BUDAPEST MOBILITY REPORT

SUMP MONITORING REPORT FOR THE YEAR 2023

The annual SUMP reports contain a narrowed down set of indicators. It is planned to produce a SUMP synthesis report every five years, linked to the review of the BMT, which will include a situation analysis of all indicators and institutional analysis. The SUMP report for 2023 typically relies on data for 2023, where data for that year was not available at the time of preparation, we have used data for 2024. The year of publication of the report is 2025.

CONTENTS

EXECUTIVE SUMMARY

WHY IS IT DONE?

- The SUMP concept is described in the Commission Recommendation (EU) 2023/550 of 8 March 2023 on National Support Programmes for Sustainable Urban Mobility Planning:
- https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32023H0550

- **TEN-T Regulation** minimum requirements for SUMPs
- **Decision of the General Assembly of the Municipality of Budapest:** "*Resolution 859/2023 (X. 25.): The General Assembly requests the Mayor of Budapest, through the CEO of BKK to ensure the periodic review of the Budapest Mobility Plan and the performance of annual monitoring and evaluation tasks related to the Sustainable Urban Mobility Plan, as set out in Annex 5 to the proposal. Deadline: continuous*"
- According to the **SUMP Guide** and the **IKOP Guide**, the monitoring of the strategic plan is a key element of the SUMP methodology.

BUDAPEST'S FIRST SUMP REPORT

In accordance with the resolution of the General Assembly, BKK prepared the SUMP report for the year 2023 in the course of 2024, in which, in addition to the general data**, the calculation and evaluation of 14 core indicators, 6 additional indicators and 44 progress indicators according to the Monitoring System are presented.** In calculating the indicators, we aim to take into account all transport sectors in Budapest. Most data are available for the calculation of the indicators, but data for state-operated railways are typically only available for the MÁV-HÉV operator. We are continuously working to cover data from as many transport sectors as possible, to provide an increasingly comprehensive picture of all areas of transport in Budapest in the coming years.

The wealth of data and information contained in the SUMP report has been gathered and processed with meticulous care and the utmost goodwill. The authors of the report would like to thank all those who helped to identify data sources and collect the data. Despite careful data collection and processing, some data may be inaccurate or may have been updated and become available in the meantime. In order to ensure that future SUMP reports contain more accurate data and better-quality indicators, please report any errors or omissions and provide constructive feedback by email to bmt@bkk.hu.

PROGRESS OF THE BMT MEASURES

Of all the (state and Budapest municipality), projects in the BMT fewer have been completed between 2013 and 2023 - primarily due to a lack of resources - than are still to be completed. As a result, the achievement of our targets cannot be taken for granted, but BKK is working intensively to identify the most cost-effective developments that will help us to approach our targets in the BMT by 2030, even in a resource-constrained environment.

LIVEABLE CITY

- **The trend of population decline since 2015 seems to be reversing:** by the end of 2023, Budapest's population increased by around 15,000 compared to the end of 2022*, but the confirmation of trend reversal will only be possible based on data from the following years. At the same time, the number of inhabitants in catchment area around Budapest is also growing.
- **Budapest's liveability has also increased** in recent years**,** with the Economist Intelligence Unit (EIU) ranking Budapest 32nd out of 173 cities ranked in the Global Liveability Index for 2024. This makes Budapest the third city – after Hong Kong and Singapore – that has moved up the most places within a year.

TRANSPORT INDICATORS

- Based on the preliminary results for 2024, **the share of active transport modes** in terms of trips to Budapest on an average weekday **increased on a trip count basis** compared to 2021, while the share of public transport in terms of trip performance decreased, mainly due to an increase in the average length of trips by private car. In order to achieve the 2030 modal split target, in addition to **the development of active modes**, the greatest attention needs to be paid to **shifting people living in Budapest and the agglomeration** from private cars **to public transport.**

- **The share of public transport in suburban transport is deteriorating, currently at 31%.** The 35% target can be achieved by improving the track and/or rolling stock of suburban railway (HÉV) and commuter rail lines, by prioritising public road transport and in some cases by increasing the ordered capacity. **The volume of suburban traffic can be reduced by strengthening the sustainability of the urban core,** and to this end, improving mobility is an important but not exclusive task.

* The data for the end of year 2023 is the data published by the HCSO on 1 January 2024, while the data for the end of year 2022 is the data published by the HCSO on 1 January 2023.

- **Road traffic volumes are similar to 2019 (pre-Covid), but public transport passenger volumes only reach 80-85% of 2019 levels** due to changing travel patterns (e.g. more people working from home and shifting to more active modes or to private cars).
- **Since 2013, the number of passenger cars registered in Budapest has been growing by 2-4% per year**, although the rate of growth has slowed down from 2020 onwards: from 2022 to 2023, the number of cars increased by 0.2%, while their average age increased by one year. **The number of households without cars is decreasing** since 2019 the number of households without a car has decreased by 2% in Budapest and by 6% in the agglomeration. Overall, the number of households with a single car is increasing in the functional metropolitan areas: from 49% to 53% between 2019 and 2024. Number of households with a second car in Budapest decreased by 1 percentage point in Budapest and increased by 2 percentage points in the agglomeration.
- **Between 2021 and 2023, the length of the main comfort level 1 and 2 cycling network in Budapest increased by around 30 kilometres,** which is a good result, but to reach the 2030 target set by the Master Cycle Network Plan, this would need to be expanded at twice the current pace, by 33-34 kilometres per year.

ENVIRONMENTAL IMPACTS FROM TRANSPORT

- As a result of increasing motorisation, **CO_2 emissions from transport in Budapest derived from final energy consumption are increasing.** **Achieving the BMT modal split targets, as well as reducing specific emissions and traffic volumes, are the main ways to reduce transport-derived CO_2 emissions.** However, the technological changes needed to reduce specific emissions will have a slight deteriorating impact on transport energy efficiency.* **To achieve climate neutrality,** in addition to meeting the BMT modal split targets**, it may also be necessary to increase passenger vehicle occupancy and freight vehicle efficiency levels, and to reduce overall travel performance.**
- The average 2022 value for **PM2.5 aerosol (**small particulate matter) **in Budapest is** 12 μg/m^3 , which **is below the EU limit value of 20 μg/m^3 but** above **the WHO recommendation of** 5 μg/m^3. This value can be improved mainly by reducing traffic volumes and increasing the specific energy efficiency of transport.
- It is projected that by 2030, 10-15% of the total vehicle fleet in the EU will be purely electric; **in Budapest, only 1% of the fleet** was electric in 2023.

* Due to the low energy density of battery technology, the overall mass required to store energy in vehicles is expected to increase with the spread of zero-emission vehicles.

SAFETY

- **The number of road traffic incidents and injuries,** after a slow increase since 2012 **due to the reduction in motor vehicle traffic associated with the 2020 coronavirus pandemic, has fallen sharply and has since then been stagnating** with a slight increase (despite road traffic quickly returning to pre-pandemic levels). But the number and proportion of serious injury incidents is increasing (the decrease in the number of injuries is due to a reduction in the number of light casualties). **To achieve the VisionZero target**, **it is also important to adapt speed limits to the role of each road in the road network and to enforce speed limits more strictly.** In addition, it is necessary to adapt transport infrastructure to promote road safety and to raise road users' awareness.

ACCESS TO SERVICES

- Taking all public transport sectors together, **the level of 76% physical and audio-visual accessibility is good at European level.** There are large differences between sectors: somewhere the accessibility of vehicles, while elsewhere that of stops and stations could be improved.

CUSTOMER SATISFACTION

- **The 75% passenger satisfaction rate in Budapest is in the upper mid-range compared to European capitals** (the lowest is 29% in Rome, the highest is 91% in Vienna). Between 2022 and 2023, both the overall satisfaction with safety and the night-time security perception increased, as did the satisfaction with BKK's passenger information services.
- As of 1 May 2023, **the introduction of the Hungary and County Passes** marked a major step forward in the field of agglomeration fare uniformisation, as the previous model projects were replaced by the fare integration of the passes. In 2024, **the validity of the Hungary and County Passes within Budapest** marked a new level of fare integration.

DESCRIPTION OF THE SUMP MONITORING SYSTEM

2023 REPORT

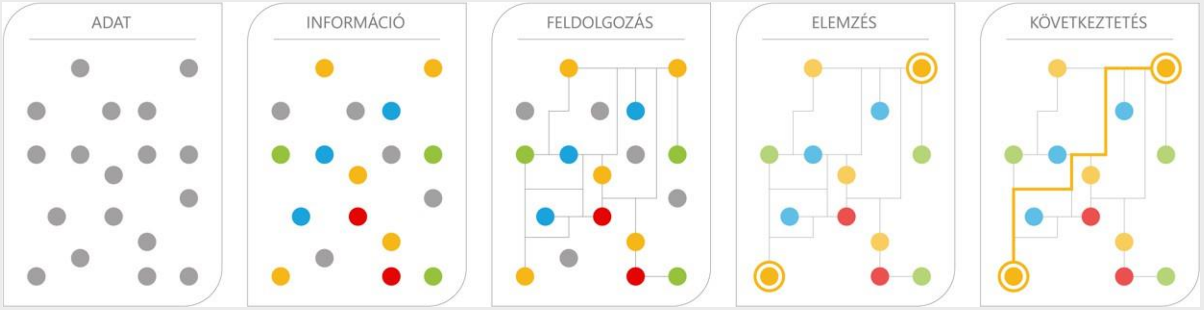
WHY IS A SUMP MONITORING REPORT PRODUCED?

The SUMP monitoring **is the monitoring of the implementation of the Budapest Mobility Plan (BMT)** adopted on 25 October 2023, in accordance with Resolution 859/2023 (X. 25) of the General Assembly of the Municipality of Budapest. The yearly small reports and the comprehensive transport situation assessments every 3-5 years are based on the Monitoring and Evaluation System of the BMT adopted by the Municipal General Assembly. The Monitoring System details the proposals for ongoing, trend-based measurement of the impact of the measures set out in the BMT Target Framework in accordance with the SUMP guidelines.

The European Parliament adopted the Regulation on the **Trans-European Transport Network (TEN-T)** in December 2023 on Union guidelines for the development of the trans-European transport network, which calls for the development of a coherent, interconnected and high-quality transport infrastructure network across the EU. Budapest, as a priority node at the intersection of all TEN-T corridors, is required to have a SUMP-based transport development plan, for which the Regulation sets out monitoring requirements.

https://transport.ec.europa.eu/transport-themes/urban-transport/sustainable-urban-mobility-planning-and-monitoring_en

The EU plans to make recommendations on the detailed methodology for SUMP indicators (SUMI indicators) by the end of EU 2024.



TEN-T Regulation
"As an effective coherent framework for tackling urban mobility challenges, a SUMP, which is a long-term, all-encompassing integrated freight and passenger mobility plan for the entire functional urban area, should be adopted for each urban node. A sustainable urban mobility plan ***should include data at least on***

- ***greenhouse gas emissions,***
- ***traffic congestion,***
- ***accidents and injuries,***
- ***the modal share of mobility services and***
- ***the accessibility to those services,***
- ***the objectives, targets and indicators underpinning the current and future performance of the urban transport system***
- ***air and noise pollution in cities."***

BASIC PRINCIPLES FOR PREPARING A SUMP REPORT

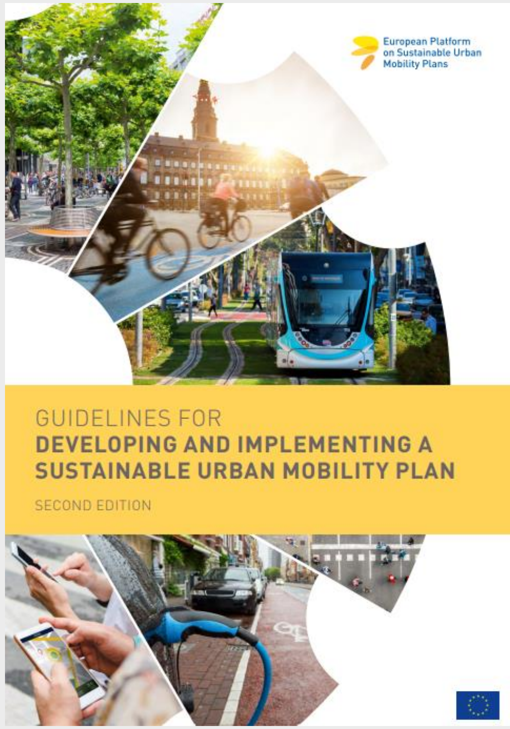
THE SUMP REPORT PRESENTS THE OVERALL IMPACT INDICATORS THAT MONITOR THE TARGETS ADOPTED IN THE BUDAPEST MOBILITY PLAN

Focusing on the overall strategic information is a key aspect to ensure comprehensibility and inclusiveness. **The aim is to provide objective and transparent information,** particularly in quantitative terms, to put results in context, to identify causes and underlying processes, to draw conclusions, whether positive or more negative (e.g. those that indicate needs for corrective action), and to make general recommendations to achieve the mobility objectives.

Annual reports
In addition to the SUMP indicators, the annual reports should analyse, based on the City Report to see how the social objectives and transport indicators are linked. The number of indicators monitored in the SUMP can be expanded in any given year.

BMT review situation assessment up to 2029

All indicators and institutional analysis will be included in the SUMP synthesis report every 3-5 years.



Principle 7 of SUMP planning:

Provision should be made for monitoring and evaluation

The implementation of the sustainable urban mobility plan should be closely monitored. Progress towards the overall objectives set out in the plan and the achievement of measurable targets will be regularly assessed on the basis of selected performance indicators. The necessary steps will be taken to ensure timely access to relevant data and statistics.
Based on the continuous monitoring and evaluation of the implementation of the measures, the measurable targets may need to be modified and corrective measures in the area of implementation may need to be applied where necessary. The monitoring report, shared and communicated with the public and stakeholders, will procide information on the progress in the development and implementation of a sustainable urban mobility plan.

GROUPING OF INDICATORS IN THE REPORT

The BMT's new indicator framework is a set of indicators adapted to the target structure, which has been developed in the framework of an EU R&D project SUMI (Sustainable Urban Mobility Indicators) set of indicators, based on a European research project.

	Core indicator	Complementary indicator	Index of progress
Group of indicators:	Core indicator	Complementary indicator	Index of progress
Type:	Impact indicator	Impact indicator	Outcome indicator
Role:	SUMP overall objective, monitoring of strategic objectives (25)	Monitoring of SUMP overall objective, strategic and operational targets (16)	Monitoring the implementation of BMT measures (44)

INDICATORS PRESENTED IN THE 2023 ANNUAL REPORT

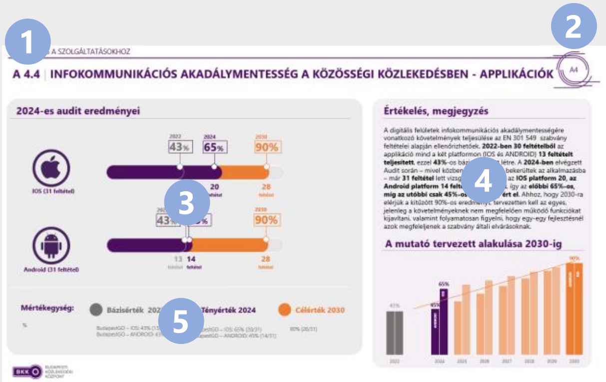
CORE INDICATORS	**MODAL SPLIT**	A1.1 Modal split: distribution of trips in Budapest on a passenger-km basis A1.3 Transport division of labour: distribution of trips to Budapest by trip number
	CLIMATE INDICATORS	A2.1 Greenhouse gas (GHG) emissions from transport A2.2 Transport energy use A2.3 Transport-related air pollution indicator (PM2.5)
	SAFETY	A3.1 Road safety index - serious injuries A3.2 Road safety index - fatalities
	ACCESS TO SERVICES	A4.3 Physical and audiovisual accessibility in public transport A4.4 Infocommunications accessibility in public transport
	TRAFFIC	A5.1 Road congestion indicator A5.2 Percentage of disruption to basic public transport services A5.3 Availability of Bubi public bicycles and shared micromobility tools
	CUSTOMER EXPERIENCE	A6.1 Customer satisfaction indicator
	MULTIMODALITY AND ACCESSIBILITY	A7.4 Proportion of people travelling to or from the suburbs by public transport
COMPLEMENTARY INDICATORS		K1.2.1 Percentage of main cycling network with adequate service comfort K2.1.1 Ratio of pure electric cars and trucks registered in Budapest K2.2.1 Ratio of public transport services provided by modern, accessible vehicles K3.1.1 Passenger safety-perception indicator K3.2.2 Level of satisfaction with passenger information services K3.3.1 Rate of fare integration
INDEX OF PROGRESS		The index shows the progress made in implementing the 44 actions set out in the BMT Objectives

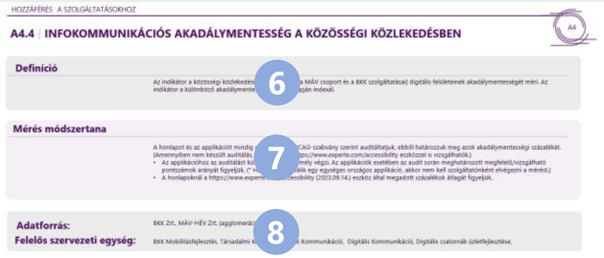
WHAT DO WE FIND IN THE INDICATOR FACT SHEETS?

The indicator fact sheets present the indicator values calculated using the methodology defined in the BMT monitoring system **and their analysis, as well as the indicator definitions and the methodology for their measurement.** For each indicator, the value calculated for 2023 according to the definition defined in the Budapest Mobility Plan Monitoring System, the baseline value known from previous years and the target value are provided. **Where 2023 data were not available for the report to calculate an indicator, the latest available measured values were used.** The year of calculation of the baseline and actual values is indicated in all cases. The different types of indicators are distinguished by different base colours.

1. **Indicator code number, title**
2. **Topic code**
3. **The indicator infographic**
4. **Evaluation, analysis**
5. **Unit of measurement, Baseline, Actual, Target**
6. **Definition of the indicator**
7. **Methodology of the calculation**
8. **Additional information**

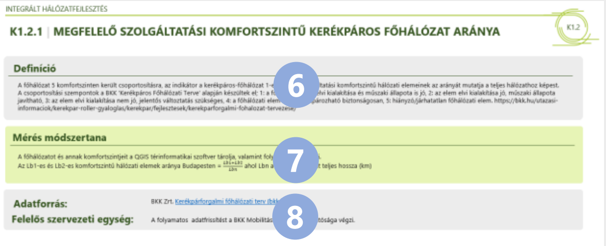
Core indicators





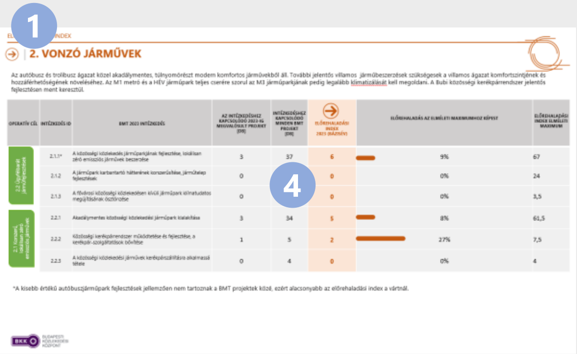
Code numbering of basic indicators:
A. [Subject number]. indicator number.

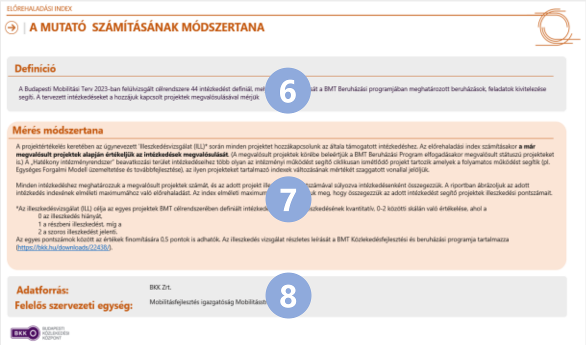
Complementary indicators



Code numbering of additional indicators:
K. [BMT operational target number]. indicator number.

Index of progress

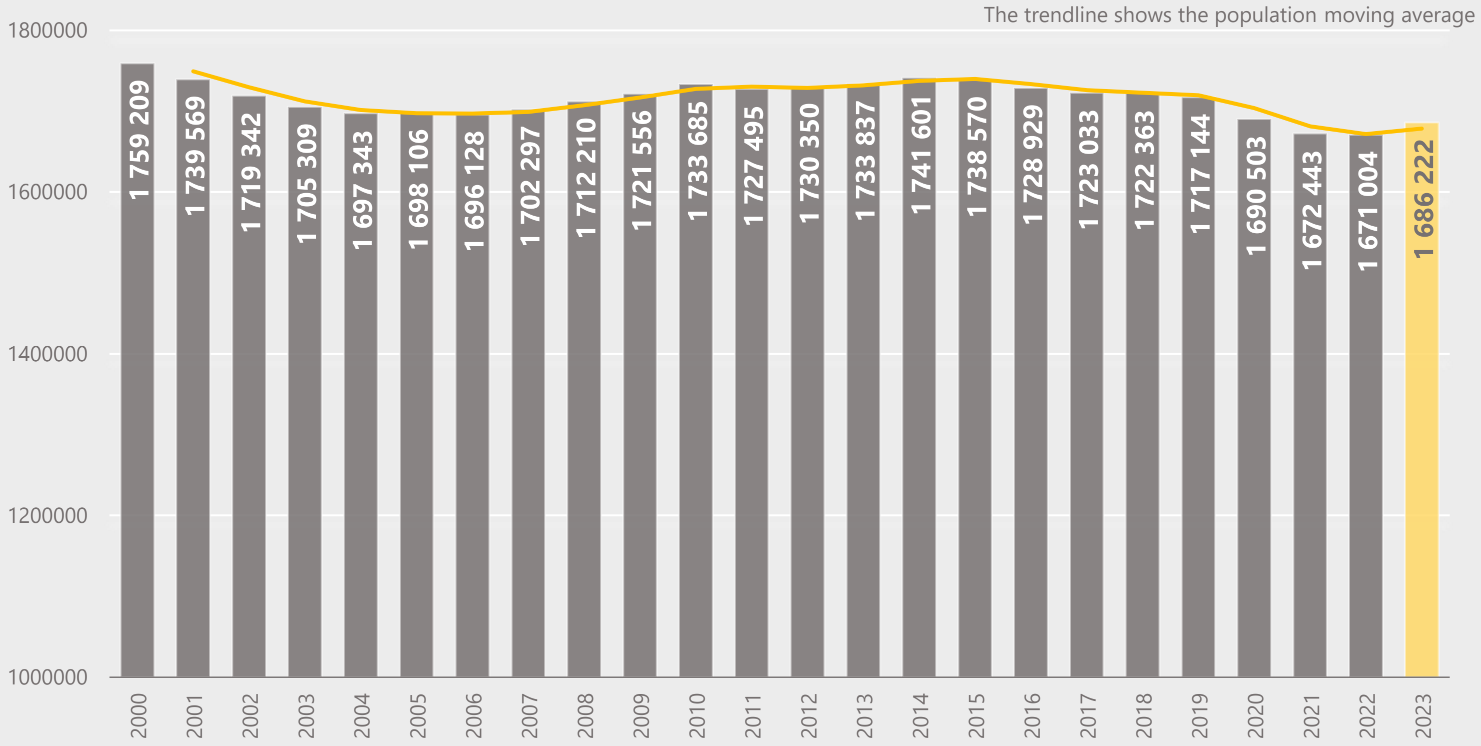




INITIAL DATA

2023 REPORT

POPULATION CHANGE IN BUDAPEST



	2021	2022	2023
natural decrease	-9 262	-7 837	-6 679
balance of domestic migration	-12 026	-5 046	4 223
international migration balance	3 228	11 444	17 674

Administrative area of Budapest**: 525,14 km^2**

At the time of the 1970 census, the population of Budapest was was 2,001,083, which has decreased by almost 319,000 in the last fifty years: at the time of the 2022 census, the city's population was 1,671,004.
Population change has not been uniform across the districts, out-migration is also observed here; the population in the inner city districts has decreased to a greater extent, while the population in the outer districts has increased. At the same time, the highest population densities (10-26 thousand persons/km^2) are found in the Inner-Pest areas outside the central ring road, in districts VI, VII and VIII.

Population of Budapest in 2023 (HCSO 22.1.2.1 Population by sex, county and region, data as of 1 January 2024)

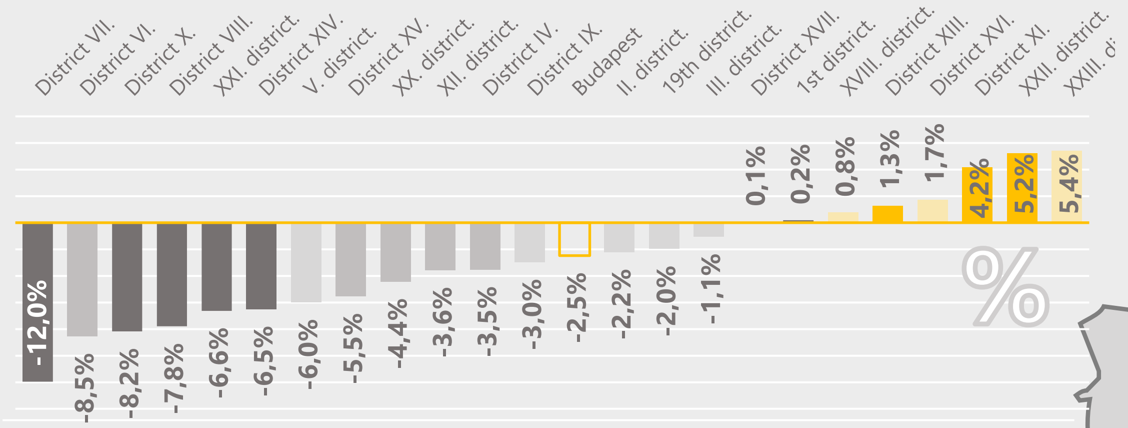
1,686,222 persons

Based on the 2011 and 2022 census data, the population of the capital decreased by about 44,000 (-2.5%) in 11 years, but based on the 2023 value**,** the decreasing trend of Budapest's **population seems to be halting, with an increase of about 15,000.**
(The trend reversal can only be established with certainty from the data for the next few years.) The increase was driven by the fact that the components of the population data (population movement indicators: natural decrease, domestic migration balance and international migration balance) turned positive in 2023.

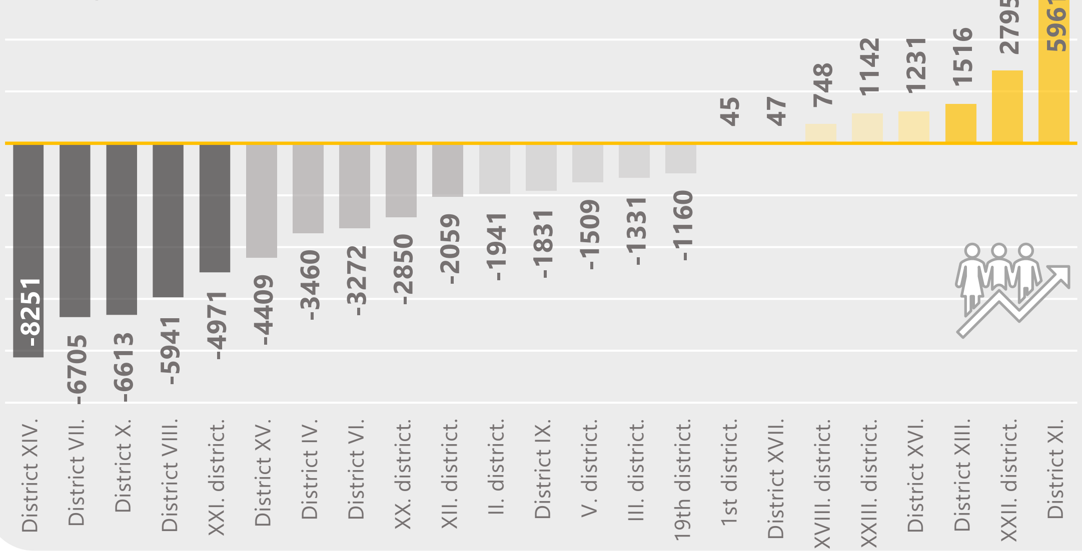
The values on the chart are the revised data updated by the HCSO on 25.10.2024.

