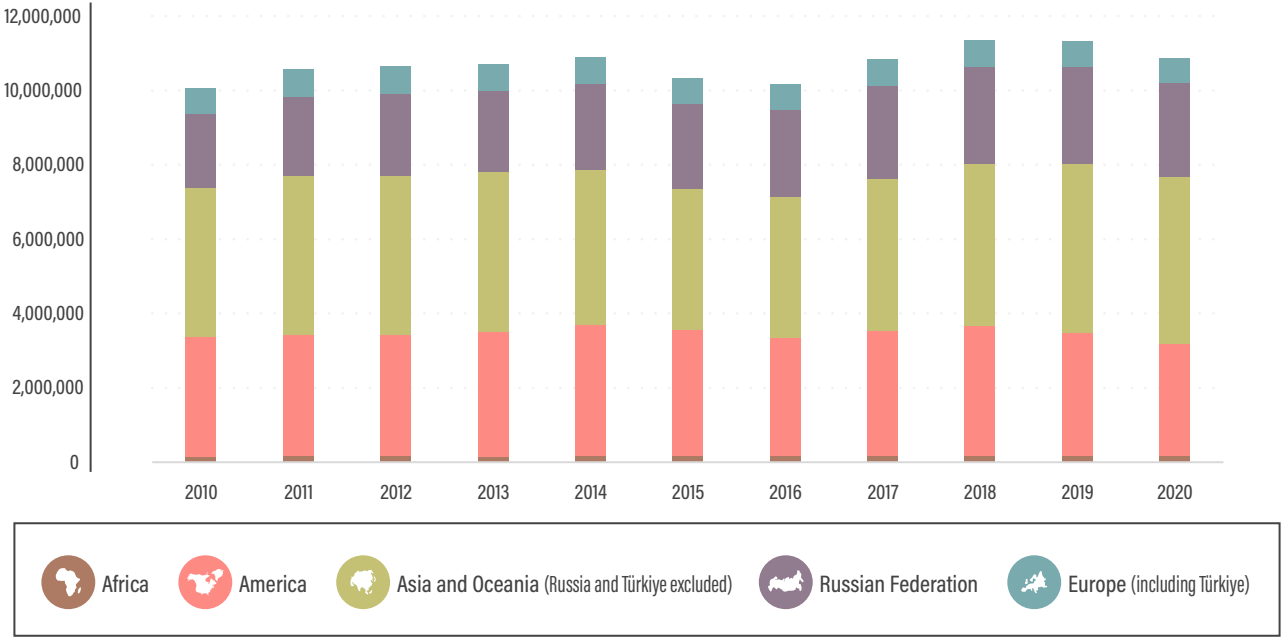


FIGURE 3 Length of rail lines by region, 2010-2020

Source: See endnote 29 for this section.

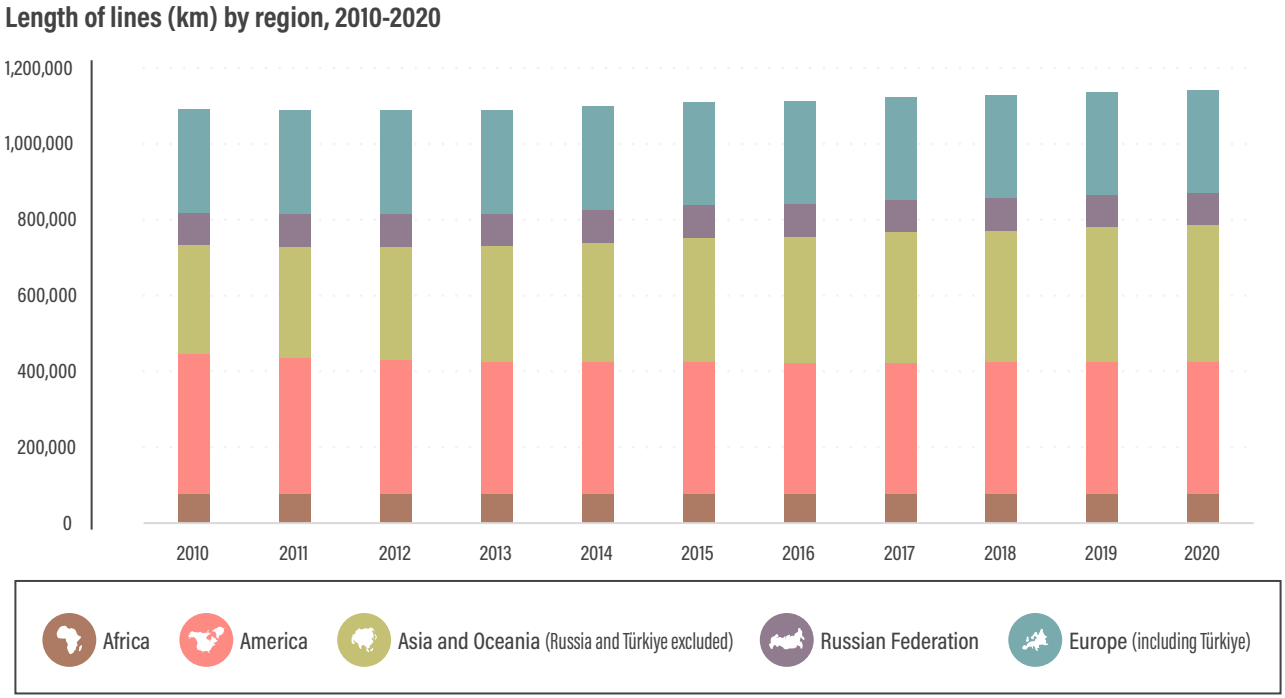


FIGURE 4 High-speed rail development in selected countries/regions, 2011-2021

Source: See endnote 31 for this section.

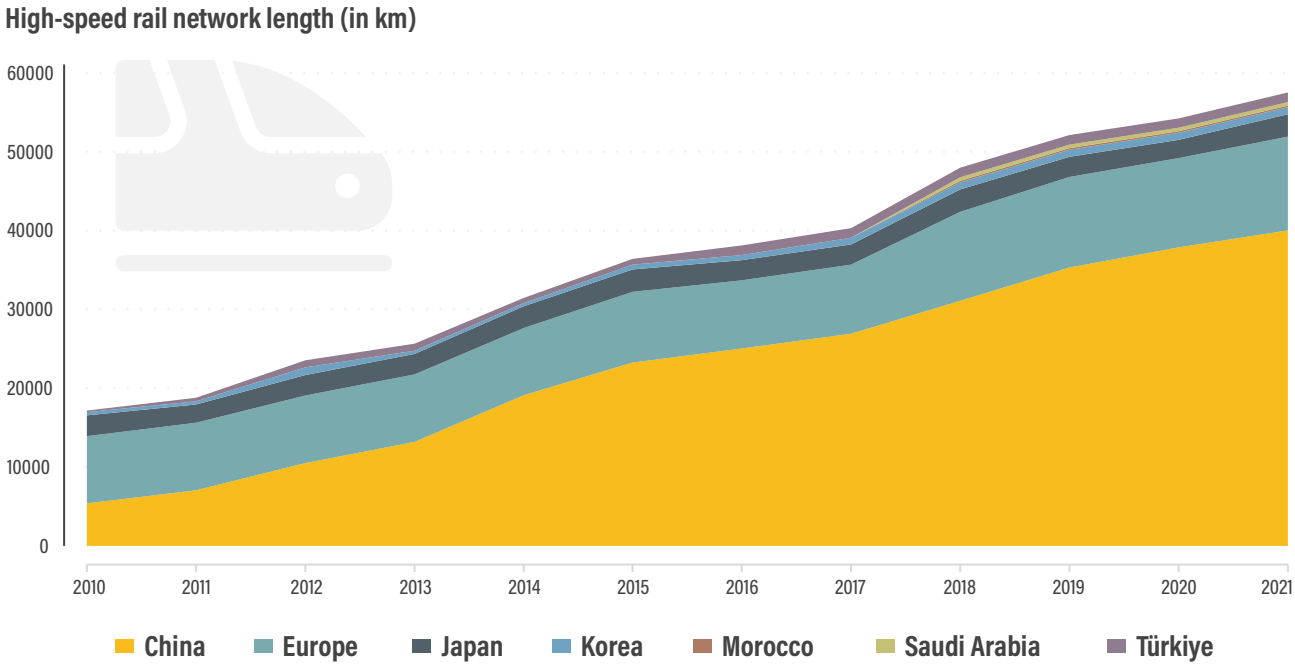


FIGURE 5 Status of global high-speed rail network by country/region, as of 2021

Source: See endnote 32 for this section.

