



2022 Annual Report

unimos Personas



Tu sistema de transportes



Consorcio Regional de
Transportes de Madrid

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Transportes de Madrid

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Foreword



Publishing the 2022 Consorcio Regional de Transportes de Madrid Report is a way to shed light on the Community of Madrid's unrelenting commitment to sustainable, safe, reliable, frequent and cost-effective mobility. However, the data collected also reveal something even more significant; the people of Madrid's commitment to their metro, suburban trains and urban and suburban buses.

After the world was brought to a halt for two years in the wake of the Covid-19 pandemic, 2022 saw public transport bounce back to levels not far off those reported in 2019, once again becoming the region at the forefront of Spain's economic and social development and the responsibility that comes therewith.

Mobility is one of the vectors used as a direct benchmark to gauge a region's activity and drive, and last year's figures went above and beyond our expectations.

The different modes of transport carried a total of 1,362 billion passengers or, to be more precise, 43 people got on a train or bus every second. However, it is also of utmost importance to ascertain how users perceive the quality of the service provided, and, according to the periodic surveys conducted, an average rating of 7.9 was obtained.

We would not be in a position to attain these results without a service model in which the different offers are not in competition; it is a collaborative process coordinated by the Consorcio Regional de Transportes designing an offer that takes into account real needs and the duty to create a network that connects and brings all the region's hubs closer together, fostering a basic principle of equality.

In 2022, our more than 7,600 metro and Cercanías carriages and urban and suburban buses covered a total distance of 635 million kilometres. This considerable mobility plan cost over €2.6 billion, half of which was contributed by the Community of Madrid, 12% by Madrid City Council and 11% by the General State Administration, other municipalities and neighbouring Autonomous Communities. Passengers, via tickets and season-tickets sales, accounted for 27%.

Providing public transport is not just a competence set forth in the Statute of Autonomy of the Community of Madrid and goes far beyond the mere provision of a service. It responds to an intrinsic need to travel, whether out of obligation or whim. This network enables us to go as far as we want to go or stay as close as we want to be. The figures and data provided herein explain the work carried out in 2022 to achieve this.

Regional Minister for Housing, Transport and Infrastructures

A handwritten signature in blue ink, consisting of stylized, overlapping loops and lines.

Jorge Rodrigo Domínguez

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1 The CRTM

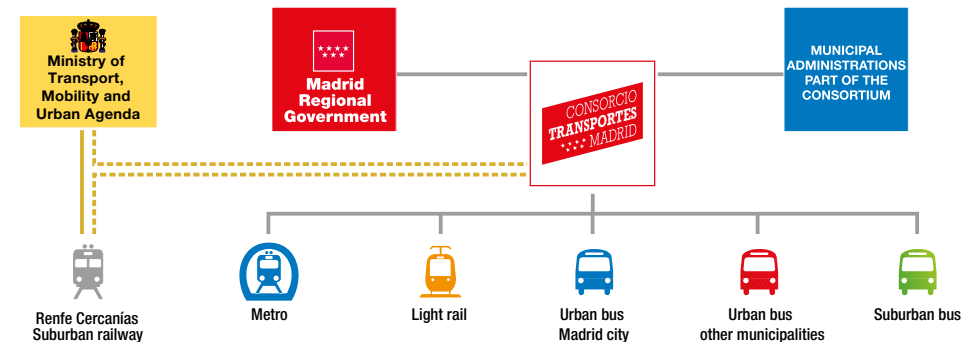


The Consorcio Regional de Transportes Públicos Regulares de Madrid (CRTM) is the Community of Madrid's Public-Transport Authority. It was founded in accordance with Law 5/1985, of 16 May 1985, of the Assembly of Madrid, as an Autonomous Body of the Community of Madrid, bringing together the region and all its local councils' competences in the field of regular public passenger transport, assuming the integrated management of the public-transport system in the region.

Its main functions and goals can be summarised as:

- ▶ Planning of public-transport infrastructure.
- ▶ Planning of services and coordination of operating programmes for all forms of public transport.
- ▶ Definition of a comprehensive fare system for the transport as a whole.
- ▶ Establishment of a stable funding framework.
- ▶ Controlling and monitoring of the financial management of operators.
- ▶ Creation of a general overview of the system, bringing external relations and users together.

INSTITUTIONAL FRAMEWORK OF THE MADRID REGION PUBLIC TRANSPORT SYSTEM



1.1 The Institution

The CRTM is a group of public authorities that transfer their powers to a joint authority. As a result, the transport operators do not form a direct part of the Consortium, but are answerable to it due to the adherence of the authority owning the service they provide.

The Board of Directors of the body includes representatives of both the Community of Madrid and Madrid City Council, and the member local authorities, as well as the State Administration, which also helps to fund the system. The Board is therefore made up of a range of representatives of society, with members of business and consumer associations as well as trade unions.

The Consortium is led by a Board of Directors that performs its duties either directly or through an Executive Committee. The composition of these bodies at 31 December 2022 was as follows:

a. The Board of Directors

Autonomous Region of Madrid	Chairman	David Pérez García
	Board Members	Carlos Díaz-Pache Gosende
		María Teresa Barcons Marqués
		Miguel Núñez Fernández
		José Luis Fernández-Quejo Del Pozo
		José Ramón Menéndez Aquino
Miguel Ángel García Martín		
Madrid City Council	Vice President	Francisco de Borja Carabante Muntada
	Board Members	Engracia Hidalgo Tena
		Mariano Fuentes Sedano
State Administration	Board Members	Jaime Alberto Moreno García-Cano
		Elena Bernardo Llorente
Member Councils	Board Members	Francisco José Recover Lorente
		José Luis Álvarez Ustarroz
		Iván Fernández Heras
CC.OO/U.G.T.	Board Members	Luis Mercado García
		Rosa Palomar Cepa
Business Associations	Board Members	Rafael Barbadillo López
		Jaime Rodríguez Medal
Consumer Associations	Board Member	Gustavo Samayoa Estrada
Non-Board Member Secretary		Pablo Bodega Herráez
Non-Board Member Managing Director		Luis Miguel Martínez Palencia
Renfe-Cercanías (commuter train)		Ricard Ribé Piñol

b. The Executive Committee

Chairman	David Pérez García
Board Members	Carlos Díaz-Pache Gosende
	José Ramón Menéndez Aquino
	Francisco de Borja Carabante Muntada
	Engracia Hidalgo Tena
	Mariano Fuentes Sedano
Secretary	Pablo Bodega Herráez
Non-Board Member Managing Director	Luis Miguel Martínez Palencia

c. The operational framework

The operational framework of the public transport system of the Community of Madrid is summarised in the following diagram:

Road passenger transport



Empresa Municipal de Transportes de Madrid (EMT)

A Madrid City Council state-owned company that provides urban transport services in the city of Madrid.



Urban transport in other municipalities

6 urban-transport concessions serve 6 municipalities and 1 municipal company in the municipality of Fuenlabrada. In addition, 29 municipalities have urban services operating under suburban concessions.



Suburban transport

27 operators run 30 suburban concessions serving all municipalities in the region.

Rail passenger transport



Metro de Madrid

A Community of Madrid state-owned company that runs in 10 municipalities.



Renfe Viajeros

A state-owned company answerable to the State Administration that operates the Renfe-Cercanías commuter-rail network in Madrid.



Metro railway concessions

2 public-works concessions to extend line 8 (Barajas - Airport T4) and line 9 (Puerta de Arganda - Arganda del Rey) operated by Metro Barajas S.C. and TFM (Transportes Ferroviarios de Madrid), respectively.



Light-rail concessions

3 public-works and operating concessions for light-rail lines: ML1 (Metros Ligeros de Madrid), ML2 and ML3 (Metro Ligero Oeste) and ML4 (Tranvía de Parla).

Transport interchanges

5 public-works, operating and maintenance concessions for the transport interchanges in Madrid: Avenida de América • Plaza de Castilla • Plaza Elíptica • Moncloa • Príncipe Pío

1.2 Funding the system



System requirements and funding

The financial requirements of the transport system consist of remuneration by the CRTM to operators for the services provided, funded through public contributions from the different levels of government and contributions from users.

The difference between the economic needs incurred and the revenue collected from ticket sales is covered by public contributions from the various administrations, constituting the system's so-called fare subsidy.

The remuneration of Metro de Madrid and the Empresa Municipal de Transportes de Madrid (EMT) are governed by annual agreements, based on the approval of a break-even fare per passenger in the case of metro, and on a production agreement for EMT, both including the agreement of certain service quality targets.

The financial relations with the different private road transport operators are set forth in the administrative contracts for the management of public services, as provided in Land Transport Law 16/1987 of 30 July, subsequently validated under Road Transport and Mobility law 5/2009 of 20 October by the Assembly of Madrid.