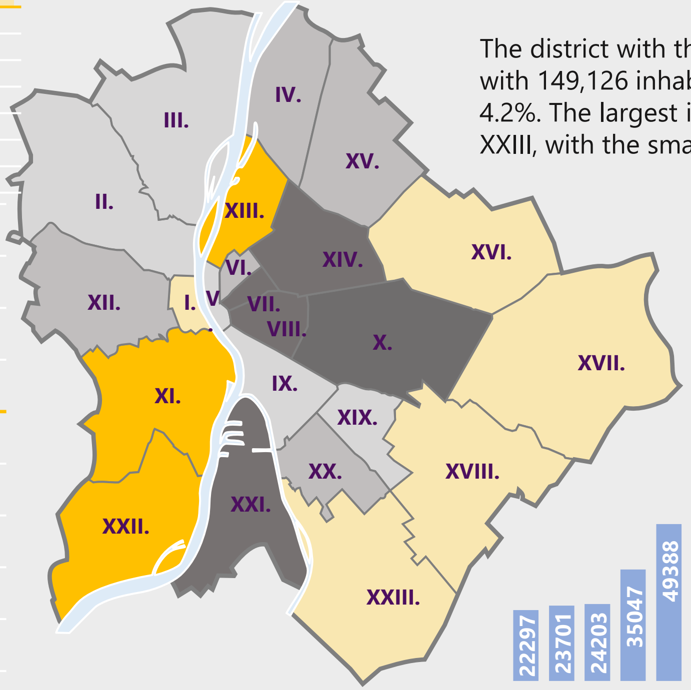
POPULATION CHANGE IN BUDAPEST DISTRICTS 2011-2023

Population change in Budapest districts as a share of district population (%)



Change in the population of Budapest districts between 2011 and 2023 (persons)

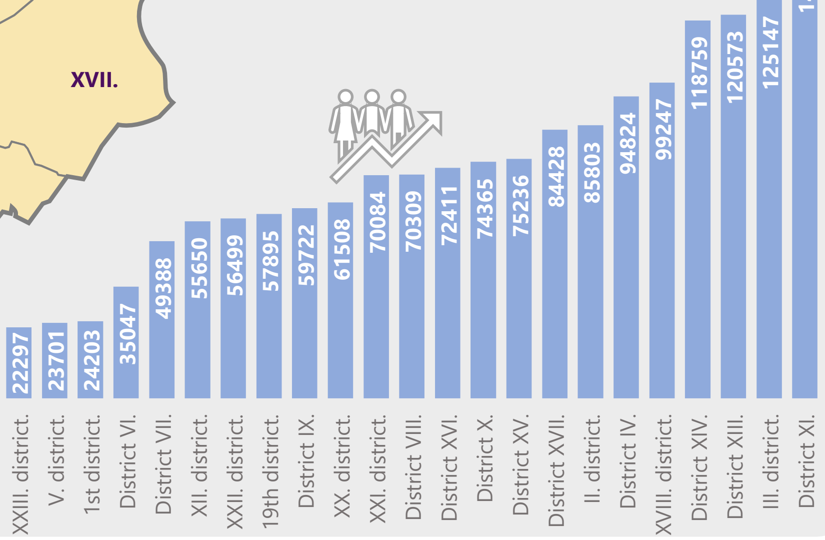




Census data show that the population of eight of the capital's 23 districts grew between 2011 and 2023, while fifteen districts have fewer inhabitants than in the early 2010s.
Most settlers moved to South Buda in Districts XI and XXII, and on the Pest side to Districts XIII and the suburbs Districts XVI, XVIII and XXIII.
In terms of population proportions, the districts show a similar pattern: the 23rd district has the smallest population among the Budapest districts, but the highest growth rate of 5.4%.

The district with the largest population in 2023 was the 11th district with 149,126 inhabitants, an increase of around 5,961 since 2011 and 4.2%. The largest increase of 5.4% was in Soroksár, which is District XXIII, with the smallest population,

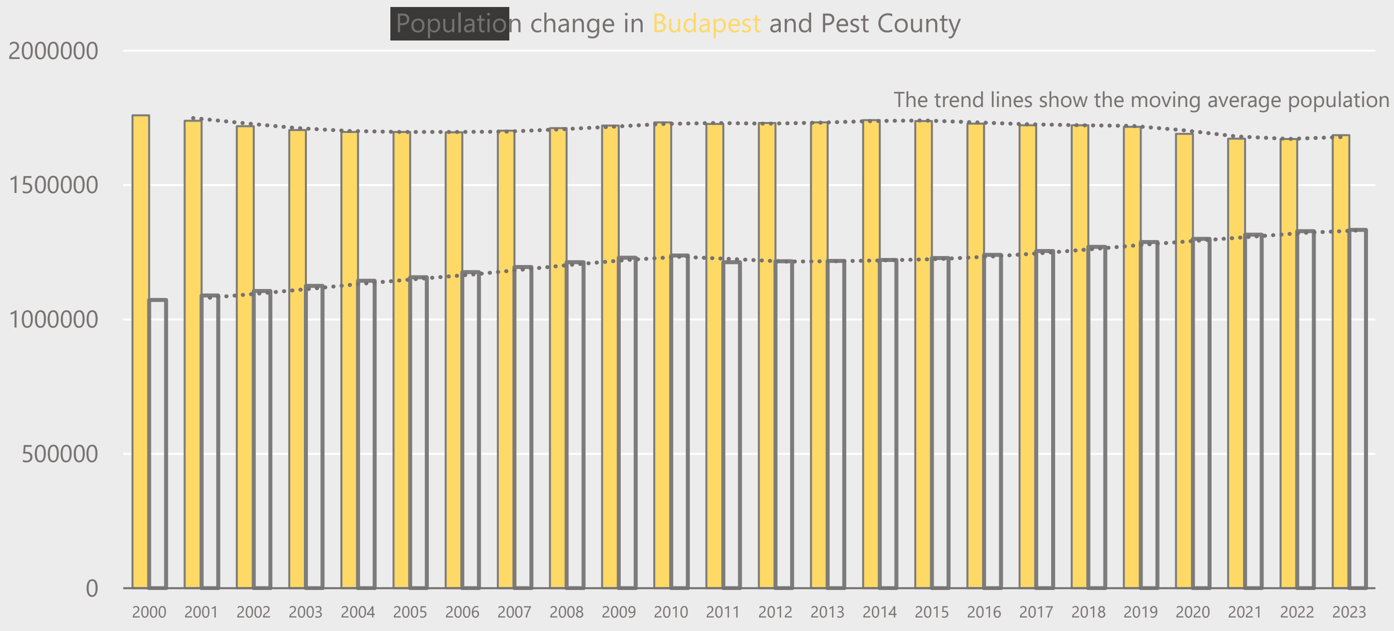
Budapest district populations in 2023 (persons)



POPULATION OF PEST COUNTY AND BUDAPEST FUNCTIONAL URBAN AREA

Pest county is one of the most populous and largest counties in the country, with **1 333 257** inhabitants living in 187 municipalities in 2023. The law on the cooperation between the capital Budapest and the surrounding settlements (Agglomeration Act), which regulates the development and cooperation of agglomeration settlements around Budapest, covers 80 settlements in Pest County (highlighted in dark grey on the right).
The population of the county and the agglomeration is constantly growing.

Urban area	Number of settlements
Agglomeration Act	**80**
Pest County	**187**
EFM	**193**



The values on the chart are the revised values updated by the HCSO on 25.10.2024.

Interpreting functional urban areas in the report:
The Budapest Functional Urban Area is defined as the same area (shaded in light grey) as the agglomeration area of the Unified Traffic Model (EFM) managed by BKK, which covers 193 municipalities in the Budapest catchment area.

Total population of Budapest and the functional urban area:

2013:	**3 249 346** persons
2022:	**3 257 241** persons

The population of the functional urban area has not changed significantly over the past decade, but there has been a shift in population concentration from the inner to the outer areas, both within and outside the administrative boundaries of Budapest.

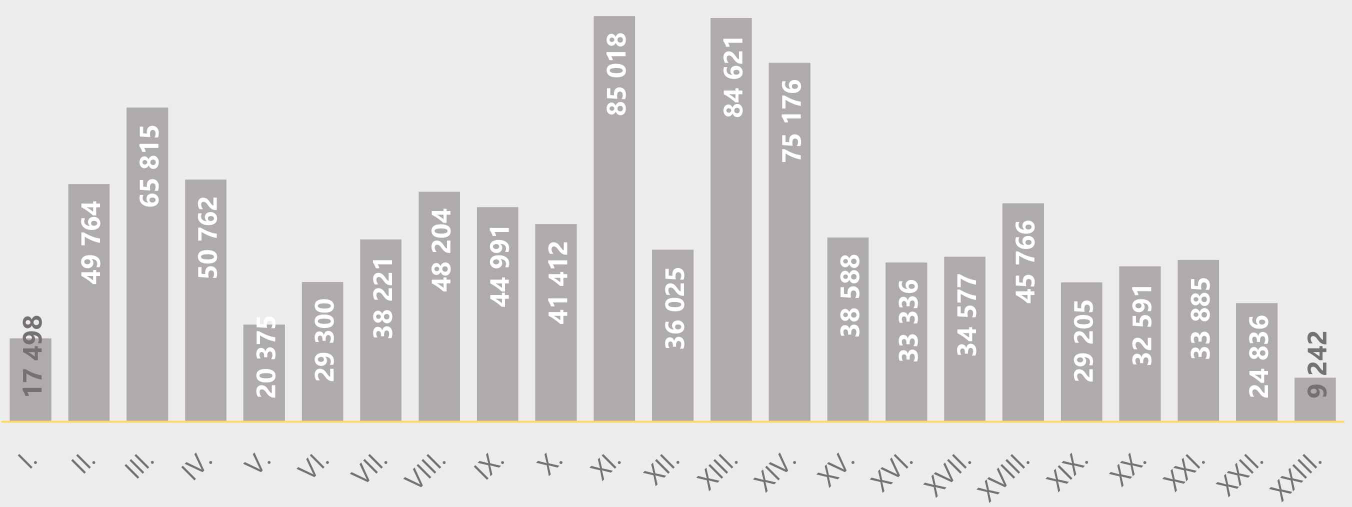
KEY ECONOMIC INDICATORS ON THE BASIS OF THE MONITORING REPORT OF THE CITY REPORT - HOME IN BUDAPEST PROGRAMME

The annual City Report of the Municipality of Budapest presents and assesses in detail the population proportions of Budapest, the migration to the agglomeration and the GDP and income data.
Budapest's transport policy not only affects the liveable environment, but also indirectly the economic performance of the city, so the effects of developments and regulatory interventions are monitored through these indicators.

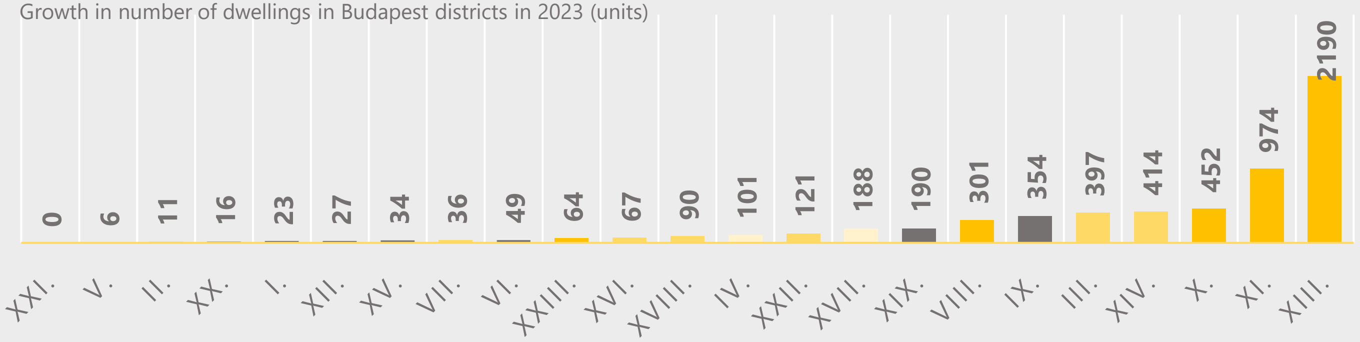
	2022	2023	DATA SOURCE
ECONOMIC PERFORMANCE WITHIN THE COUNTRY GROSS DOMESTIC PRODUCT PER CAPITA AS A PERCENTAGE OF THE NATIONAL AVERAGE:	208.10%	**219.0 %**	STADAT
% OF GDP GENERATED IN THE COUNTRY	36.67%	**38.3%**	STADAT
AVERAGE ANNUAL NET INCOME PER CAPITA (HUF/PERSON/YEAR)	2,891,025	**3,320,778** (preliminary data)	STADAT
NUMBER OF REGISTERED ENTERPRISES PER 1,000 INHABITANTS IN HUNGARY (PCS)	192	**192**	STADAT
NUMBER OF REGISTERED ENTERPRISES PER 1,000 INHABITANTS IN BUDAPEST (PCS)	252	**249**	STADAT

NUMBER OF DWELLINGS IN BUDAPEST DISTRICTS IN 2023 AND CHANGE BETWEEN 2022-2023

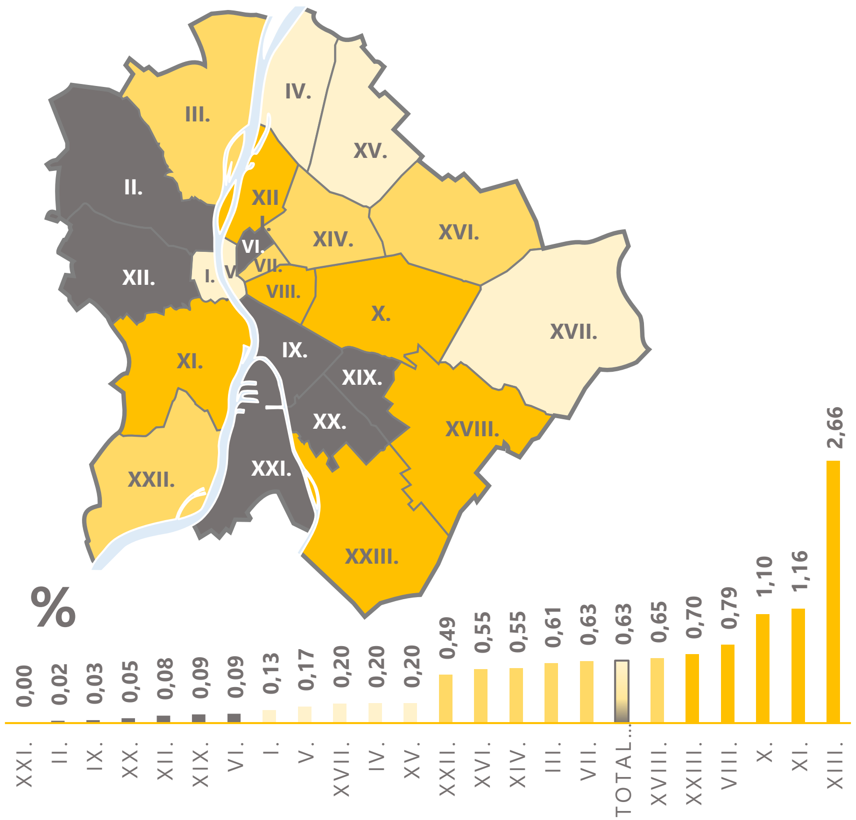
Number of dwellings in Budapest districts in 2023 (units)



Growth in number of dwellings in Budapest districts in 2023 (units)



In Budapest, **a total of 969,208 flats** were registered in 2023, with around 6,105 of them built that year, an increase of 0.63%, but **compared to the** 25,560 new **dwellings** in 2022, the growth in the capital's housing stock is slowing. Most dwellings are located in districts XI, XIII and XIV, and these are also the districts where most new dwellings are built. The evolution in relation to the number of dwellings is similar.



TRANSPORT CO_2 EMISSIONS FROM BUDAPEST USING THE SECAP METHODOLOGY

The Sustainable Energy and Climate Action Plan (hereafter SECAP), adopted in March 2021, sets a target for reducing greenhouse gas emissions (mitigation) based on the EU's objectives. SECAP sets a target of a 40% reduction in CO_2 emissions by 2030 compared to the 2015 base year. In the preparation of the SECAP and the annual Budapest Environmental Status Assessments (BESA), CO_2 emissions are determined from the energy use calculated from the amount of fuel sold in Budapest, based on the National Tax and Customs Administration of Hungary (NTCA) database.

In 2015, the SECAP's base year, total energy consumption was 27,928,557 MWh, with the total associated CO_2 emissions was 6,109,183 tonnes. The largest CO_2 emissions are related to energy use in buildings, while **the second largest emitter is transport.**

1 691 582 tonnes of CO_2 / year

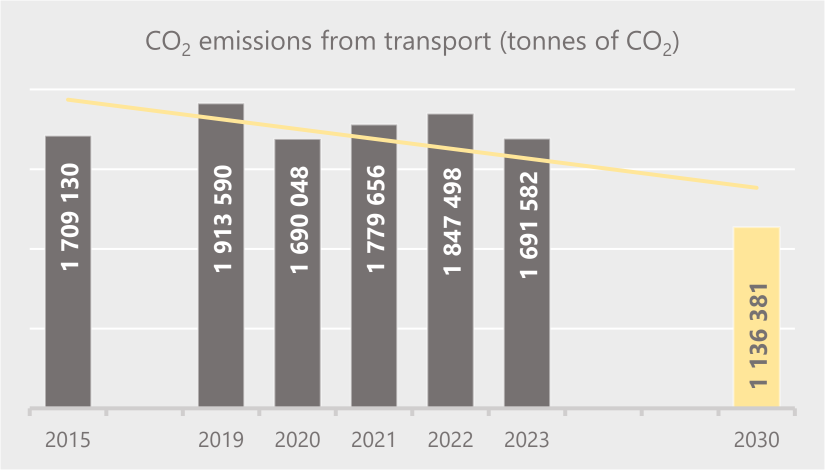
After the drop in 2020 due to Covid, **CO_2 emissions continued to rise.** According to the Budapest Environmental Assessment 2023 (BKÁÉ 2023), transport contributed 30.3% of Budapest's total emissions in 2023, i.e. CO_2 emissions from transport were 1.69 million tonnes per year.

The climate neutrality target could be achieved, for example, in the following scenario:

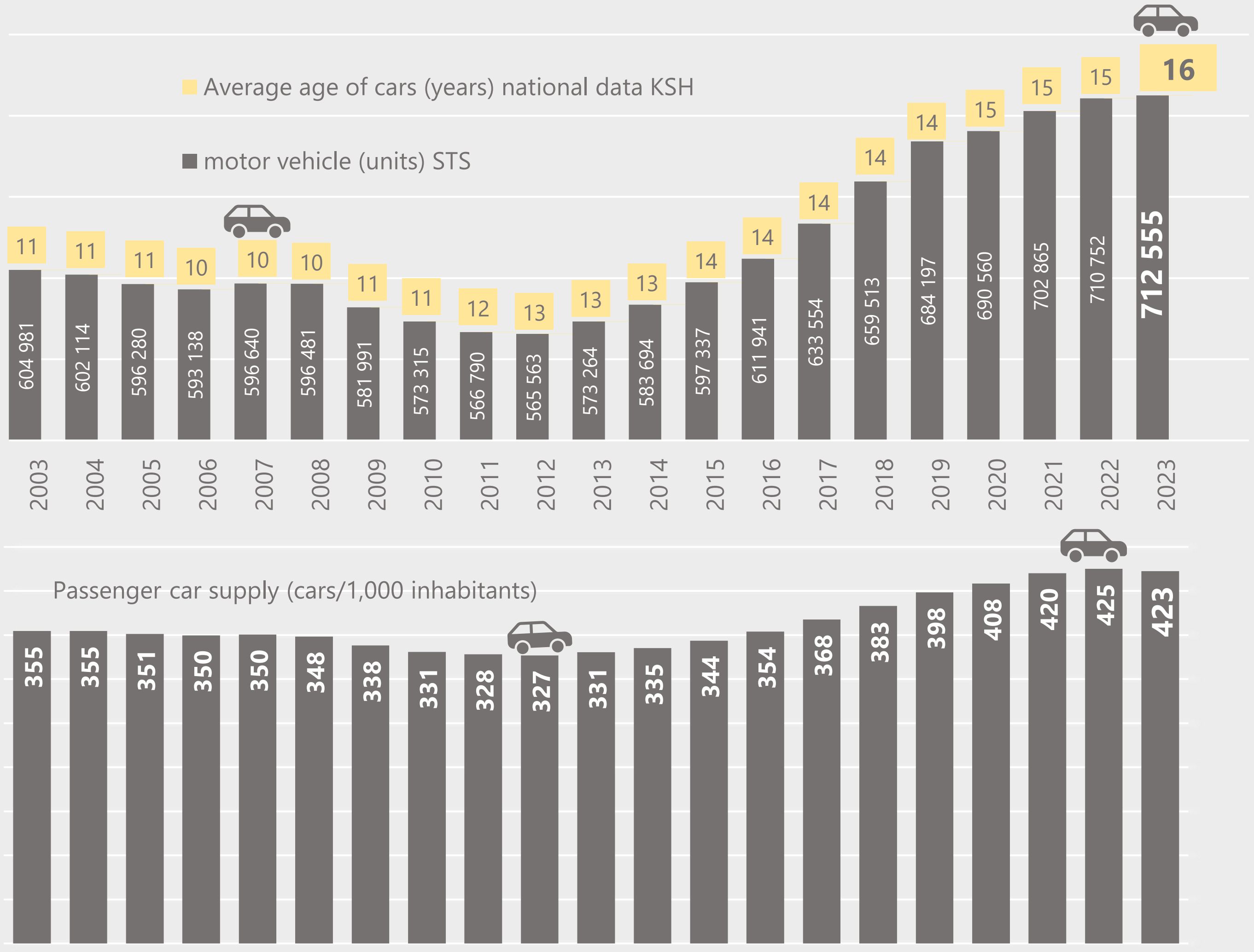
- achieving the 2030 BMT modal split targets;
- a 20-25% reduction in total travel performance compared to current levels, including a 40-50% reduction in passenger car travel performance (vehicle-kilometres);
- increasing the average car occupancy rate from the current 1.2-1.3 persons/vehicle to 1.5-1.7 persons/vehicle;
- 55% of the passenger car fleet, 90% of trucks of less than 3.5 t and 60% of trucks of more than 3.5 t to be purely electric;
- increasing the average load of urban freight vehicles from the current estimated 25-50% to **40-60%.**

Climate change impacts in Budapest:
Between 1901 and 2022, there will be an increase of about 1.54°C in the annual mean temperature in Budapest.
In parallel, the annual amount of daylight has been increasing since the early 1970s. [...]
The urban climate depends on the climatic and macroclimatic environment, in which the city is embedded. The Earth's climate and therefore Budapest's has been and will continue to be subject to change. However, in the process of global climate change, the balance of fluctuations has been upset and there has been a shift towards warming phases in all seasons worldwide. At the same time, precipitation varies according to a time- and place-dependent pattern. The main reason for all these changes is certainly greenhouse gas emissions, in the mitigation of which Budapest has also played a role.
(Budapest Environmental Assessment 2023 BKÁÉ)

The graph below shows the values published in the City Report, which are the values of CO_2 emissions related to transport energy use within the administrative boundaries of Budapest, calculated using the methodology used to prepare the SECAP.



BUDAPEST PASSENGER CAR FLEET



The values on the chart are calculated with the revised data updated by the HCSO on 25.10.2024.

Number of cars in the capital in 2023:

712 555
and constantly growing

Average age of passenger car fleet (national data):

15.8 years

While the number of cars is constantly increasing, **the average age of vehicles is also steadily increasing,** the subsector's emissions will not improve significantly as a result.

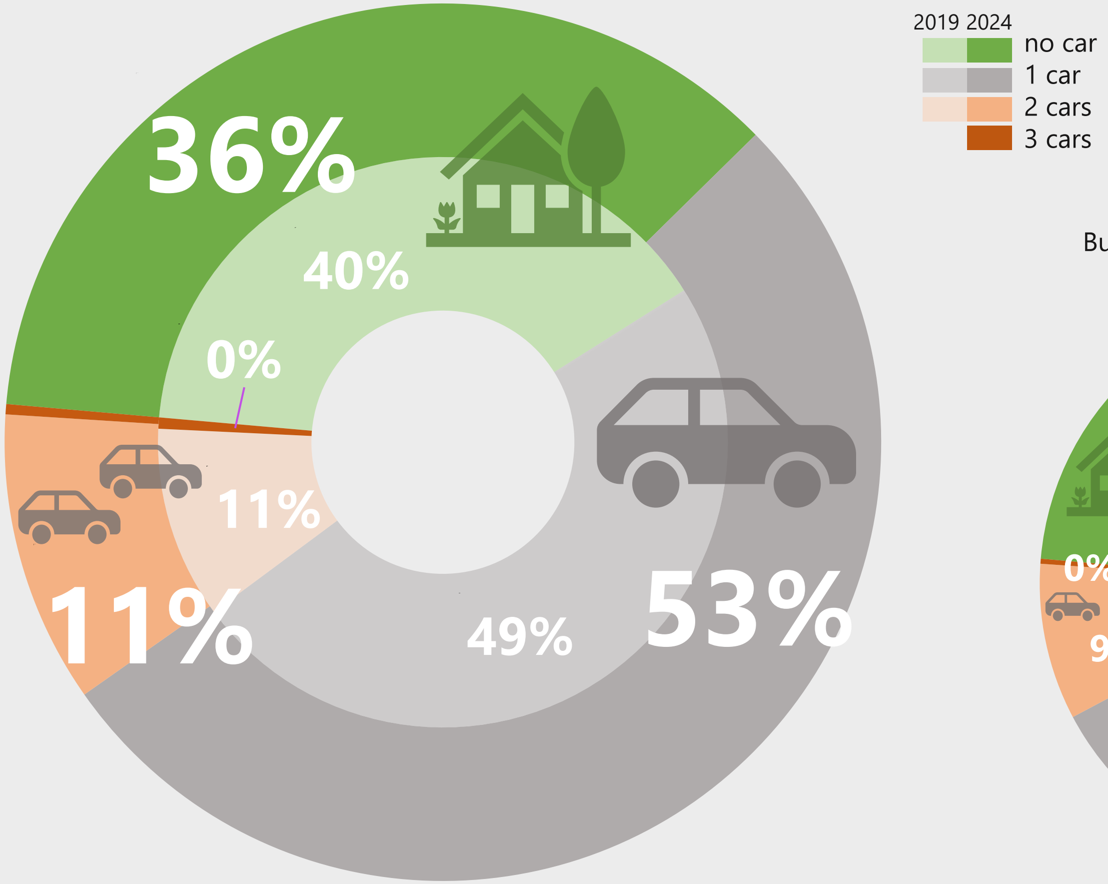
Passenger car supply in Budapest in 2023:

423 cars/1,000 inhabitants

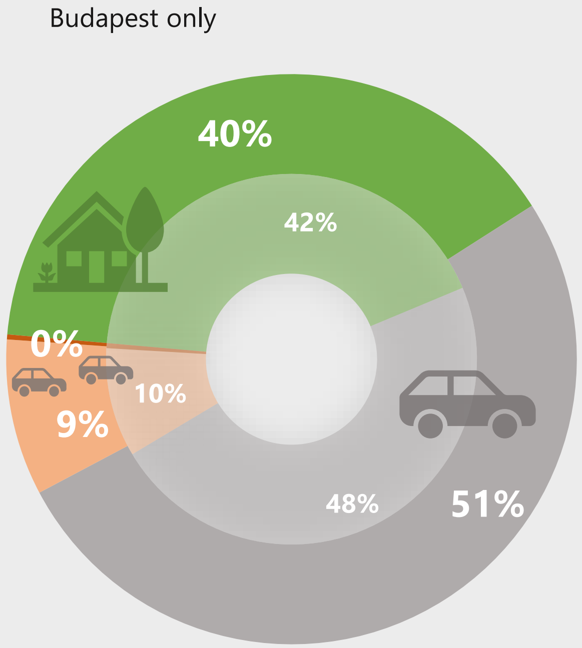
The slowdown in the growth of motorisation is due to the slight increase in population (because the measure is proportional to population) and **the fact that young urban dwellers and newcomers are/could be less and less likely to consider owning a car as a necessity; public transport and cycling are good alternatives.**

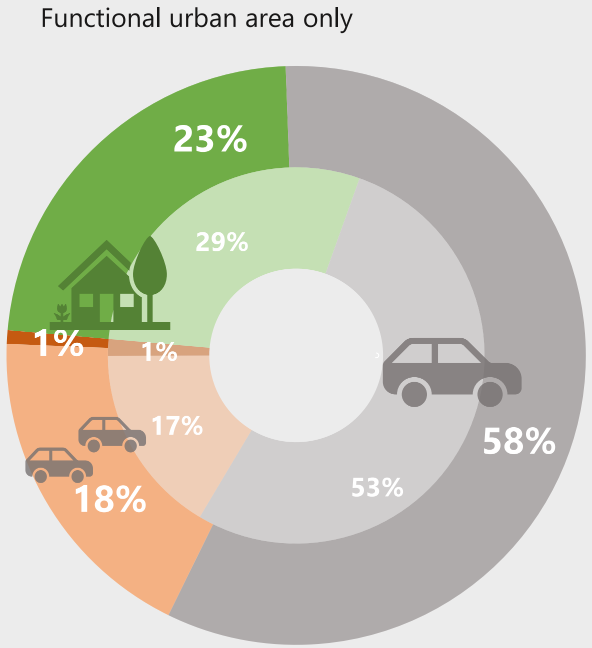
NUMBER OF CARS PER HOUSEHOLD

The share of cars per household based on the 2019 and 2024 EFM household survey data for Budapest and the functional urban area:



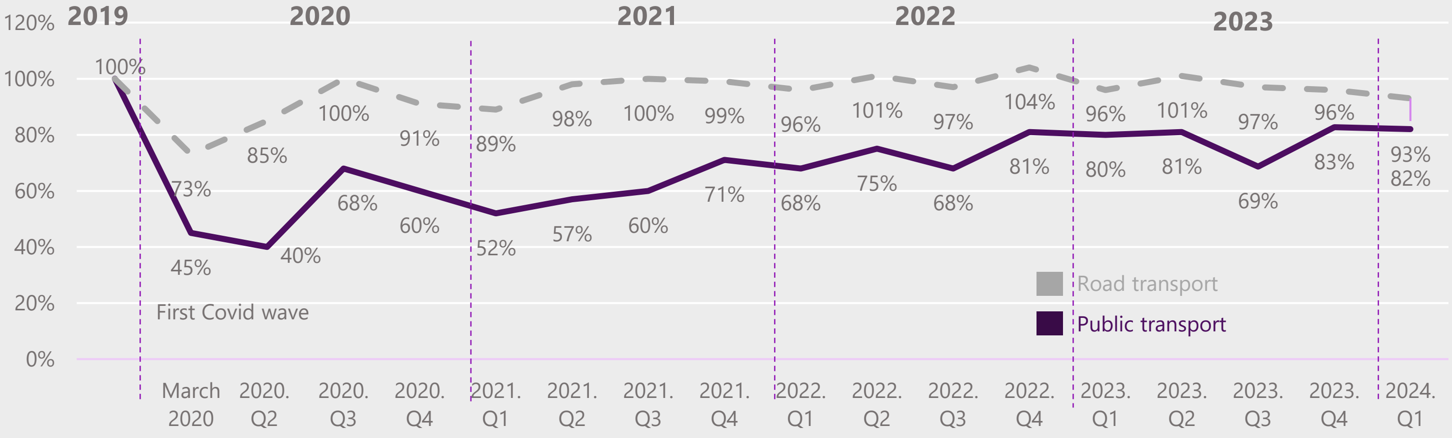
In Budapest and its urban area, 64% of people live in a household with a car. The number of households with a car in the functional urban area is significantly higher than in Budapest, by 17 percentage points. **The urban area is characterised by a growing number of households with one or two cars.** Since 2019**,** the number of households without a car has decreased by 2% in Budapest and by 6% in the functional urban area.