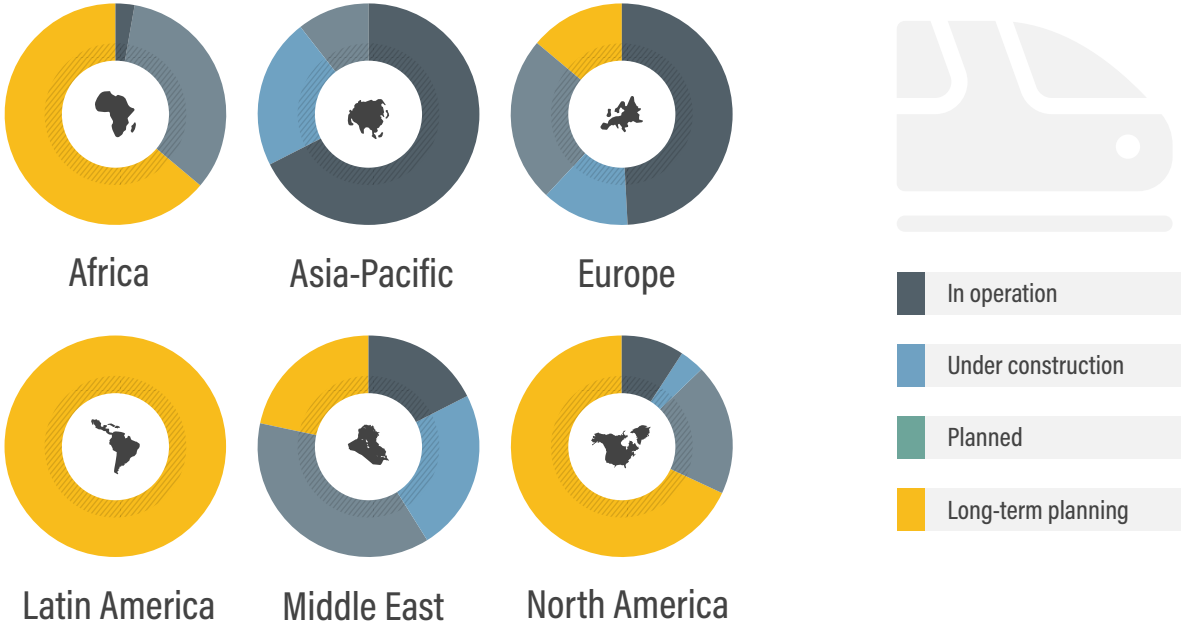


FIGURE 6 Increases in rail modal share due to high-speed rail

Source: See endnote 33 for this section.

Factor by which rail mode share increases due to high-speed rail

FIGURE 7 CO_2 emissions intensity of global rail, 2000-2020

Source: See endnote 44 for this section.

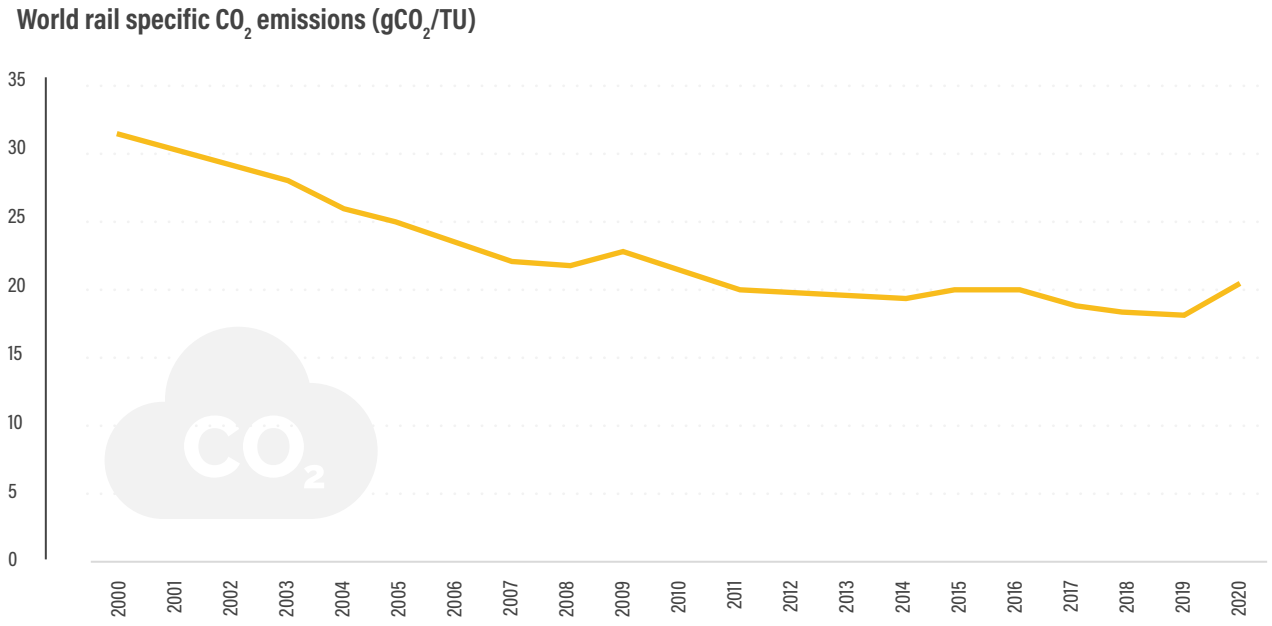


FIGURE 8 Energy use in the rail sector by source, 2021 and projections for 2030

Source: See endnote XX for this section.

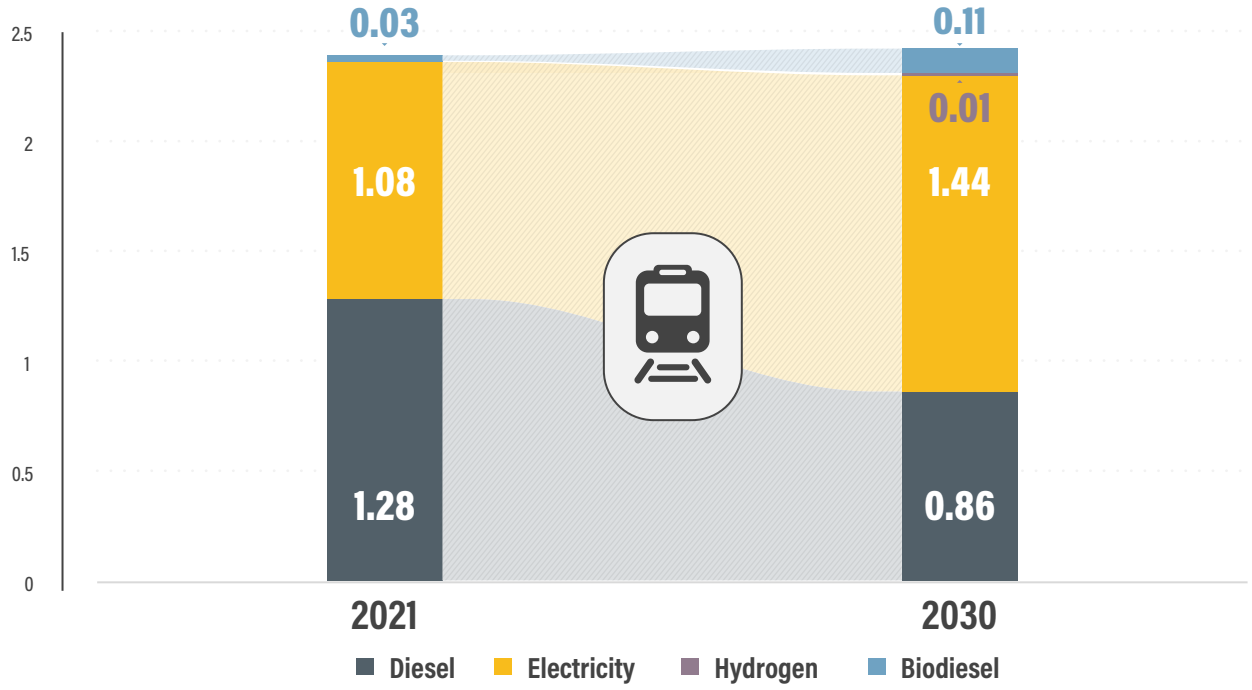
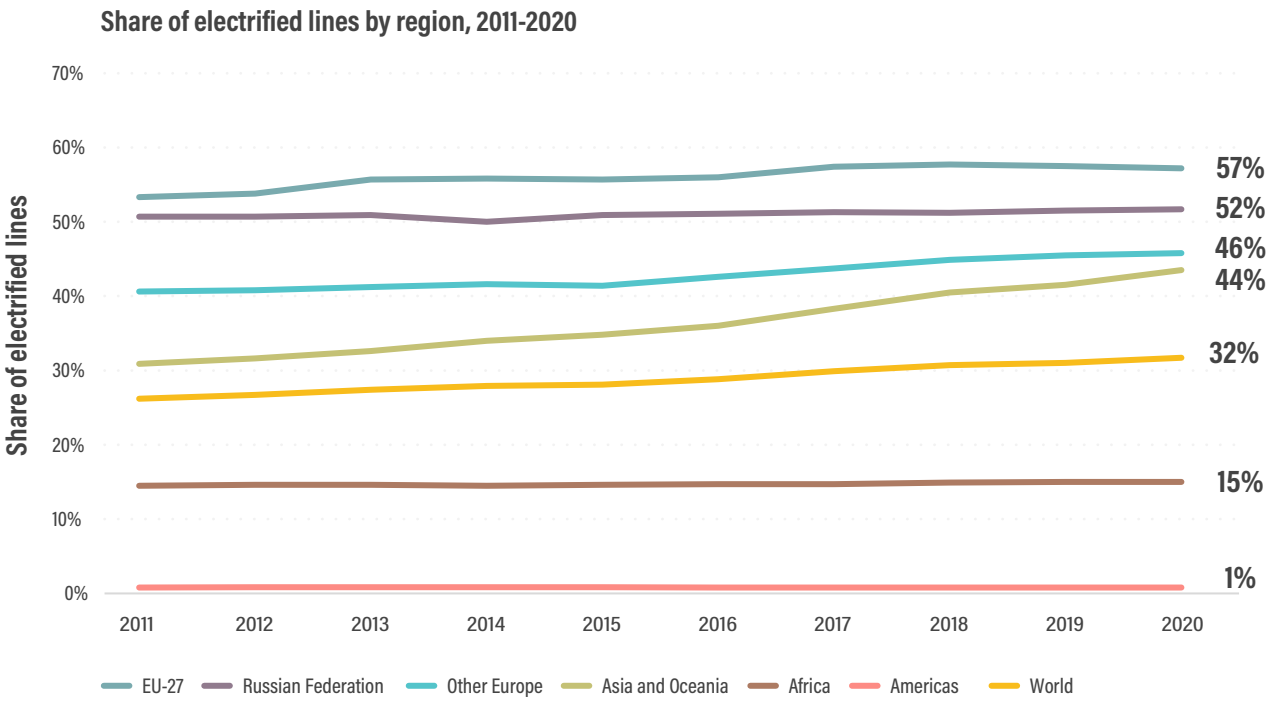


FIGURE 9 Share of electrified rail lines by region, 2011-2020

Source: See endnote XX for this section.