The CRTM remunerates light-rail concession holders and those of the section of line 8, Barajas-Airport T4, in line with the actual level of passenger demand, using the technical fare offered, whereas the deficit between the break-even fare and the revenues from Parla Tramway is paid equally between the CRTM and Parla Town Council, similarly to the system established with the Empresa Municipal de Transportes in Fuenlabrada.

Transportes Ferroviarios de Madrid (TFM), the concession holder of the section of the underground line 9 between Puerta de Arganda and Arganda del Rey, is paid by the passengers using the Travel Pass in accordance with the price set forth in the contract, receiving an additional contribution per passenger until a certain level of demand is met.

The interchanges are funded through the application of the fare set forth in the concession contracts, which is updated in the manner set forth out therein.

The CRTM has an agreement with Renfe Viajeros that governs the use of multimodal tickets and the payments arising therefrom.

User contributions are derived from revenue from transport ticket sales.

The Community of Madrid, the State Administration (AGE) and Madrid City Council are the main partners in funding the system. The city councils of the Autonomous Region with an urban transport service, as well as the Autonomous Region of Castilla-La Mancha under the passenger-transport financing agreement signed between the Autonomous Region of Madrid and said Autonomous Region also contribute, though substantially less.

The State Administration contributes with a nominative subsidy, which is applied to the system's funding requirements and distributed as follows:

- ▶ 34% goes towards covering the operating deficit of the EMT de Madrid, in accordance with the Regulatory Agreement on the conditions of Madrid City Council's membership of the CRTM for the period 2017–2020, which was extended in 2021 and 2022.
- ▶ The remaining 66% funds the fare subsidy for Metro de Madrid and for the services operating in zones B and C.

The contribution of the rest of the public authorities, once the State contribution has been deducted as indicated, is distributed as follows:

- ▶ Madrid City Council covers 50% of the deficit of the EMT; 50% of the fare subsidy corresponding to road concessions and Renfe services in zone A; 35% of interchange requirements; and 35% of the CRTM's operating expenses and commercial expenses.
- ▶ The Community of Madrid pays the entire fare subsidy corresponding to Metro de Madrid. It also covers the part not funded by Madrid City Council for the rest of the services and expenses in which it participates, i.e. the remaining 50% of the fare subsidy for road concessions and Renfe services in zone A; 65% of interchange requirements; and 65% of the CRTM's operating expenses and commercial expenses. It also pays the entire fare subsidy generated in zones B and C, corresponding to the road concessions and Renfe services, and that of the railway concessions. Lastly, it also pays 50% of the operational deficit of member-council municipal services.
- ▶ Councils with an urban passenger transport pay 50% of their operating deficit.
- ▶ The Castilla-La Mancha Regional Government contributes to the funding of the fare subsidy corresponding to exterior Travel Cards (zones E1 and E2) in accordance with the criteria established in the partnership agreement between the two authorities.



2022 budget and financial result

The CRTM's commercial nature requires the management of two types of budget:

- ▶ An estimated budget covering commercial activity, made up on the income side by revenue from the collection of fares, and on the expenses side by the reimbursement of this revenue to the transport operators, along with the expenses involved in the distribution and sale of the different tickets.
- ▶ An administrative budget consisting of income relating to fares and other public revenue, as well as contributions from partners corresponding to the fare subsidy. With regard to expenses, this budget includes the necessary credit for the funding of the body's own staff, running expenses for goods and services and their investments, as well as the fare subsidy paid to operators.

In 2022, the total amount of revenue settled from both budgets amounted to €2.7 billion and, in terms of expenses, the amount at 31 December represented a total of €2.6 billion. The total revenues of the system from fares, including those received from operator tickets, which do not form part of the CRTM budget, amounted to €714.9 million in 2022. The difference between income (entitlements) and expenses (obligations) places the budgetary result for the year at a surplus of €39.2 million, according to the figures below.

FINANCIAL RESULT

I.- INCOME	€2,678,089,440
*.- Contributions to the CRTM	€1,753,315,406
*.- Fare revenue applied	€714,872,770
*.- Own CRTM and commercial income	€14,717,553
*.- CRTM extraordinary income (options sale + MLO rebalancing)	€191,183,711
*.- MRR Funds	€4,000,000
II.-EXPENSES	€2,638,933,987
*.- Internal CRTM and commercial operations	€45,037,694
*.- Fare payment to transport operators	€2,504,168,863
*.- Administrative concessions	€89,727,430
*.- Other operating and capital expenses	€0
III.- DIFFERENCE (I-II)	€39,155,453

CRTM BUDGET LIQUIDATION 2022

Limited and Estimated Budget(€)

INCOME	Entitlements
Chapter 3.- Fees and other income	91,763,457
Chapter 4.- Current transfers	1,752,083,381
Chapter 5.- Equity income	300,000
Chapter 6.- Alienation of real-estate investments	101,590,285
Chapter 7.- Capital transfers	5,305,150
Chapter 8. - Financial assets	7,162
TOTAL LIMITED INCOME	1,951,049,436
Collection revenue	647,844,336
TOTAL ESTIMATED INCOME	647,844,336
TOTAL INCOME	2,598,893,772
EXPENSES	Obligations
Chapter 1.- Personnel expenses	6,937,673
Chapter 2.- Running expenses	5,786,061
Chapter 3.- Financial expenses	220,213
Chapter 4.- Current transfers	1,884,551,897
Chapter 6.- Real estate investments	2,106,219
Chapter 7.- Capital transfers	0
Chapter 8. - Financial assets	9,700
TOTAL LIMITED EXPENSES	1,899,611,763
Raw materials in service operations	3,913,047
Other external work	26,064,781
Collection repayment	630,148,728
TOTAL ESTIMATED EXPENSES	660,126,556
TOTAL EXPENSES	2,559,738,319
ENTITLEMENTS - OBLIGATIONS	
I.- LIMITED BUDGET OUTTURN	51,437,673
II.- ESTIMATED BUDGET OUTTURN	-12,282,220
FINANCIAL YEAR INCOME(LOSS) (I+II)	39,155,453














This budget result takes into account revenue and expenses irrespective of the actual year in which they are accrued. Their accrual leads to the financial result for the year, which for 2022 is equal to the budgetary result.

The financial flows of the source and application of funds for the financial year 2022 can be seen in the following recap, which presents all revenue and expenses, and the economic results for 2022.

FUNDING SCHEME FOR CONTRIBUTIONS FROM THE CRTM TO THE REQUIREMENTS OF THE TRANSPORT SYSTEM. 2022

Financial Result (€)

SOURCE OF FUNDS			
	STATE ADMINISTRATION	126,894,000	
	COMMUNITY OF MADRID	1,300,423,971	
	MADRID CITY COUNCIL	302,685,618	
	LOCAL CORPORATIONS AND AUTONOMOUS REGIONS	23,311,817	
	FARE REVENUE APPLIED	714,872,770	
	EXTRAORDINARY REVENUE AND EUROPEAN FUNDS	195,183,711	
	TOTAL SOURCE OF FUNDS	2,663,371,887	
APPLICATION OF FUNDS / ACTUAL NEEDS			
 CONSORCIO REGIONAL DE TRANSPORTES DE MADRID TOTAL REQUIREMENTS: 30,320,141		METRO DE MADRID, S.A.	1,006,939,260
		EMPRESA MUNICIPAL DE TRANSPORTES DE MADRID, S.A.	634,731,482
		RENFE VIAJEROS	111,983,585
		RAILWAY CONCESSIONS (TFM, TRANVIA PARLA, LIGHT RAIL)	124,314,569
		ROAD CONCESSIONS (CITY AND SUBURBAN BUSES)	625,436,228
		OTHER REQUIREMENTS (ADMIN. CONCESSIONS, OPERATORS RUNNING/CAP. EXPENSES)	90,491,169
		TOTAL APPLICATION OF FUNDS	2,624,216,434
	2022 FINANCIAL RESULT	39,155,453	

Finally, the Profit and Loss Account and the Balance Sheet at 31 December 2022 are published as an annex.