TRAFFIC

Traffic trends in Budapest - Changes in public transport passenger numbers and road traffic



(base: average of school term working days in 2019, 100%)
Public transport sample: average number of trips per day based on the traffic of some bus services.
After the Covid period, data for the first and second quarters are adjusted for school holidays.

After the Covid epidemic in 2020-21, Budapest's public transport ridership dropped significantly, and despite the positive trend since then, it has not reached the level of 2019. While road traffic "recovered" to pre-Covid levels in 2021, public transport passenger numbers stagnated at around 80%; in 2023 they increased by 10% overall compared to the previous year.
In 2019, there were almost 4.2 million journeys per working day (school term), rising to around 3.3 million journeys per day in 2023.
The increase in the number of registered passenger cars has not caused an increase in road traffic in recent years.

A detailed report with traffic data for 2023 is available by clicking on the image:
https://bkk.hu/downloads/23913/

PUBLIC TRANSPORT SERVICE LEVEL

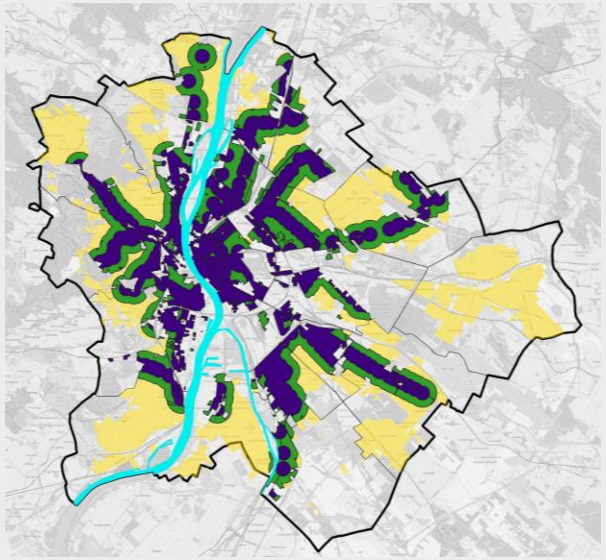
Network criteria for **competitive public transport services** based on the forthcoming Public Transport Network Development Strategy.

From the given stop

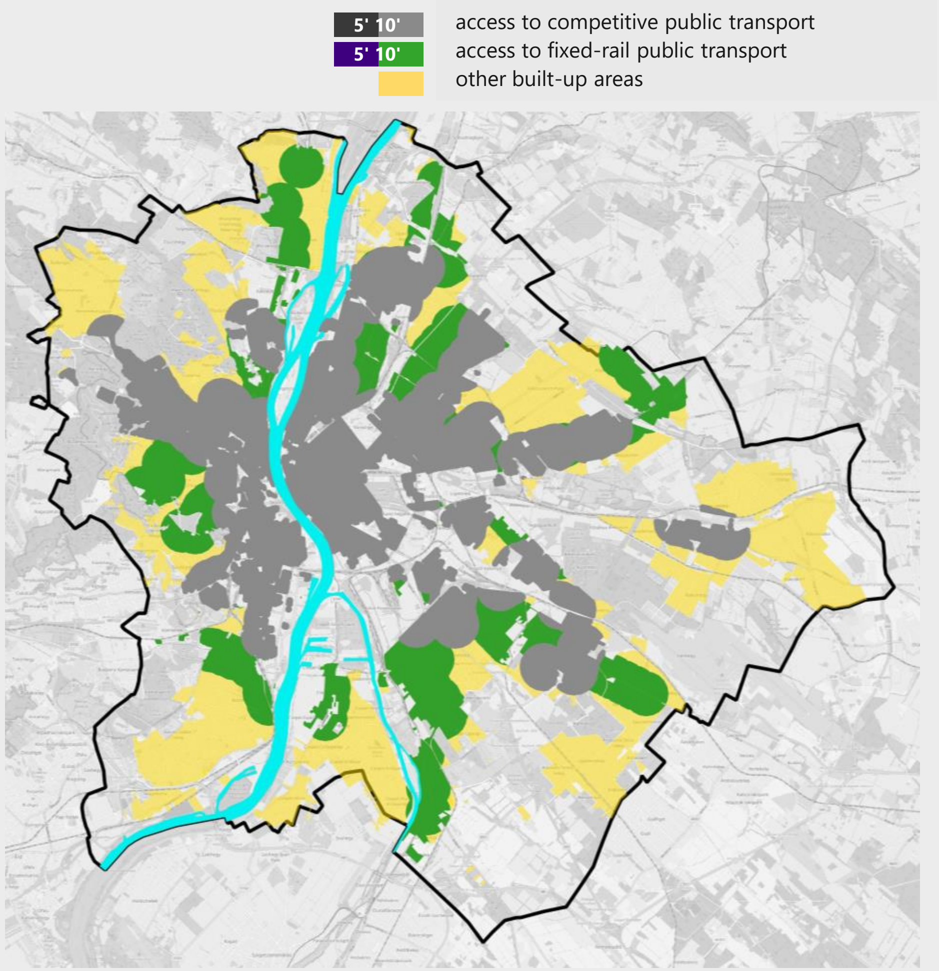
- **access time to city centre areas can only be up to 5 minutes longer than by car**
- **at least 10 departures per hour, even during off-peak hours**
- **the city centre is accessible with up to one transfer.**

The spatial walking accessibility of fixed-rail public transport stops is good, but journey times and/or headways times do not always make public transport attractive. Currently, we provide a competitive service within 500 metres for around 800,000 Budapest residents.

Competitive public transport services within 5 and 10 minutes walking distance (2024)



5- and 10-minutes walking distance to fixed-rail public transport stops (2024)



Access to fixed-rail and other competitive public transport services within a 10-minute walk – difference chart (2024)

CORE INDICATORS

2023 REPORT

CORE INDICATORS

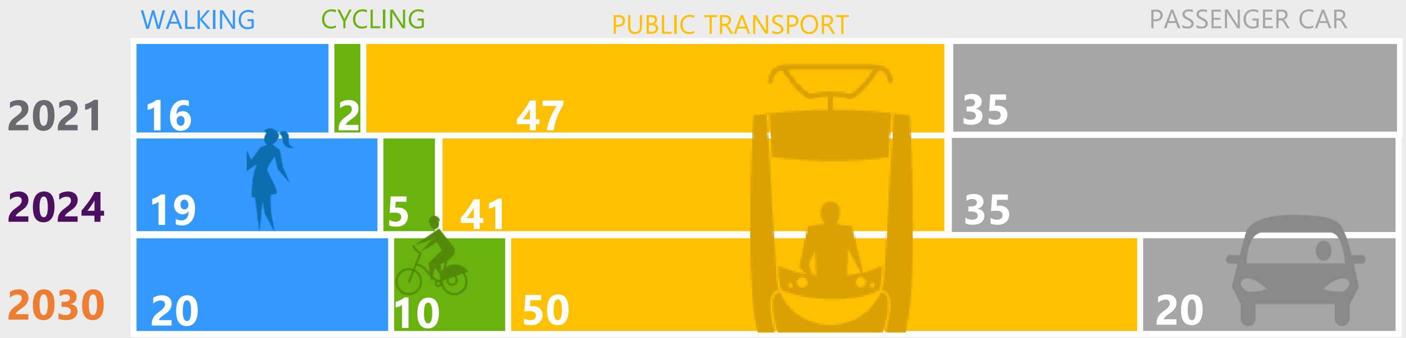
**THE CORE INDICATORS MEASURE THE ACHIEVEMENT OF THE STRATEGIC OBJECTIVES OF THE BMT.
THE INDICATORS ARE DIVIDED INTO THEMATIC AREAS. THE ANNUAL REPORT CONTAINS THE INDICATORS HIGHLIGHTED IN PURPLE.**

A1	MODAL SPLIT	**A1.1 Transport division of labour: distribution of trips to Budapest by trip number** A1.2 Modal split: distribution of trips to and from Budapest on a trip number basis **A1.3 Modal split: distribution of trips in Budapest on a passenger-km basis** A1.4 Modal split: distribution of trips to and from Budapest on a passenger-km basis
A2	CLIMATE INDICATORS	**A2.1 Greenhouse gas (GHG) emissions from transport** **A2.2 Transport energy use** **A2.3 Air pollution from traffic (PM2.5)** A2.4 Public exposure to traffic noise
A3	SAFETY	**A3.1 Road safety index - serious injuries** **A3.2 Road safety index - fatalities** A3.3 Risk level of active modes
A4	ACCESS TO SERVICES	A4.1 Temporal and location-based access to public transport A4.2 Affordability of public transport services for the poorest **A4.3 Physical and audio-visual accessibility in public transport** **A4.4 Infocommunications (ICT) accessibility in public transport** A4.5 Active mobility opportunities
A5	TRAFFIC	**A5.1 Road congestion indicator** **A5.2 Percentage of disruption to basic public transport services** **A5.3 Availability of Bubi public bicycles and shared micromobility tools**
A6	CUSTOMER EXPERIENCE	**A6.1 Customer satisfaction indicator**
A7	MULTIMODALITY AND ACCESSIBILITY	A7.1 Degree of mobility integration in 28 sub-centres A7.2 Accessibility of the public transport backbone A7.3 Availability of high-comfort cycling main network elements **A7.4 Proportion of people travelling to or from the suburbs (commuters) by public transport** A7.5 Travel time provided by the transport system in Budapest and the agglomeration

A1.1 | MODAL SPLIT: DISTRIBUTION OF TRIPS IN BUDAPEST ON A TRIP-COUNT BASIS

A1

2024 results



The 2024 figure includes **preliminary figures of** the EFM household survey corrected for seasonal effects.
The methodology for the calculation of the seasonality of traffic and the modal split values derived from it is detailed on page 30.

Unit of measurement:

%, on a per trip basis

Baseline 2021

walking 16%,
cycling 2%, public transport 47%,
car transport 35%

Actual value 2024

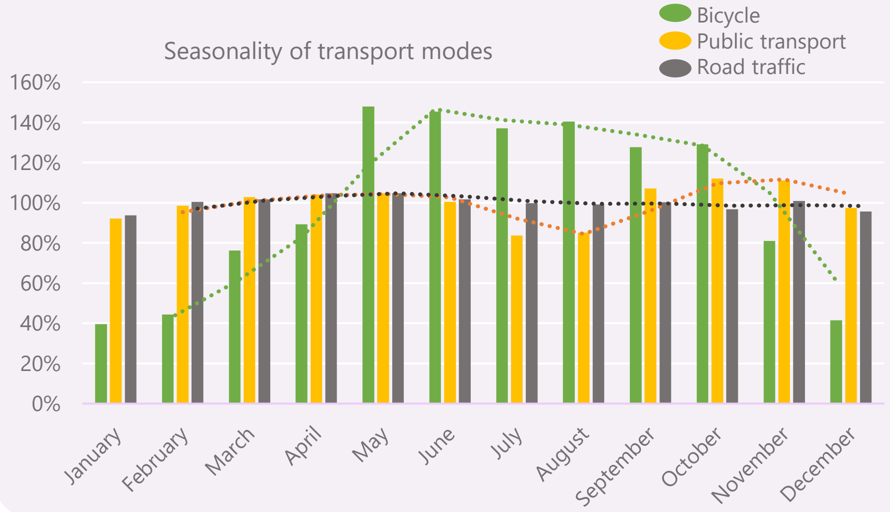
walking 19%,
cycling 5%, public transport 41%,
car transport 34%

Target 2030

walking 20%,
cycling 10%, public transport 50%,
car transport 20%

Evaluation and remarks

Budapest aims to promote sustainable transport modes within the transport sector, including active mobility and public transport. and to reduce local emissions, to achieve climate neutrality and increase the efficiency of mobility's public space use, thereby reallocating valuable public space to other urban functions (e.g. recreational, social, green, etc.).
The development of each mode of transport typically affects all other modes and the change in modal split is an overall indicator of changes in travel behaviour. Responses to changing travel demand due to the 2020-21 COVID, and the results of more intensive development of walking and cycling infrastructure, are reflected in the modal split over a 2–3-year period. However, **there is also a decline in public transport within sustainable transport modes.** Active mode users have mainly switched from public transport.
In order to achieve the 2030 modal split target, in addition to the development of active modes, the greatest attention should be paid to shifting the use of public transport from private cars to public transport.



A1.1 | MODAL SPLIT: DISTRIBUTION OF TRIPS IN BUDAPEST ON A TRIP-COUNT BASIS

Definition

The modal split **is an indicator of** the composition of urban traffic, **measured by the frequency of use of** different transport modes.
The intra-urban modal split, based on the number of trips, is the modal split of daily traffic within the city and from Budapest to the agglomeration and from Budapest to the agglomeration, on weekdays. The modes calculated are **walking, cycling, public transport, private car.** This indicator shows the modal split **as a proportion of the number of trips**. The modal split is regulated by Decree 20/2012 (III. 14.) of the Municipal General Assembly (Appointment Decree), the Annual (Public Service) Contract and its Annex 3.

Calculation methodology

The modal split is calculated at a frequency of 2 years based on a household survey*. In the household survey, the travel habits of city dwellers are sampled on a representative sample of households in Budapest and the urban area. The sample includes all trips made on the previous day of a weekday (typically in October). The number of trips does not include walking to access public transport separately as walking, since walking to access is not a separate trip. This is used to determine, on a passenger-kilometre and trip-count basis, the percentage of trips made by each of the 4 modes calculated in relation to each other, so that the total daily trip share is 100%.

Research methodology

In the BMT, both trip-based (A1.1; A1.2) and travel-efficiency-based (A1.3; A1.4) modal split are measured to get a more complete picture of travel patterns in Budapest.
* A total of 12,000 addresses were surveyed in the 2024 household survey, covering 25,499 persons.
The household surveys were conducted over a period of approximately 2 months from the end of May to July 2024. Travel/person is the average of the total trips per day per district of all persons starting on foot surveyed in that district.
Travel by scooter (and other micromobility devices) is shown combined with the proportion of cyclists.

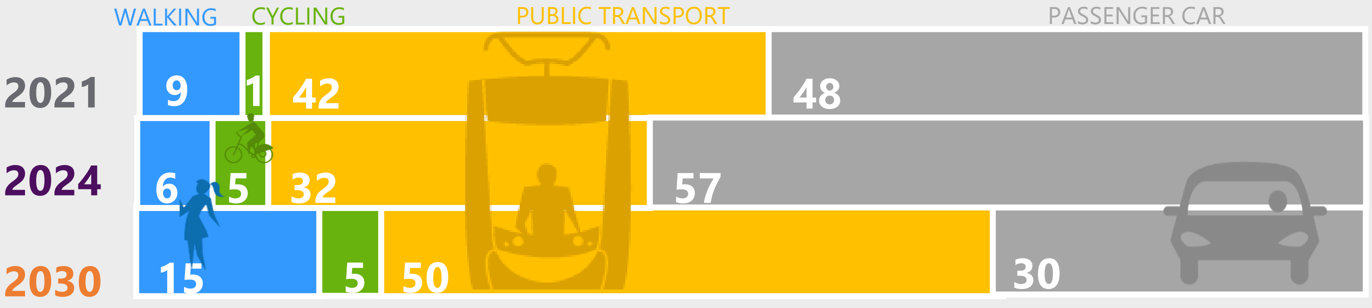
Pedestrians
Micromobility
Cyclists
Scooter users
Public transport
People travelling by car

Data source: BKK Zrt.

Responsible department: Strategic Data Management and Knowledge Centre Directorate, Data Analysis and Modelling Department

A1.3 | MODAL SPLIT: DISTRIBUTION OF TRIPS IN BUDAPEST ON A PASSENGER-KM BASIS

2024 results



Preliminary figures for the 2024 EFM household survey adjusted for seasonal effects.

Unit of measurement:

%, on a passenger-kilometre basis

Baseline 2021

walking 9%,
cycling 1%, public transport 42%,
car transport 48%

Actual value 2024

walking 6%,
cycling 5%, public transport 32%,
car transport 57%

Target 2030

walking 15%,
cycling 5%, public transport 50%,
car transport 30%

Evaluation and remarks

The modal split is an indicator of the composition of urban traffic and the share of the different modes of transport. **Budapest aims to promote sustainable transport modes within the transport sector, such as increasing the share of active mobility and public transport,** reducing local emissions, achieving climate neutrality, and to increase the efficiency of mobility in public space use and thereby reallocate valuable public space to other urban functions (e.g. recreational, social, green, etc.). The development of each mode of transport typically has an impact on all other modes, and the change in modal split represents an overall change in travel patterns. Responses to changing travel demand due to the 2020-21 COVID, and the results of more intensive improvements in walking-cycling infrastructure, became also visible in the modal split over a 2–3-year period.

When examining modal split on a passenger-kilometre basis, we look at the modal shares of the total lengths travelled in passenger transport trips. Compared to the trip count-based indicator, changes in modal length characteristics can also be examined here. For example, some of the longer walking trips have been shifted to cycling, presumably because of improvements in cycling conditions.

Travel efficiency data suggest that **longer walking trips are beginning to be shifted to cycling.** However, **there is also a decline in public transport as a sustainable mode of transport.** Active mode users have shifted primarily from public transport. Based on the values of the indicator examined based on travel efficiency, we are moving away from our target, even though we have come closer to the target in terms of the number of trips compared to the baseline value – this is mainly due to **the increase in the average length of trips made by private car.**

In order to achieve the 2030 modal split target, in addition to the development of active modes, it is necessary to the greatest attention should be paid to shifting the modal shift from car to public transport.

A1.3 | MODAL SPLIT: DISTRIBUTION OF TRIPS IN BUDAPEST ON A PASSENGER-KM BASIS

Definition

Distribution by mode of all **intra-city** trips in Budapest on an average weekday. The modes considered are walking, cycling, public transport, private car. This indicator shows **the modal split in terms of the proportion of kilometres travelled**.
The modal split is regulated by Decree 20/2012 (III. 14.) of the Municipal General Assembly (Appointment Decree), the Annual (Public Service) Contract and its Annex 3.

Calculation methodology

The modal split is calculated at a planned frequency of 2 years based on a household survey* . In the household survey, the travel habits of city dwellers are surveyed on a representative sample of households in Budapest and the urban area. The sample always includes all trips and part-trips made on the previous day, typically a weekday in October.
Only the Budapest part of the trip is taken into account in the calculation of the share, and the agglomeration trips before or after crossing the administrative border are 'cut off'.
Walking that does not count as a trip in itself (e.g. to a stop or a car) is recorded in minutes and recalculated using a speed of 4 km/h, and then, in case of passenger-km, is added to the pedestrian value. This is used to determine, on a passenger-kilometre and trip-count basis, the percentage of trips made in each of the four calculated modes relative to each other, so that the total daily trip rate is 100%.

Research methodology

In the BMT, we measure both trip-based (A1.1; A1.2) and travel-efficiency-based (A1.3; A1.4) modal splits to get a more complete picture of transport patterns in Budapest.
* A total of 12,000 addresses were surveyed in the 2024 household survey, covering 25,499 persons.
The household surveys were conducted over a period of approximately 2 months from the end of May to July 2024. Travel/person is the average of the total trips per day per district of all persons starting on foot surveyed in that district.
Travel by scooter (and other micromobility devices) is shown combined with the proportion of cyclists.

Pedestrians
Micromobility
Cyclists
Scooter users
Public transport
People travelling by car

Data source: BKK Zrt.

Responsible department: Strategic Data Management and Knowledge Centre Directorate, Data Analysis and Modelling Department

| DETERMINING THE SEASONALITY OF THE PRELIMINARY MODAL SPLIT VALUES

In the calculation of modal split values, mode shares were adjusted to eliminate seasonal effects. The household surveys and yearly modal split surveys on which the data are based were conducted in autumn/summer, however, the frequency of use of each mode can vary significantly depending on the season, especially for cycling, but also for other modes (e.g. summer holidays, school holidays).
The modal split values obtained from the data collection were corrected by the values calculated for cycling, public transport and road transport, and the seasonality of each mode was determined on a monthly basis and weighted by their shares. For walking, annual averages were calculated based on the seasonality of walking in some European capitals (Vienna, London, Paris).

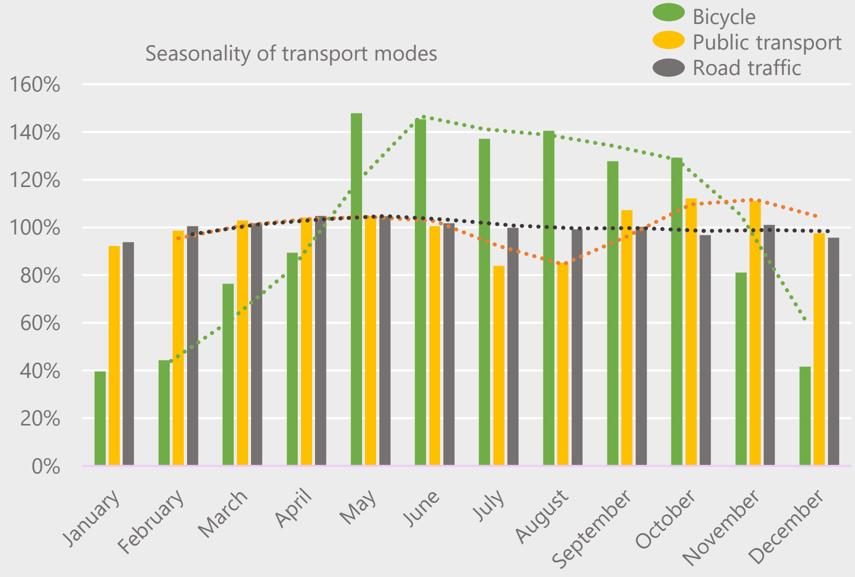
Analysis of the seasonality of cycling:
For the year 2022-23, a monthly aggregation (number of trips/month) was made from daily data based on data from 12 bicycle counters. From the aggregated monthly data, we determined the average monthly number of trips for both 2022 and 2023, and then examined the extent to which the trip data for each month differed from the determined average monthly number of trips. We then averaged the deviation from the average monthly trip counts for each year in the corresponding months on a monthly basis to obtain the seasonality of cycling.
Bicycle traffic counting locations: Bem tér, Hungária körút, Weiss Manfréd út, Árpád híd, Üllői út (inbound), Műegyetem rakpart, Jászai Mari tér, Kosztolányi Dezső tér (outbound), Margit híd, Népfürdő utca, Budagyöngye, Fogarasi út.

Analysis of the seasonality of public transport:
For the year 2022-23, the change in weekly trip numbers for the main bus lines for public transport (compared to 2019) was averaged on a monthly basis to obtain the monthly average change in trip numbers. We determined the seasonality of the years by the deviation of the monthly trip number changes from the annual average, and then averaged the values for the corresponding months of the two years, correcting the modal split public transport share on this basis.

Analysis of the seasonality of road transport:
For road transport, a data series 2023 was used. The weekly variation in road traffic (compared to 2022) was averaged on a monthly basis to determine the change in average monthly traffic volume. We then determined the seasonality of the yearly deviation of monthly traffic volume changes from the annual average.

Correction of modal split values by mode:

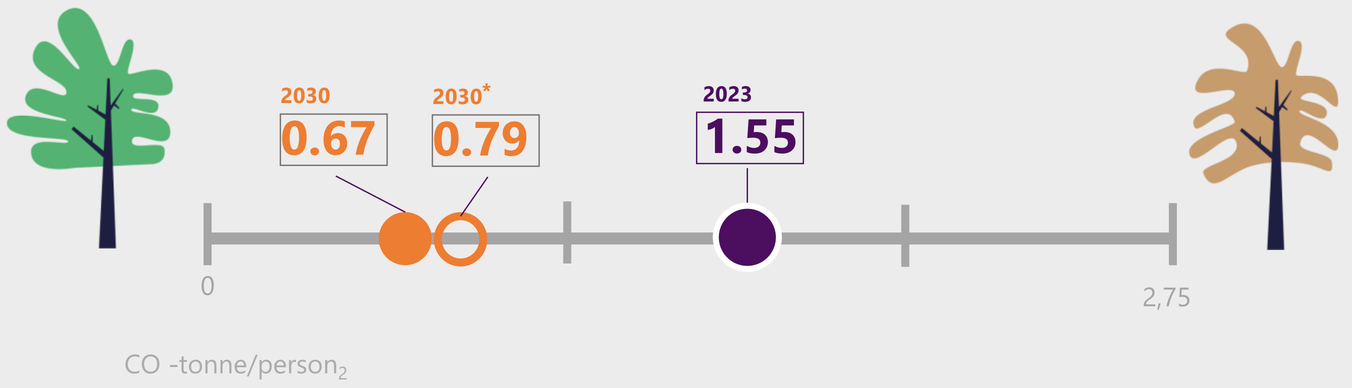
1. We checked in which month of the year the data were collected (household survey, modal split survey).
2. The modal split values were corrected for the seasonality factor associated with the month of the survey.
3. For walking, we have corrected for annual seasonality in some European capitals (Vienna, London, Paris) given that we do not currently have comparable data for walking seasonality in Budapest.



