



Economic Commission for Europe**Inland Transport Committee****Working Party on Transport Statistics****Seventy-fifth session**

Geneva, 24–26 April 2024

Item 2 of the provisional agenda

Monitoring of transport-related Sustainable Development Goals**Access to safe, affordable, accessible and sustainable transport systems****Note by the secretariat***Summary*

This document outlines the monitoring of Sustainable Development Goal indicator 11.2.1 in the context of member States of the Economic Commission for Europe. It showcases data gathered by UNECE and other entities in measuring public transport accessibility in urban areas.

I. Introduction

1. The advancement of Sustainable Development Goal 11, aiming to make cities and human settlements inclusive, safe, resilient and sustainable, relies critically on indicator 11.2.1, which measures the proportion of population that has convenient access to public transport, by sex, age and persons with disabilities. This indicator represents a pivotal component of the global effort to advance sustainability, equity, and inclusivity, highlighting the imperative to establish transport systems that are not merely efficient but also bolster economic development, environmental protection, and social welfare.
2. Nonetheless, temporal data pertaining to this indicator is limited. The SDG Indicators Database by the United Nations¹ predominantly presents single-year data per country, with 2020 being the most frequently reported. The number of cities profiled in each country varies significantly, from just one city in nations like Azerbaijan, Iceland, Luxembourg, and Malta, to 139 cities in the United Kingdom.
3. The Center for International Earth Science Information Network (CIESIN) also produces similar datasets. In its 2023 Release of Documentation for the Sustainable Development Goal Indicators Data Sets, CIESIN disseminated datasets for four SDG

¹ <https://unstats.un.org/sdgs/dataportal/database>.

indicators, including indicator 11.2.1². As with the UN SDG Indicators Database, the data showcased likely represents the most recent within the period of 2015 to 2022.

4. Although ECE does not directly collect data correlating to this indicator, it has, since 2019, gathered tram and metro statistics at the city-level, which act as a proxy, providing valuable insights into urban public transport usage – an ancillary indicator for evaluating access (refer to ECE/TRANS/WP.6/2021/5).

5. The following sections of this document provide insight into the performance of the ECE region in achieving SDG indicator 11.2.1.

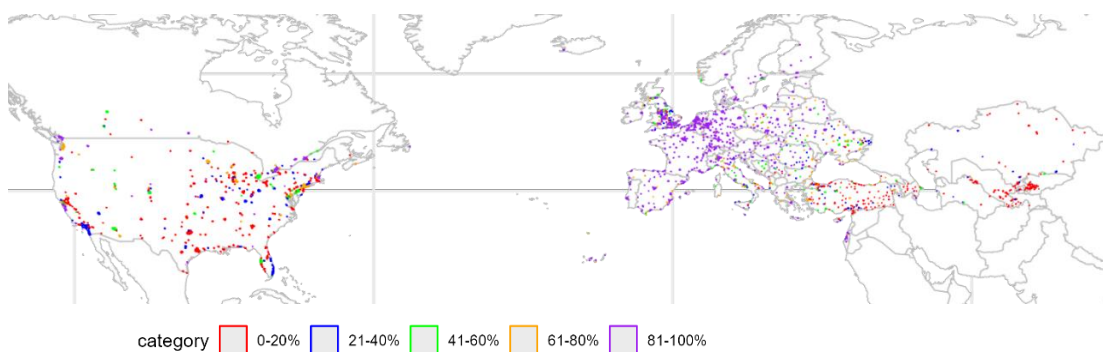
II. Share of population with access to public transport

6. The United Nations SDG Indicators Metadata Repository defines convenient access to public transport as the availability of a stop within a 500-meter walking distance from key reference points (e.g. homes, schools, workplaces, markets) to a low-capacity public transport system (e.g. bus, Bus Rapid Transit) and/or within 1 km to a high-capacity system (e.g. rail, metro, ferry)³.

7. For the purpose of this analysis, the secretariat has opted to scrutinize the datasets produced by CIESIN, which also include shapefiles facilitating map visualization (see the figure 1). CIESIN's methodology involves extracting urban centres and OpenStreetMap (OSM) public transport points for each country. These points are classified into low/high capacity and buffered accordingly, in accordance with the UN SDG indicator metadata. The buffers are dissolved to form access zones, upon which zonal are computed to estimate the population with convenient access to public transport.