ECONOMIC OUTTURN ACCOUNT 2022 (euros)

	2022	2021
2. Transfers and subsidies received	1,757,966,254.86	1,586,992,819.27
a) For the financial year	1,757,966,254.86	1,586,992,819.27
a.1) Subsidies received to fund expenses for the financial year	4,073,125.00	365,924.32
a.2) Transfers	1,753,893,129.86	1,586,626,894.95
3. Net sales and provision of services	647,845,515.03	611,579,897.46
a) Net sales	647,845,515.03	611,579,897.46
6. Other ordinary management revenue	2,170,557.93	906,803.23
7. Surplus provisions	29,184,504.20	85,085.36
A) TOTAL ORDINARY MANAGEMENT EXPENSES (1+2+3+4+5+6+7)	2,437,166,832.02	2,199,564,605.32
8. Staff costs	-6,937,673.22	-6,768,396.13
a) Wages, salaries and similar	-5,300,552.19	-5,137,065.91
b) Employee welfare expenses	-1,637,121.03	-1,631,330.22
9. Transfers and subsidies granted	-1,875,831,057.62	-1,582,149,073.11
10. Procurements	656,429,845.17	-627,745,996.98
a) Consumption of goods and other supplies	656,429,845.17	-627,745,996.98
11. Other ordinary management expenses	-11,667,718.02	-22,498,461.08
a) External supplies and services	-11,601,660.14	-22,426,863.82
b) Taxes	-66,057.88	-71,597.26
12. Amortisation of PP&E	-4,194,256.06	-3,776,973.88
B) TOTAL ORDINARY MANAGEMENT EXPENSES (8+9+10+11+12)	-2,555,060,550.09	-2,242,938,901.18
I Result (saving or dissaving) of ordinary management (A+B)	-117,893,718.07	-43,374,295.86
13. Impairment and gains or losses on disposal of non-financial fixed assets and assets held for sale	98,333,606.15	350.00
b) Retirements and disposals	98,333,606.15	350.00
14. Other extraordinary entries	89,593,425.70	0.00
a) Revenue	89,593,425.70	0.00
II Result of non-financial operations (I +13+14)	70,033,313.78	-43,373,945.86
15. Finance income	299,473.78	416,865.33
b) From other marketable securities and long-term loans	299,473.78	416,865.33
b.2) Other	299,473.78	416,865.33
16. Financial expenses	-220,212.52	-190,262.81
b) Other	-220,212.52	-190,262.81
III Result of financial operations (15+16+17+18+19+20+21)	79,261.26	226,602.52
IV Net results (saving or dissaving) for the financial year (II + III)	70,112,575.04	-43,147,343.34

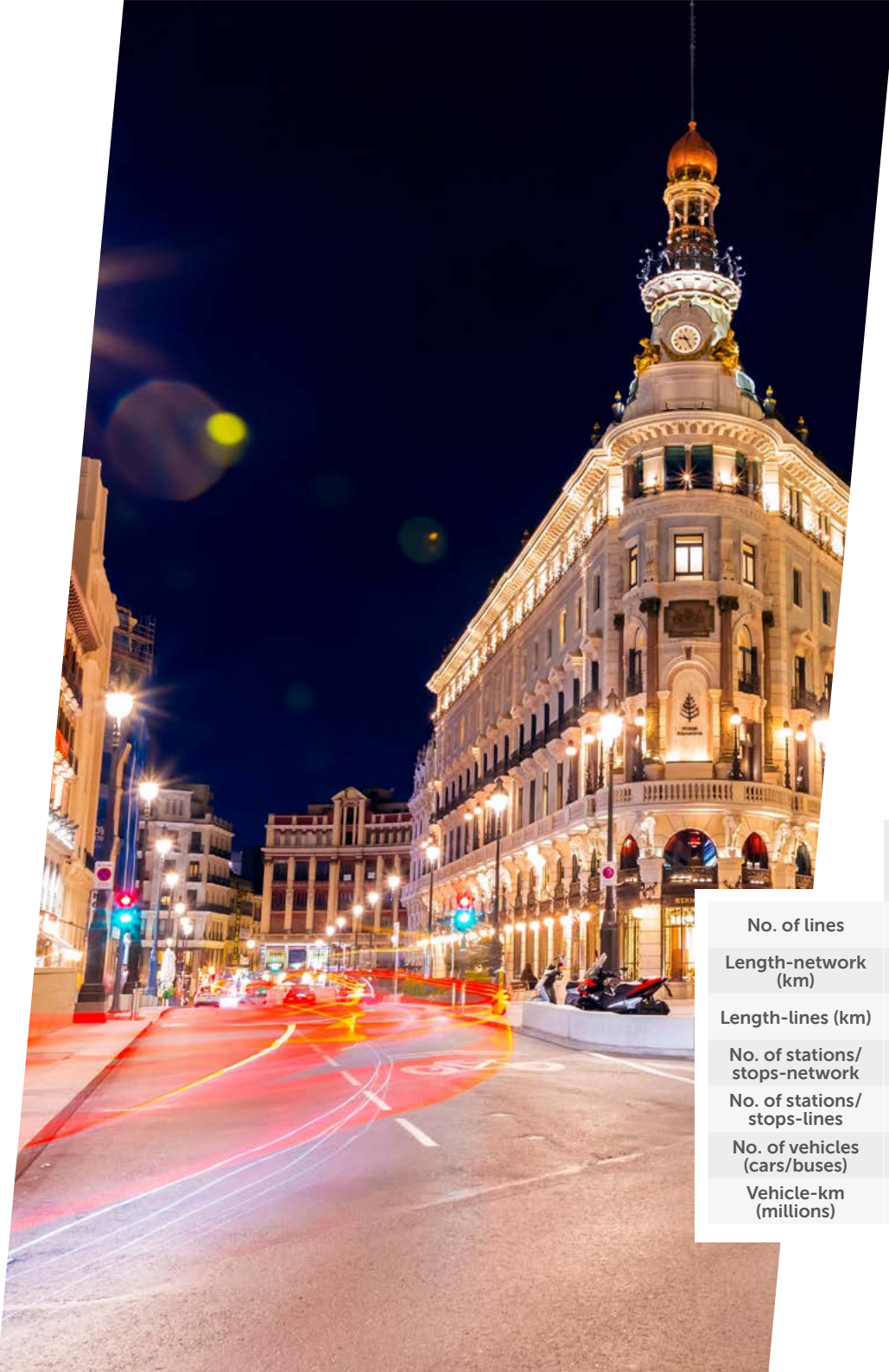
Balance 2022 (euros)

	2022	2021
ASSETS	290,657,942.60	263,545,532.19
A) NON-CURRENT ASSETS	8,628,858.93	14,553,474.10
I. Intangible assets	3,490,626.33	8,885,051.35
2. Industrial and intellectual property	0.00	202.85
3. Computer software	3,409,996.35	2,487,892.25
4. Investments in assets under lease	80,629.98	134,112.01
5. Other intangible assets	0.00	6,262,844.24
II. Property, plant and equipment	1,008,338.27	980,175.13
2. Buildings	79,572.17	80,418.69
5. Other property, plant and equipment	928,766.10	899,756.44
V. Long-term financial investments	4,129,894.33	4,688,247.62
2. Representative credits and securities	4,121,357.82	4,679,711.11
4. Other financial investments	8,536.51	8,536.51
B) CURRENT ASSETS	282,029,083.67	248,992,058.09
III. Debtors and other receivables	140,236,907.46	153,050,032.13
1. Debtors through management operations	-331,938,474.51	-322,387,994.93
2. Other receivables	5,098,937.67	6,268,692.87
3. Public authorities	467,076,444.30	469,169,334.19
V. Short-term financial investments	13,108.56	10,570.16
2. Representative credits and securities	13,108.56	10,570.16
VII. Cash and cash equivalents	141,779,067.65	95,931,455.80
2. Cash and cash equivalents	141,779,067.65	95,931,455.80
EQUITY AND LIABILITIES	290,657,942.60	263,545,532.19
A) EQUITY	199,348,391.95	129,236,995.77
II. Generated equity	199,348,391.95	129,236,995.77
1. Profit/loss of previous years	129,235,816.91	172,384,339.11
2. Financial year results	70,112,575.04	-43,147,343.34
B) NONCURRENT LIABILITIES	11,025,116.03	40,211,795.10
I. Long-term provisions	10,831,592.23	40,016,096.43
II. Long-term debts	193,523.80	195,698.67
4. Other debts	193,523.80	195,698.67
C) CURRENT LIABILITIES	80,284,434.62	94,096,741.32
II. Short-term payables	2,937.50	2,937.50
4. Other debts	2,937.50	2,937.50
IV. Trade and other payables	80,281,497.12	88,801,670.54
1. Creditors from current budgetary operations	1,051,781.53	192,685.80
2. Other accounts payable	78,713,144.81	88,042,576.45
3. Public authorities	516,570.78	566,408.29
V. Accrual adjustments	0.00	5,292,133.28



2

The offer



The public transport system of the Community of Madrid comprises underground, light rail and Renfe-Cercanías suburban railway networks, and the city and suburban bus networks. This system includes operators, infrastructure and modes of transport, on which the CRTM performs its duties of planning and managing the transport services, with the exception of Cercanías, a mode of transport for which the CRTM has no authority.

In 2022, the production of services for the public transport system as a whole stood at 352.5 million cars-km of rail, and 283.2 million cars-km of road, on a network of 11,000 km serving all the municipalities in the region.

The following table summaries the main figures of the supply in 2022 by type of transport operator, in order to provide an analysis of the system as a whole.