A2.1 | GHG EMISSIONS FROM TRANSPORT

A2

2023 results



Unit of measurement:

CO_2 tonnes/person

Baseline 2023

1.55

Actual value 2023

1.55

Target 2030

0.67
based on SECAP methodology

BMT 2030 modal split target*

0.79
BMT 2030 modal split target achievable value

* Target parameters for the 2030 modal split targets:

- traffic flow (vkm): taking into account the 2030 modal split target and the public transport network development targets
- car occupancy: 1.3 persons
- change in vehicle mix: share of electric cars increases to 10%, share of electric bus fleet increases to 33% at the expense of the diesel and petrol categories
- lorry load factor remains at current estimates: J1 23%, J2-4 45%

Evaluation and remarks

In Budapest, after CO_2 emissions linked to the energy consumption of buildings, transport is the second largest emitter, accounting for 28% of total emissions in 2015. Within this, private and commercial transport accounted for 26% and public transport for 2%. CO_2 emissions attributable to energy use in Budapest **in 2023** can already be considered to be **30.3%** from transport (source BKÁÉ). It can therefore be concluded that **transport CO_2 emissions from final energy use have increased as a share of total emissions in Budapest.** In the Budapest SECAP (including in the City Report and the annual assessment of the environmental status of Budapest in the BKÁÉ documents), CO_2 emissions derived from final energy use, unlike in the SUMI methodology, CO_2 emissions from transport are calculated from the amount of fuel sold within the administrative boundaries of Budapest. In the SUMI methodology, transport-related GHG emissions are determined based on the total distance travelled by public transport vehicles in Budapest and the composition of the fleet, and the value of the indicator is calculated by projecting this value onto the population. For the quantification of the target value, the targets set in the SECAP were used.

By achieving the BMT 2030 modal split targets, we can approach the target set in the SECAP. In addition, by reducing specific GHG emissions and/or reducing overall mobility demand (passenger and freight) and/or improving the modal split beyond the BMT targets, we can meet the SECAP target.

A2.1 | GHG EMISSIONS FROM TRANSPORT

Definition

The indicator shows the well-to-wheel or WTW emissions of greenhouse gases (GHGs) per capita of the Budapest population from all passenger and freight transport, i.e. the entire life cycle of the energy carrier.

Calculation methodology

The indicator calculates greenhouse gas emissions from public transport, passenger and freight transport in Budapest.

The indicator calculates total GHG emissions by mode of transport, vehicle fleet and fuel type, by mileage, and then divides by population. **The calculation of the 2023 traffic performance for passenger vehicles is based on the data of the updated Unified Traffic Model Strategic Version 07 (EFM SV07), while the total distance covered values for public transport vehicles are based on the actual data of BKK public services.**

Greenhouse gas emissions from transport =

$$\frac{(\sum_{ij} A_{ij} \times (\sum_{ck} S_{ijk} \times C_{ijkc} \times I_{jk} \times (T_k + W_k) \times (1 + F_{ijk})))}{cap} \times 1000 [CO_2 \text{ tonnes/person/year}]$$

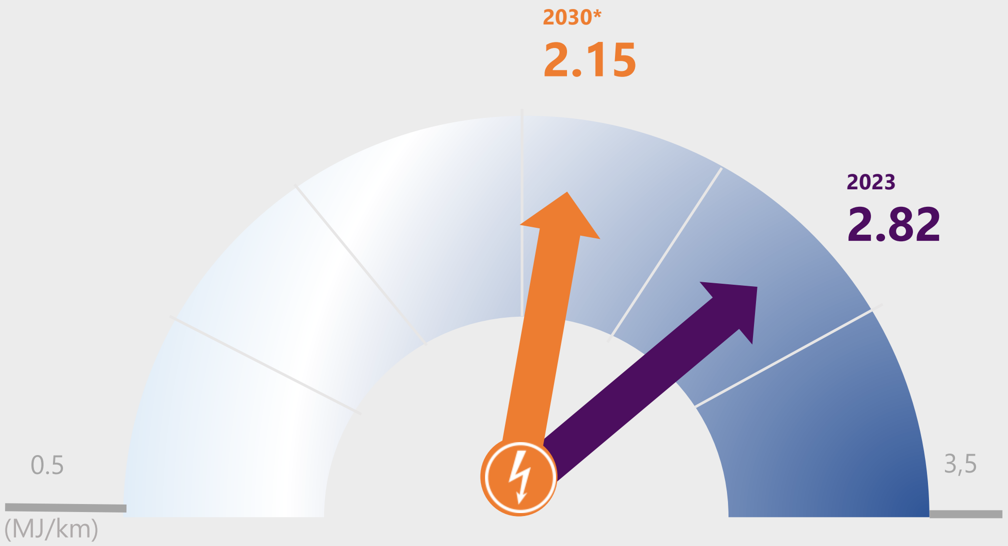
Tk = CO_2 emissions per fuel type unit (from tank to wheel) [kg/l or kg/kWh]
Wk = CO_2 emissions per fuel type unit (from well to tank) [factor]
Aij = Activity volume (based on distance travelled by mode i, vehicle type j) [million jkm/year]
Sijk = Share of k fuel type, by j vehicle type and i transport mode [percentage]
Cijkc = Share of emission class c, by fuel type k, vehicle type j and mode i [percentage]
Ijk = Energy intensity based on distance travelled by vehicle type j and fuel type k [ℓ/km or MJ/km or kWh/km]
Cap = Number of inhabitants within the functional urban area [persons]
Fijk = Non-carbon GHG correction (carbon dioxide equivalent) [factor]
k = Energy type (petrol, diesel, biofuel, electricity, hydrogen, etc.) [type]
i = Mode of transport (car, lorry, metro, tram, bus, trolleybus, HÉV suburban railway, etc.) [type]
j = Type of vehicle (if available, specify by model, e.g. SUV, etc.) [type]

Data source: BKK Centre for Budapest Transport

Responsible department: Directorate for Mobility Development, Mobility Strategy
Strategic Data Management and Knowledge Centre Directorate, Data Analysis and Modelling Unit

A2.2 | TRANSPORT ENERGY USE

2023 results



Unit of measurement:

MJ/km

Baseline 2023

2.82

Actual value 2023

2.82

Target 2030

2.15

* Achievable target with the 2030 BMT modal split targets

* The parameters used to set the target values are indicated next to the measurement methodology on the next page.

Evaluation and remarks

According to SECAP, the total energy consumption in Budapest in 2015 was 27,928,557 MWh, 24% of which can be considered as transport-related. According to the Budapest Environmental Status Reports (BKÁÉ), the energy consumption of the transport sector will decrease by 7.7% in 2023 in terms of final energy consumption, compared to 2022. In SECAP (and consequently in the City Report and in the annual Budapest Environmental Assessment (BKÁÉ) documents), the calculation of energy use from transport differs from the BMT methodology developed in the SUMI project. While the SECAP methodology calculates energy use based on the amount of fuel sold in Budapest, the **BMT methodology calculates energy use based on traffic performance, fleet composition and cargo load factor of goods vehicles.**

The transport energy use indicator shows the energy use of urban transport as a proportion of the annual average of motorised transport modes (passenger cars, buses, light and heavy duty vehicles). The calculated energy consumption value of 2.82 MJ/km in 2023 is used as a baseline.
For the calculation of the 2030 target, we assumed the achievement of the BMT 2030 modal split targets and a 10% share of the electric vehicle fleet, in line with the target of indicator K2.1.1 Share of pure electric cars and goods vehicles registered in Budapest.

Achieving the climate neutrality target will require, in addition to the achievement of the BMT modal split targets, a change in transport patterns, with a significant increase in the average occupancy of cars and cargo load factor of goods vehicles.

A2.2 | TRANSPORT ENERGY USE

A2

Definition

Urban transport within Budapest, including the total mileage of vehicles from Budapest and the agglomeration: total energy consumption of public transport and road passenger and freight transport per passenger-kilometre and freight-tonne-kilometre (annual average for all motorised modes of transport).

Calculation methodology

The indicator is based on the mode of transport, vehicle fleet composition and fuel type based on the mileage and payload of the goods vehicles and the fuel mix.
The indicator calculates the energy consumption of transport taking into account the utilisation of goods vehicles. Calculation of 2023 traffic performance for passenger cars is based on the data of the updated Uniform Traffic Model Strategic Version 07 (EFM SV07), the mileage values for public transport vehicles are based on the actual data of BKK public services.

$$\text{Transport energy use} = \frac{\left(\sum_{ij} A_{ij}\left(\sum_k S_{jk} \times I_{jk} \times EC_k\right)\right)}{TV_{pass} + \left(\frac{TV_{fre}}{8}\right)}$$

TV_{pass} = total distance travelled in passenger transport (passenger-km) [million passenger-km]
TV_{fre} = freight transport volume for freight transport [million tonne-km]
S_{jk} = share of fuel type k by vehicle type j [%]
I_{jk} = energy intensity by distance travelled by vehicle type j and fuel type k [l/km or MJ/km or kWh/km]
A_{ij} = activity volume (distance travelled by mode i and vehicle type j) [million km/year]
EC_k = energy content of fuel for k fuel [MJ/l or MJ/kg]
k = type of fuel [type]
i = mode of transport (passenger car, lorry, metro, tram, bus, trolleybus, HÉV suburban railway, etc.) [type]
j = vehicle type (if available, specify by model, e.g. SUV, etc.) [type]

Vehicle fleet data were taken into account as calculated in the A2.1 Transport GHG emissions indicator.

Parameters taken into account to set the target value:

2030 2.15 MJ/km - parameters considered to achieve the modal split targets:

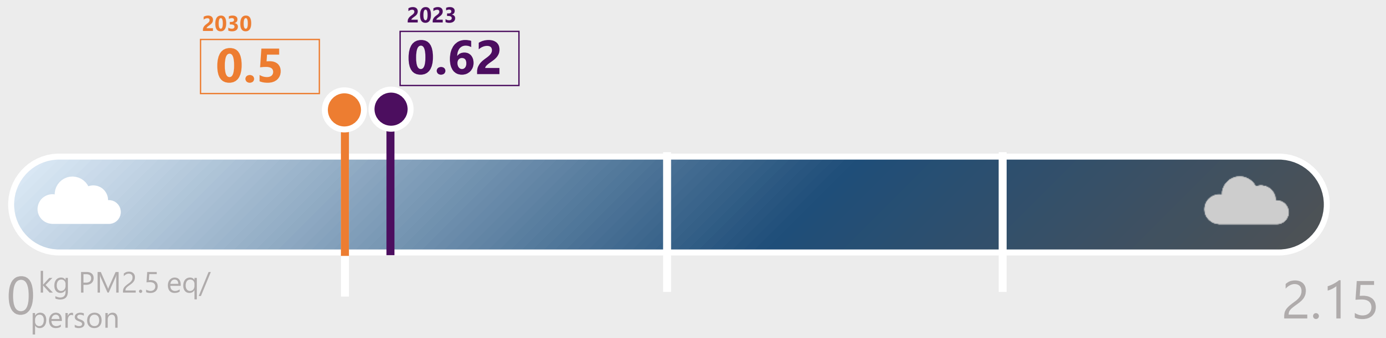
- traffic flow (j-km): **taking into account the 2030 modal split target and the public transport network development targets**
- car occupancy: 1.3 persons, EFM data
- change in vehicle mix: **share of electric cars increases to 10%, share of electric buses to 33%,** at the expense of diesel and petrol
- average cargo load factor of trucks remains at current estimated levels: J1 **23%**, J2-4 **45%**

Data source: BKK Centre for Budapest Transport

Responsible department: Directorate for Mobility Development, Mobility Strategy
Strategic Data Management and Knowledge Centre Directorate, Data Analysis and Modelling Department

A2.3 | AIR POLLUTION FROM TRAFFIC (PM2.5)

2023 results



Unit of measurement:

kg PM2.5 eq/ person

Baseline 2023	Actual value 2023	Target 2030
0.62	0.62	0.5*

* Parameters of the target value that can be achieved by meeting the 2030 modal split targets:

- traffic volumes (j-km): taking into account the 2030 modal split target and the public transport network development targets
- car occupancy: 1.3 persons, EFM data
- change in vehicle mix: share of electric cars increases to 10%, share of electric bus fleet increases to 33% at the expense of the diesel and petrol categories

Evaluation and remarks

Fine particles of PM2.5 can enter the airways and pose a serious health risk. Long-term exposure to polluted air reduces life expectancy and years of healthy life. Traffic-generated PM2.5 emissions are caused by vehicle exhaust gases (whose concentration increases with congestion), the wear and tear of tyres and brakes and road surfaces as well as dust resuspension. Air pollution caused by transport can be improved primarily by reducing traffic volumes and increasing the specific efficiency of transport energy use.

According to the Budapest Environmental Assessment (BKÁÉ), the average value of PM2.5 aerosol, small particulate matter **in Budapest** in 2022 is **12 µg/m³ .**
The results of the measurements at about 9 monitoring points have so far **complied with the relevant EU-wide limit value of 20 µg/m³ for PM2.5 per year** at all assessable monitoring points. The WHO recommendation for 2021 is much more stringent: 5 µg/m³ per year .

As with the other climate indicators, the traffic-based PM2.5 value per population is determined using the SUMI methodology based on the total distance travelled of Budapest traffic and the composition of the vehicle fleet. The value of the indicator is shown on the scale for the worst state of air pollutant emissions (when the parameter value exceeds 2.15 kg PM2.5 equivalent per capita) and the best state (when the parameter value is 0 kg PM2.5 equivalent per capita). In the SUMI methodology, the threshold value of 2.15 kg PM2.5 eq per capita was set taking into account the Gothenburg 2020 PM2.5 target, given that around 30% of urban emissions come from road transport.

A2.3 | AIR POLLUTION FROM TRANSPORT

Definition

Exhaust and non-exhaust **PM2.5** emissions from urban transport, public transport, passenger and freight transport per capita in Budapest.
PM2.5 (Particulate Matter) is an indicator of particles suspended in the air with a diameter of 2.5 micrometers or less.
(EHI = Emission harm equivalent index [kg PM2.5 eq./cap per year])

Calculation methodology

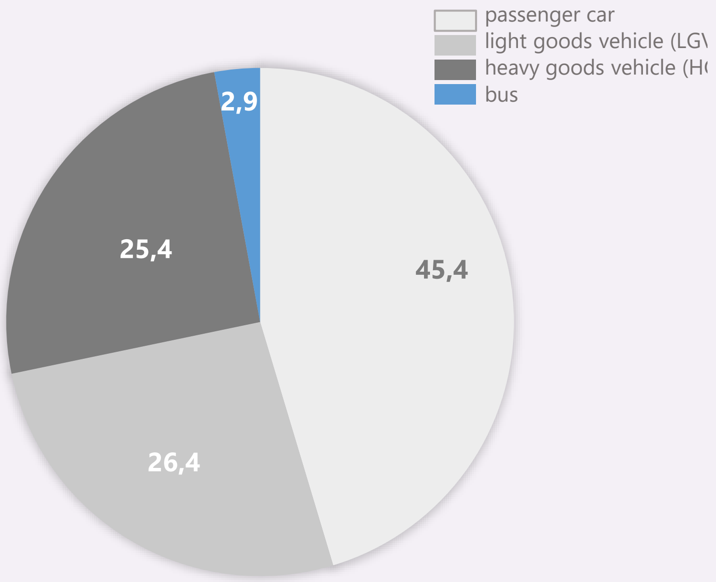
The indicator calculates the total PM2.5 emissions by transport mode, vehicle fleet and fuel type, by mileage, and then divides by the population.
from the EFM, and the mileage data for public transport vehicles from the operators.)
The following formula was used to calculate the indicator:

$$\text{EHI} = \frac{\sum_s Eeq_s \times (\sum_{ij} A_{ij} \times (NE_i + \sum_{ck} S_{ck} \times E_{ijkcs} \times I_k)) \times 1000}{cap}$$

Eeq_s = health effect value equivalent to the type of pollutant (PM2.5) [factor]
E_{ijkcs} = emission of pollutant: i per vehicle kilometre travelled by mode of transport, j per vehicle, k per fuel type and c per emission class (g/km)
A_{ij} = activity volume (distance travelled by mode i and vehicle type j) [million vkm/year]
sijk = share of fuel type k by vehicle type j and mode i [share]
Cijkc = share of emission class c by fuel type k, vehicle type j and mode i [share]
NE_{si} = non-tailpipe emissions of pollutant i based on distance travelled [g/km] (= 0 for NOx)
cap = number of inhabitants within the functional urban area [inhabitants] [cap
k = type of energy (petrol, diesel, biofuel, electricity, hydrogen, etc.) [type] [type
i = type of vehicle transport mode (car, lorry, metro, tram, bus, trolleybus, metro, etc.) [type] [type]
j = class of vehicle (if available, defined by model, e.g. SUV, etc.) [type] [type
s = type of substance limited to nitrogen oxides and PM2.5 [type]
c = emission class (EURO emission standard) [type]

Fleet data were considered as given in the Transport GHG emissions indicator A2.1.

Traffic PM2.5 pollution by vehicle type [%] in Budapest



Data source:
Responsible department:

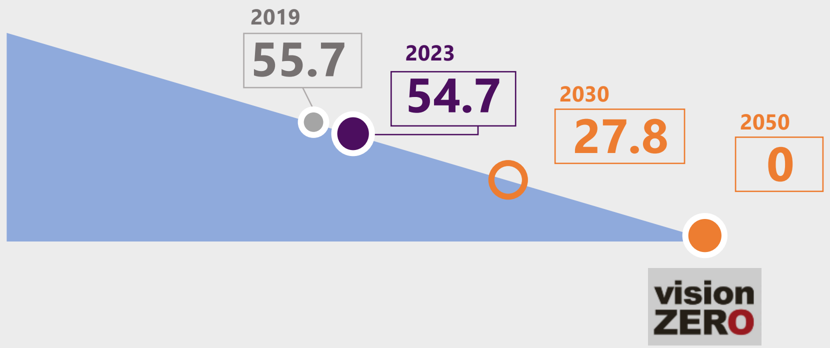
BKK Zrt.
Directorate for Mobility Development, Mobility Strategy
Strategic Data Management and Knowledge Centre Directorate Data Analysis and Modelling Unit

A3.1 | ROAD TRANSPORT SAFETY INDEX - SERIOUS INJURIES

2023 results

923 people were seriously injured in road traffic incidents

The value of the indicator per 100,000 inhabitants:



Unit of measurement:

persons/year/ 100,000 inhabitants

Baseline 2019

55.67

956 persons

Actual value 2023

54.74

923 persons

Target 2050

VisionZero: 0 persons

Target 2030

27.8

50% reduction by 2030

Evaluation and remarks

Road traffic injury incidents and casualties in 2020 after a slow increase since 2012 due to the decrease in vehicle traffic associated with the coronavirus epidemic and has since then been stagnating with a slight increase.

The number of people seriously injured in transport in Budapest started to increase from 2022, following a significant decline due to Covid.

The number of inhabitants in Budapest increased slightly after the low point in 2022, which was positive, while the increase in the number of severely injured persons had a negative impact on the index. Overall, its value improved slightly.

The number of events is lower than in the previous decade, but both the proportion and number of serious injury incidents is increasing. The decrease in the number of people injured is typically a decrease in the number of persons with minor injuries.

To improve safety indicators and achieve the VisionZero target, it would be important to improve cooperation between institutions and increase the resources available for improving road safety.

A3.1 | ROAD TRANSPORT SAFETY INDEX - SERIOUS INJURIES

Definition

The indicator shows the number of persons seriously injured in road traffic incidents involving personal injury in Budapest. The rate shows the number of persons seriously injured in road traffic incidents per 100,000 persons in the city. This indicator is used to monitor the implementation of the VisionZero road safety principle.

Calculation methodology

A serious road traffic incident involving serious personal injury means any incident on a pavement, public road or private road open to public traffic involving at least one moving vehicle and resulting in serious injury to at least one person which is expected to heal beyond 8 days. The indicator shall include the number of persons seriously injured as defined above, multiplied by 100,000 and then divided by the population in the current year.

Data source: BKK Zrt. / KSH: https://www.ksh.hu/stadat_files/ege/hu/ege0068.html; https://www.ksh.hu/stadat_files/ege/hu/ege0070.html

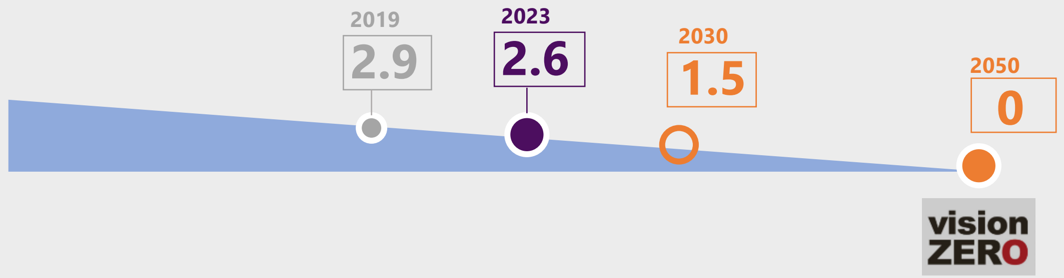
Responsible department: Directorate for Mobility Development, Transport Safety; Mobility Strategy

A3.2 | ROAD TRANSPORT SAFETY INDEX - FATALITIES

2023 data

44 people were killed in road traffic incidents

Indicator value per 100,000 inhabitants:



Unit of measurement:

persons/year/
100,000 inhabitants

Baseline 2019

2.91

50 persons

Actual value 2023

2.61

44 persons

Target 2050

VisionZero: 0 persons

Target 2030

1.5
50% reduction by 2030

Evaluation and remarks

Our aim is to reduce road deaths in Budapest

- by 50% by 2030
- and to zero by 2050.

The number of personal injury road traffic incidents and injured persons decreased in 2020, after a slow increase since 2012, due to a decrease in motor vehicle traffic related to the coronavirus epidemic.

The average number of fatalities and injured persons per incident in recent years has remained stable at 1.2.

In 2023, the number of fatal incidents decreased by 12% compared to the base year, but this improvement does not necessarily indicate a clear trend; it can also be attributed to natural fluctuations in the data series.

A3.2 | ROAD TRANSPORT SAFETY INDEX - FATALITIES

Definition

The indicator shows the number of fatalities due to road traffic incidents involving personal injury in Budapest. The rate shows the number of fatalities due to road traffic incidents in the city per 100,000 inhabitants. This indicator is used to monitor the implementation of the VisionZero road safety principle.

Calculation methodology

A fatal road traffic incident is any incident on a pavement, public road or private road open to public traffic involving at least one moving vehicle and resulting in the death of at least one person at the scene of the incident or within 30 days. The indicator takes the number of persons killed as a result of the fatal incidents defined above, multiplies it by 100,000 and divides the result by the population.

Measures to help achieve the VisionZero target

Vehicle speed has a major impact on the outcome of personal injury incidents, so the first priority among the measures is to adjust speed limits to the role of the roads in the network and public space and stricter enforcement of speed limits.
Infrastructure interventions will prioritise the safety of the most vulnerable road users.
In addition to infrastructure modifications, as well as increasing controls and updating the legislative environment, emphasis should be placed on sensitising and educating road users.

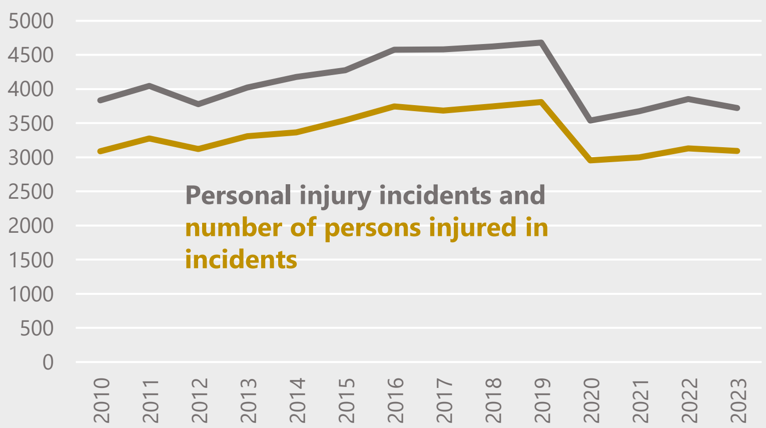
Data source: BKK Zrt. / KSH https://www.ksh.hu/stadat_files/ege/hu/ege0070.html https://www.ksh.hu/stadat_files/ege/hu/ege0080.html

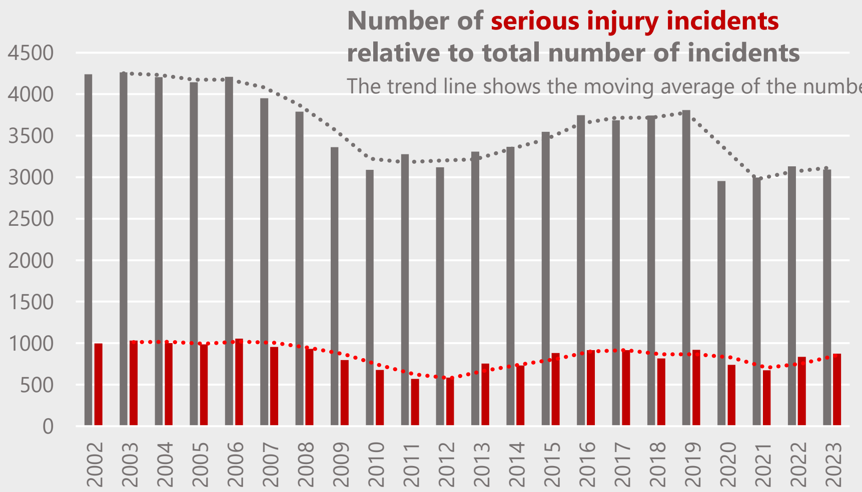
Responsible department: Directorate for Mobility Development, Transport Safety; Mobility Strategy

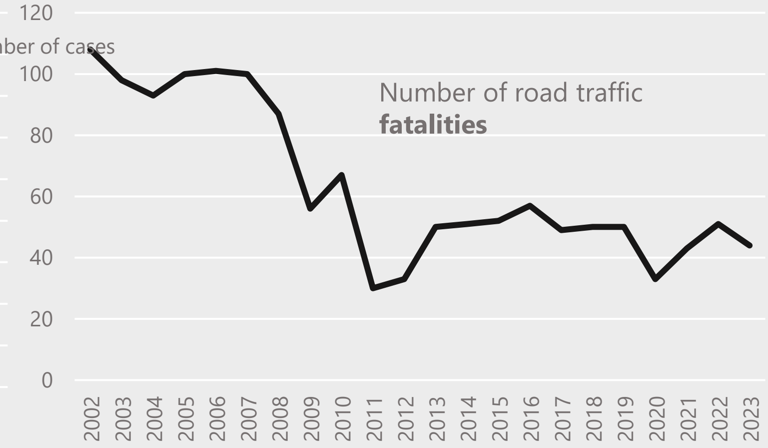
A3. | BUDAPEST ROAD TRANSPORT SAFETY DATA

The green figures are the revised data of the HCSO updated on 25.10.2024

BUDAPEST / actual year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Population	1719342	1705309	1697343	1698106	1696128	1702297	1712210	1721556	1733685	1727495	1730350	1733837	1741601	1738570	1728929	1723033	1722363	1717144	1690503	1672443	1671004	1686222
Total number of personal injury road traffic incidents [case]	4241	4262	4204	4142	4211	3952	3789	3362	3087	3278	3120	3310	3366	3545	3747	3685	3745	3810	2955	2997	3132	3094
Serious injury incidents [case]	996	1032	1001	984	1053	956	932	797	676	571	585	754	731	883	915	916	816	919	738	673	836	875
Fatal incidents [case]	101	97	87	97	97	96	82	53	63	28	32	49	50	50	56	47	49	49	33	40	49	43
Number of persons injured in road traffic incidents [persons]	5278	5306	5243	5119	5268	4985	4830	4203	3835	4047	3777	4025	4179	4277	4578	4580	4626	4681	3539	3676	3856	3723
Number of persons seriously injured [persons]	1088	1140	1079	1050	1162	1039	1005	857	715	603	611	784	765	924	961	968	865	956	769	684	885	923
Number of persons fatally injured [persons]	108	98	93	100	101	100	87	56	67	30	33	50	51	52	57	49	50	50	33	43	51	44
A3.1 | ROAD TRANSPORT SAFETY INDEX - SERIOUSLY INJURED	63,28	66,85	63,57	61,83	68,51	61,04	58,70	49,78	41,24	34,91	35,31	45,22	43,93	53,15	55,58	56,18	50,22	55,67	45,49	40,90	52,96	54,74
A3.2 | ROAD TRANSPORT SAFETY INDEX – FATALITIES	6,28	5,75	5,48	5,89	5,95	5,87	5,08	3,25	3,86	1,74	1,91	2,88	2,93	2,99	3,30	2,84	2,90	2,91	1,95	2,57	3,05	2,61







A 4.3 | PHYSICAL AND AUDIO-VISUAL ACCESSIBILITY IN PUBLIC TRANSPORT

2024 results

Accessibility level in public transport weighted by number of trips

Unit of measurement:

%

Baseline 2024

76%
Indicator was previously not calculated, so the 2024 value is included in the report.