Section 3.6

(Private) Road Transport

FIGURE 1. Average crude oil price globally, 2011-2022

Source: See endnote 10 for this section.

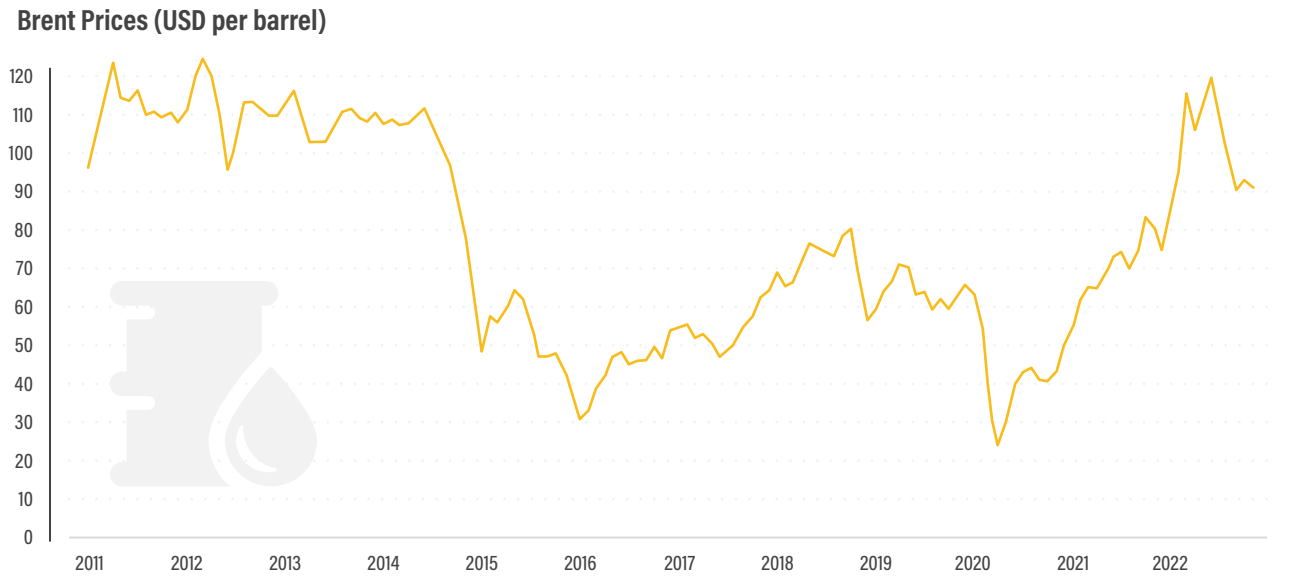


FIGURE 2. Motorisation rates by region, 2020

Source: See endnote 22 for this section.

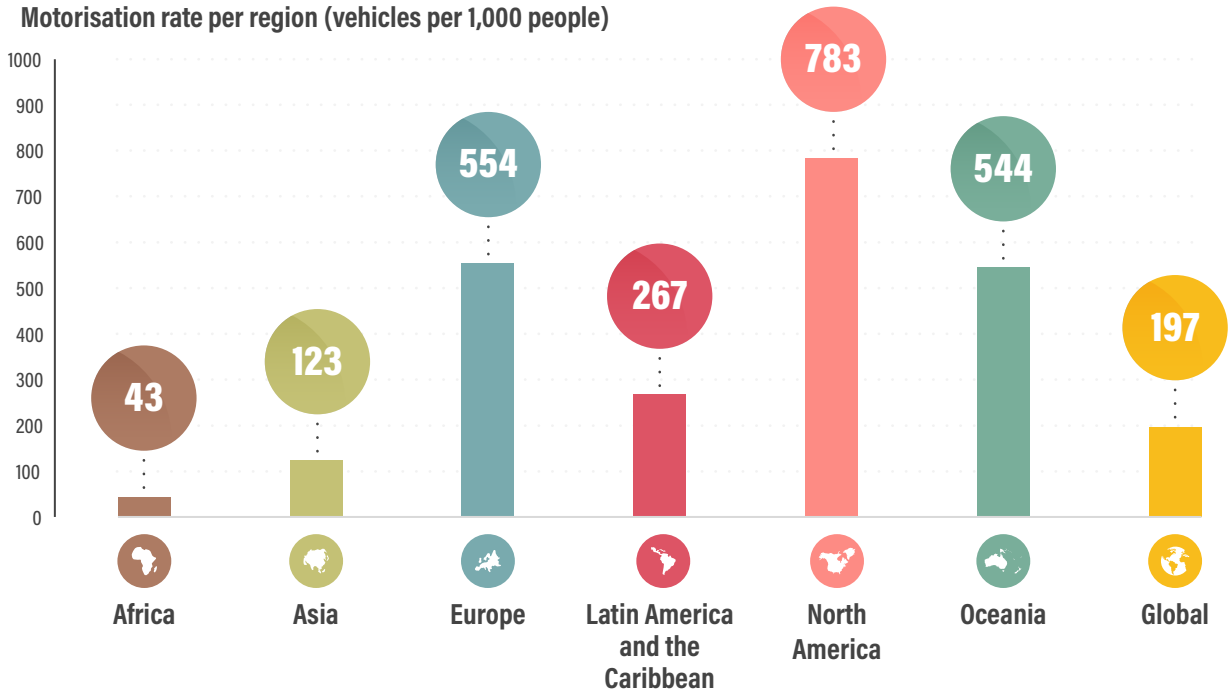


FIGURE 3. Automobile vehicle sales (passenger and commercial) by region, 2015-2022

Source: OICA. See endnote 38 for this section.

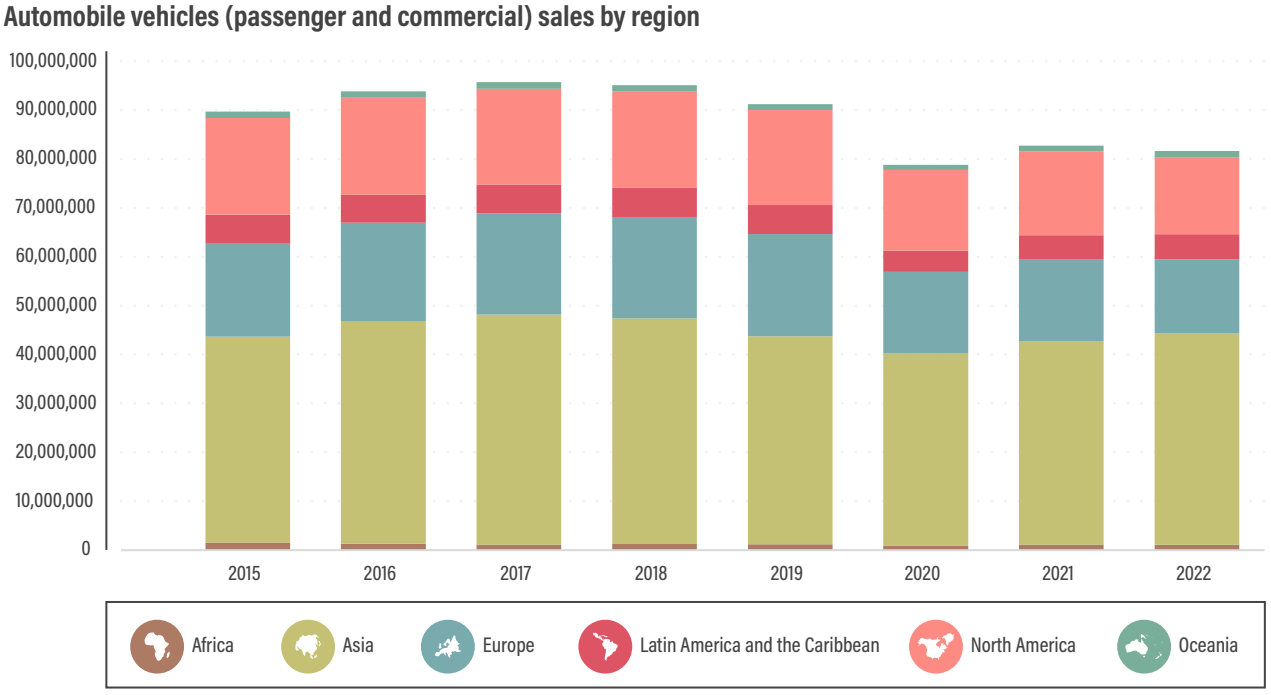


FIGURE 4. Top 10 cities where people spent the most time in traffic, 2022

Source: INRIX. See endnote 66 for this section.