Figure 1

Share of population with access to public transport in ECE region



Bubbles represent urban centres categorized by access to public transport

Source: Center for International Earth Science Information Network - CIESIN - Columbia University. 2023. SDG Indicator 11.2.1: Urban Access to Public Transport, 2023 Release. Palisades, New York: NASA Socioeconomic Data and Applications Center (SEDAC). <https://doi.org/10.7927/1a5z-3h71>. Accessed on 29 November 2023.

8. The map reveals a high proportion of Western European urban populations with access to public transport, potentially reflecting the region's higher population density, which supports the feasibility and economic viability of comprehensive public transport networks. Conversely, the lower access percentages observed in American cities might suggest the presence of lower-density residential areas, which can impede the extension of public transport services.

² <https://sedac.ciesin.columbia.edu/data/set/sdgi-11-2-1-urban-access-public-transport-2023>.

³ <https://unstats.un.org/sdgs/metadata/>.

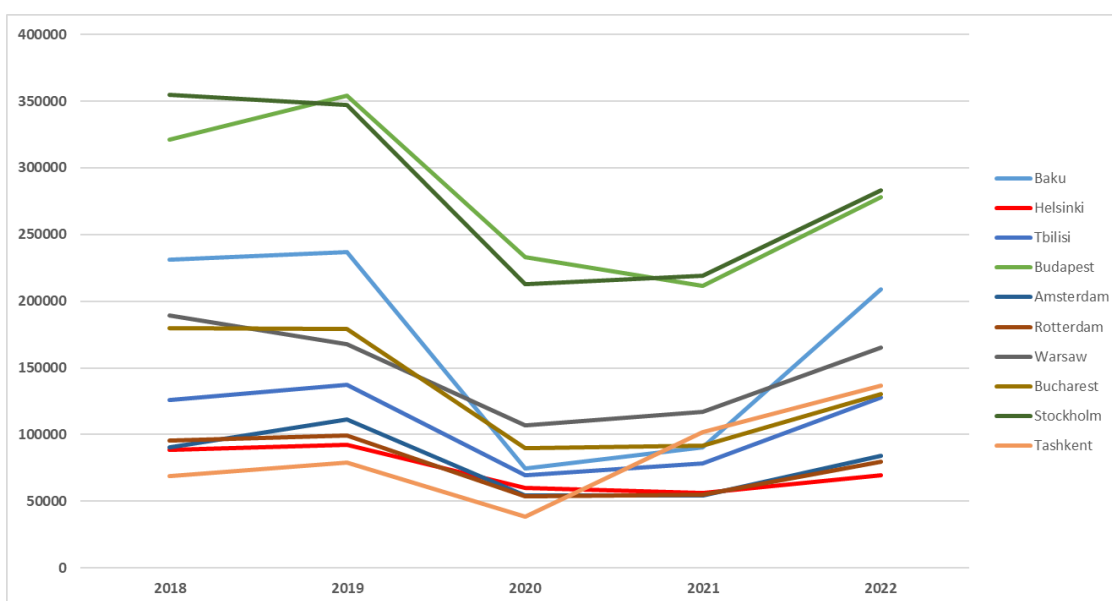
III. UNECE tram and metro statistics

9. The most recent collection of tram and metro statistics by the secretariat took place between August and November 2023. With the inclusion of new data for Uzbekistan, the coverage has expanded to 150 cities across twenty-eight member States.

10. Figure 2 depicts metro passenger trends across selected cities from 2018 to 2022, demonstrating a significant impact of the COVID-19 pandemic on urban mobility. The data shows a sharp decline in ridership during 2020 as travel restrictions took effect. While 2022 shows a marked upturn in ridership, the recovery is not yet complete, with passenger numbers still below the pre-pandemic benchmarks.