	Metro de Madrid	Urban bus Madrid city (EMT)	Road transport concessions	Light rail and other railway concessions*	Renfe-Cercanías
No. of lines	12+Ramal	221	468	5	11
Length-network (km)	269.5	1,651.8	8,660.8	54.8	361.1
Length-lines (km)	269.5	4,011.7	22,087.0	54.8	725.1
No. of stations/stops-network	237	4,802	8,553	62	95
No. of stations/stops-lines	287	11,387	22,491	63	200
No. of vehicles (cars/buses)	2,320	2,090	2,075	241	1,052
Vehicle-km (millions)	186.4	96.4	186.8	17.0	149.1

2.1 Metro de Madrid



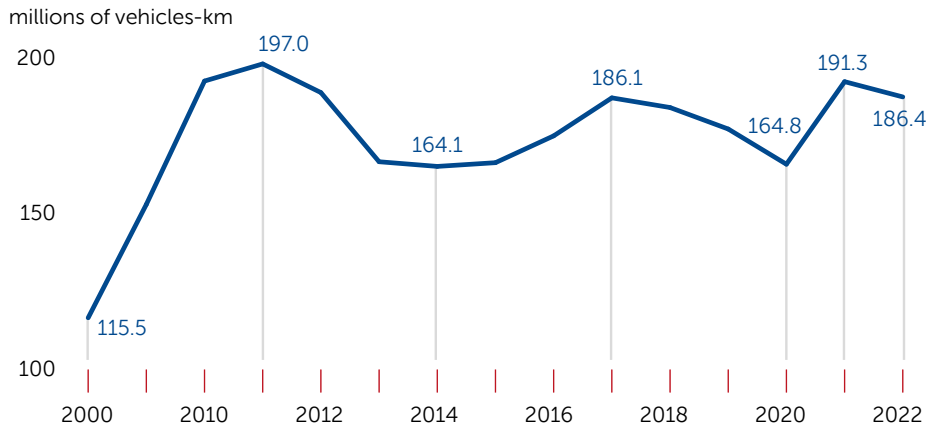
The Metro de Madrid network a total of 12 lines plus the branch between the Ópera and Príncipe Pío stations, covering a length of 269.5 km and a total of 237 network stations, of which 39 are multiple-line (with connections between 2 or more lines), and 198 are single-line stations. If counted in terms of lines, the network has a total of 287 stations-line.

Production in 2022 reached 186.4 million cars-km, 2.6% lower than in 2021, mainly down to service outages for improvement works to be carried out on lines 5, 6, 7a, 7b and 8.

On a business day, the morning rush hour supply consists of 309 trains in service, with the average interval being 4.1 minutes (3.6 if weighed by number of trains), the average speed being 27.7 km/h (26.6 if weighted).

The rolling stock in service during 2022 is made up of 2,320 carriages, with an average age of 22.

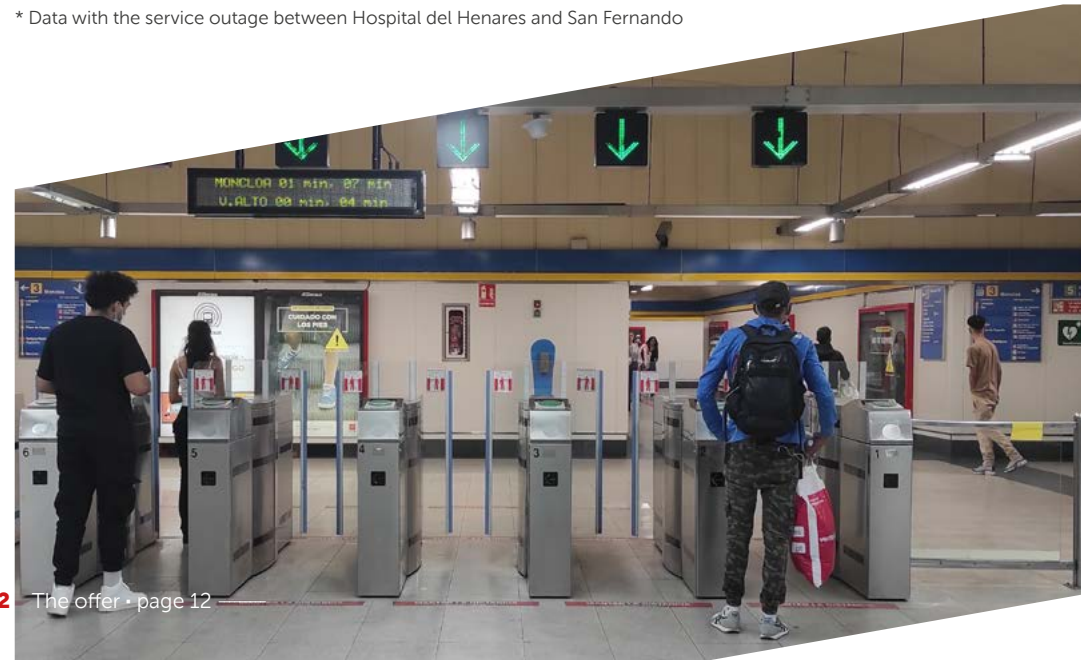
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SUPPLY PER LINE AT MORNING RUSH HOUR ON A BUSINESS DAY

Line	Trains	Cars per train	Operating speed (km/h)	Travel time (min) (round trip)	Interval (min)
1	36	6	22.6	116	3.2
2	19	4	23.5	68	3.6
3	28	6	23.2	70	2.5
4	26	4	21.7	79	3.0
5	32	6	23.0	117	3.7
6 ₁	20	6	24.3	58	2.9
6 ₂	14	6	24.7	57	4.1
7	20	6	26.7	86	4.3
7 _b *	4	3	31.4	23	5.8
8	12	4	39.6	53	3.9
9	23	6	25.1	97	4.3
10	34	6	29.3	94	2.8
10 _b	14	3 and 4	32.7	61	4.0
11	5	3	29.3	29	5.6
12 ₁	10	3	41.5	60	5.9
12 ₂	10	3	41.1	60	5.9
R	2	4	11.6	10	5.0

* Data with the service outage between Hospital del Henares and San Fernando



2.2 EMT



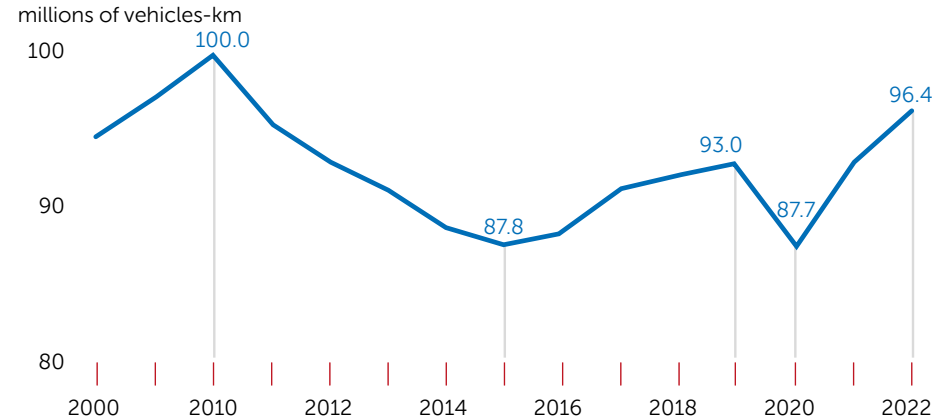
The Madrid urban bus network, operated by Empresa Municipal de Transportes de Madrid (EMT), is made up of a total of 221 lines, of which 193 are day lines and 27 are night lines, to which the 24-hour Airport Express line should be added.

In 2022, the following one-off projects were implemented across the EMT network:

- ▶ Creation of the 170 line that provides a transversal connection to the urban developments in the north of Madrid: Arroyo del Fresno, Montecarmelo, Las Tablas and Sanchinarro.
- ▶ Improvement of the transport offer in the new El Cañaveral neighbourhood, that entailed changing the route and extending line 159 to extend the coverage of the EMT network to the entire urban area while strengthening the offer of line E5 by adding two 2 additional vehicles.
- ▶ Implementation of a special public transportation service in the Rejas neighbourhood (pilot project) to make it easier to reach the local industrial and business hubs and to strengthen the area's existing transport network.
- ▶ Readjustment of headways and routes of 5 lines with headways at the Moncloa



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interchange and the surrounding area to respond to service operation needs.

- ▶ Route changes on lines 29, 30, 43, 63 and 152 due to the remodelling and new configuration of the Felipe II intermodal area, on lines 72 and 73 due to the reorganisation of the Joaquín Costa axis after the demolition of the upper level, on line 43 due to the remodelling of Avenida General Perón, on line 162 due to road remodelling in El Plantío, and on line 51 due to the works being completed on Calle Sevilla around Plaza Canalejas.
- ▶ Extended service on the 165 Alsacia - Hospital Ramón y Cajal line until 22:00 to improve the mobility options for professionals, patients and relatives to reach the hospital.
- ▶ Supply adjustment on 10 lines to balance supply with demand to ensure quality standards are maintained.
- ▶ Furthermore, 3 special temporary services were put into operation: one to transfer Ukrainian refugees fleeing the war from the Isabel Zendal Hospital (entrance) to the Pozuelo de Alarcón Reception Centre (This service was in place for 5 and a half months), another between Mar de Cristal and Feria de Madrid for the NATO summit in Madrid to transfer press and staff (4 days), and another between the municipal sports centres of Vicente del Bosque (Barrio del Pilar) and Hortaleza due to works in the former during the swimming season (3 months).