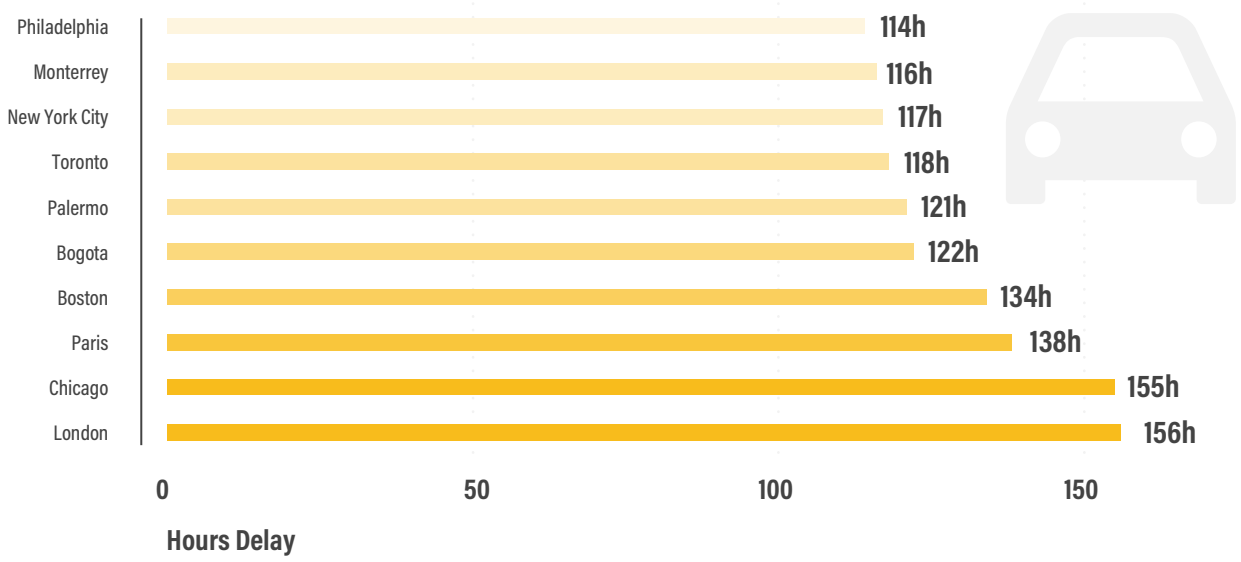


FIGURE 5. CO_2 emissions from road transport, by vehicle type, 2000-2020 (in $MtCO_2$)

Source: IEA. See endnote 86 for this section.

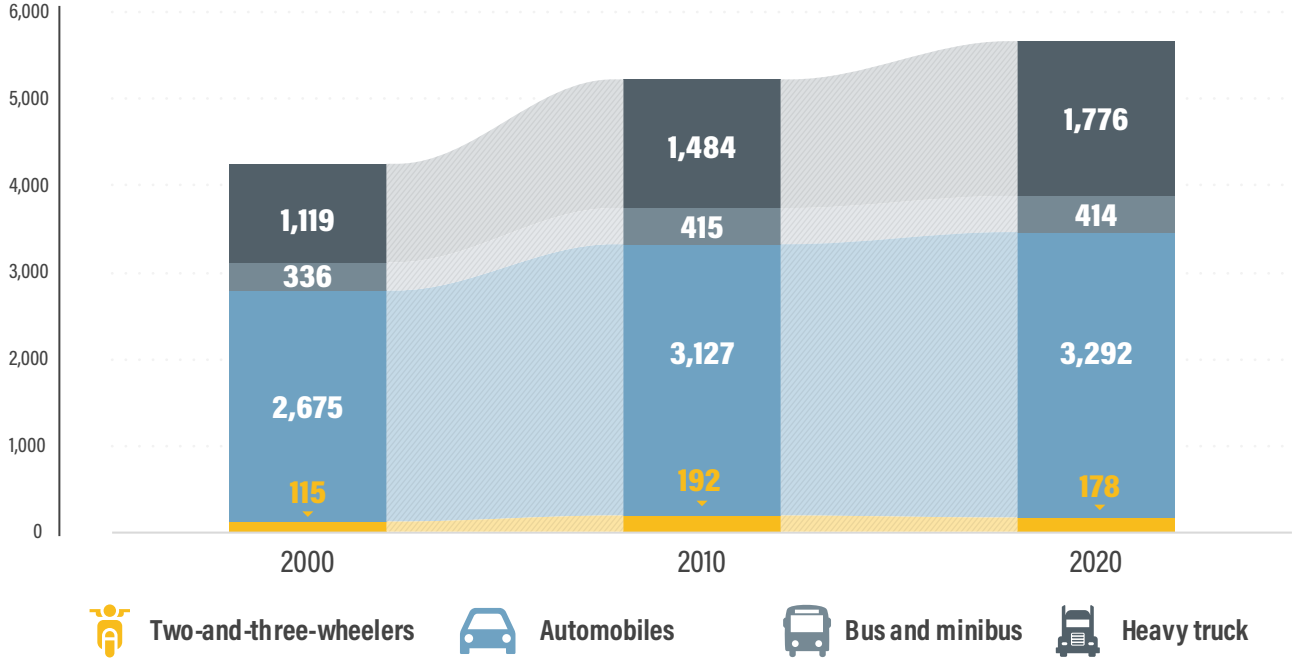


FIGURE 6. Per capita CO_2 emissions from road transport in countries globally, 2021 (in kilograms)

Source: See endnote 89 for this section.

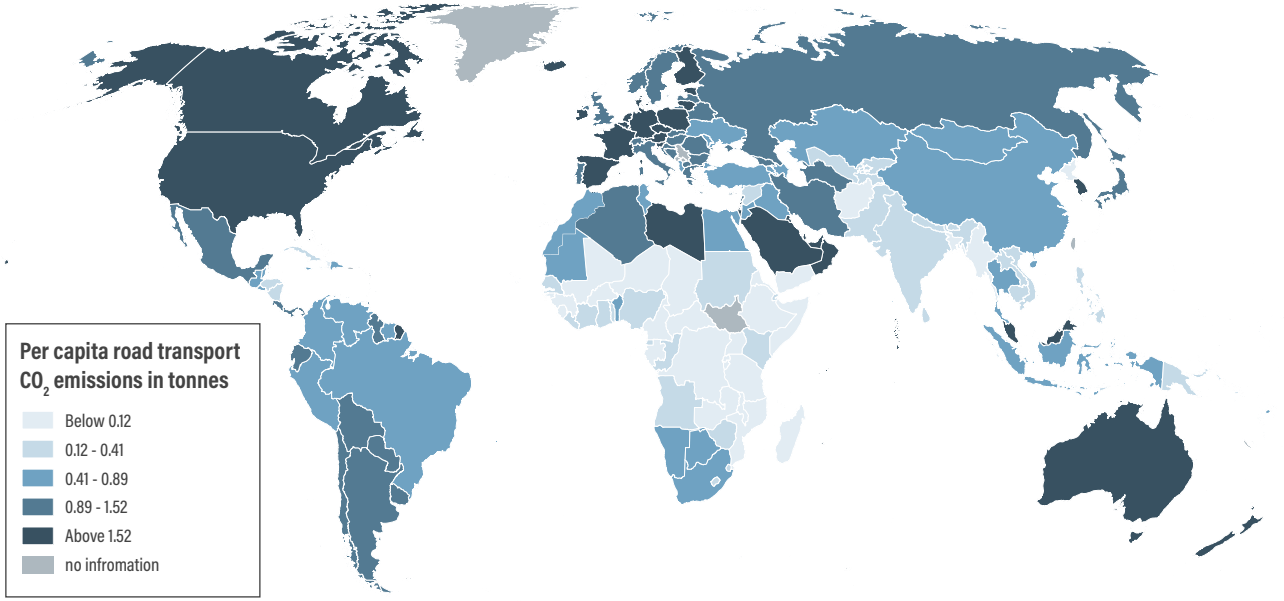
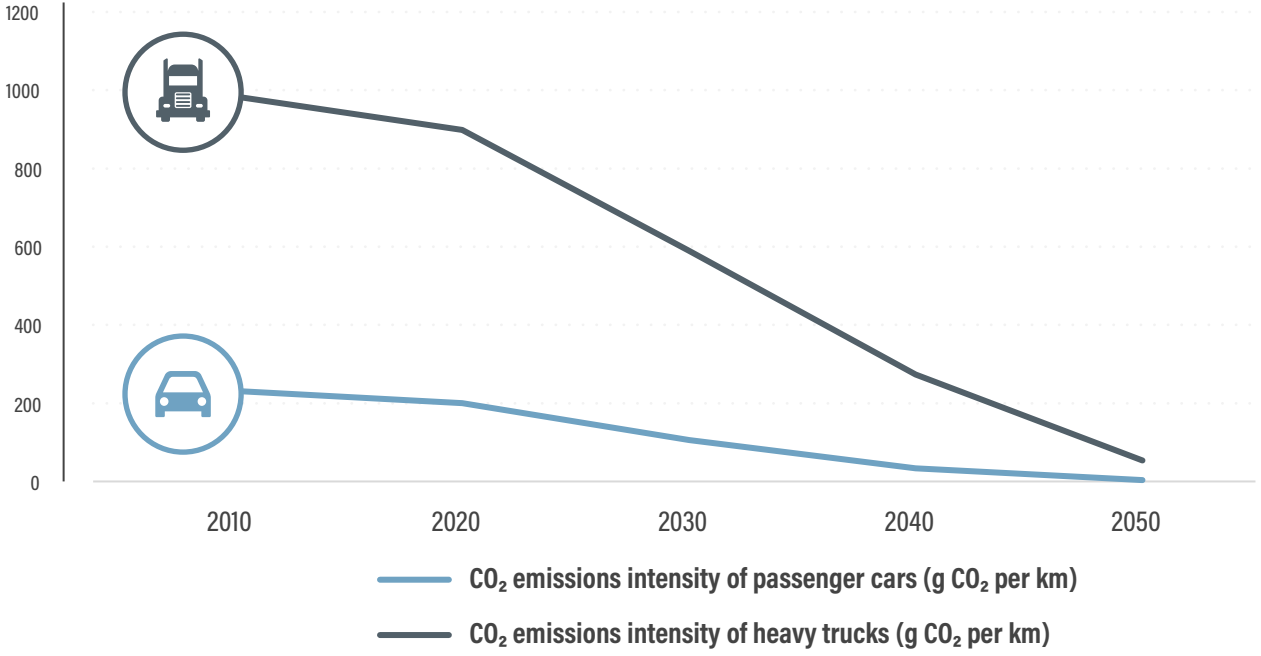