Actual value 2024

76%

Target 2030

88%

Evaluation and remarks

Taking all public transport sectors together, the accessibility rate of almost 80% is good at European level, around the median for the 46 **cities** participating in **the SUMI project** (indicators calculated in the SUMI project are summarised on page 92). There are significant differences between sectors: in some cases, vehicle accessibility could be improved, while in others, stops and stations need to be made more accessible. We aim to improve these proportionally by 2030.

Values used in the calculation of the indicator by sector:

- proportion of accessible ticket machines and ticket offices
- proportion of vehicles with visual passenger information systems
- the proportion of vehicles with audible passenger information systems
- proportion of low-floor vehicles
- percentage of vehicles with designated wheelchair/baby car spaces
- proportion of stops equipped with public address systems
- percentage of stops with barrier-free access
- proportion of stops with accessible platform-to-vehicle connections

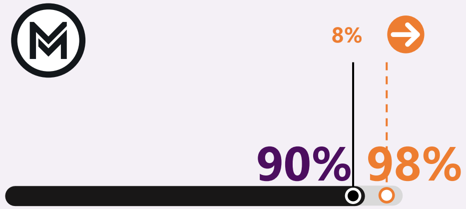
Note: due to lack of data, the indicator does not include the data for MÁV and Volán vehicles and stops in Budapest and the agglomeration.

A 4.3 | PHYSICAL AND AUDIOVISUAL ACCESSIBILITY IN PUBLIC TRANSPORT

Level of accessibility weighted by number of passengers:*

* More than 3,000,000 trips are made every day in Budapest by public transport

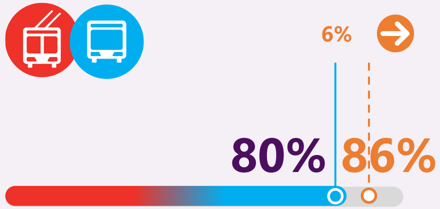
The level of physical and audiovisual accessibility of public transport sectors:*



Metro sector

821 000 trips/workday

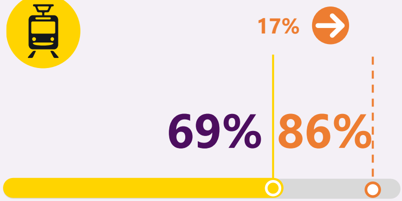
To achieve the metro sector target, line M1 rolling stock and infrastructure developments are needed, as well as improvements to accessibility of M1 and M2 platforms.



Trolleybus and bus sector

1 355 000 trips/workday

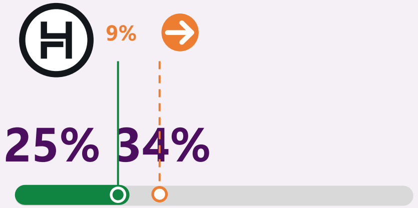
In addition to the full accessibility of the bus fleet, major improvements in the accessibility of bus stops are needed to achieve the sectoral target. All 3,878 bus and trolleybus stops should be accessible (based on ForTe data, 3,275 accessible). In addition, around 1,000 stops should have audible passenger information.



Tram sector

944 000 trips/workday

To reach the sectoral target, besides the planned procurement of around 100 CAF vehicles, a major improvement is needed in the accessibility of stops. Of the approximately 643 tram stops, 500 should be accessible in all three aspects, compared to the current 322.



HÉV suburban railways

136 000 trips/workday

By 2030, the development of the HÉV already
is not realistic, therefore 34% can be achieved by upgrading the stops.
To achieve this, all 69 stops need to be equipped with public address systems (currently 35 stops).

* In 2023, 91% of ticket vending machines and ticket offices, 303, were barrier-free.
For all sectors, the 334 BKK ticket vending machines and ticket offices in operation must be **100%** accessible.

BUDAPESTI KÖZLEKEDÉSI KÖZPONT

A4.3 | PHYSICAL AND AUDIOVISUAL ACCESSIBILITY IN PUBLIC TRANSPORT

Definition

This indicator determines the accessibility of public transport services (MÁV Group and BKK services) for people with reduced mobility.
Persons with reduced mobility include people with visual and hearing impairments and people with physical disabilities, such as pregnant women, people using wheelchairs and mobility equipment, elderly people, people with baby carriages, those with physical characteristics that differ greatly from the average (e.g. too short) and people with temporary injuries.
The indicator monitors the accessibility of vehicles, stops, ticket offices and ticket vending machines.

Calculation methodology

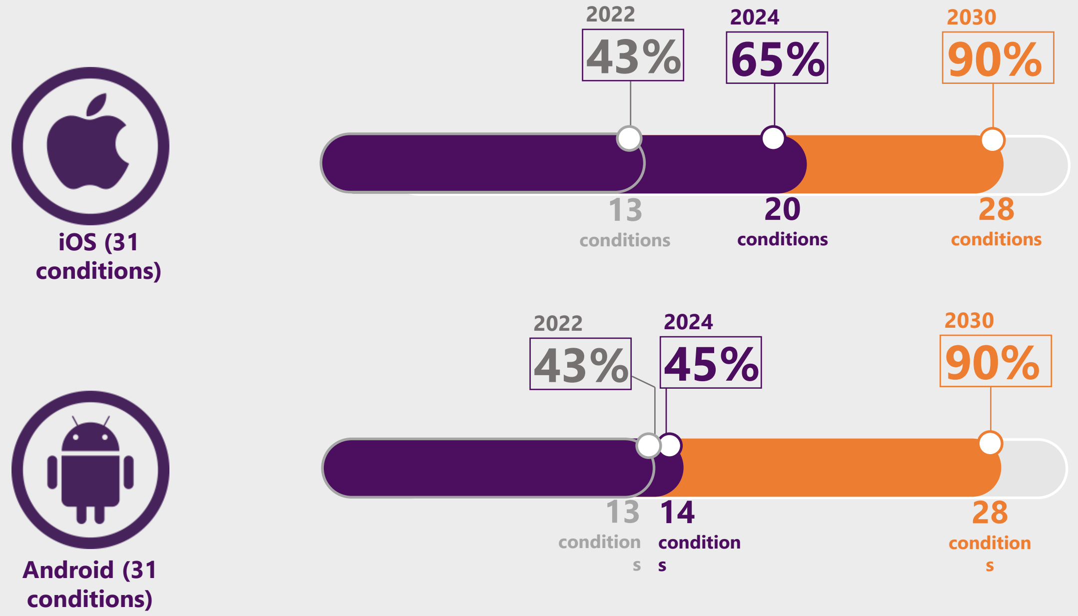
The ratio of accessibility of vehicles and stops (low-floor design) **is calculated** by mode, **weighted by the number of trips**. For vehicles, we take into account their physical accessibility (low floor and interior design) and their info-communication accessibility (audio and real-time visual passenger information). For stops, we measure access to and from the stops to the vehicle and the presence of audible passenger information (audible passenger information should be automatic). Ticket offices are considered accessible if they are wheelchair accessible, equipped with a loop amplification system, have KONTAKT sign language interpretation services available, and are staffed for purchases of fare products. Ticket vending machines are considered accessible if they can be used by visually and/or hearingimpaired customers and wheelchair users.
Note: Due to lack of data, the indicator does not include the vehicle and stop data of MÁV and Volán within Budapest and the agglomeration.

Data source: BKK Zrt., MÁV-HÉV Zrt. (with agglomeration data)

Responsible department: BKK Mobility Development, Public Relations; Mobility Strategy

A 4.4 | ICT ACCESSIBILITY IN PUBLIC TRANSPORT - APPLICATIONS

2024 audit results



Unit of measurement:

%

Baseline 2022

BudapestGO - iOS: 43% (13/30)
BudapestGO - Android: 43% (13/30)

Actual value 2024

BudapestGO - iOS: 65% (20/31)
BudapestGO - Android: 45% (14/31)

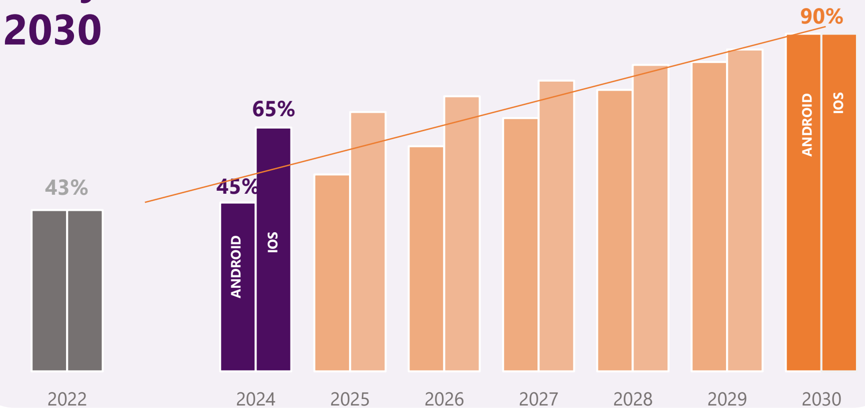
Target 2030

90% (28/31)

Evaluation and remarks

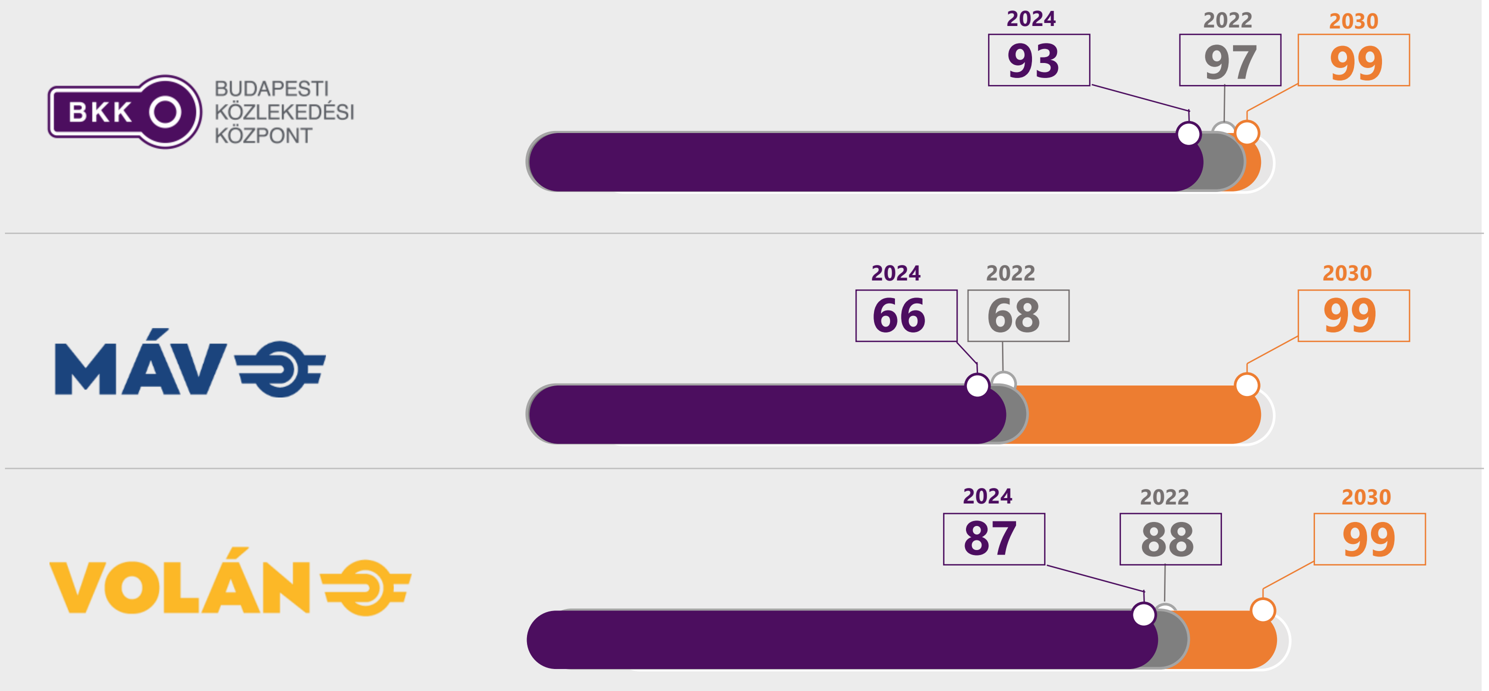
The compliance with the requirements for ICT accessibility of digital interfaces can be checked against the criteria of EN 301 549. **In 2022, out of 30 criteria,** the app met **13 criteria** on both platforms (iOS and Android**), creating a baseline of 43**%. In the audit carried out **in 2024**, as the new features were added to the app, **31 criteria** were tested, of which the iOS **platform met 20 and the Android platform 14, i.e. 65% for the former and 45% for the latter.** For apps, improvements were made in the review and accessibility of screen displays for journey planning. This work will continue **on the payment, registration and bookmarking favourites interfaces** in the light of the results of the audits**.** In order to reach the 90% target by 2030, there is a need for a planned approach to remedy some of the features that are currently not yet compliant and to continuously monitor the compliance of each development with the standard.

Projected evolution of the indicator until 2030



A 4.4 | ICT ACCESSIBILITY IN PUBLIC TRANSPORT - WEBSITES

2024 audit results



Unit of measurement:

Point value (max = 100)

Baseline 2022

BKK | www.bkk.hu - 97
MÁV Group | mavcsoport.hu - 68
Volánbusz | volanbusz.hu - 88

Actual value 2024

BKK | www.bkk.hu - 93
MÁV Group | mavcsoport.hu - 66
Volánbusz | volanbusz.hu - 87

Target 2030

BKK | www.bkk.hu - 99
MÁV Group | mavcsoport.hu - 99
Volánbusz | volanbusz.hu - 99

Evaluation and remarks

Compliance with the requirements for the info-communication accessibility of digital interfaces can be checked against the criteria of EN 301 549. The WCAG (Web Content Accessibility Guidelines) standard **sets out 41 criteria.**
The conditions can be grouped into the following categories:

- barrier-free navigation,
- appropriate names and labels,
- appropriate contrast,
- navigability in tables and lists,
- whether the audio and video material contains subtitles or transcripts,
- the website language is set up correctly.

The accessibility of BKK's website is very high compared to other transport operators, and problem-specific improvements should be made in the future. In the case of MÁV and Volánbusz, however, a comprehensive accessibility improvement would be needed.

The development of ICT accessibility improvements focused on the development of screens for journey planning. In the future, the accessibility of the areas related to registration and the marking of favourites will be further developed. The accessibility of ICT interfaces will be reviewed and fine-tuned by BKK according to the results of annual audits.

A4.4 | ICT ACCESSIBILITY IN PUBLIC TRANSPORT

Definition

The indicator measures the accessibility of the digital interfaces of public transport services (MÁV Group and BKK services).
The indicator indexes the different levels of accessibility.

Calculation methodology

The website and the app are always audited according to the latest WCAG standard to determine their accessibility percentage (websites can also be audited using the https://www.experte.com/accessibility tool).

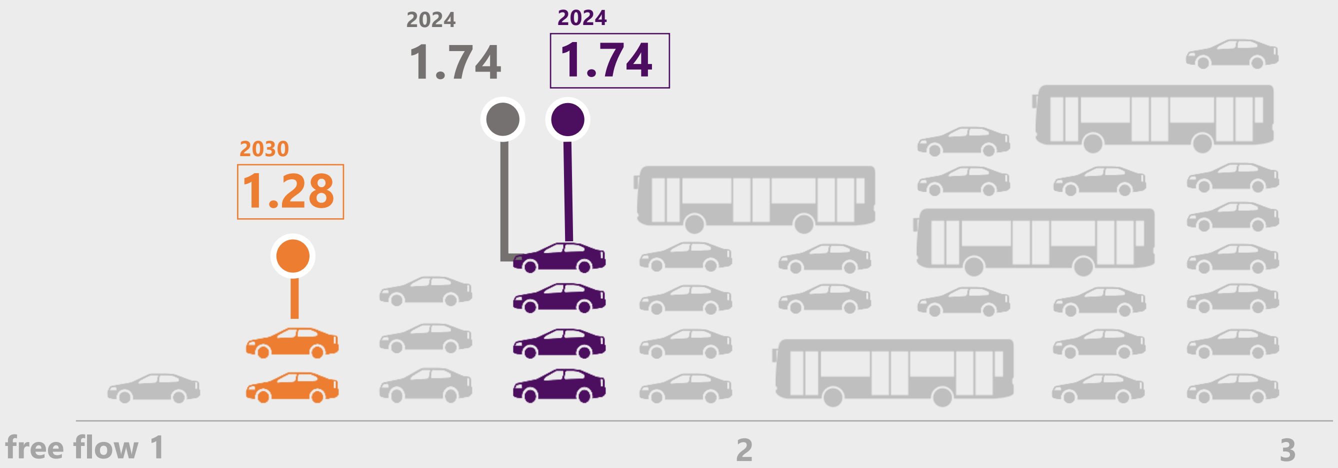
- The application is audited by an external company or person. In the case of applications, we monitor the ratio of appropriate/verifiable scores determined during the audit. (If a single national application becomes available, there will be no need to perform the measurement per provider.)
- For websites, we monitor the average of the percentages provided by the https://www.experte.com/accessibility (14/09/2023) tool.

Data source: BKK Zrt., MÁV-HÉV Zrt. (with agglomeration data)

Responsible department: BKK Mobility Development, Public Relations, BKK Communication, Digital Communication, Business Development of Digital Channels

A5.1 | ROAD CONGESTION INDEX

2024 results



Unit of measurement:
Index showing the extent of congestion in Budapest

Baseline 2024	Actual value 2024	Target 2030
1.74	1.74	1.28

Evaluation and remarks

The traffic congestion index **consists of two main components:** congestion measured in selected corridors of **road traffic** and **public transport** are summarised by weighting the traffic volumes belonging to the corridor and the modal split ratios of motor vehicle traffic and public transport. Based on the SUMI methodology, BKK has developed a methodology for calculating the congestion index in the Budapest context using road traffic and public transport data available from BKK, based on **public transport passenger data and continuously updated hourly road traffic volume and speed data from hundreds of locations in Budapest.**

The Budapest congestion index calculated with 2024 data takes a value close to its theoretical median (2), i.e. the Budapest "congestion level" is about 17% below the median congestion level of the European cities participating in the SUMI project (p.98). The Budapest indicator for public transport corridors is 1.71, which is slightly better than the 1.76 for road corridors.

The congestion indicator **target value of 1.28** is based on the assumption that public transport in the corridors considered travels at an average free flow speed during peak hours, i.e. the value of the indicator would be 1, while the peak hour average speed on road corridors would remain unchanged from the baseline value. The 2030 modal split targets have also been assumed to be met, and therefore the weight of public transport will be higher than at present. **The theoretical maximum of the indicator is 1,** which would imply that the peak hour average speed does not deviate from the free flow average speed, while the indicator takes on a value corresponding to a congestion level of 3 when the traffic volume is such that the peak average speed on all corridors is reduced to one third of the free flow average speed.

A5.1 | ROAD CONGESTION INDEX

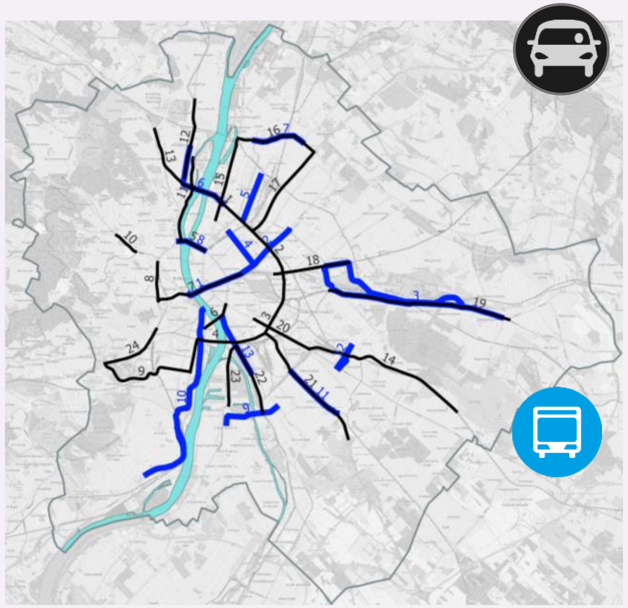
Definition

An indicator based on the average speed of public and private transport during peak hours and off-peak hours, as well as the number of trips during peak hours.

Calculation methodology

Measured on a minimum of 20 road transport corridors and a minimum of 10 public transport corridors representative of public and private transport average peak and off-peak speeds. The corridors must be representative of the city and the public and private transport corridors may be the same or different. (The road corridors were defined with the involvement of transport professionals and NGOs.)

The number of peak hour trips is multiplied by the average speed during peak hours and then divided by the average speed during off-peak hours.
The average speed for motor traffic is the lowest average speed value for the corridor, and for public transport the average speed value for the slowest travel time.
In order to determine an average value, this value is divided by the total number of peak road trips in the corridors and then weighted by the modal split ratio between motor vehicles and public transport.
The resulting modal split between public and private transport is then added together.
As the indicator measures road congestion, the fixed-rail transport modes are not included in the calculation, only the tyre-equipped fleet is observed.



Serial number	Road corridors	Start	Endpoint
1	Hungária körút - north	Flórián Square	Introduction to M3
2	Hungária körút - north-east	Introduction to M3	Kerepesi road
3	Hungária körút - south east	Kerepesi road	Soroksári út
4	Hungária körút - south	Soroksári út	Andor Street
5	Grand Boulevard - North	Margaret Bridge, Buda side	Nyugati Railway Station
6	Grand Boulevard - South	Bogdánffy road	Üllői út
7	Rákóczi út	BAH node	Keleti Railway Station
8	Creation Street	Attila Street	BAH node
9	Mouse path	M1-M7 access road	Andor Street
10	Szilágyi Erzsébet alley	Pearls of Bud	St John's Hospital
11	Buda Lower Quay - North	Mozaik street	Margaret Bridge
12	Szentendrei út	János Czetz street	Flórián Square
13	Outer Vienna Road	Pomazi road	Flórián Square
14	Ferihegy motorway	Border road	Ferihegy train station
15	Váci út	Árpád road	Dózsa György út
16	Árpád út-Illyés Gyula út-Szentmihályi út	Váci út	Introduction to M3
17	Introduction to M3	Szentmihályi road	Kacsóh Pongrácz road
18	Kerepesi road	Crossroads	Dózsa György út
19	Jászberényi road-Kőbányai road	Csabai road	Élessarok
20	Üllői út	Oradea Square	Border road
21	Nagykőrösi road	Szentlőrinci road	Könyves Kálmán krt.
22	Soroksári út	Topanka street	Between intermediate bridges

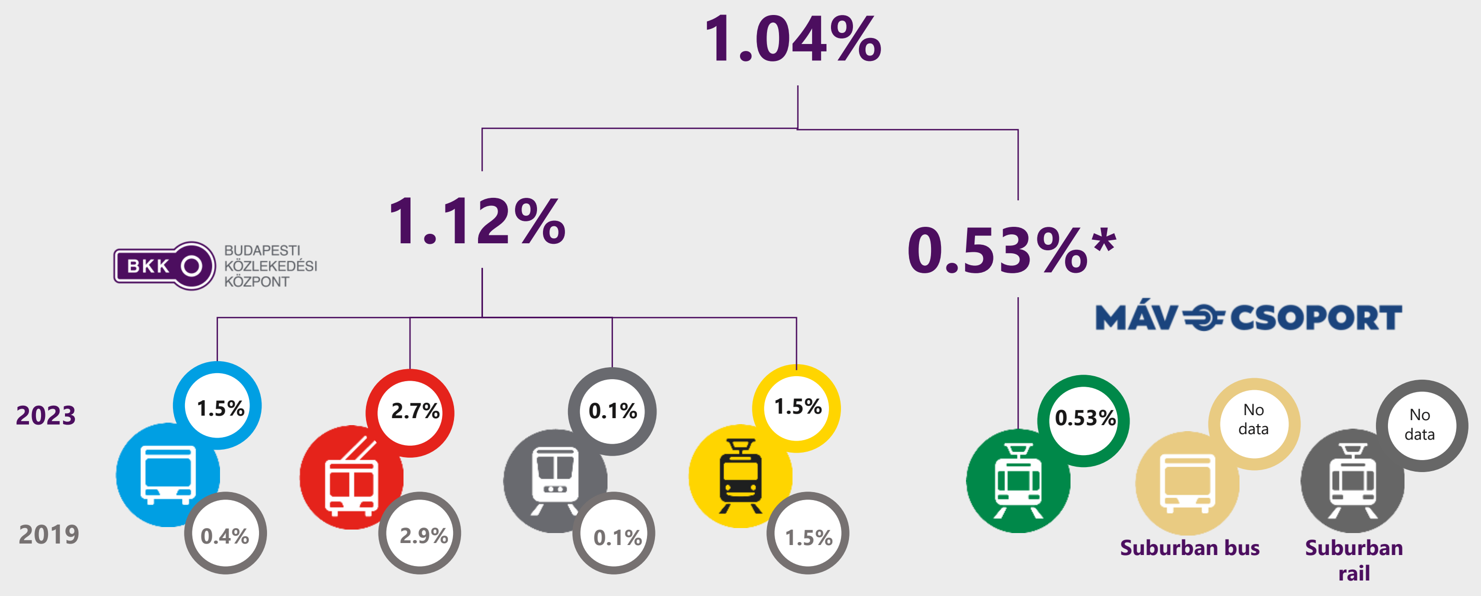
Serial number	Bus lanes	Start	Endpoint
1	Kossuth-Rákóczi axis	Döbrentei Square	Eastern pu.
2	Thököly road	Eastern pu.	Bosnyak Square
3	Keresztúri út-Jászberényi út-Pesti út	Örs vezér tere	Rákoskeresztúr city centre
4	Dózsa György út	Thököly road	Vágány street
5	Reitter Ferenc street	Róbert Károly krt.	Kuchma Street
6	Szentendrei út	From the reaper vineyard	Göncz Árpád to city centre
7	Árpád út-Szentmihályi út	Újpest city centre	Old Foti road
8	Margaret Bridge	Western pu.	Buda Bridgehead
9	Csepel, Ady Endre út	Saint Imre Square	Topanka street
10	Budafoki út-Nagytétényi út	From Gellért Square	To Plant Street
11	M5 introduction	Border road	Second-hand market
12	Southeast-Pest transverse connection Hunyadi út-Báthory utca	Üllői út	Gyömrői road
13	Soroksári út	Boráros Square	Sulphur Street

Data source: BKK Zrt., Strategic Data Management and Knowledge Centre Directorate Data Analysis and Modelling Department

Responsible department: Directorate for Mobility Development, Mobility Strategy
BKK Mobility Management, Service Management, Service Monitoring

A5.2 | PERCENTAGE OF DISRUPTION TO BASIC PUBLIC TRANSPORT SERVICES

2023 results



Unit of measurement:
plan-fact deviation in seat km, %

Baseline 2019
BKK: 0.7%
MÁV Group: no data
Budapest: ---

Actual value 2023
BKK: 1.12%
MÁV Group: 0.53%*
Budapest: 1.04%

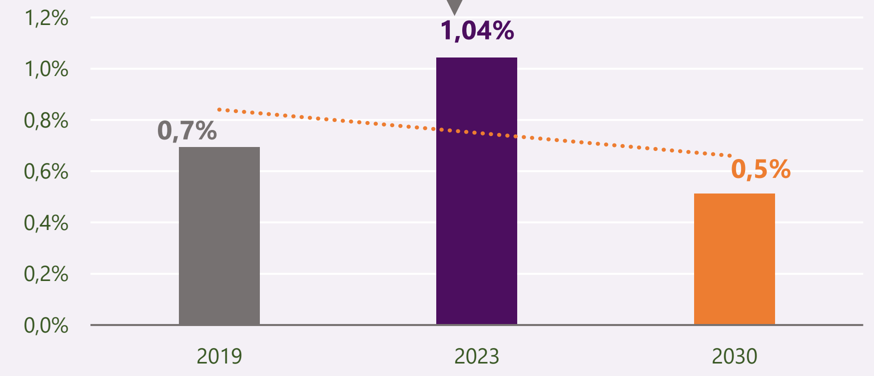
Target 2030**
BKK: 0.5%
MÁV Group: no data
Budapest: ---

* 2023 data only available for the HÉV (suburban railway) sector
** The calculation criteria for the target value are described on page 51.