A total number of 96.4 million kilometres were covered in 2022, 3.5% more than the previous year, due to service levels getting back on track in the wake of the Covid-19 pandemic, and the larger number of special services put into operation. In this regard, car-hours (7.45 million) and trips (11.0 million) also show a similar relative increase at similar levels to those recorded the previous year.

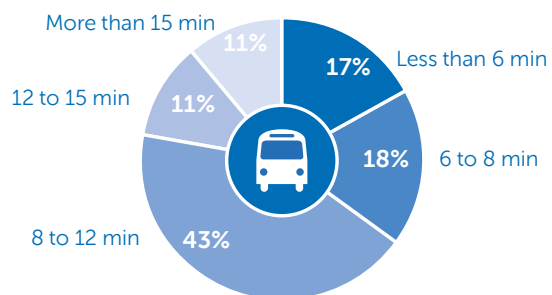
The characteristics of the scheduled supply vary due to the diversity of the lines making up the daytime network, although the main group consists of lines with an average daily frequency interval of between 8 and 12 minutes. At rush hour, 35% of bus routes run at a frequency of every 8 minutes or less.

As planned, in 2022, average operating speed rose by 0.8% to 12.9 km/h.

As of 31 December 2022, EMT has been operating a 100% clean bus fleet in accordance with European fuel standards for urban transport after acquiring new natural gas and electric vehicles and retiring the last diesel vehicles.

The EMT vehicle fleet consists of 2,090 active vehicles, with an average age of 4.8 years, of which 1,896 run on natural gas, 14 are hybrids and 180 are electric. During the year, 354 new units (304 natural gas and 50 electric buses) were added to the fleet and 359 vehicles were written off. All buses have low floor and ramp for People with Reduced Mobility (PRM).

% EMT LINES BY INTERVAL AT RUSH HOUR



2.3 Road transport concessions



The bus network of the road transport concessions of the Community of Madrid comprised 468 lines at 31 December 2022, with 309 day suburban lines, 119 urban lines and 40 night suburban lines.

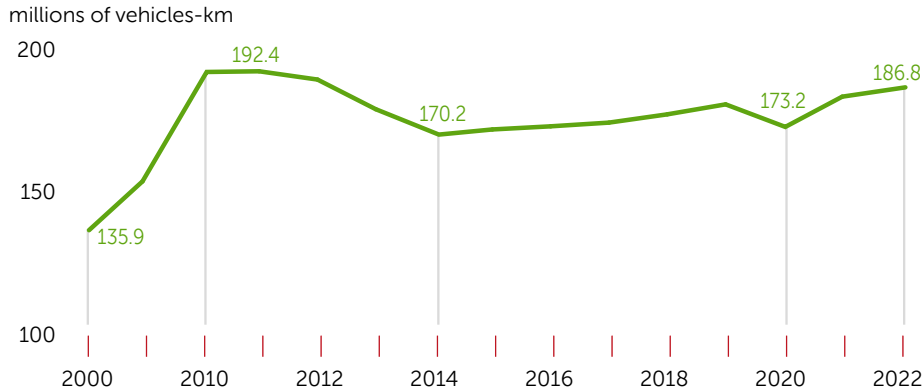
In 2022, the offer was changed (timetables and routes) for 96 lines, among which the following stand out:

- ▶ New sub-lines of lines 326, 691 and 692.
- ▶ Modification of lines 350 B and 350 C.



The system of lines is operated by 27 different companies under 36 administrative concessions and an agreement with a City Council. The urban service in the municipalities of peripheral zones B and C is provided through the municipality's own urban lines or through the suburban bus network. In some municipalities, the urban service is provided through a combination of both networks.

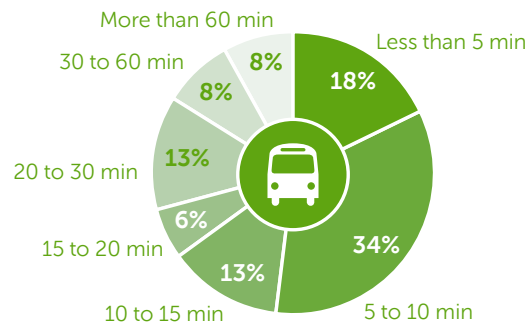
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As a result, the actual supply of urban transport is much higher than that derived from the urban networks themselves. The specific network of urban lines in peripheral zones B and C reaches a total of 35 municipalities, although in only 6 of them is there an administrative concession for an independent urban service. In addition, in the municipality of Fuenlabrada, the urban service is provided directly by the city council, through a municipal company. The supply of services scheduled for the whole network amounts to 28,529 trips on a business day in winter.

The supply of the different lines of the network is, of course, diverse and responds to the different needs in municipalities with different populations and characteristics, as shown in the table below that indicates the percentage of lines distributed according to the rush hour interval on a business day, in minutes.

% ROADWAY CONCESSION LINES BY RUSH HOUR INTERVAL



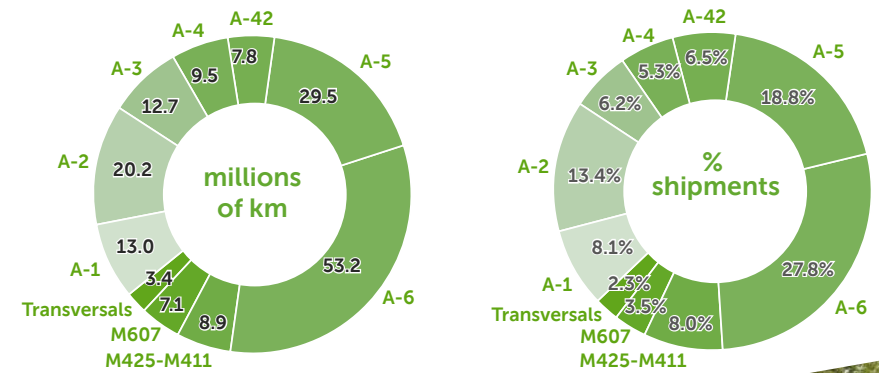
NOTE: Night lines have not been taken into account in this calculation, as they do not operate at rush hour. The busiest direction on each line at rush hour is taken into account.

The vehicle fleet of road transport concessions comprises 2,075 buses. As of 2022, 143 buses have been updated, making 253 compressed or liquefied natural gas vehicles, 405 hybrid vehicles, 4 electric vehicles and one hydrogen vehicle available. Likewise, 100% of the bus fleet is adapted for People with Reduced Mobility (PRM).

Distribution of supply by corridor

The supply generated in 2022 along the different corridors is shown below, these being broken down according to the dual carriageways and main access roads to the capital. This also includes a group of transversal routes which cover connections between some of these main corridors.

SUBURBAN CONCESSIONS BY CORRIDORS



2.4 Renfe Cercanías



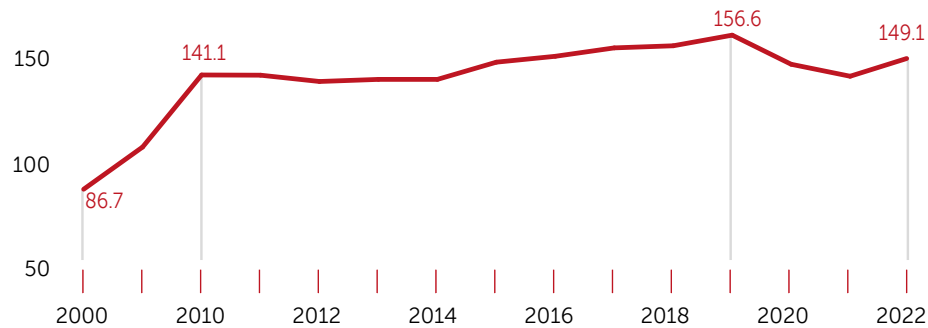
Cercanías Madrid is a railway service operated by Renfe Viajeros on ADIF infrastructure, connecting the city of Madrid with its metropolitan area and with the region's main population centres, along with the city of Guadalajara.

The Madrid Cercanías network operates a total of 11 commercial lines and 95 network stations developed over 361 km, including the Azuqueca, Cotos and Guadalajara stations outside the territorial scope of the Community of Madrid, and the Zarzalejo, Robledo de Chavela and Santa María de la Alameda stations, as an extension of the network from El Escorial.

Of all the stations, 43 serve at least 2 Cercanías lines. Taking into account the total number of connections to other railway modes (underground and light rail), this figure increases to 54.