FIGURE 7. Required emissions intensity pathway to 2050 according to the IEA's Net Zero scenario

Source: IEA. See endnote 103 for this section.



Section 3.7

Aviation

FIGURE 1 Demand trends for international air travel, January 2021 to March 2022

Source: See endnote 12 for this section.

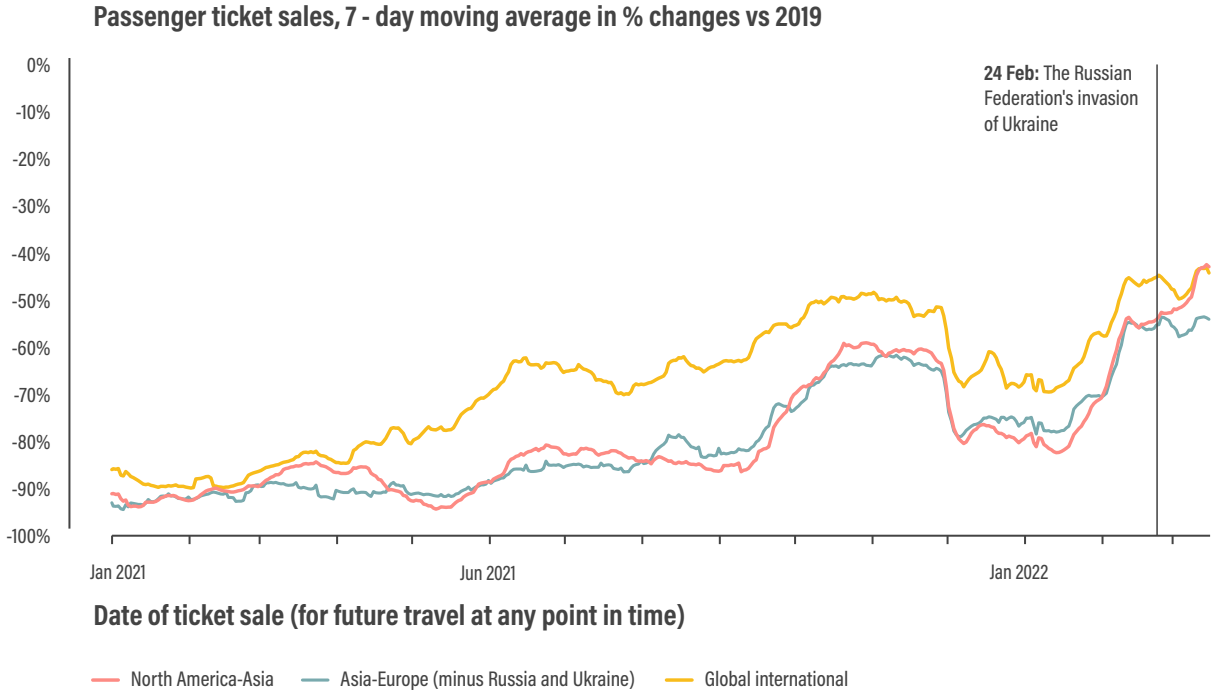


FIGURE 2 Relative emissions of different classes of airline services from London to New York

Source: See endnote 36 for this section.

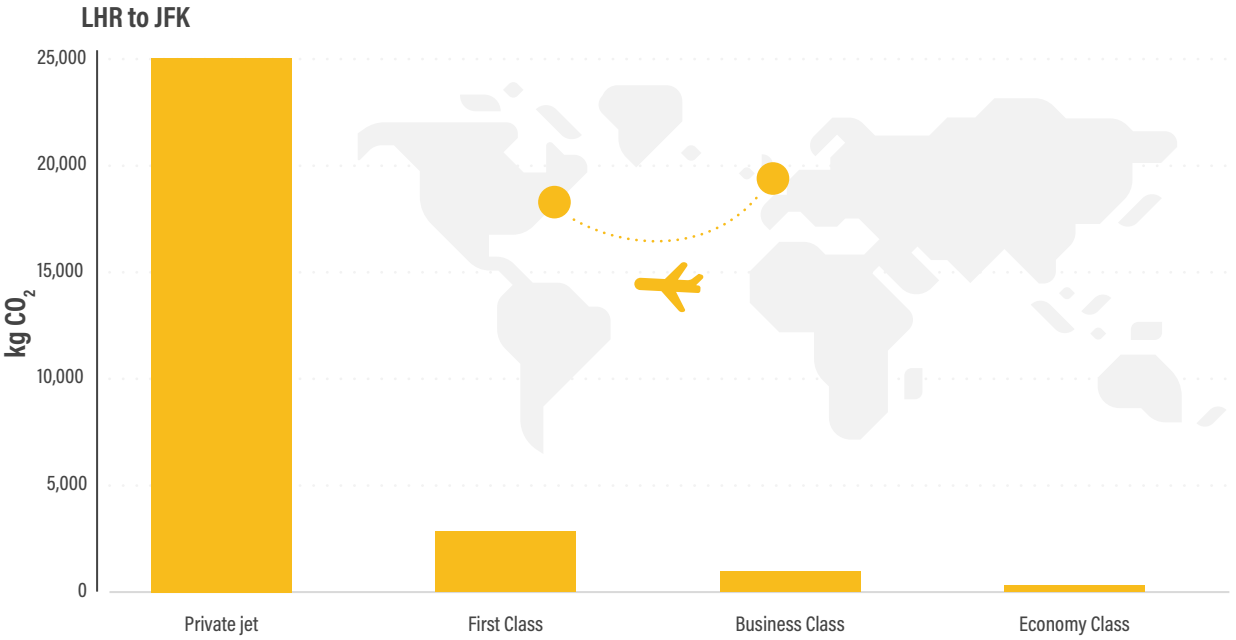


FIGURE 3 Energy intensity of domestic (top) and international (bottom) passenger aviation, 2000-2021 and projections to 2030 under a net zero scenario

Source: See endnote 43 for this section.

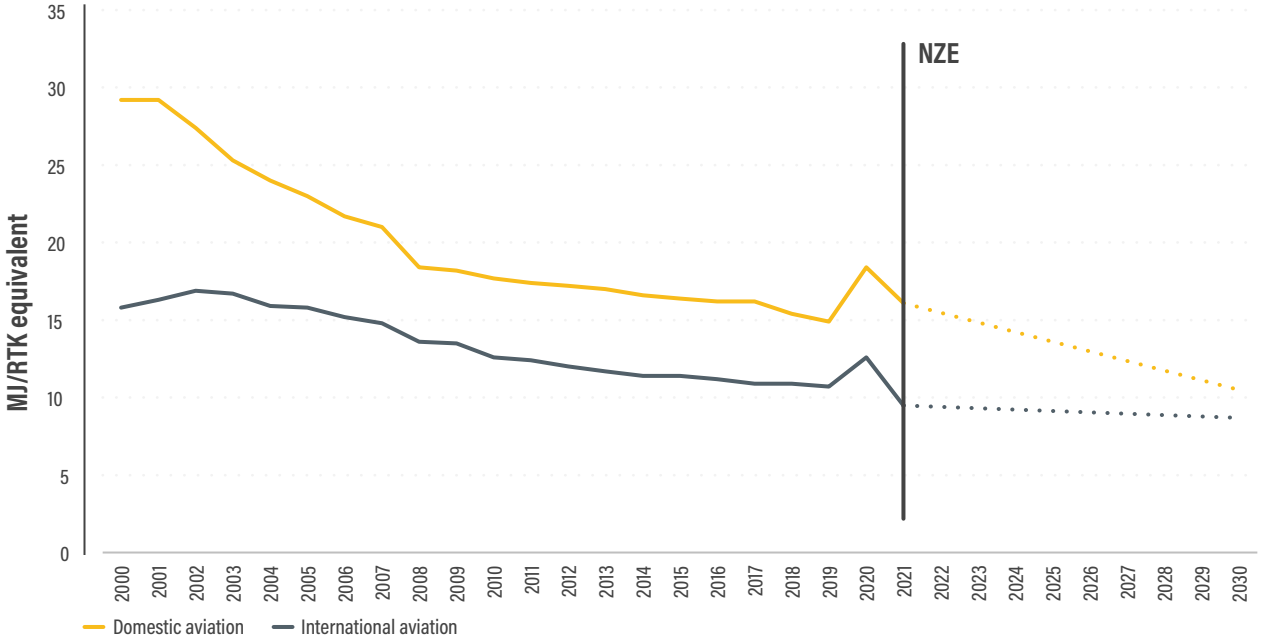


FIGURE 4 Scenarios for CO_2 emission mitigation from aviation, 2020-2050

Source: See endnote 45 for this section.