Evaluation and remarks

This indicator measures service disruptions (cancelled departures) that affect service quality; our goal is to continuously reduce service disruptions. **Three main reasons for the loss of performance: traffic, staffing and technical.** The five public transport sectors studied are affected to different degrees: fixed-rail services are less affected problematic traffic conditions, which is why we measure significantly better values for these sectors.
The technical condition of the vehicle fleet has a major impact on the indicator, as the main cause of breakdowns is the poor technical condition of vehicles, so it is very important to rejuvenate the fleet.
The 2023 value was significantly influenced by the shortage of drivers in the rubber tyre sector.
This problem has been solved by 2024 and the 2024 figure is therefore expected to be more favourable than in 2023. The value of the indicator can be further improved by resolving and eliminating problematic traffic situations (e.g. trolleybus traffic in the city centre is hampered by parked vehicles).

Projected indicator evolution until 2030



A5.2 | PERCENTAGE OF DISRUPTION TO BASIC PUBLIC TRANSPORT SERVICES

Definition

This indicator is a measure of the reliability of the transport service (MÁV Group and BKK services), which **expresses the performance rate in terms of kilometres of public transport services as specified in the timetables.** This indicator **is used to monitor the reliability of** the service**.**

Calculation methodology

The indicator is defined by measuring the proportion of missed service performance by subtracting the % of the performance amount of **missed trips** in relation to **the performance amount of the scheduled trips** from 100%. A missed trip is defined as a trip that has not departed from the terminus or has only partially completed its journey and has not been replaced by another vehicle. All land sectors are covered (subject to the availability of data). These are the bus, trolleybus, metro and tram sectors operated on behalf of BKK, as well as the HÉV suburban railway, commuter rail and bus sectors that are part of the MÁV group. The assessment includes the performance of all the journeys of the sector in the period under consideration (full sample).

Parameters taken into account to set target values:

To set the 2030 target, we assumed that

- For the BKK sectors:
  - traffic reasons are slightly reduced by 5%;
  - the reasons for staff shortages are reduced from a high level in 2023 to a level in 2019, which can be considered as a stable period;
  - in terms of technical reasons, an improvement can be assumed due to the vehicle acquisitions foreseen in the rolling stock strategy, therefore technically, the average age of the current modern vehicle types has been taken into account to reach the target average age for 2030 foreseen in the rolling stock strategy.
- For the sectors of the MÁV Group:
  - Vehicle development in the HÉV suburban railway sector until 2030 no longer realistic

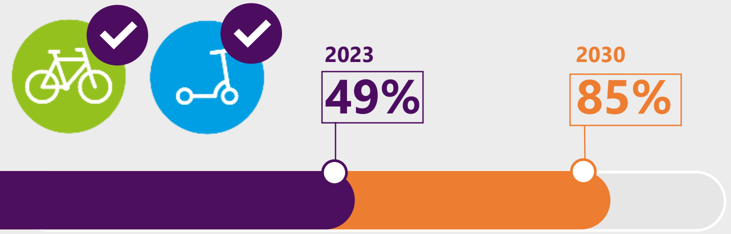
Data source: BKK Zrt., MÁV-HÉV Zrt.

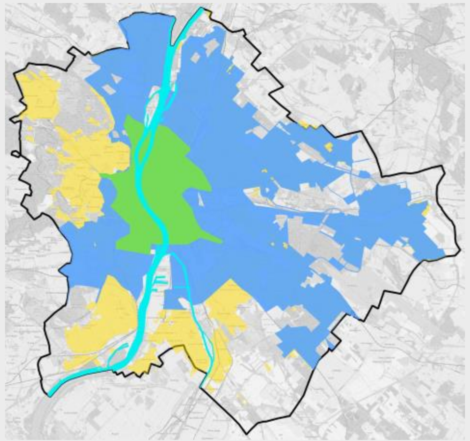
Responsible department: BKK Mobility Management, Service Management, Service Monitoring

BUDAPESTI KÖZLEKEDÉSI KÖZPONT

A5.3 | AVAILABILITY OF BUBI PUBLIC BICYCLES AND SHARED MICROMOBILITY DEVICES

2023 results





Bubi service area
other shared micromobility service area
built-up area without services

42%
48%
90%

Percentage of Bubi stations where bicycles were available at the station every day except 1 day beyond the grace period for that station plus 56 minutes

30%
50%
80%

Spatial availability of other shared micromobility devices in Budapest

Unit of measurement:

%

Baseline 2023

49%
Indicator previously not calculated, so the value for 2023 is included.

Actual value 2023

49%
Time availability **48%**
50% of the inhabited area

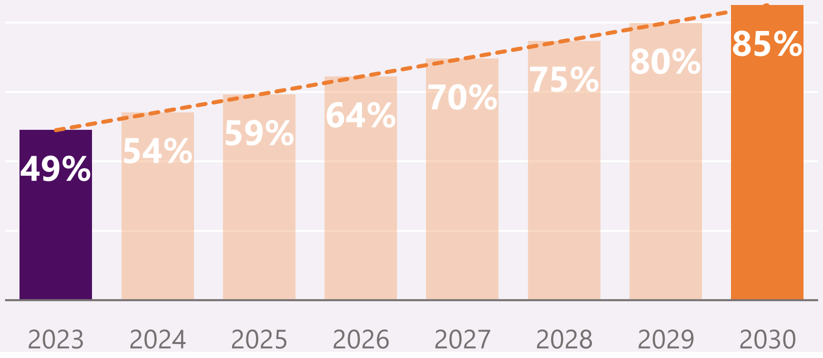
Target 2030

85%
Time availability **90%**
80% of the inhabited area

Evaluation and remarks

The area covered by Bubi public bikes has a medium density of stations and almost uniform service availability, while the area covered by private service providers has a dynamic variation in the number of service providers and the area covered and the density of service availability, especially in those areas, where there are no Mobi-Points. **An average density of 100-200 m of Mobi-Points provides better reachability than a density of 400-500 m of Bubi bike stations** in the affected areas.
The number of trips made with Bubi is higher than the number of trips made by private operators, despite the fact that the service area and fleet size are significantly larger in the case of private operators. Presumably, the higher number of trips made with Bubi is due to its much lower prices.
The aim is to provide shared micromobility to the widest possible range of users in Budapest both in terms of coverage and density, as well as availability at the right time.

Projected evolution of the indicator until 2030



A5.3 | AVAILABILITY OF BUBI PUBLIC BICYCLES AND SHARED MICROMOBILITY DEVICES

Definition

The indicator is composed of two parts: the availability of MOL Bubi and other shared micromobility devices. For **Bubi, we measure the reliability** of the service**,** while for other shared **micromobility devices,** we look at **the size of the service area**.

Calculation methodology

The indicator is used to monitor the possibility of using shared bicycles and micromobility devices: the average of two pairs of ratios is calculated as a %.

1. The number of stations where there was no more than 1 day where bicycles were not available beyond the grace period plus 56 minutes for that station (scrolled value), i.e. where bicycles were available every day within the grace period plus 56 minutes for that station, except for 1 day.

2. For other shared micromobility devices, the area (km^2) that falls within the service area of at least one shared micromobility service provider active in Budapest, divided by the total area of Budapest.

Availability of Bubi and shared micromobility $= \frac{\frac{BX}{BM} + \frac{T}{BT}}{2}$ x 100, where

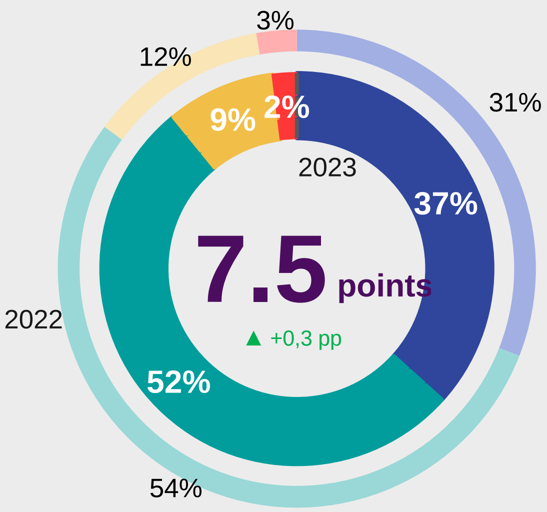
BX: number of Bubi stations where bicycles were available every day - beyond the grace period (pcs)
*BM: n*umber of Bubi stations in the year of survey
T: the area of land that falls within the service area of at least 1 service provider
BT: area of Budapest

Data source: BKK Zrt., own Bubi data, and data coming via API (application programming interface) for LIME and TIER

Responsible department: BKK Digital Channels Operation, Mobility Strategy and Shared Mobility

A6.1 | CUSTOMER SATISFACTION INDICATOR

2023 results



Satisfaction with public transport	2022	2023	
Overall satisfaction	**7.2**	**7.5**	▲0,3
Availability	7.5	7.8	▲0,3
Passenger information	7.5	7.7	▲0,2
Staff	7.2	7.6	▲0,4
Speed	7.3	7.6	▲0,3
Reliability	7.2	7.6	▲0,4
Security	7.1	7.5	▲0,4
Comfort	6.7	7.2	▲0,5
Price level	6.2	7.1	▲0,9

▼/▲ = significant difference compared to previous measurement

Base: public transport users, n=1000

Fully satisfied | Rather satisfied | Not satisfied | Not satisfied at all

Unit of measurement: Index showing the proportion of passengers satisfied with public transport in Budapest

	Baseline 2022	Actual value 2023	Target 2030
	7.2	7.5	8.0

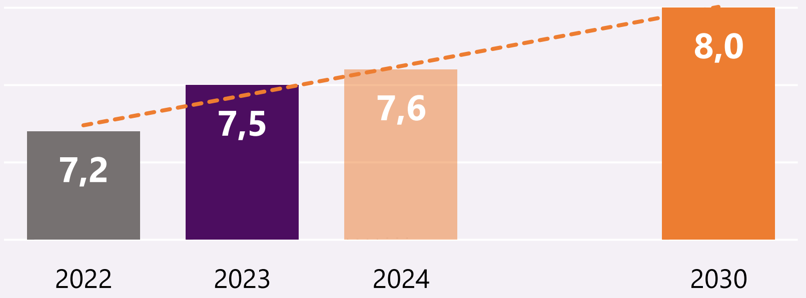
Evaluation and remarks

Public transport passengers are satisfied with all aspects of BKK's services. Compared to the base year 2022, **satisfaction with the price level has increased the most, but there is also a significant improvement in safety, availability and reliability.** Overall satisfaction shows an improvement of +0.3 points since last year.

The 2023 passenger satisfaction indices for EU capitals ranged from 29% to 91%. With a score of 7.5 points (75%), Budapest is roughly in the upper middle range, as confirmed by the customer satisfaction survey using the SUMI methodology (the indicators calculated in the SUMI project are summarised on page 92). **The index measures the opinions of frequent and infrequent users of public transport.**

A different method is used to measure those who are also part of the research: they do not use the service at all. Three main categories of satisfaction are currently identified. Those above 80%, those between 71-76% and those below 70%. Achieving **a target of 8 would put Budapest in the top third of cities with the best public transport.**

Projected indicator evolution until 2030



A6.1 | CUSTOMER SATISFACTION INDICATOR

Definition

The indicator measures customer satisfaction with public transport services (MÁV Group and BKK services). The Passenger Satisfaction Index is based on the Passenger Satisfaction Index of Budapest Municipal Decree 20/2012. (III. 14) (Appointment Decree) and the Annual (Public Service) Contract and its Annex 3.

Calculation methodology

The indicator is based on a questionnaire survey. The topics provided are to be rated on a scale of 4 according to the EU SUMI methodology, with predefined weights [strongly agree (4) = 10; somewhat agree (3) = 6.66; somewhat disagree (2) = 3.33 strongly disagree (1) = 0]. Percentage distribution of 1-4 responses per topic is multiplied by the weights given and the average of the number obtained per topic is used as the indicator. The topics monitored in the survey are Price Level; Security; Comfort; Speed; Availability; Passenger Information; Staff and Reliability.

Research methodology

* The customer satisfaction survey measures the satisfaction of people using public transport (1,000 people), cars (1,000 people), active and micromobility devices (1,000 people). The customer satisfaction indicator is calculated based on the responses of public transport users (frequent and occasional users). Each transport user sample is representative by gender, age and region (6 Budapest and 4 agglomeration areas).

The index can be between 0 and 10 points according to the EU methodology: 10 points then, 10 points if everyone would be completely satisfied (giving a score of 4), 0 points if no one would be satisfied (giving a score of 1).

In addition to the index, the results are also analyzed according to the TOP2 methodology, which shows the proportion of satisfied customers, i.e. 3 and 4.

Data collection takes place annually in October of the year in question, and the results of the survey are published at the beginning of the following year. The 2024 survey data will be presented in February 2025.

Pedestrians

Micromobility

Cyclists

Scooter users

Public transport

People travelling by car

Data source: BKK Zrt.

Responsible department: BKK Customer Experience and Analysis

A7.4 | PERCENTAGE OF SUBURBAN COMMUTERS USING PUBLIC TRANSPORT

2023 results

2019	2023	2030	2040
34%	31%	35%	60%

Unit of measurement:

% public transport rate, trip/day

Baseline 2019

33.9%
EFM at 1.2 passengers/vehicle occupancy

Actual value 2023

30.6%
EFM at 1.2 passengers/vehicle occupancy

Target 2030

35%

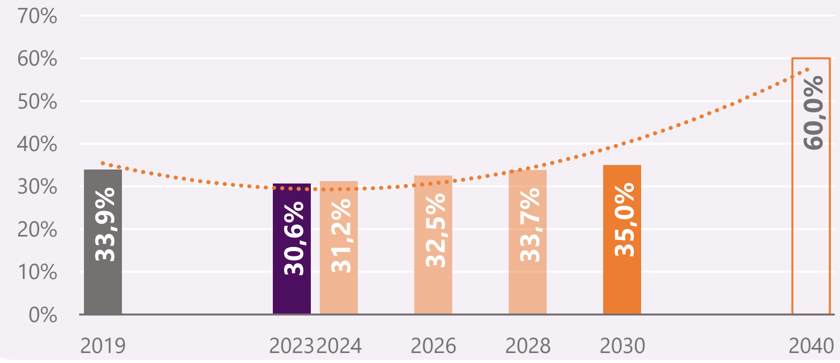
BAVS 2040

60%

Evaluation and remarks

Several factors have had a significant impact on travel patterns between the 2019 and 2023 data collection. The population of the agglomeration increased and the proportion of commuters using public transport decreased, partly due to the Covid epidemic. In addition, a survey on travel mode preference for trips between the agglomeration and Budapest was carried out for the EFM update, which refined the parameters of the model's mode choice functions. A major improvement on **the 30.6% in 2023** is the aim: the ambitious target of the Budapest Agglomeration Rail Strategy (BAVS) is to almost **double this by 2040.** **To reach the feasible 35% target by 2030, it would be important to implement**
the extension of the Southern Circular Railway, the reconstruction of commuter rail lines 71 and 142 and of the HÉV suburban railway lines, and the development of the HÉV fleet, which would also help to reduce road traffic for commuters. Another important measure could be improving the prioritisation of suburban public transport and, in some cases, increasing the capacity.
The **60% target planned for 2040** will require the implementation of medium- and long-term projects included in the BAVS.

Projected indicator evolution until 2040



A7

A7.4 | PERCENTAGE OF SUBURBAN COMMUTERS USING PUBLIC TRANSPORT

Definition

The role of **agglomeration commuting** in Budapest transport is significant. The indicator shows **the percentage of trips made by public transport** and private cars when people travel across the boundary between Budapest and its agglomeration (metropolitan area), i.e. from the suburbs to Budapest or from Budapest to the suburbs.

Measurement methodology

The indicator is generated on the basis of the traffic performance that can be calculated in the Unified Traffic Model (EFM). The number of public transport trips from the suburbs to Budapest or from Budapest to the suburbs is summed up and divided by the total (public transport and car) border crossing trips.
The indicator was calculated using the updated Unified Traffic Model Strategic Version 07 (EFM SV07). The SV07 does not yet include the results of the 2024 household survey, so the correlations drawn from it are not yet reflected in this version, but it does include the results of the agglomeration travel preference survey, which we used to refine the mode choice for trips between Budapest and the agglomeration.
Based on SV07, the share of people travelling from the agglomeration to Budapest by public transport was 31% inwards and 30.19% outwards, the average of the two values is used in the indicator (the difference is technical due to the model's operating mechanism, the average of the two values can be relevant).

Data source: BKK Zrt.

Responsible department: Strategic Data Management and Knowledge Centre Directorate
Data Analysis and Modelling Department

A7.4 | PERCENTAGE OF SUBURBAN COMMUTERS USING PUBLIC TRANSPORT

Proposals for the development of agglomeration transport based on the BMT

Short- and medium-term tasks:

- A substantial extension and capacity increase of the bus network from the agglomeration to Budapest to provide a real and convenient alternative to private car use. Traffic engineering solutions should be put in place to ensure bus priority (bus lanes and early green signal). The Municipality of Budapest is constantly striving to achieve the prioritisation of both city and suburban bus services within the city limits.
- Increasing the availability of fixed-rail public transport, which is important for suburban traffic, by optimising the feeder bus network and improving its coordination with fixed-rail services, including through on-demand transport. Feeder service can be further enhanced by promoting shared and private micromobility.
- Accelerate the implementation of the already prepared or planned improvements to the HÉV suburban railway lines. Increase the frequency of the trains within the limits of the infrastructure and the fleet.
- Ensure better access to existing public transport stops and stations in the agglomeration through active and micromobility, and create new stops.
- Supporting carpooling systems and developing a carpooling app to increase the current average car occupancy rate of 1.2-1.3 people: fewer cars are needed to transport the same number of people. This measure can be combined, with an adequate control system, with regulations that, in the case of multi-lane roads, give a lane to the cars with more riders (carpool lane).
- Implementing the immediate and short-term (feasible by 2030) commuter rail improvements identified in the Budapest Agglomeration Rail Strategy (BAVS).
- A large number of P+R and B+R car parks should be set up as close as possible to the start and end points of journeys in agglomeration areas, in cooperation with the agglomeration municipalities and
  the government. Only in exceptional cases should P+R capacity be increased near the city border and in the more inland areas of Budapest. P+R parking is possible in areas without fixed rail links, provided that the quality and quantity of bus services are sufficient.
- B+R developments that promote micromobility should have an advantage over P+R developments because they typically require less space and are more cost-effective.

Long-term developments:

- Implementation of the suburban rail developments identified by the Budapest Agglomeration Rail Strategy (BAVS).
- Extension of metro lines not discussed by the BAVS to the city limits or beyond. Preparatory steps should be continued for the M3 and started for the M4.
- To complete the missing transverse road and public transport links in the outer zone and around the city border, in order to avoid unnecessary transit traffic in the inner and transition zones of the city.

2023 REPORT

COMPLEMENTARY INDICATORS

COMPLEMENTARY INDICATORS

THE ADDITIONAL INDICATORS ARE GROUPED ALONG THE 11 OPERATIONAL OBJECTIVES OF THE BMT. THE ANNUAL REPORT INCLUDES THE ADDITIONAL INDICATORS HIGHLIGHTED IN GREEN

CODE	BMT OPERATIONAL OBJECTIVE	Additional indicators for the operational objective
1.1	LIVEABLE PUBLIC SPACES	K1.1.1 Percentage of liveable streets K1.1.2 Land use diversity indicator K1.2.3 Transport area per population K1.1.4 Quality of public spaces indicator K1.1.5 Percentage of fully accessible stops
1.2	INTEGRATED NETWORK DEVELOPMENT	**K1.2.1 Proportion of main cycling network with adequate service comfort** K1.2.2 Concentration of city logistics loading points
1.3	EASILY INTEROPERABLE REGIONAL SYSTEMS, CONVENIENT MODE CHANGE POINTS	K1.3.1 Number of P+R and B+R transfer points K1.3.2 Transfer time in public transport
2.1	MODERN, LOCALLY ZERO-EMISSION VEHICLES	**K2.1.1 Percentage of pure electric cars and trucks registered in Budapest**
2.2	CUSTOMER FRIENDLY VEHICLE DEVELOPMENTS	**K2.2.1 Proportion of public transport services provided by modern, accessible vehicles**

COMPLEMENTARY INDICATORS

K

THE ADDITIONAL INDICATORS ARE GROUPED ALONG THE 11 OPERATIONAL OBJECTIVES OF THE BMT. THE ANNUAL REPORT INCLUDES THE ADDITIONAL INDICATORS HIGHLIGHTED IN GREEN

CODE	BMT OPERATIONAL OBJECTIVE	Additional indicators for the operational objective
3.1	SHAPING TRANSPORT CULTURE AND HABITS	**K3.1.1 Passenger security perception indicator**
3.2	INTEGRATED MOBILITY SERVICES	K3.2.1 Level of MaaS integration **K3.2.2 Level of satisfaction with passeger information services**
3.3	HARMONISED CITY-REGION SERVICES	**K3.3.1 Rate of fare-system integration**
4.1	COORDINATED URBAN AND MOBILITY DEVELOPMENT IN BUDAPEST	Institutional analyses
4.2	COORDINATED MOBILITY PLANNING	Institutional analyses
4.3	REGIONAL COOPERATION	Institutional analyses

K1.2.1 | PROPORTION OF MAIN CYCLING NETWORK WITH ADEQUATE SERVICE LEVEL

2023 results

COMFORT - LEVEL	TECHNICAL CONDITION	CURRENT LENGTH IN 2023 (KM)	COMFORT LEVEL IN 2023 (%)
1	**The design and technical condition of the public space/stand-alone cycling facility is good in principle and no improvements are needed.**	**127**	**26%**
2	**The design is good in principle, but improvements are needed: road resurfacing, upgrading of existing junction designs, minimum widths according to the Road Standards to be achieved.**	**113**	
3	Design not good in principle: type-switching required; significant shortcuts may be used; poorly designed nodes.	145.5	16%
4	Conditions for safe cycling are not given: shared surface with car traffic, speed limit/actual speed at least 50 km/h.	466.5	51%
5	A physically missing or impassable section (e.g. missing bridge, tunnel or breach of a currently closed area).	63	7%

Unit of measurement:

%

Baseline values

2019: 22% 198 km

2021: 23% 209 km

Actual value 2023

26% 240 km

Target 2030

56% 512 km

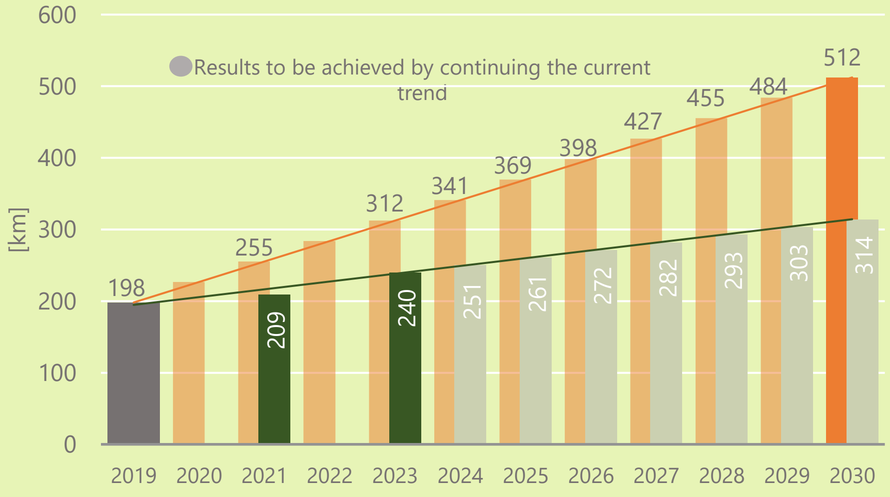
Evaluation and remarks

The length of the planned main cycling network is 915 km.
In base year 2019, the share of comfort level 1 and 2 was 198 km, or 22%.

Compared to the base year 2019, the share of cycling infrastructure with adequate comfort level has improved by ~5% (42 km) to ~26% by the end of 2023.

To reach the target by 2030, we need, on average per year, **~40 kilometres** of extension of the comfort level 1 and 2 networks. If only the current rate of 10-11 km/year is built, then instead of the 56% target for 2030, 34% (314 km) of the network will have adequate comfort level cycling infrastructure.

Projected indicator evolution until 2030



BKK BUDAPESTI KÖZLEKEDÉSI KÖZPONT

K1.2.1 | PROPORTION OF MAIN CYCLING NETWORK WITH ADEQUATE SERVICE LEVEL

K1.2

Definition

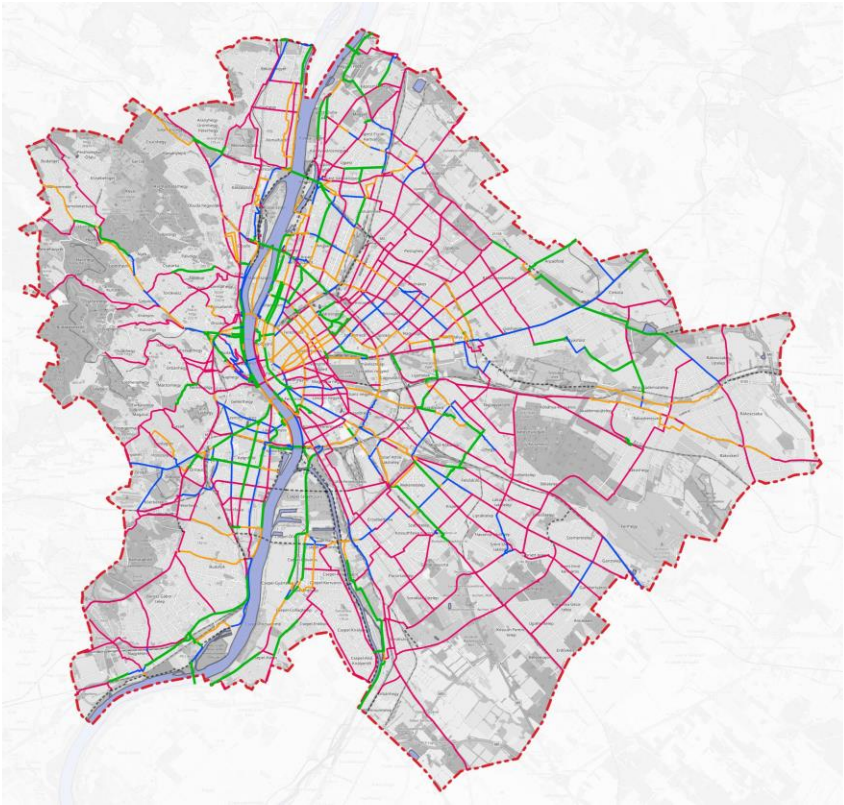
The core network can be grouped into 5 levels of comfort, the indicator shows the ratio of the network elements of the cycling core network with service level 1 and 2 comfort levels to the total network. The grouping criteria are based on the BKK Cycling Core Network Plan; 1: the core network element is of good design and technical condition, 2: the element is of good design and its technical condition can be improved, 3: the element is of poor design and major changes are needed, 4: the core network element cannot be cycled safely, 5: the core network element is missing/unfit for use.
https://bkk.hu/utazasi-informaciok/kerekpar-roller-gyaloglas/kerekpar/fejlesztesek/kerekparforgalmi-fohalozat-tervezese/

Calculation methodology

Theoretical maximum-main network service comfort levels
Legend

- Lb1 the main network element is well designed and in good technical condition
- Lb2 the main network element is of good design in principle, technical condition to be improved
- Lb3 the conceptual design of the main network element is not good, major changes are needed
- Lb4 the main network element cannot be cycled safely
- Lb5 missing or impassable main network element

The main network and its comfort levels are stored and continuously updated by the QGIS geospatial software.
Proportion of Lb1 and Lb2 comfort level network elements in Budapest = $\frac{Lb1 + Lb2}{Lbn}$, where Lbn is the total length of the bicycle network (km)



Data source: BKK Zrt. Cycling Master Network Plan (bkk.hu)

Responsible department: Continuous data updates are carried out by the BKK Mobility Development Directorate.