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millions of vehicles-km
200



SUPPLY PER LINE ON A BUSINESS DAY

Line	Number stations-line	Number of operations	Number of rush hour circulations (06:00 to 09:30)	Rush hour frequency	Cars per train	Operating speed (km/h)
C-1	11	75	16	30	6 / 10	34.9
C-2	19	208	45	8	6 / 10	50.2
C-3	13	113	27	11	10	64.6
C-3a	27	47	11	32	10	58.0
C-4a C-4b	30	278	53	6	10	53.0
C-5	23	312	76	4	6	46.3
C-7	24	84	17	16	6 / 10	48.6
C-8	32	42	9	42	6 / 10	53.9
C-9*	3	10	-	-	2	12.4
C-10	21	77	18	23	6 / 10	47.4
Total	203	1,246	272	-	6 / 10	50.7

Line C-9 (Cerdedilla - Cotos). Special rates and prior booking. The line was reopened in September 2022 after being closed for two years while improvement works were being carried out.

The programmed transport offer for Madrid Cercanías services in 2022 stood at 1,246 circulations and more than 1.7 million people per day, resulting in an annual production of 392,000 commercial circulations equivalent to 149.1 million car-km, 6% more than last year as a result of bringing service levels back to pre-Covid-19 pandemic levels.

The vehicle stock comprises 278 trains, with an average age of 24.5 years.



2.5 Light rail



The light-rail network consists of 4 lines, the names of which are indicated below:

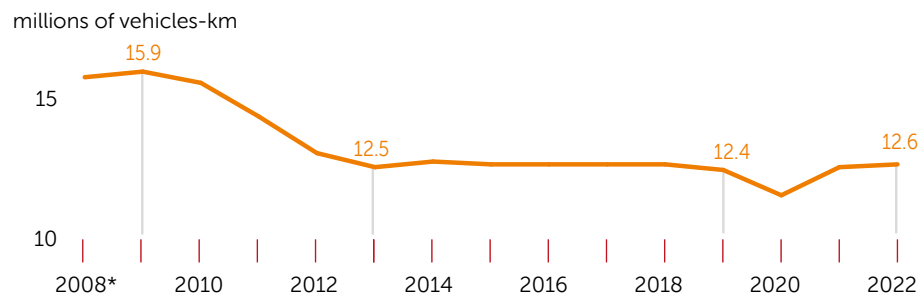
- ▶ ML1: Pinar de Chamartín – Las Tablas
- ▶ ML2: Colonia Jardín – Estación de Aravaca
- ▶ ML3: Colonia Jardín – Puerta de Boadilla
- ▶ ML4: Tranvía de Parla (circular line)

Light-rail services are provided by three concessionary companies, each of which operates the following lines:

- ▶ Metros Ligeros de Madrid S.A.: ML1
- ▶ Metro Ligero Oeste S.A.: ML2 and ML3
- ▶ Tranvía de Parla S.A.: ML4

Overall, 2022 output was 12.6 million vehicles-kilometres.

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*The light rail network started operating in 2007

On a business day, the morning rush hour supply consists of 35 trains in service, with the average interval being 6.8 minutes and the average speed 21.5 km/h.

SUPPLY PER LINE AT MORNING RUSH HOUR ON A BUSINESS DAY

Line	Trains	Cars-train	Operating speed (km/h)	Travel time (min) (round trip)	Interval (min)
1	7	5	19.1	35.0	5.0
2	9	5	23.5	44.0	6.0
3	12	5	25.4	64.0	6.0
4 s1	3	5	20.1	24.5	10.0
4 s2	4	5	19.6	25.1	7.0

2.6 Other railway concessions



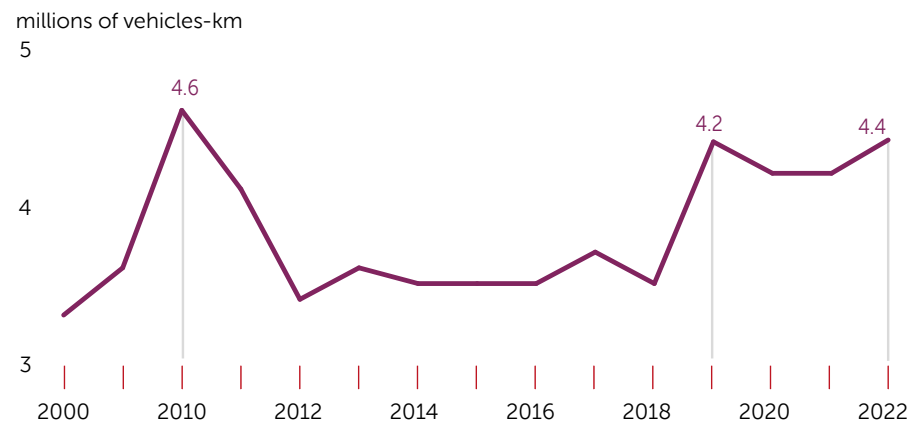
This is the section of line 9 between the Puerta de Arganda and Arganda del Rey stations. It covers a length of 19.0 km and 6 stations-line, the Puerta de Arganda station being the link with the rest of line 9.

The services are provided by the concession company Transportes Ferroviarios de Madrid, S.A.

Adding this section to the Metro de Madrid section would give a network of 288.5 km, and a total of 242 stations-network and 293 stations-line.

2022 output amounts to 4.4 million vehicles-km.

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*Operations on line 9 began in 1999

SUPPLY AT MORNING RUSH HOUR ON A BUSINESS DAY

Line	Trains	Cars-train	Operating speed (km/h)	Travel time (min) (round trip)	Interval (min)
(TFM)	7	2 double and 5 triple	53.4	42.8	6.1





3

The fare system



The fare system for public transport in the Community of Madrid is defined as a zonal system, in which the price of travel is determined depending on the zones involved, and in which there are three types of tickets aimed at three general categories of passengers.

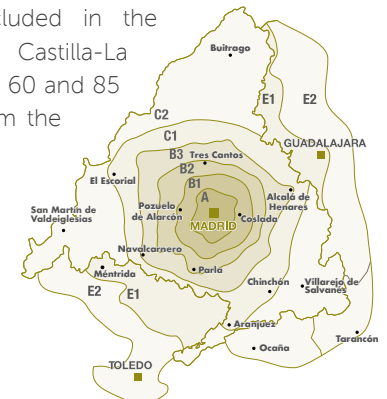
According to the Consortium Creation Act, tickets used on more than one operator belong to the CRTM, which is responsible for their issue and sale. All modes and operators are included within this framework, ultimately forming a system with a high degree of integration.

All tickets, with the exception of single tickets of bus operators, can be topped-up onto the Public Transport Card, which is a contactless card with a microprocessor chip.

3.1 Zoning

The Community of Madrid is divided into six fare zones:

- ▶ A central area (A), almost coinciding with the municipality of Madrid.
- ▶ Three metropolitan zones (B1, B2 and B3), with 8, 14 and 27 municipalities, respectively.
- ▶ Two zones (C1 and C2) to complete the administrative boundary of the Community of Madrid, containing a population spread over the remaining 129 municipalities.
- ▶ In addition, two external zones have been defined (E1 and E2), included in the neighbouring region of Castilla-La Mancha, up to a distance of 60 and 85 kilometres, respectively, from the capital city.



3.2 Ticket types



There are three main types of ticket:

- ▶ A **single ticket**, valid for each operator, aimed at the occasional user who purchases it at the time of use. In the case of Metro de Madrid and the underground and light-rail concessions connected thereto, there is a combined single ticket that can be used on all these services.
- ▶ A **ten-trip ticket**, aimed at repeat users who purchase it in advance. In zone A there are two types of these tickets: a multimodal ticket (Metrobús), that can be used on metro, EMT and ML1, as well as the concessions of the companies Prisei and Alacuber, within the municipal area of Madrid; and another, 10-trips ticket with transfer, only valid on EMT, allowing passengers to change line within one hour from the first time it is validated. In zones B and C there is a multioperator 10-trips ticket that can be used on all urban transport operators and suburban road operators. Likewise, similarly to the combined single ticket for the connected underground and light rail services, there is a combined 10-trips ticket.
- ▶ The **Travel Pass**, a personal, multi-modal, unlimited-use ticket for regular users purchasing in advance. Valid for 30 days after it is first used; there is also an annual pass. Passes have different prices depending on the passenger's age, with three categories: Youth Pass (up to 26), Adult (between 26 and 64) and Senior passengers (aged 65 and over).

Functional exceptions to this general pricing framework apply to the sections outside the underground network that, together with the Metro Ligero Oeste lines, make up a single fare area for non-personal tickets. Furthermore, the use of stations serving the airport terminals involves the payment of an additional ticket, with users of any form of Travel Pass or tourist tickets being exempt from this payment. Finally, the EMT Express Airport line has a specific ticket.

The so-called tourist tickets are also personal and unlimited-use tickets aimed at visitors to the city and tourists. They are split into two zonal forms: A and T (all zones, including external zones), each for six time periods: 1, 2, 3, 4, 5 and 7 calendar days starting from the first use.