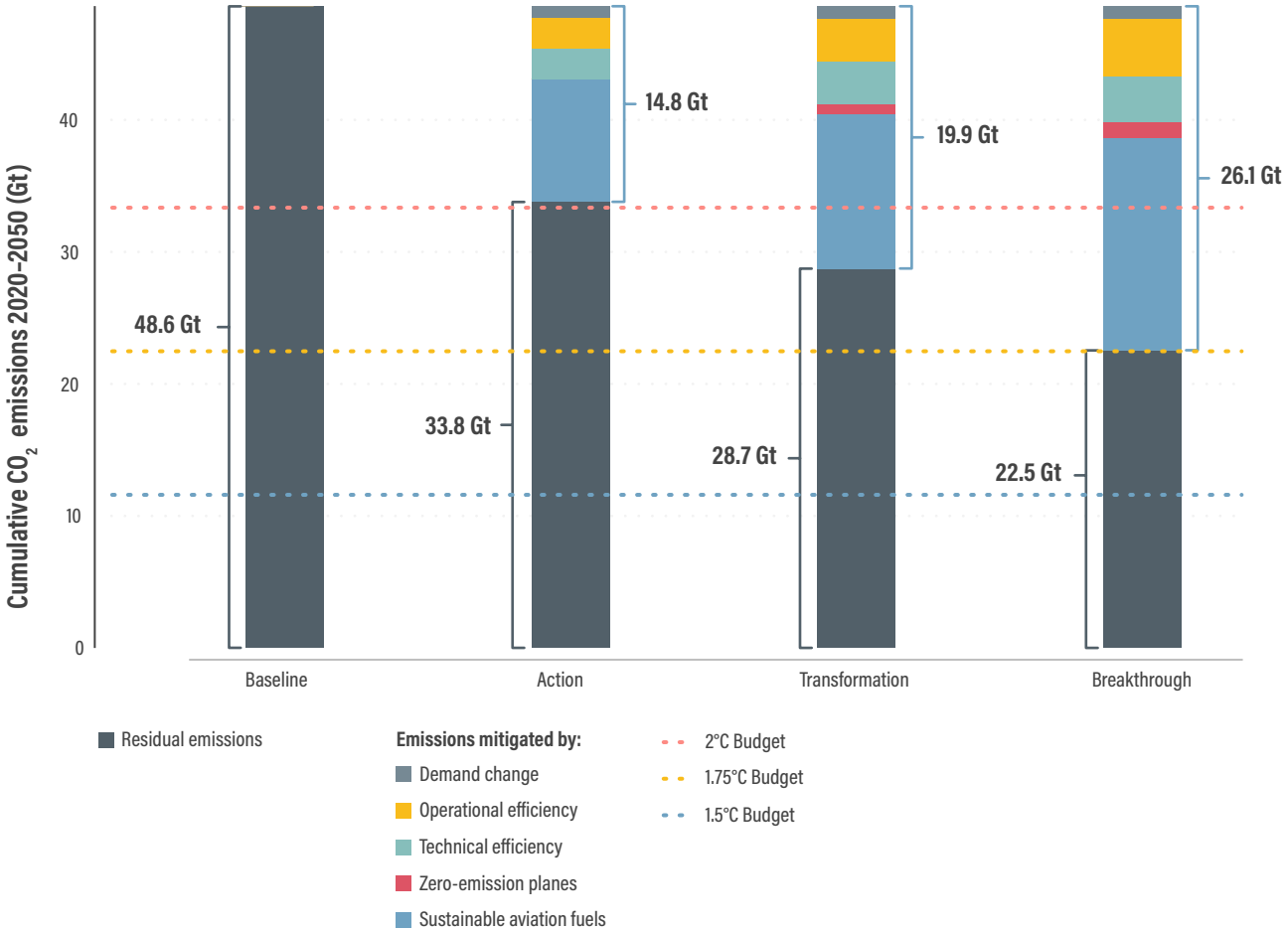
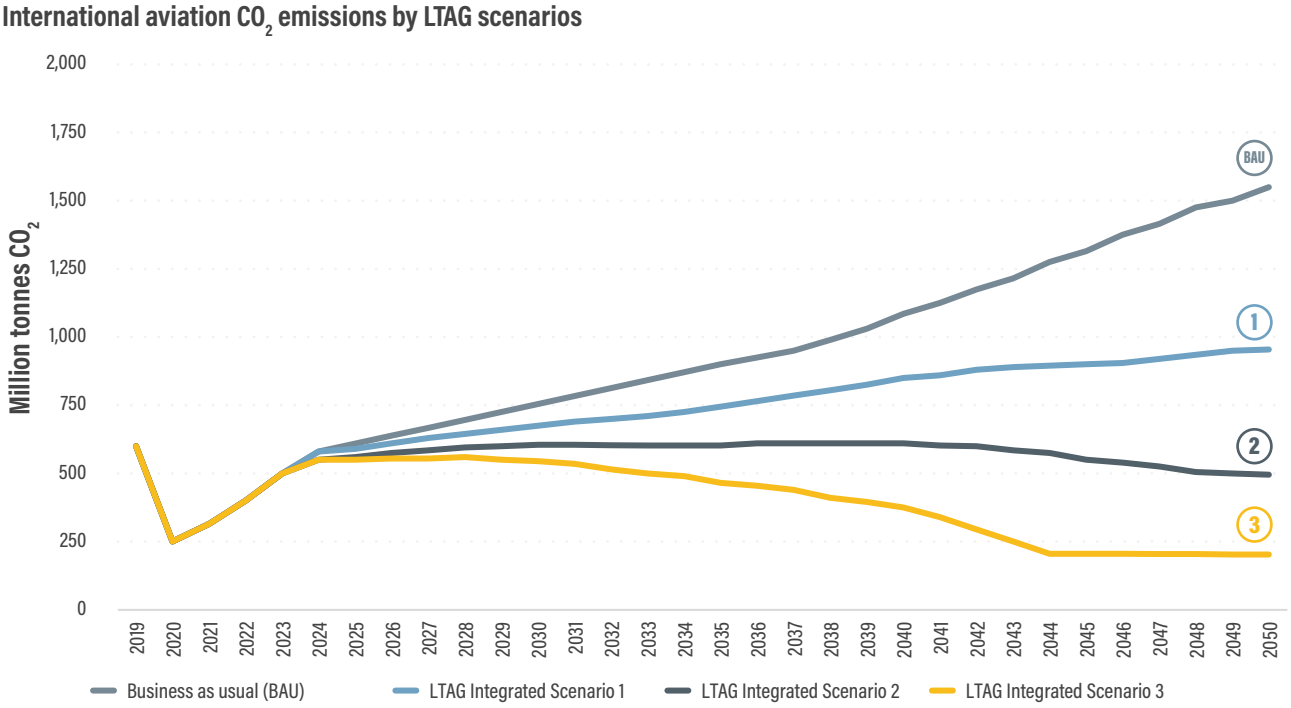


FIGURE 5 Decarbonisation scenarios under the International Civil Aviation Organization's long-term aspirational goal of 2022

Source: See endnote 53 for this section.



Note: LTAG = long-term aspirational goal

Section 3.8

Shipping

FIGURE 1 Container shipping fleet deployment of selected countries (by capacity in 20-foot equivalent units), 2018 to mid-2022

Source: See endnote 13 for this section.