BUDAPESTI KÖZLEKEDÉSI KÖZPONT

K2.1.1 | PERCENTAGE OF PURE ELECTRIC CARS AND TRUCKS REGISTERED IN BUDAPEST

K2.1

2023 results

	Budapest		In Budapest and agglomeration	
	1.56%	1.07%	1.45%	0.99%
	0.59%		0.54%	

Unit of measurement:

%

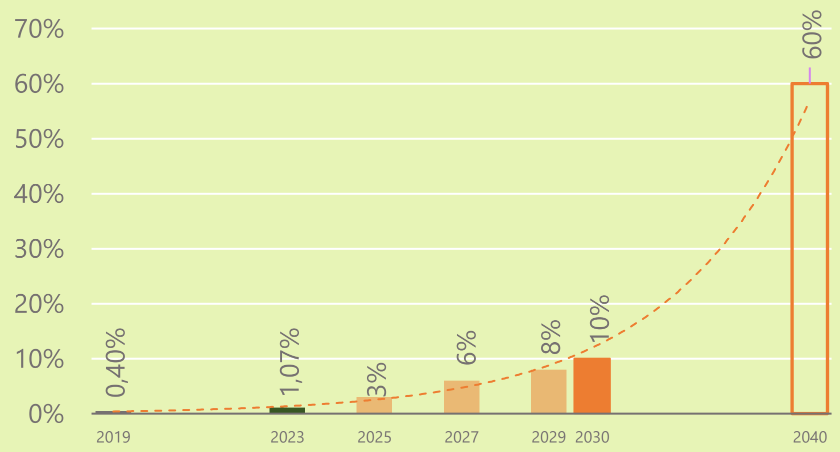
Baseline 2019	Actual value 2023	Target 2030	Target 2040
0.4%	1.07%	10%	~ 60%

Assumed values needed to meet the projected climate neutrality targets for 2040: equal shares of cars and trucks in the Budapest fleet; share of electric vehicles per category: passenger car: 55%, J1: 90%, J2-J3: 60%, J4: 55%, bus: 50%.

Evaluation and remarks

Vehicles with green plates (pure electric, range-extending electric, plug-in hybrid and other zero-emission vehicles) appeared on the roads from 2015, and their number in the capital was 8,205 at the end of 2019 (source: Ministry of Interior).
The European Union's target is that by 2030, at least 30% of new cars on the road should be pure electric. **It is projected that by 2030, 10-15% of the total vehicle fleet in the EU will be pure electric. Budapest is currently far behind this target, with only 1% of its fleet being pure electric.**

Projected indicator evolution until 2040



K2.1.1 | PERCENTAGE OF PURE ELECTRIC CARS AND TRUCKS REGISTERED IN BUDAPEST

Definition

The indicator shows the share of the pure electric passenger car fleet and the commercial vehicle fleet in the total passenger car/goods vehicle fleet in the capital.

Calculation methodology

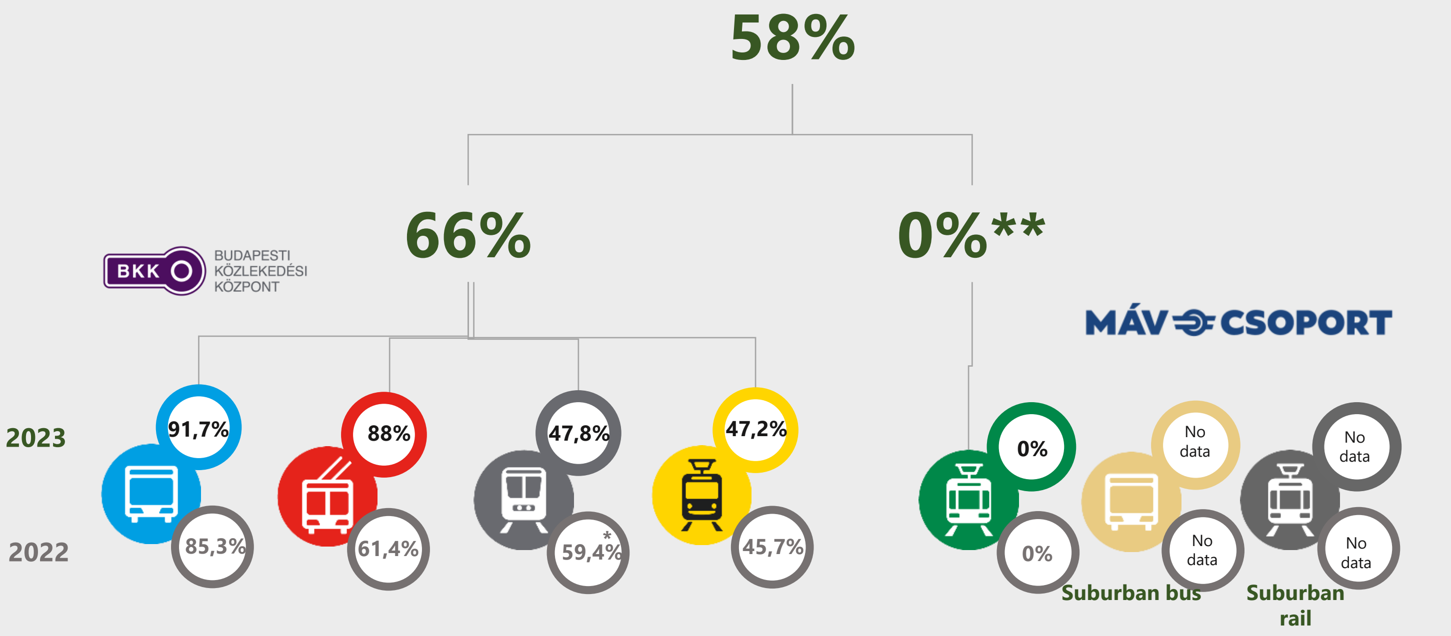
Vehicle fleet data are obtained from the Ministry of Interior.
To determine the indicator, we calculate the percentage of pure electric cars and trucks in Budapest as a proportion of all cars and trucks, and then take the average of the two values.
The calculation can also be done for the agglomeration.

Data source: Ministry of Interior

Responsible department: BKK Mobility Development Directorate Mobility Strategy

K2.2.1 | PROPORTION OF PUBLIC TRANSPORT SERVICES PROVIDED BY MODERN, ACCESSIBLE VEHICLES

2023 results



* The reconstruction of the M3 metro line (where the vehicles are not equipped with air conditioning) significantly affected the value calculated for the metro sector in 2022, because BKK provided fewer services with outdated vehicles during the cut-off period, so the value in 2022 is more favourable than in 2023.

** Within the MÁV Group, data is only available for the HÉV sector

Unit of measurement:

% as a proportion seat-km

Baseline 2022	Actual value 2023	Target 2030
BKK: 67%	BKK: 66%	BKK: 88%
MÁV Group: 0%**	MÁV Group: 0%**	MÁV Group: 0%**
Budapest: 58%	**Budapest: 58%**	**Budapest: 77%**

Evaluation and remarks

The indicator includes values for BKK and MÁV-HÉV services.
To calculate the indicator monitoring the achievement of the BMT operational objective "Customer-friendly vehicle developments", three aspects are taken into account:

- low-floor design
- equipped with air conditioning
- equipped with on-board camera in the passenger cabin.

This indicator is not affected by the accessibility of platforms; physical accessibility is taken into account in the core indicator A4.3 *Physical and audio-visual accessibility in public transport*.

Metro and tram services have a lower share of services provided by modern vehicles than rubber-wheeled services:

- trains on the M1 and M3 metro lines are not air-conditioned,
- only 30% of the tram fleet is considered modern (Combino and CAF trams).

The vehicles on the M4 and M2 metro lines are considered state-of-the-art.

The most modernised public transport fleet trolleybuses, where the trolleybus fleet is expected to grow by about 27% increase in the share of services provided by modern vehicles.

To set the target, the following sectoral targets were taken into account, based on the BKK's vehicle strategy and the current government development plans:

- bus, trolleybus 100% (renewal of trolleybus fleet)
- metro 97% (complete air conditioning of M3 trains)
- trams 60% (additional CAF trams to enter service)
- HÉV 0% (the development of HÉV trains is no longer realistic until 2030).

BUDAPESTI KÖZLEKEDÉSI KÖZPONT

K2.2.1 | PROPORTION OF PUBLIC TRANSPORT SERVICES PROVIDED BY MODERN, ACCESSIBLE VEHICLES

Definition

Indicator of the spatial and temporal provision of public transport by modern vehicles, by sector. The indicator expresses the percentage of completed services by modern vehicles in relation to total services.

Calculation methodology

Low-floor vehicles with air conditioning and on-board passenger safety cameras are considered to be state-of-the-art.
The baseline is set for 2022.

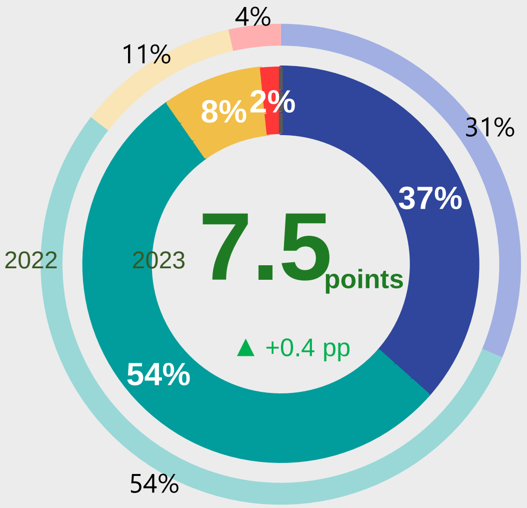
Data source: BKK Zrt., MÁV-HÉV Zrt.

Responsible department: BKK Mobility Management Directorate Service Management, Service Monitoring, Mobility Development Directorate Mobility Strategy

K3.1.1 | PASSENGER SENSE OF SECURITY INDICATOR

2022 and 2023 results

Satisfaction with security



Factors determining sense of security	2022	2023	
Beggars	38%	40%	▲2%
Unpleasant smelling people, vagrants	48%	38%	▼10%
Presence of suspicious, dubious, rowdy characters	38%	36%	▼2%
Drunk, aggressive passengers	38%	33%	▼5%
Pickpocketing	33%	33%	
Bad transport culture	24%	22%	▼2%
Technical condition of vehicles	18%	13%	▼5%
Virus risk	18%	12%	▼6%
Harassment	9%	9%	

▼/▲ = significant difference compared to previous measurement

Base: public transport users, n=1000

Fully satisfied | Rather satisfied | Not satisfied | Not satisfied at all

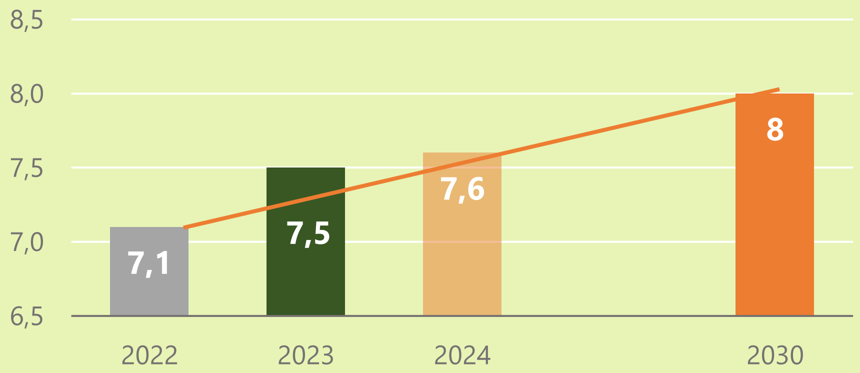
Unit of measurement:	Baseline 2022	Actual value 2023	Target 2030
Index of satisfaction with the security of public transport in Budapest	7.1	7.5	8.0

Evaluation and remarks

Compared to the base year, both overall satisfaction with safety and night-time safety perception increased, the former by +0.4 points and the latter by +0.7 points.

In 2023, the BKK Security Service continued its cooperation with FÖRI and
and the BRFK. **The presence of the security service on priority routes is almost a daily occurrence**
to increase passenger and driver safety.
At its meeting on 4 October 2024, the Municipal Assembly of Budapest voted to establish the BKK Police, which will start on 1 January 2025 with 75 employees.

Projected indicator evolution until 2030



K3.1.1 | PASSENGER SENSE OF SECURITY INDICATOR

Definition

The level of passenger protection perceived by customers. The data comes from the security component of the customer satisfaction survey.

Calculation methodology

The indicator is a security component of the A6.1 Customer Satisfaction Indicator. The indicator is based on a questionnaire survey. The topics provided are rated on a scale of 4 according to the EU SUMI methodology, with predefined weights: strongly agree (4) = 10; somewhat agree (3) = 6.66; somewhat disagree (2) = 3.33; strongly disagree (1) = 0. The percentage distribution of the 1-4 responses per topic is multiplied by the weights provided and the average of the number obtained per topic becomes the indicator.

Research methodology

The customer satisfaction survey covers public transport (1,000 people), car (1,000 people) and active and micromobility users (,1000 people).
The customer satisfaction indicator is calculated on the basis of the responses of public transport users (frequent and occasional users). The sample of individual users is representative of gender, age and region (6 Budapest and 4 agglomeration areas).

The index can take a value between 0 and 10, according to the EU methodology; 10 points would be awarded if everyone was completely satisfied (a score of 4) and 0 points if no one was satisfied (a score of 1).

In addition to the index, we also analyze the results according to the TOP2 methodology, which is 3 and 4, i.e. the proportion of satisfied customers.

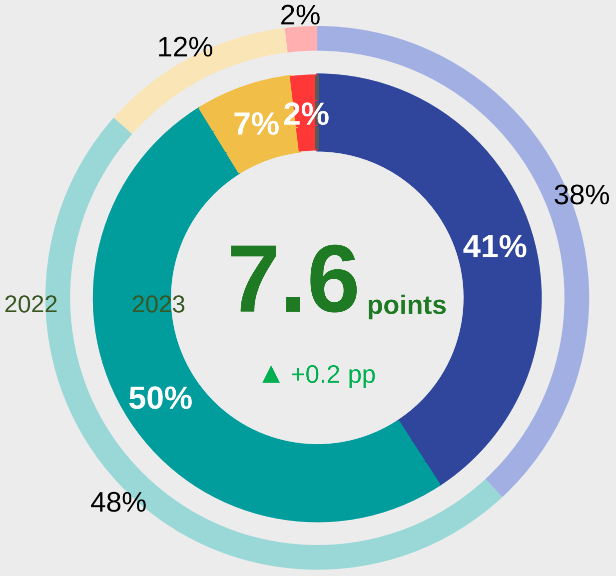
Pedestrians
Micromobility
Cyclists
Scooter users
Public transport
People travelling by car

Data source: BKK Zrt.

Responsible department: BKK Customer Experience and Analysis

K3.2.2 | LEVEL OF SATISFACTION WITH PASSENGER INFORMATION SERVICES

2022 and 2023 results



Satisfaction with information platforms	2022	2023	
Digital information boards	91%	91%	
BKK Info	-	89%	▲1%
Information on vehicles	88%	89%	
Information at customer centres	90%	89%	▼1%
Online information	90%	89%	▼1%
Press communication	-	88%	
Information boards at bus stops	89%	88%	▼1%
BudapestGO app	91%	88%	▼3%
Timetable information	90%	88%	▼2%
Information in the underpasses	85%	86%	▲1%

▼/▲ = significant difference compared to previous measurement

Base: public transport users, n=1,000

Fully satisfied Rather satisfied Not satisfied Not satisfied at all

Unit of measurement:
Index of satisfaction with passenger information on public transport in Budapest

Baseline 2022	Actual value 2023	Target 2030
7.5	7.6	8.1

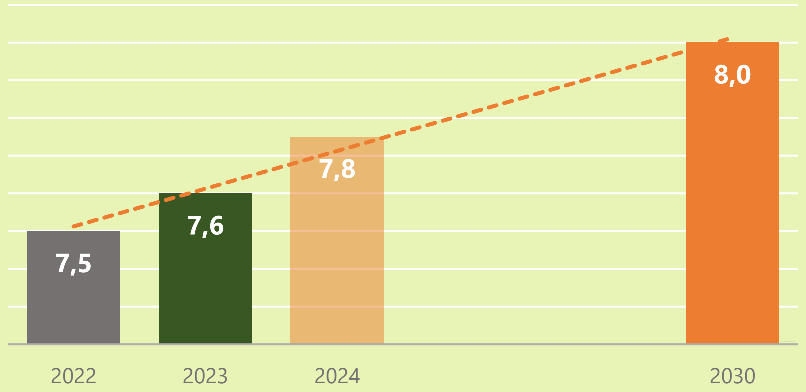
Evaluation and remarks

Our customers are generally satisfied with the passenger information provided by BKK. The customer information index scored 7.6 points in 2023, and based on the TOP2 methodology, **the percentage of 'rather satisfied' and 'completely satisfied' customers is high in all categories:** above 85%.

The renewal of the timetable information started at the end of 2023**.** Installation of the renewed timetable boards and **expansion** and renewal **of the information interfaces** in **the BudapestGO app** will be fully completed in 2024.

To achieve a passenger satisfaction **score of 8,** we **need to improve by** an average of **5 points** in all areas **by 2030**. To achieve this, we plan to introduce a passenger information reform to further extend our digital passenger information solutions.

Projected indicator evolution until 2030



K3.2.2 | LEVEL OF SATISFACTION WITH PASSENGER INFORMATION SERVICES

Definition

The quality of information provision perceived by customers. The data comes from the customer satisfaction survey. The indicator is based on a questionnaire survey. The European Union does not specifically require the monitoring of this indicator, but, as with the K.3.1.1 Passenger sense of security, the monitoring system covers this component separately.

Calculation methodology

The indicator is the passenger information component of the A6.1 Customer Satisfaction Indicator. The indicator is based on a questionnaire survey. The topics provided are rated on a scale of 4 according to the EU SUMI methodology, with predefined weights: strongly agree (4) = 10; somewhat agree (3) = 6.66; somewhat disagree (2) = 3.33; strongly disagree (1) = 0. The percentage distribution of the 1-4 responses per topic is multiplied by the weights provided and the average of the number obtained per topic becomes the indicator.

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> The index can take a value between 0 and 10, according to the EU methodology; 10 points would be awarded if everyone was completely satisfied (a score of 4) and 0 points if no one was satisfied (a score of 1).

In addition to the index, we also analyze the results according to the TOP2 methodology, which is 3 and 4, i.e. the proportion of satisfied customers.

- Pedestrians
- Micromobility
- Cyclists
- Scooter users
- Public transport
- People travelling by car

Data source: BKK Zrt.

Responsible department: BKK Customer Experience and Analysis

K3.3.1 | LEVEL OF FARE SYSTEM INTEGRATION

AVAILABILITY OF A FARE PRODUCT FOR MULTIPLE PROVIDERS		PUBLIC TRANSPORT SERVICE PROVIDER				
		BKK	MÁV-START	MÁV-HÉV	VOLÁNBUSZ (blue)	VOLÁNBUSZ (yellow)
Baseline: from 2019 Until 30.04.2023: status before introduction of Hungary/County Passes	ticket	B	-	B	B^0	-
	pass	B	A, B^1 separately	A, B^1 separately	A, B^1 separately	A, B^1 separately
From 01.05.2023 to 29.02.2024, Hungary/County Passes introduced, but they are not yet valid for local transport in Budapest	ticket	B	-	B	B^0	-
	pass	B	A, B^2 separately	A, B^2 separately	A, B^2 separately	A, B^2 separately
Status after 01.03.2024: Hungary/County Passes are also valid for local transport in Budapest	ticket	B	A^3	A, B^3 separately	A, B^3 separately	A^3
	pass	A + B integrated product	A + B integrated product	A + B integrated product	A + B integrated product	A + B integrated product
Target uniform tickets, daily travelcards and passes in Budapest and the agglomeration	ticket	A + B integrated product	A + B integrated product	A + B integrated product	A + B integrated product	A + B integrated product
	pass	A + B integrated product	A + B integrated product	A + B integrated product	A + B integrated product	A + B integrated product

Evaluation and remarks

From 1 May 2023, the introduction of Hungary and County Passes represents a major step forward for the agglomeration fare community, because
the previous model projects have been replaced by the fare integration of passes. As of 1 March 2024, a zonal transport system (country, county, Budapest) has been implemented, with which BKK and the Ministry of Construction and Transport (ÉKM) form a joint fare portfolio. This is another step forward: the validity of the pass system has been extended to the territory of Budapest, thus **the fare integration of public transport services has been achieved. But there were setbacks for tickets:** the validity of tickets has been limited to the administrative boundaries of Budapest, and metropolitan area tickets can now only be bought from the driver.

Legend

Degree of integration (levels are defined on the next page):

No integration · Level I · Level II · Level III · Level IV: full integration

A: in the agglomeration
B: In Budapest
0: BKK ticket valid for the entire length of the line
1: only model projects (South Buda Zone Pass, Dunaharaszti Zone Pass, joint pass along the 80a railway line (the latter included the Budapest sections of MÁV and VOLÁN interurban lines) and there were reciprocal pass-acceptance agreements in a limited area
2: the agglomeration integrated pass also includes the Budapest sections of MÁV-START and VOLÁNBUSZ (yellow) interurban services
3: Vármegye24, Magyarország24 day tickets: includes MÁV-START, MÁV-HÉV, interurban (yellow) and agglomeration (blue) VOLÁNBUSZ services in Budapest

K3.3.1 | LEVEL OF FARE SYSTEM INTEGRATION

K2.2

Definition

Achieving common fare product purchase (ticketing) and fare integration between sub-sectors. The indicator shows **in a matrix** the level of integration of a single fare system.

Calculation methodology

The table shows the steps leading to a single fare system and fare integration. The table should indicate all service providers with uniform integration at the given level, according to the legend. A new provider (e.g. carsharing) should only be added to the columns if the integration is meaningful with at least one of the providers already shown.
Evaluation: the different levels of integration need to be colour-coded

Level 0 = no integration: pre-BKSZ status
Level I = rudimentary integration: some fare products are common (e.g. Budapest pass)
Level II = partial integration: fare integration between mobility operators with significant share (e.g. outside Budapest, fare integration has been achieved in the agglomeration: MÁV and VOLÁN share a common pass)
Level III = advanced integration: fare integration of public mobility service providers for a given major fare product (e.g. common pass or ticket fares; currently, the operator accepts national fare products also in Budapest; BKK also accepts national fare products
Level IV = full integration: all public transport services can be purchased at a common fare across the city region

Data source: BKK Zrt.

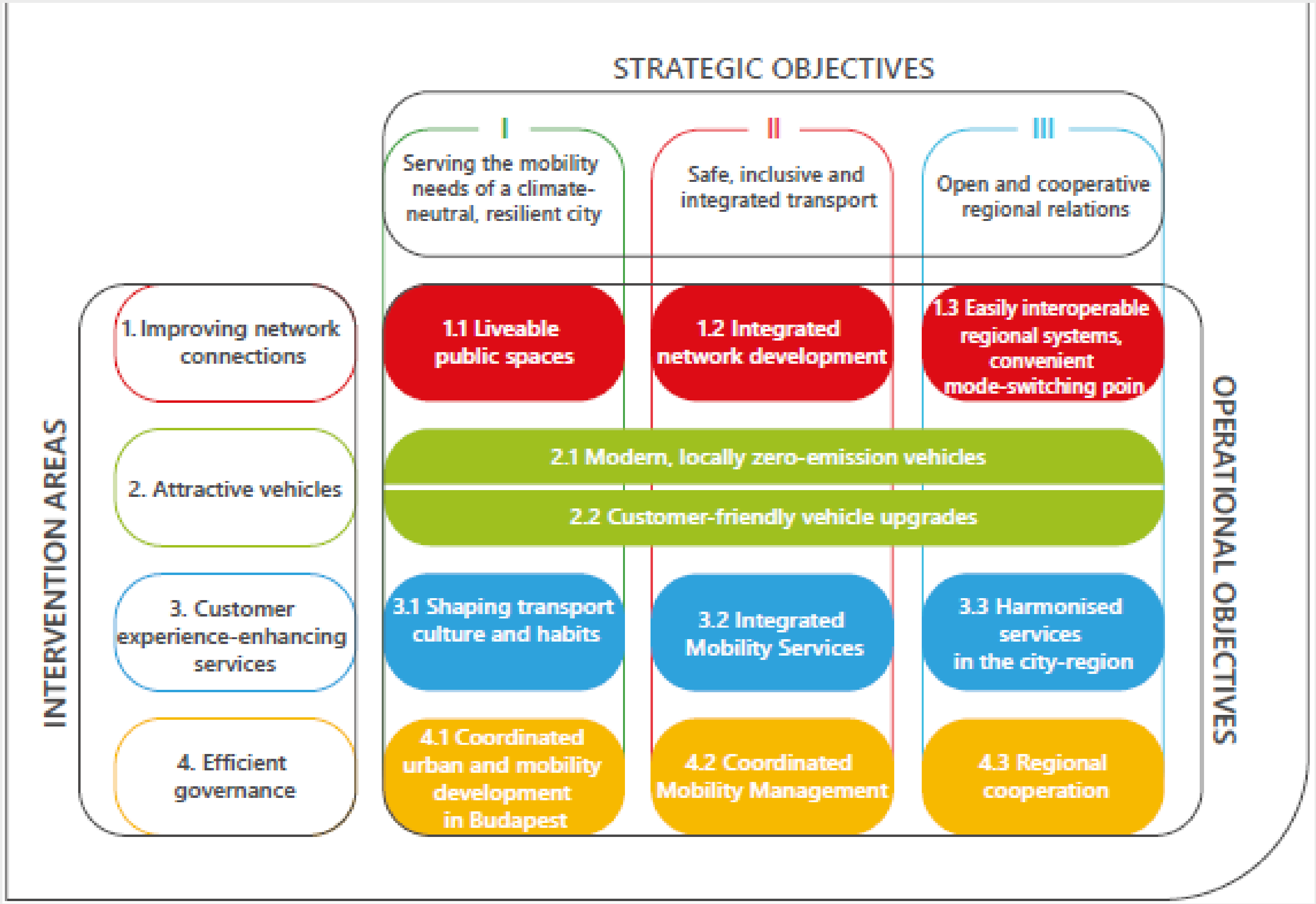
Responsible department: BKK Mobility Management Directorate Service Management, Mobility Development Directorate Mobility Strategy

PROGRESS INDEX

2023 REPORT

THE BUDAPEST MOBILITY PLAN OBJECTIVES

Objectives of the BMT



The development measures related to traditional technical areas of transport that are linked to the integrated strategic objectives are grouped into four transport intervention areas in the mobility plan, which are:

- improved network connections;
- attractive vehicles;
- services that enhance the customer experience;
- an effective institutional system.

Focusing on three priority strategic target areas, the Budapest Mobility Plan defines a total of 11 areas of action (operational objectives) in these four intervention areas.
The operational objectives are broken down into 44 measures, which will be implemented through the projects examined by the BMT. **Progress in the implementation of the 44 BMT measures is monitored through progress indices.**

Of all the projects in the BMT (state and Budapest), fewer have been completed between 2013 and 2023 than are still to be completed, primarily due to a lack of funds. As a consequence, the achievement of our targets cannot be taken for granted, but BKK is working intensively to identify the most cost-effective developments that will help us to approach our targets in the BMT by 2030, even in a resource constrained environment.