3.3 Social fares

There are four types of group that benefit from a reduction in the general price established:

- ▶ Large families: (20% and 50% discount in general and special categories, respectively).
- ▶ People with disabilities equal to or greater than 65%: 20% discount. In the above two conditions are met, the corresponding discounts are added.
- ▶ The over-65s or people with disabilities residing in the city of Madrid whose personal income is less than a certain amount in comparison with the IPREM (Public Multiple-Effect Income indicator) can make use of a specific pass, the Blue Card, which can be used on the Metro de Madrid (zone A), ML1 and EMT services in Madrid.
- ▶ Lastly, the Children's Public Transport Card allows for free use of all transport services in the Community of Madrid for children aged 4, 5 and 6.

3.4 The distribution network

There are two main groups of distributors:

- ▶ Transport operators
- ▶ Networks outside the operators

Transport operators generally sell tickets for use exclusively on their network.

The multi-modal and multi-operator tickets, owned by the CRTM, are sold in the metro network (more than 1,200 automatic machines), at transport interchanges (10-trips tickets for suburban road operators), in Renfe Cercanías (more than 500 self-service machines) and in an external network with customer service provided by Logista, which is made up of 1,200 points of sale including tobacconists and other authorised establishments and, finally, in the Tarjeta Transporte App. On

this app, available for Android and iOS alike, passengers can load CRTM tickets onto personal and non-personal public transport cards.

Tourist tickets are sold at the CRTM management offices located at the Airport and throughout the entire external sales network indicated above. Similarly, the CRTM also sells these tickets directly to the groups and collectives requesting them, as well as the organisers of conferences and large events and entities that sell them through tourist packages (MadridCard, etc.).

Annual passes purchased by companies for their employees are managed through the CRTM itself, while tickets for private users are managed through the network of tobacconists and other authorised establishments, as well as at the CRTM Management Offices.



3.5 Fares

The prices in force since 1 February 2013, when the last price review took place, were maintained in 2022, with the exception of the fare for Senior users which was reduced from €6.30 to €3.30 in the case of 30-day passes, while the fares for zones B3, C1 and C2 were matched.

The Ministry of Infrastructure Development is responsible for approving the fares corresponding to Renfe-Cercanías tickets.

TRAVEL PASS(30-day)

	zone	A	B1	B2	B3	C1	C2	E1	E2
Adult (aged 26–64)		€54.60	€63.70	€72.00	€82.00	€82.00	€82.00	€110.60	€131.80
Youth Pass (aged 7-25)				€20.00					
Senior (aged 65 and above)				€3.30					
Blue Card		€6.20							

INTERZONAL PASSES (except with zone A)

Zone	B1-B2 / B2-B3 / B2-C1 / B2-C2 / B3-C1 / B3-C2 / C1-C2 / C2-E1	B1-B3 / B1-C1 / B1-C2 / C1-E1 / C2-E2	B3-E1 / C1-E2	B2-E1 / B3-E2	B1-E1 / B2-E2	B1-E2
Normal	€47.90	€54.60	€63.70	€72.00	€82.00	€89.50

Yearly passes are valid for the calendar year, the price of which is 10 times the corresponding 30-day pass. Children under 4 can travel without a ticket.

SINGLE AND 10-TRIPS UNDERGROUND AND LIGHT-RAIL TICKET

	Metro Zone A+ML1	Metro Norte	Metro Este	Metro Sur	TFM & MLO	Combined metro and light rail
Zone	A	B1	B1	B1-B2	B1-B2-B3	A B1-B2-B3
Single	€1.50–€2.00	€1.50	€1.50	€1.50	€2.00	€3.00
10-trips	€12.20	€11.20	€11.20	€11.20	€12.20	€18.30

Airport supplement €3.00

SINGLE AND 10-TRIPS TICKETS ON URBAN AND SUBURBAN BUSES

	EMT	Suburban						
	zone A	1 zone	2 zones	3 zones	4 zones	5 zones	6 zones	
Single	€1.50	€1.50	€1.30	€2.00	€2.60	€3.60	€4.20	€5.10
10-trips	€12.20–€18.30	-	€8.50	€12.20	€16.10	€23.00	€29.70	€37.40

Airport express line €5.00

TOURIST TICKET

	1 day	2 days	3 days	4 days	5 days	7 days
Zone A	€8.40	€14.20	€18.40	€22.60	€26.80	€35.40
Zone T (all zones)	€17.00	€28.40	€35.40	€43.00	€50.80	€70.80

50% discount for children under 11

In the last four-month period of 2022, the Consorcio Regional de Transportes' Board of Directors, in agreements dated 4 and 17 August, approved temporary discounts on current fares in accordance with the provisions of Royal Decree-Law 11/2022 of 25 June, which adopted and extended certain measures to respond to the economic and social consequences of the war in Ukraine, to mitigate situations of social and economic vulnerability, and for the economic and social recovery of the island of La Palma, and Royal Decree-Law 14/2022, of 1 August, on economic sustainability measures in the field of transport, on educational scholarships and grants, as well as on energy saving and efficiency measures and measures to cut down on natural gas dependence. These temporary discounts accounted for 30% of the current fares for multi-trips tickets and Blue Cards as well as 50% of Travel Pass fares.



3.6 The technology

Contactless ticketing technology was a strategic project for the integrated public-transport system in the Community of Madrid. Its consolidation as a support for the 98% of transport tickets represented a significant leap by achieving fare and technological unification of all the transport systems and operators, providing new services in terms of security, comfort and flexibility to the users of the public transport network.

In addition, this technology significantly increases CRTM-management capacity for better service planning, efficiency improvements and cost reduction, and for obtaining new data that is now already used as the basis for analytical work with Big Data and Business Intelligence technologies. The elements forming part of this new technological development included, in particular, the ticket itself (Public Transport Card) and the test development centre (DCC) for progressive implementation and verification of successive modifications to the specifications.

a. The Public Transport Card ('PTC')

Different tickets can be contained in two types of public transport card: personal and non-personal. The former may contain a personal ticket and two additional non-personal tickets. Non-personal cards, sold under the 'Multi' name, only contain non-personal tickets. The former cost €4.00 and the latter cost €2.50.

In 2022, the number of applications for personal cards underwent considerable growth, exceeding one million; 1,115,952 to be precise, in other words, a 44.0% increase compared to 2021. Almost half a million cards were personalised in the last four-month period, 10% more than in the same period of 2019. This increase was driven by the 50% discounts on personal Travel Passes, leading to a considerable increase in new users or previous users who had come back. In fact, 45% of the cards issued were to replace old cards and 55% were for new cardholders. This distribution is the exact opposite of 2021.

The number of active cards went up as users were attracted by the discounts. The number of active personal cards on 31 December 2022 reached 4,793,798, 8.7% more than in 2021. In particular, the number of Senior passengers (13.9%) and Youth (9.4%) cards rose. On the other hand, Blue Cards have kept going down, with 9.8% less cardholders compared to last year. A 6.7% increase in new users of children's cards reverses the downward trend seen over the last two years.

75.9% more cards were issued to new users in 2022 than in 2021. The following table indicates their distribution by sales channel for each user profile, except in the case of the Blue Card, which can only be requested at the Citizen Assistance offices of Madrid City Council. The percentage of cards requested online increased considerably, although Management Offices remained the most used channel, issuing 71.7% of cards. This channel is preferred as it can be obtained there and then, instead of having to apply on our website.

NEWLY ISSUED PERSONALISED CARDS BY PROFILE/CHANNEL(2022)

	Management Offices	Internet	Total
Youth Pass	154,843	105,969	260,812
Normal	143,567	51,790	195,357
Senior	97,521	19,989	117,510
Child	19,179	17,503	36,682
Blue Card	-	2,958	2,958
Total	249,890	98,747	613,319





Applications for children (47.7%) and youth (40.6%) passes are more likely to be made online, while Senior passengers largely prefer to obtain their card in person. 51,109 new users applied for Transport Passes for the first time each month, although 92,966 requests for personal cards were made as many people need a replacement card for a number of reasons (loss, expiry, damage, etc.).

b. Multi Card



The Multi Card is intended to contain the non-personal tickets of users who do not have a personal card. The single tickets of bus operators remain in paper format and are paid for on board buses at the start of the trip.

The card can be purchased from vending machines on the underground and light rail networks and at the points of sale of the Logista network, and lasts for ten years, just like personal cards.

The following table summarises the Multi Cards distributed up to 31 December 2022, differentiating between those provided during their promotion and the total of those sold through the two existing sales channels: Metro de Madrid, Metro Ligero Oeste, tobacconists and other CRTM-managed establishments and Offices.

A total of 3,528,570 Multi Cards have been sold in 2022, 51.4% more than in 2021, edging close to the 2018 figures when more than 4.8 million cards were sold and in 2019 when almost 4 million were sold. Metro de Madrid card distribution is highly polarised given how easy they are to acquire and the fact that the network cannot be accessed without a card.