Figure 2

Annual metro ridership in selected cities

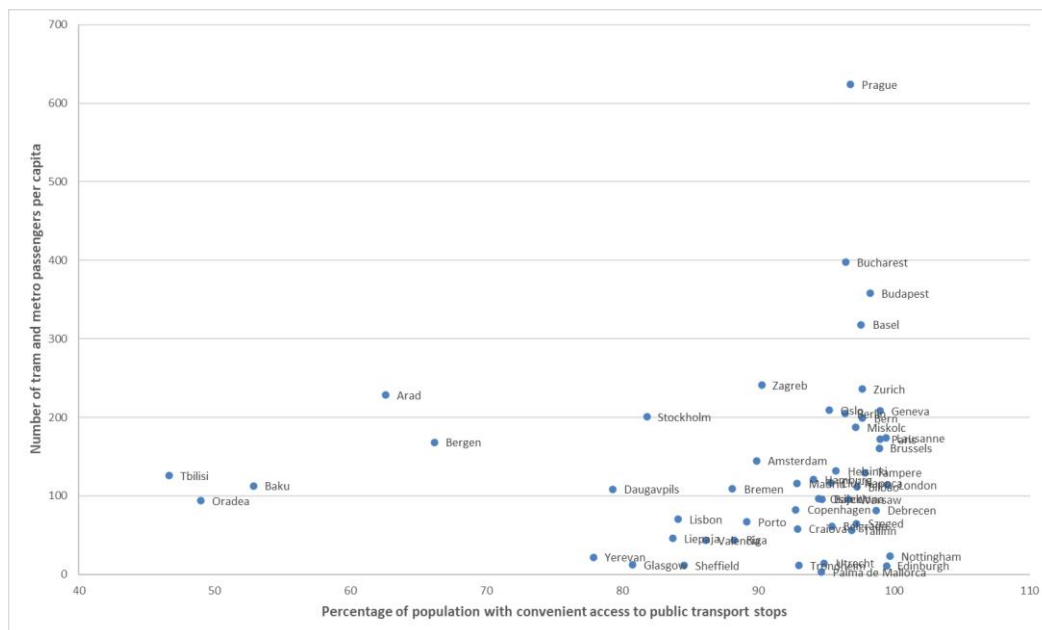


Source: UNECE Transport Database.

11. An analysis was also conducted to explore the correlation between CIESIN's data on the population with access to public transport and UNECE's tram and metro passenger statistics for the year 2022. UNECE data were first converted to reflect per capita public transport usage, derived from urban population figures provided in CIESIN's datasets. The analysis, executed using the R software, considered only cities with data availability in both sources.

12. The exercise resulted in a dataset covering 52 cities across 26 UNECE countries, as illustrated in Figure 3. The resulting correlation coefficient of 0.122 indicates a negligible positive linear relationship between the variables, which is insufficient for robust predictions or to signify a substantial correlation. This may be attributed to the per capita figures reflecting only tram and metro users, which explains why cities heavily reliant on these transport modes, such as Prague, Bucharest and Budapest, feature prominently on the top-right quadrant of the scatter plot. In contrast, cities with prevalent bus transport systems exhibit low per capita passenger numbers despite having nearly universal public transport accessibility. This is particularly notable in cities in the UK, such as Sheffield and Nottingham, where not only is bus usage higher than light rail, but car usage also surpasses the use of public transport.

Figure 3
Per capita public transport passengers versus population access in ECE region



Source: UNECE Transport Database and CIESIN⁴.

IV. Concluding remarks

13. The analysis of the UNECE tram and metro statistics in conjunction with the proportion of population with access to public transport reveals nuanced insights into urban mobility patterns. While the correlation between the availability of public transport and its usage per capita is not strongly linear, the data suggests that trams and metros are integral components of the public transport ecosystem, particularly in cities with a high reliance on these modes of transit.

14. The collection of tram and metro statistics remain crucial for understanding and improving urban mobility. The secretariat encourages countries to consider publishing any available data in a machine-readable format, and broken down by city, if possible. This could allow a metro and tram index to be published for cities across the ECE region, allowing short-term urban transport patterns to be available quickly.

⁴ Center for International Earth Science Information Network - CIESIN - Columbia University. 2023. SDG Indicator 11.2.1: Urban Access to Public Transport, 2023 Release. Palisades, New York: NASA Socioeconomic Data and Applications Center (SEDAC). <https://doi.org/10.7927/1a5z-3h71>. Accessed on 29 November 2023.