METHODOLOGY FOR CALCULATING THE INDICATOR

Definition

The revised 2023 Budapest Mobility Plan defines 44 measures to be implemented through the investments and tasks defined in the BMT Investment Programme. The planned measures are assessed by the implementation of the related projects.

Calculation methodology

As part of the project evaluation, we link each project to the measure it supports in the so-called fit test(ILL)*. The progress index is calculated on the basis of projects completed from 2013 to the end of 2023. (Completed projects also include projects that had been completed at the time of adoption of the BMT Investment Programme 2023.) The measures in the Efficient Governance intervention area include a number of cyclical projects that support the continued operation of the institution (e.g. operation and further development of the Unified Transport Model). The extent of change in the indices for these projects is indicated by a dashed line.

For each measure, we determine the number of projects implemented and sum them up by measure, weighted by the project's matching score. The progress towards the theoretical maximum of the index for a given measure is plotted in the report. The theoretical maximum of the index is determined by summing the fit scores of the completed and planned projects that support the measure.

* The purpose of the fit test (ILL) is to assess the fit of each project with the measures defined in the BMT objectives framework on a quantitative scale of 0-2, where

    a 0 indicates a lack of fit,
    1 is a partial fit, while
    2 stands for a close fit.

Half points may be awarded to refine the values between individual scores. A detailed description of the fit test is available in the BMT's Transport Development and Investment Programme (https://bkk.hu/downloads/22438/).

Data source: BKK Zrt.

Responsible department: Mobility Development Directorate Mobility Strategy

1. IMPROVING NETWORK CONNECTIONS

There are an extremely large number of unrealised projects in this area, mainly due to a lack of funding.

OPERATIVE OBJECTIVE	MEASURE ID	BMT 2023 MEASURE	PROJECT RELATED TO THIS MEASURE COMPLETED BY 2023 [QTY]	ALL BMT PROJECTS RELATED TO THE MEASURE [QTY]	PRE-RESERVATION INDEX 2023 (BASE YEAR)	PROGRESS TOWARDS THE THEORETICAL MAXIMUM	PROGRESS INDEX THEORETICAL MAXIMUM
1.1 Liveable public spaces	1.1.1	Improving conditions for walking, creating pedestrian links of urban structural importance	11	79	12	15%	81,5
	1.1.2	Creating parks, people-centred regeneration of emblematic public spaces	7	48	9	18%	51
	1.1.3	Ensuring equal, barrier-free access to transport for all	8	64	11	14%	79
	1.1.4	Increasing road safety, a forgiving mobility environment	9	59	11	17%	64
	1.1.5	Establish traffic calming and restricted traffic zones	3	48	3	6%	48
	1.1.6	Protection of life and property, crime prevention equipment and facilities	2	6	2	33%	6
1.2 Integrated network development	1.2.1	A complex approach to modernising elements of the existing mobility system	14	111	25	15%	167,5
	1.2.2	Mode-switching points designed with a complex approach	2	51	2	4%	47
	1.2.3	Directly connected public transport network	2	35	3	5%	61
	1.2.4	Developing missing links in the transport network, connecting cut-off urban areas, Danube crossings	2	50	3	5%	63,5
	1.2.5	A coherent, safe and comfortable urban cycling network	11	89	14	12%	117,5
	1.2.6	Developing an infrastructure for a modern urban logistics system	0	6	0	0%	8
1.3 Easily interoperable regional systems, convenient mode-switching points	1.3.1	Promoting the urban integration of long-distance and suburban transport, modernising infrastructure	7	30	8	25%	32,5
	1.3.2	Improving transfer and intermodal connections between suburban and urban transport	2	57	4	6%	65,5
	1.3.3	Improving transport links between the city and the metropolitan area, modernisation of lines outside the city limits	7	48	12	19%	62,5
	1.3.4	Developing national and regional cycling links	0	18	0	0%	21,5
	1.3.5	Developing the waterborne transport network and its service infrastructure	0	3	0	0%	3,5
	1.3.6	Improving the accessibility of Budapest Liszt Ferenc International Airport	0	5	0	0%	5,5

2. ATTRACTIVE VEHICLES

The bus and trolleybus sector is almost barrier-free, with a predominantly modern, comfortable fleet. Further significant purchases of trams are needed to improve the comfort level of the tramway sector and accessibility. The M1 metro and HÉV fleet needs complete replacement and the M3 fleet needs at least air conditioning. The Bubi public bicycle system has undergone significant improvements and further developments are expected.

OPERATING OBJECTIVE	MEASURE ID	BMT 2023 MEASURE	PROJECT RELATED TO THIS MEASURE COMPLETED BY 2023 [QTY]	ALL BMT PROJECTS RELATED TO THE MEASURE [QTY]	PRE-RESERVATION INDEX 2023 (BASE YEAR)	PROGRESS TOWARDS THE THEORETICAL MAXIMUM	PROGRESS INDEX THEORETICAL MAXIMUM
2.2 Customer-friendly vehicle developments	2.1.1*	Improving the public transport fleet, purchasing locally zero-emission vehicles	3	37	6	9%	67
	2.1.2	Modernisation of fleet maintenance background, depot upgrades	0	19	0	0%	24
	2.1.3	Promoting climate-conscious renewal of the Budapest fleet of vehicles outside public transport	0	2	0	0%	3,5
2.1 Advanced, locally zero-emission vehicles	2.2.1	Developing an accessible public transport fleet	3	34	5	8%	61,5
	2.2.2	Operating and developing a public bicycle-sharing system, expanding cycling services	1	5	2	27%	7,5
	2.2.3	Making public transport vehicles suitable for bicycle transport	2**	4	2,5	63% **	4

* Lower-value developments of the bus fleet are typically not included in BMT projects (nor are those vehicles that are involved in transport through service contracting), and therefore the value of the progress index may be lower than expected.

** A task-type project belonging to the intervention area "Attractive vehicles", which is continuously implemented by Budapest; the degree of change in the indices containing such projects is indicated by a dashed line. The BMT includes 4 projects whose implementation will support Measure 2.2.3. Of these, the project "Bicycle transport on public transport" is progressing steadily (so we calculated the index using the fit score for this project).

As a result of the continuous progress of the project, in 2023 ~19% of the buses and ~30% of the trams of the public transport services ordered by BKK will be suitable for bicycle transport. Trolleybuses and metro trains are not yet equipped for bicycle transport, but all HÉV and commuter trains are.

3. CUSTOMER EXPERIENCE-ENHANCING SERVICES

Successful awareness-raising measures have been implemented, significant progress has been made in the field of digitisation and work is ongoing to improve information services.

OPERATING OBJECTIVE	MEASURE ID	BMT 2023 MEASURE	PROJECT RELATED TO THIS MEASURE COMPLETED BY 2023 [QTY]	ALL BMT PROJECTS RELATED TO THE MEASURE [QTY]	PRE-RESERVATION INDEX 2023 (BASE YEAR)	PROGRESS TOWARDS THE THEORETICAL MAXIMUM	PROGRESS INDEX THEORETICAL MAXIMUM
3.1 Shaping transport culture and habits	3.1.1	Encouraging a change of mindset and conscious mobility, communication	6	16	8	42%	19
	3.1.2	Public security, public health and sanitation in urban transport	1	3	1	40%	2,5
	3.1.3	Protecting our transport heritage	1	7	1	9%	11,5
3.2 Integrated mobility services	3.2.1	Digitalisation and use of modern technologies in transport management	3	28	4	9%	45
	3.2.2	Developing shared mobility services	2	12	2	13%	16
	3.2.3	Expanding demand-driven passenger transport services	1*	2	2	66%	3
	3.2.4	Developing a uniform taxi service in Budapest	0	3	0	0%	6
	3.2.5	Developing mobility customer relationships	1	11	2	20%	10
	3.2.6	Participation in mobility planning, project implementation and operation	1	4	1	22%	4,5
	3.2.7	Development of direct logistics services provided by the Municipality of Budapest	0	2	0	0%	3
3.3 Harmonised city-region services	3.3.1	Fare community and interoperable fare systems	3*	6	4	50%	8
	3.3.2	A digital sales system integrated into the city region	3	12	5	29%	17
	3.3.3	Uniform passenger and mobility information services for all	2	20	3	16%	19
	3.3.4	Harmonisation of urban-suburban public transport timetables and related services	1*	7	1,5	13%	12,5

* The measures of the Customer Experience Enhancement Services intervention area include several task-related projects that are continuously implemented by the Municipality of Budapest. The extent of change in the indices containing these projects is indicated by a dashed line.

3. EFFECTIVE GOVERNANCE

Develop and approve key sector strategies and strategic network plans.

OPERATING OBJECTIVE	MEASURE ID	BMT 2023 MEASURE	PROJECT RELATED TO THIS MEASURE COMPLETED BY 2023 [QTY]	ALL BMT PROJECTS RELATED TO THE MEASURE [QTY]	PRE-RESERVATION INDEX 2023 (BASE YEAR)	PROGRESS AGAINST THEORETICAL MAXIMUM*	PROGRESS INDEX THEORETICAL MAXIMUM
4.1 Coordinated urban and mobility development in Budapest	4.1.1	Coordination of transport development integrated into metropolitan urban development	1*	1	1	100%	1
	4.1.2	Regulation to ensure the uptake of transport solutions that support climate strategy	7*	16	8	47%	17
4.2 Coordinated mobility management	4.2.1	Tasks to ensure the functioning of transport in Budapest	2*	6	3	43%	7
	4.2.2	Urban mobility regulation	1*	5	2	36%	5,5
4.3 Regional cooperation	4.3.1	Inter-institutional cooperation to ensure integrated transport in the metropolitan area	1*	4	2	29%	7
	4.3.2	City-region mobility regulation	1*	4	1	18%	5,5

* The measures of the intervention area Efficient Governance include several cyclical projects that support the continuous functioning of governance institutions (e.g. in the case of Action 4.1.1, the operation and further development of the Uniform Traffic Model). For the indices containing such projects, the total matching score of the projects has been taken into account in the calculation of the Progress Index and the values corresponding to the continuous implementation are indicated by a dashed line.

EUROPEAN CITIES INDICATORS, BENCHMARK

2023 REPORT

EUROPEAN CITIES' SUMP INDICATORS AND TARGETS - COMPARATIVE ANALYSIS

CITIES	GENERAL COMPARATIVE DATA				MODAL SPLIT		
	POPULATION [PERSONS; 2023]	TERRITORY [KM]2	NUMBER OF TRIPS [PERSONS/YEAR]	MOTORISATION SZGJ./1000 INHABITANTS	INTERPRETATION / DESCRIPTION	TIME	OBJECTIVE
Budapest	1 686 222	525	727	423	BMT modal split target: reduce the share of car trips to 20%	2030	max. 20%
Vienna	1 917 528	415	381	370	share of passenger car trips	2025	max. 20%
Frankfurt	784 664	248	164	397	share of sustainable transport modes	2030	min. 65%
Ljubljana	296 228	164	199	572	sustainable transport mode share	2027	67%
Milan	1 236 837	182	158	577	share of passenger car trips	2030	-8% compared to 2024
Rome	2 318 895	1 285	436	693	reducing the share of car trips; increasing the share of active mobility	2035 2030	max. 71.9% (2019: 80.2%) min. 14,5% (2019: 10,5%)
Stockholm	988 943	188	341	195	the share of public transport in motorised transport in peak hours; the proportion of journeys made by bicycle during peak hours	2030	min. 80% min. 15%
Tallinn	447 032	159	257	No data (national: 524)	share of sustainable transport modes	2025 2035	min. 50% min. 70%
Warsaw	1 861 644	517	452	765	share of passenger car trips	2030 2040	max. 63% max. 50% (2019: 72%)

EUROPEAN CITIES' SUMP INDICATORS AND TARGETS - COMPARATIVE ANALYSIS

CITIES	TRAFFIC						SECURITY			
	INDICATOR	TARGET	INDICATOR	TARGET	INDICATOR	TARGET	INDICATOR	TARGET	INDICATOR	TARGET
BUDAPEST	reducing congestion	2030: -30%	development of the main cycle network	2030: min. 512 km	reducing disruption to public transport	2030: Max: 0.5%	number of injuries and deaths from road incidents	VisionZero: 2030: 50% 2050: 0		
VIENNA	reducing traffic crossing the city limit	2030: -50%	reducing the level of motorisation	2030: 250 cars/100 inhabitants			fatalities related to traffic incidents	VisionZero: 2025: 0 persons		
FRANKFURT	access to a sustainable transport mode	2030: max. 5 minutes walking time					number of serious injuries and deaths from road incidents	2035: -60% 2050: 0 persons		
LJUBLJANA	the city centre should be quickly accessible by public transport for 49% of the population	2030: max 30 minutes	increasing the length of cycle routes; currently 230 km	steady increase			number of injuries and deaths from road incidents	VisionZero: 2030: 50% 2050: 0		
MILAN	reduction of vehicles per 1,000 people	2019-2024: -11%	reducing the volume of traffic	2030: -25%	population served by public transport	2030: +142%				
ROME	number of public transport trips on an average working day	2 081 498 trips/day	number of commuter rail journeys on an average working day	339 334 trips/day	ZeroEmission zone with congestion charge, access gates around the city centre	will be introduced 2025-2030	number of injuries and deaths from road incidents compared to 2019	VisionZero: 2030: 50% 2050: 0		
STOCKHOLM	average speed of express buses in the city centre	2030: min. 20 km/h	reducing through traffic in the city centre	2030: max. 5% of total traffic volume	parking space occupancy	2030: max. 85%				
TALLINN	travel time between centres	2035: max. 20 minutes					fatalities in road traffic incidents involving injuries	VisionZero: 2035: 0 persons		
WARSAW							number of injury incidents involving pedestrians and cyclists per 100,000 persons	2030: 40.1 2040: 10.0 (2021: 80.1)	number of fatalities in traffic incidents per 100,000 persons (2021: 3.5)	2030: 1.8 2040: 0.4

EUROPEAN CITIES' SUMP INDICATORS AND TARGETS - A COMPARATIVE ANALYSIS

CITIES	CLIMATE / ENVIRONMENTAL PROTECTION						ACCESSIBILITY	
	INDICATOR	TARGET	INDICATOR	TARGET	INDICATOR	TARGET	INDICATOR	TARGET
BUDAPEST	CO_2 emissions	2030: -40%	Transport energy use	2030: -25% compared to 2023 baseline	Air pollution from traffic (PM2.5)	2030: -20% compared to the 2023 baseline	physical and audiovisual accessibility in public transport	2030: 88%
VIENNA	CO_2 emissions per capita in the transport sector	2030: -50% 2040: - 100%	Share of non-fossil vehicles in new vehicle registrations	2030: 100%	commercial traffic will be largely CO_2 -free within the municipal boundaries	2030: 100%	accessibility of the transport system	2025: 100%
FRANKFURT	GHG emission reductions compared to 1990	2025: 40% 2030: 55%	2035: climate neutral city	2050: use of only renewable energy sources				
LJUBLJANA	climate neutrality	2030						
MILAN	reducing emissions	2019-2024: -18%						
ROME	GHG emissions compared to 1990	2030: -55%	PM2.5 emissions	2020-2029: -10% from 2030: -45%	share of renewable energy in transport	2030: 22%		
STOCKHOLM	covering parking spaces with electric charging stations	2028: 100%	2030: climate neutral city					
TALLINN	CO_2 emissions from transport	2025: 550.000 t 2030: 390.000 t					making pavements, public transport stops and the cycle network accessible to all	2023: 100%
WARSAW	GHG emissions	2030: 23,000 t 2040: 8,200 t (2019: 43,200 t)	emissions of air pollutants	2030: 2500 kg PM2.5 2040: 900 kg PM 2.5 (2019: 4800 kg PM 2.5)	reduce the number of residents exposed to noise pollution	2030: 15,600 people 2040: 1000 persons (2017: 103.900 persons)	the proportion of the population with at least good access to public transport (62% in 2022)	2030: 68% 2040: 70%

VIENNA

Modal split target: no more than 20% of trips to be made by private car (28% in 2020);
share of sustainable transport modes (public transport, cycling, walking) 80%.
Motorisation: the current **number of cars per 1,000 inhabitants** is 381, with the aim of reducing it.
Providing space for walking, cycling and public transport on newly built roads: the aim is to increase this.
Cycle and footpaths: the aim is to improve quality and accessibility.
Public transport hubs: *the aim is to improve them and make them accessible.*
Public transport in new residential areas: the aim is to ensure optimal service.
Road safety: the goal is VisionZero, no road fatalities.
Accessibility: the goal is a fully accessible transport system.
Gender equality: the aim is to be fair and take into account different needs.

Smart Climate City Strategy Vienna

"Enabling mobility without car ownership" - in this context, the development and expansion of the existing public transport/fixed-rail network is an important aspect.
Better distribution of street space: in 2020, 65% of street space was used by motorised traffic, even though it only accounted for 28% of traffic.
87% of 6-14 year olds travel to school in a sustainable way, so the aim is to create a safe environment around schools.
By 2025, 50% of residents should have a car-sharing service within 500 metres of their home, while 40% should have a public bike station within 300 metres.
Other important indicators are the number of public bike stations and the number of trips made through them.

BKK BUDAPESTI KÖZLEKEDÉSI KÖZPONT

WARSAW

The indicators included in the SUMP are, as follows:

Modal split:

- **ratio of trips by car and public transport** in Warsaw: currently 72/28; then 63/37 by 2030; and 50/50 by 2040. Ratio of trips by car and public transport in Warsaw city region municipalities (Warsaw Metropolis, Polish short name: MW), excluding Warsaw: currently 69/31; then 66/34 by 2030; and 58/42 by 2040. Ratio of car and public transport trips in key MW municipalities: currently 69/31; then 66/34 by 2030; and 60/40 by 2040. Ratio of car and public transport trips in developing MW municipalities including Minsk Mazowiecki: currently 69/31; then 67/33 by 2030; and 62/38 by 2040. Ratio of trips by car and public transport in other MW municipalities: currently 73/27; then 72/28 by 2030; and 69/31 by 2040.
- **the proportion of walking and cycling.**

Safety:

- Number of road traffic injury incidents per 100,000 inhabitants involving **pedestrians and cyclists** in 2021: 80.2. Target to reduce number to 40.1 by 2030; and to 10.0 by 2040.
- Number of road traffic injury incidents: number of **fatalities** per 100,000 inhabitants in **road traffic** injury **incidents** in 2021: 3.5. Target to reduce to 1.8 by 2030; and to 0.4 by 2040.

Climate:

- **emissions** from transport**:** greenhouse gas emissions from transport are currently 43.2 thousand tonnes of CO_2 ; 23.0 thousand tonnes by 2030; and 8.2 thousand tonnes by 2040. **Emissions of air pollutants** from transport**:** currently 4.8 thousand kg PM2.5; then 2.3 thousand kg PM2.5 by 2030; and 0.9 thousand kg PM2.5 by 2040.
- transport-related **noise pollution:** the number of inhabitants exposed to transport-related noise pollution in Warsaw: 103.9 thousand at present; 15.6 thousand in 2030; and 1.0 thousand in 2040.
- **transport-related energy consumption.**

Accessibility:

- **access to public transport:** currently 62% of MW residents have very good or good access to public transport; the aim is to increase this to 68% by 2030 and to 70% by 2040.

MILAN AND TALLIN

Milan

- **The level of motorisation** in 2003 was 6.25 cars per 10 persons, which decreased to 5.18 in 2013, a pre-SUMP 2013 situation.
- Between 2013 and 2015, the size **of the 30 km/h zones** measured in square metres increased from 345,260 to 756,000.
- Between 2013 and 2015, **the size of pedestrian zones,** measured in square metres, increased from 357,402 to 612,847.
- Between 2013 and 2015, the **cycling network** increased from 166 km to 200 km.
- **The annual use of public bikes (**BikeMi) increased from 3 million km to over 5 million km between 2013 and 2015, while the annual number of rentals increased from 1.8 million to 3 million.
- Since 2012, a daily **€5 entrance fee** is required in the city centre on weekdays. As a result, in the affected area:
  - traffic is down by 29.2% (40,000 fewer vehicles enter the area);
  - 26% fewer road traffic incidents with injuries;
  - the average speed of public transport increased (between 9 am and 10 am: bus +2%, tram +2.2%; between 6 pm and 9 am: bus +5.9%, tram 4.4%);
  - reduced occupancy of parking spaces: 10% more spaces available;
  - 49% fewer polluting vehicles (2,400 fewer per day);
  - 6.1% more clean vehicles (from 9.6% to 16.6% of total urban vehicles);
  - improved air quality: total **PM10: -18%; CO_2 : -35%** etc.;
  - less black carbon: reduction between 28-52%

Tallinn

Targets **by 2035:**

Modal split: share of sustainable transport modes in daily trips: at least 50% by 2025, at least 70% by 2035.
Climate: reduce greenhouse gas emissions from transport to at least 40% of 2007 levels; 550,000 tonnes of CO_2 per year by 2025; 390,000 tonnes of CO_2 per year by 2030.
Safety: 0 road injury deaths related to road traffic incidents.
Traffic: travel time between centres by public transport: maximum 20 minutes.
Accessibility: pavements, public transport stops, cycling network accessible to all, and **90% of school children to be able to travel independently.**

STOCKHOLM

Modal split target: 80% of all motorised transport should be public transport by 2030.
By 2030, **the share of local trips (**i.e. trips starting and ending in the city centre, southern suburbs or western suburbs) **made on foot** in a calendar day will be at least 60% in the city centre and 50% in the suburbs.

- The average speed of public fixed-rail transport will be 20 km/h by 2030 (including stops).
- Only 85% of today's parking spaces will remain by 2030.

Traffic:

- By 2030, through traffic will not exceed 5 percent of the total traffic volume on the city centre road network.
- The total distance travelled by car or goods vehicles on the city's roads and streets during peak hours will not exceed 2008 levels by 2030.
- By 2030, at least 80 percent of people will feel that transport is not a major problem in their local area.

Accessibility:

- Improving the accessibility of the road network **by increasing the speed of** high-capacity **means** of transport and improving **journey time reliability** for all road users.

FRANKFURT AND LJUBLJANA

Frankfurt

Modal split target: increase the share of sustainable transport modes (walking, cycling, bus and rail) to 65% in the Frankfurt-Rhine-Main region by 2030.
Climate target: the Hesse state government aims to reduce greenhouse gas emissions in Hesse by 40% by 2025 compared to 1990 levels, while by 2030, the Frankfurt-Rhine-Main region should reduce by 55%.

Ljubljana

Access to services - measures: purchase of new accessible buses and rail vehicles.
Traffic – cyclic schedule for services: departing every 15, 30, 60 minutes.
Safety - reducing speed, thus reducing noise, increasing safety.

ROME

- Integrated transport
- Multimodality and the decline in the number of cars
- Increasing road safety
- Increase in the share of shared mobility
- Less congestion and pollution
- Renewal of the urban vehicle fleet
- +45 km of metro and rail
- +10 km of cable cars
- +58 km tram tracks
- +185 stops
- Introduction of a ZeroEmission zone by 2025-2030 - with congestion charging, access gates around the city centre, new P+R areas
- Reducing free parking
- Modal split: increasing sustainable transport modes from 37% to 52%

GDYNIA AND GDANSK

Gdynia

The indicators in the plan are:
Modal split:
- Public transport use
- Walking and cycling rates

Security:
- Number of road traffic incidents involving injuries

Climate:
- Emissions from transport
- Transport-related noise pollution
- Transport-related energy consumption

By 2040, the SUMP aims to increase public transport use by 50% and walking and cycling by 20%. Road traffic injury incidents would be reduced by 50% and transport emissions by 40%. The plan also aims to reduce transport-related noise pollution and energy consumption.

Gdansk

The indicators displayed in the SUMP are:
Modal split:
- Public transport use
- Walking and cycling rates

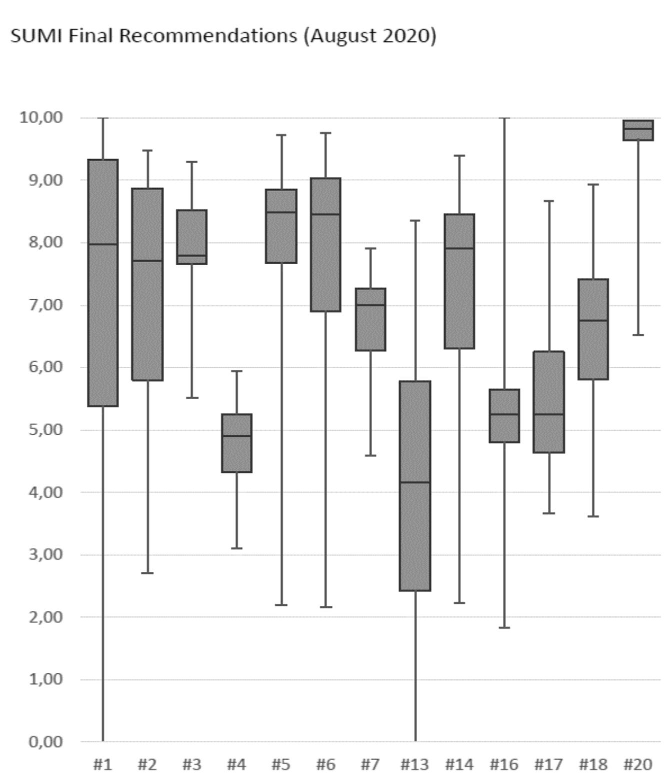
Security:
- Number of road traffic incidents involving injuries

Climate:
- Emissions from transport
- Transport-related noise pollution
- Transport-related energy consumption
- Transport-related costs

The plan aims to increase public transport use by 50% and walking and cycling by 20% by 2040. Traffic injury incidents would be reduced by 50% and emissions from transport by 40%. The plan also aims to reduce transport-related noise pollution and energy consumption and **optimise transport-related costs.**

ANALYSIS OF INDICATORS FOR CITIES PARTICIPATING IN THE SUMI-PROJECT

Summary of indicator results for the cities included in the SUMI project (for indicators for which at least 10 cities have provided finalised background calculations):



#	Title of the SUMI indicator
#1	Affordability of public transport for the poorest group
#2	Accessibility of public transport for mobility-impaired groups
#3	Air pollutant emission
#4	Noise hindrance
#5	Road deaths
#6	Access to mobility services
#7	Quality of public spaces
#13	Greenhouse gas emissions
#14	Congestion and delays
#16	Opportunity for active mobility
#17	Multimodal integration
#18	Satisfaction with public transport
#20	Traffic safety active modes

The black vertical lines in the box plot represent the minimum and maximum scores achieved by the 46 SUMI cities. The top and bottom edges of the grey box represent the upper and lower quartiles of the distribution of scores (interquartile range), i.e. the grey box covers the 50% of the total score closest to the median.
The median of the indicator scores is represented by the horizontal black line inside the grey box.

The basic idea behind the SUMI project 2017-2019 was to develop a common set of indicators for mobility planning, providing cities with a useful tool to identify the strengths and weaknesses of their mobility system and to
focus on areas for improvement. The indicators selected in the SUMI are based on those previously developed by the World Business Council for Sustainable Development (WBCSD). They were developed by the European Commission as part of the European project: DG MOVE funded technical assistance on sustainable urban mobility indicators to 46 European cities where the set of indicators was tested. In selecting the cities, an effort was made to include at least two cities of different sizes from each available country: in Hungary, the indicators were tested in Budapest and Szeged, coordinated by Mobilissimus Kft.

A balance had to be struck when designing the SUMI indicator set between accuracy and usability, taking into account data acquisition, quality and timeliness, understandability for policy makers and the general public, and the availability of human resources and funds for data acquisition. In developing and improving the SUMI indicators, the **aim is to connect the indicators closely to the SUMP concept and process, linking them directly to the SUMP objectives** at successive stages of the planning process:

- in the initial identification of transport problems;
- when assessing the options;
- during the evaluation period of the follow-up.

A uniformly used set of tried and tested common European indicators is applied to compare mobility parameters in SUMP planning for comparative analysis at European level, and to assess progress towards sustainability objectives.

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IMPRINT

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The Budapest Mobility Plan 2030 Monitoring and Evaluation System is a SUMP framework document that dynamically aligned with sustainable urban development, in which the indicators evaluated and the methodology for their calculation may be expanded or modified during the preparation of the report, depending on the data available.

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