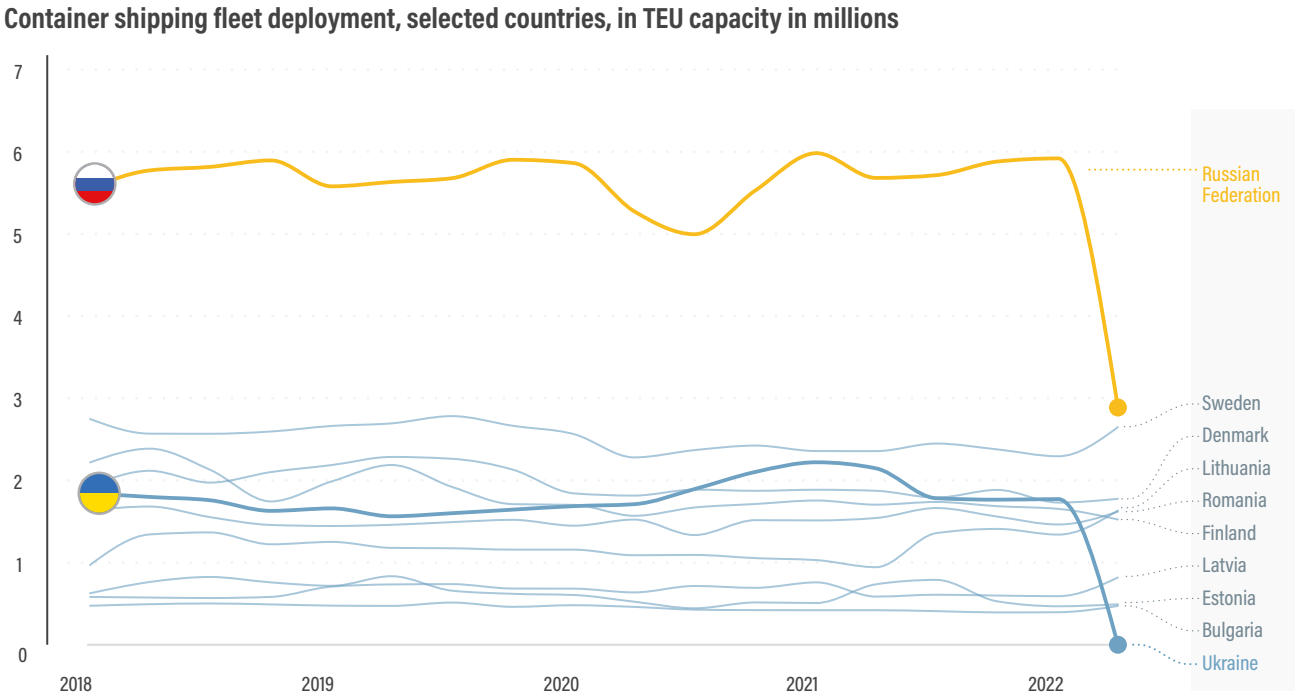


FIGURE 2 Shares of fossil fuels in international shipping and shipping vessel propulsion, as of March 2023

Source: See endnote 16 for this section.

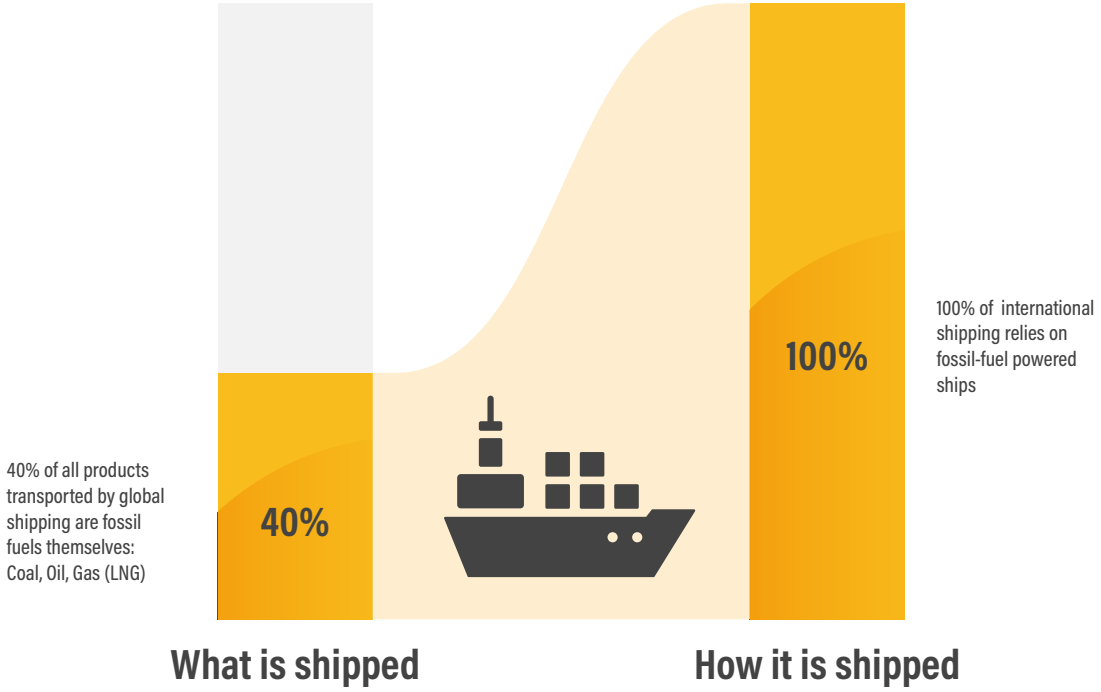


FIGURE 3 Rising costs of shipping, 2019 to mid-2022 (in USD per day)

Source: See endnote 23 for this section.

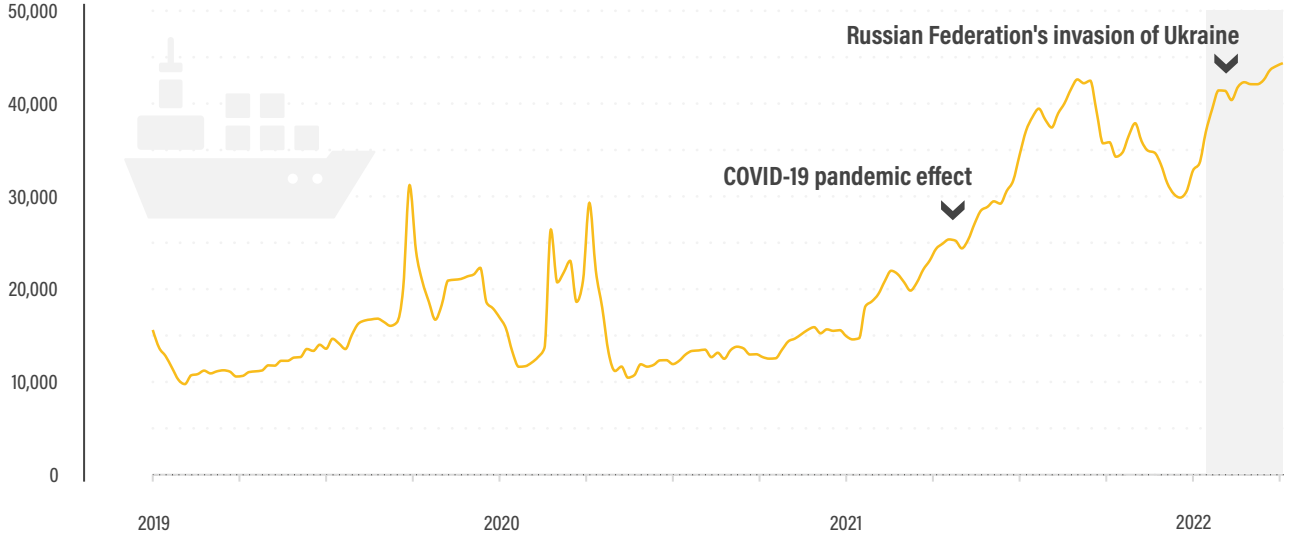


FIGURE 4 Inland waterway freight transport activity in the European Union, 2011-2021

Source: See endnote 27 for this section.

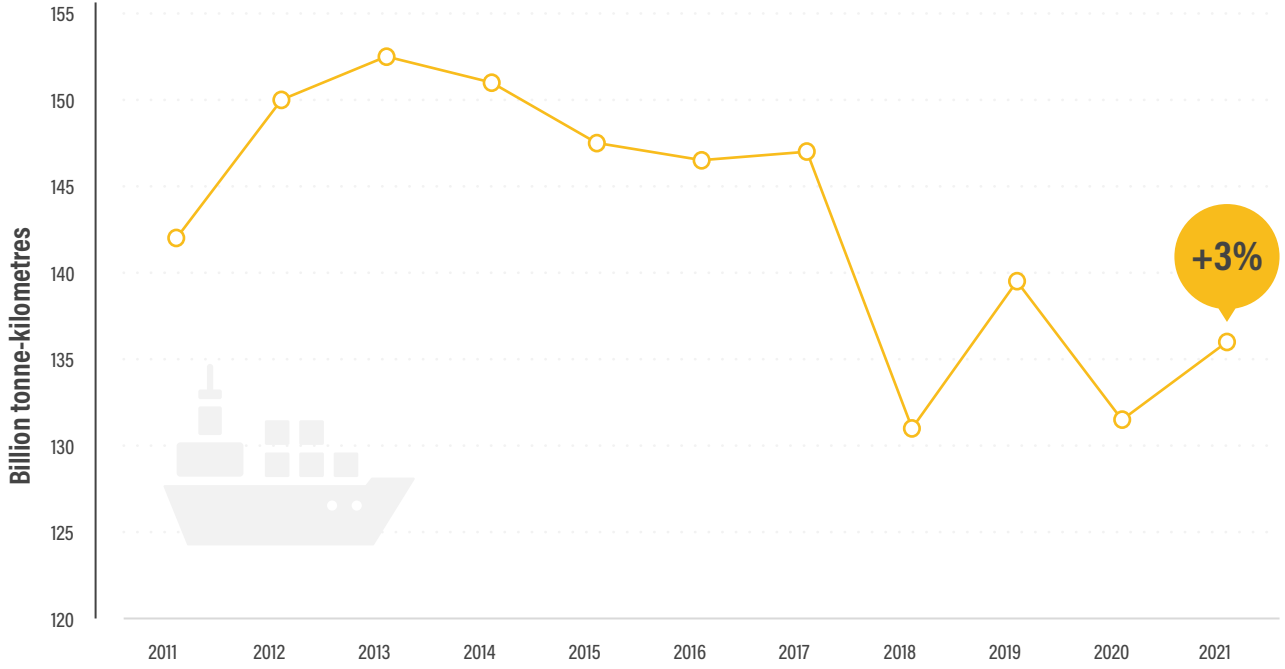


FIGURE 5 Monthly emissions from international shipping, 2019-2022

Source: See endnote 29 for this section.

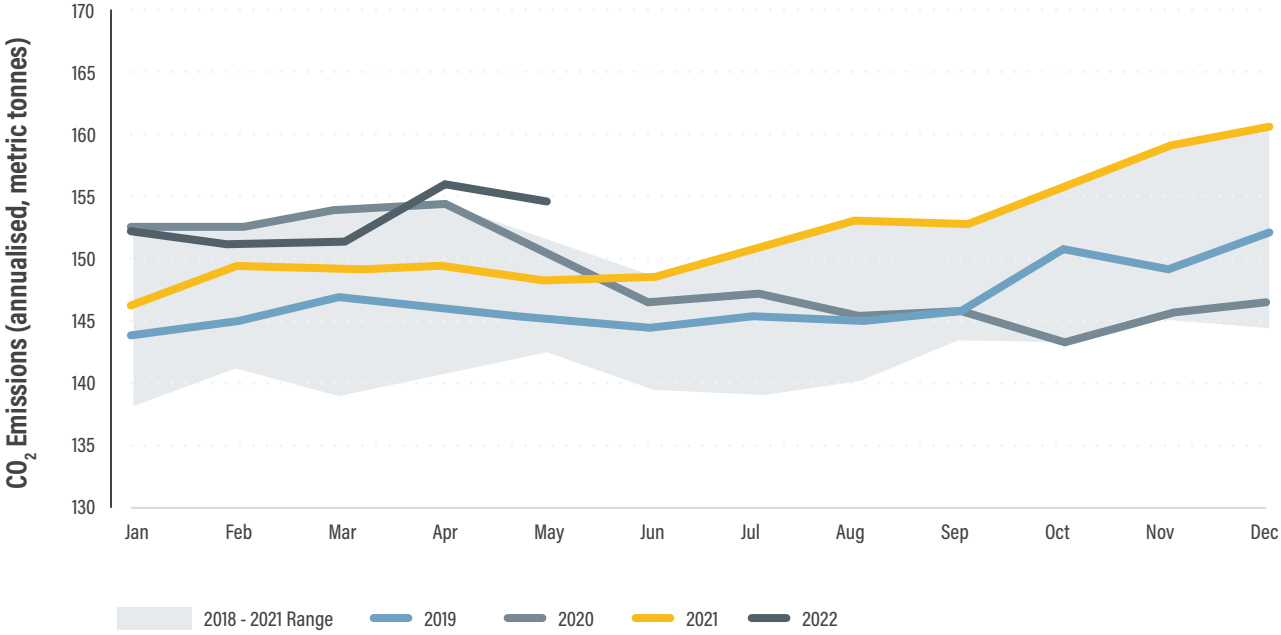


FIGURE 6 CO_2 emissions from the world's commercial shipping fleet, 2012-2022

Source: See endnote 30 for this section.

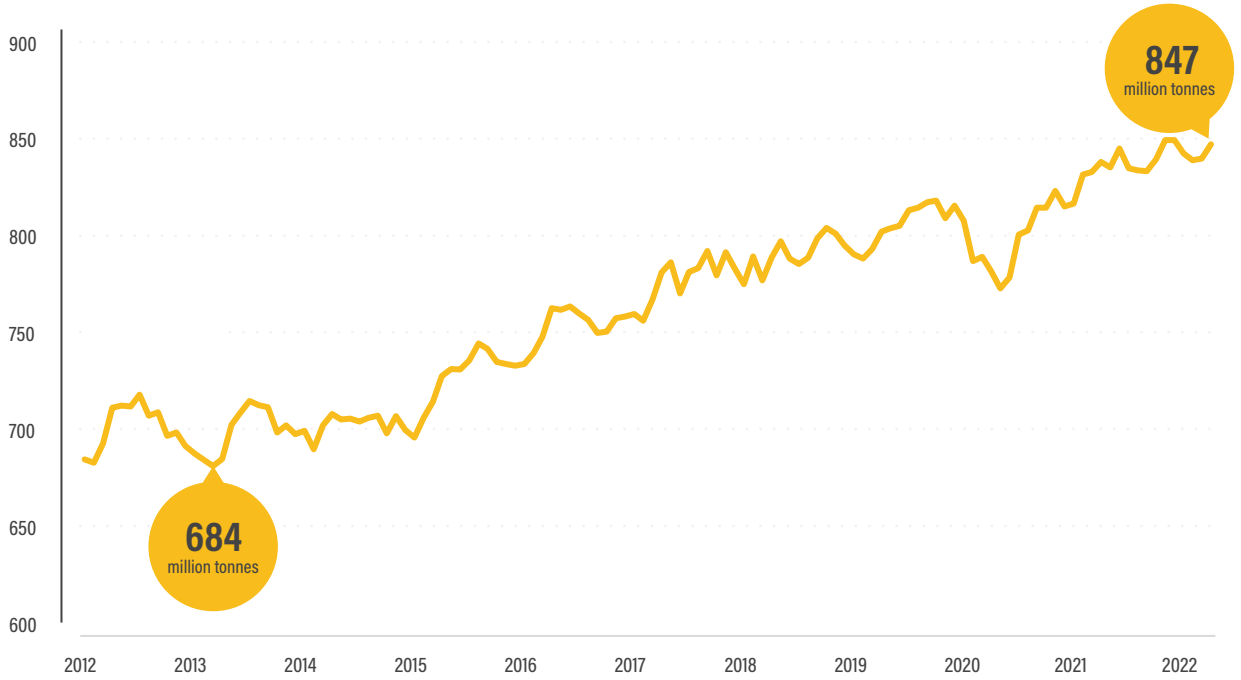


FIGURE 7 Greenhouse gas emissions per million tonne-kilometres, by transport mode, 2019

Source: See endnote 38 for this section.

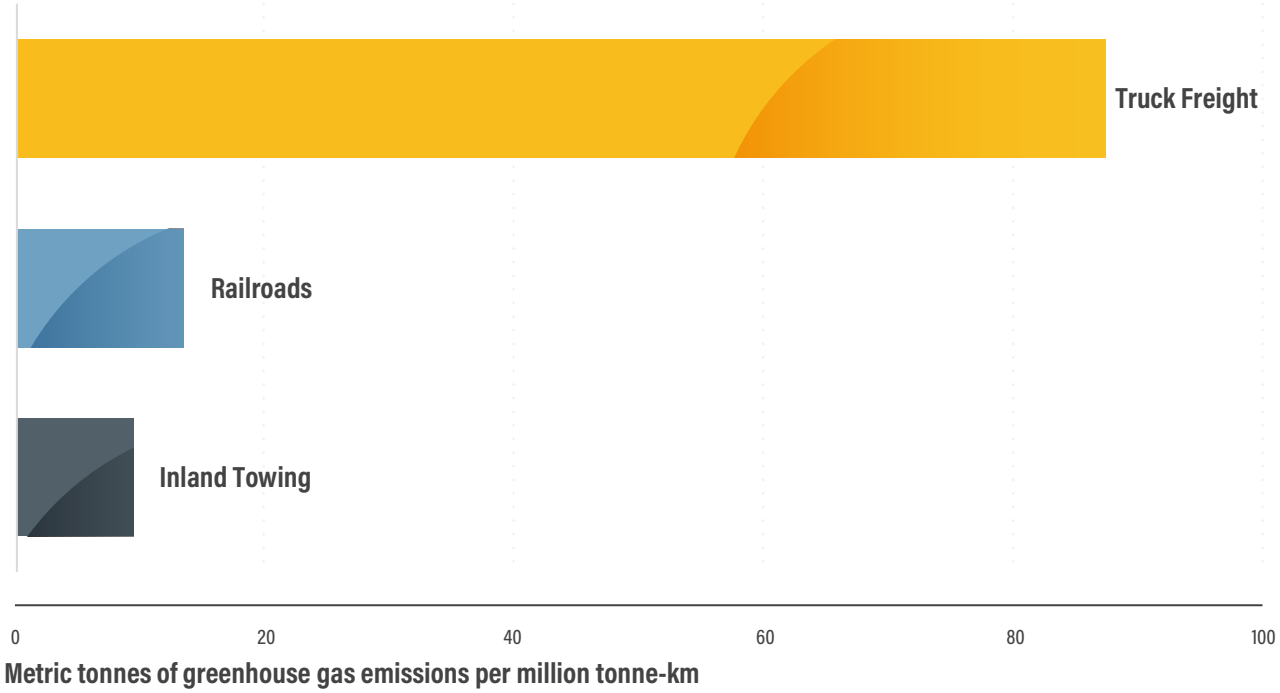


FIGURE 8 Proportion of fuel strategies in industry commitments on maritime shipping decarbonisation, as of 2022

Source: See endnote 73 for this section.