The following table shows the number of cards in circulation, distinguishing between whether they are distributed through promotional activities or sales:

MULTI CARDS IN CIRCULATION as at 31 December 2022

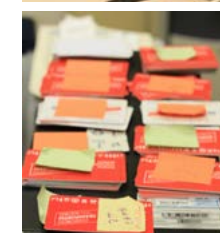
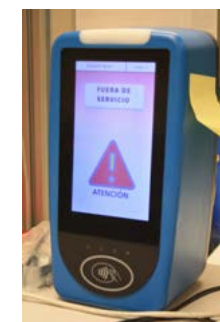
Free of charge	1,231,425
Social Services	38,000
Provided during promotion	1,193,425
Sales	17,533,674
TOTAL	18,765,079

Throughout 2022, 35.4 million tickets were topped-up onto Multi Cards, a little more than half of which were single Metro de Madrid tickets (51.5%). In the future, the introduction of new payment methods will lead to a decrease in the high card usage we have been used to seeing up until now.

c. The Development and Compliance Centre (DCC)

The Development and Compliance Centre (DCC) was launched in 2006 and its basic aim is to be a technological flagship guaranteeing the compatibility of all elements, equipment and systems, both hardware and software, which constitute or may constitute part of the Smart Ticketing System of the Autonomous Region of Madrid.

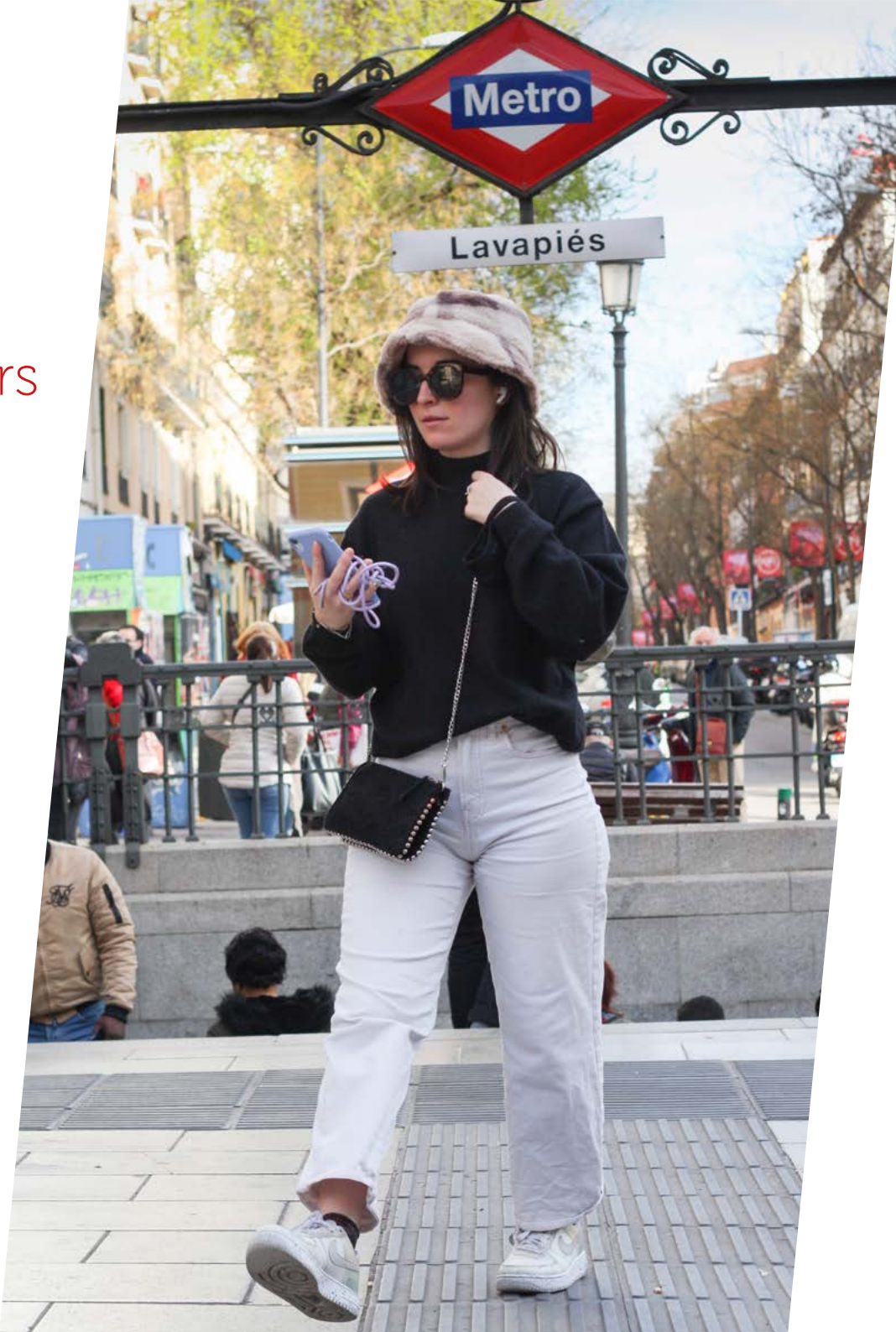
In 2022, the physical PTC charging application functionality was tested on mobile phones in Android and iOS environments alike. Furthermore, a number of tests (physical and logical) were carried out on cards supplied to the CRTM with a view to checking compatibility with existing retail networks, as well as the compatibility of the new version (called DESFIRE EV3) of the semiconductor used in the cards. Work has also continued with regard to topping up transport fare cards on mobile phones using two different strategies: contactless card emulation in an application on the terminal itself and emulation in the embedded secure element (Security Element) that some terminals feature. Furthermore, it was verified whether the fare reduction was correctly integrated into the transmission network.





4

Passengers



1,362.7 million passengers

In 2022, just over 297.7 million trips were recovered, coming to a total figure of 1,363 million passengers, 28.0% more than in 2021, accounting for 85.1% of the 2019 demand.

This figure represents a yearly average of 202 trips per inhabitant, 28.0% more than the previous year and in line with the recovery in trips recorded, although still a long way off 2019 figures (240). In 2022 mobility restrictions were eased, resulting in a steady growth in passenger numbers, although not quite reaching the traffic volume numbers seen in the first two months of 2020 or 2019.

The change of cycle was clearly seen from March 2022 onwards, with levels of demand reaching 85% of those seen in the same month in 2019. This percentage remained steady until the end of the summer, after which there was another sharp rise in passenger numbers. This recovery towards the end of the year was clearly down to the significant temporary discounts on existing fares (50% for multi-modal tickets and 30% for multi-trips tickets), which had a direct impact on the number of people using public transport.

4.1 Evolution of passenger demand by operator

This year, the relative evolution by operators has shifted between the value reached by other railway concessions (TFM), demand for which increased by 34.4%, and that obtained by EMT de Madrid, which rose by 25.8%. The growth differential between operators remained steady and allowed rail transport, which still had some way to go in its recovery, to close the gap on road transport. Renfe Cercanías offered an additional fare measure by giving free journeys to frequent users, which led to a 30.6% rise in passenger numbers.

Suburban road transport concessions, as well as other rail concessions (TFM), were leading the way in terms of passenger volume recovery compared to 2019 with values of 90.4% and 97.4% respectively. Nevertheless, light rail still accounts for 77.2% of demand, in particular Metro Ligero Oeste accounting for 72.0% and Metro Ligero de Madrid accounting for 74.0%. Tranvía de Parla saw much higher recovery than these two operators (86.5%), even slightly above the network as a whole.

Empresa Municipal de Transportes de Madrid closed the year with 84.8% of 2019 passenger levels and Metro de Madrid with 84.4%, slightly below the average for the entire network.

EVOLUTION OF PASSENGER DEMAND BY OPERATOR (millions)

Year	Metro de Madrid	EMT	Road concessions	Renfe-Cercanías	Light rail (1)	Other railway concessions (2)	TOTAL
1995	397.2	521.5	191.6	126	-	-	1,236.2
% VAR 95/90	-4.6%	20.3%	24.4%	30.8%	-	-	12.4%
2000	518.9	531.2	270.1	161.2	-	4.7	1,486.1
% VAR 00/95	30.7%	1.9%	40.9%	28.0%	-	-	20.2%
2005	643.6	470.2	275.6	199	-	6.7	1,595.1
% VAR 05/00	24.0%	-11.5%	2.0%	23.5%	-	42.9%	7.3%
2010	627.1	423.4	235.8	181.6	17.3	6.4	1,491.6
% VAR 10/05	-2.6%	-10.0%	-14.4%	-8.8%	-	-4.8%	-6.5%
2015	569.7	405.9	207.3	182.2	14.7	5.9	1,385.8
% VAR 15/10	-9.2%	-4.1%	-12.1%	0.3%	-15.0%	-7.8%	-7.1%
2018	657.2	420.2	242.8	203.4	18.2	6.6	1,548.4
% VAR 18/17	4.9%	-1.8%	4.3%	5.6%	7.8%	1.5%	3.0%
2019	677.5	439.8	254.7	203	18.8	6.9	1,600.7
% VAR 19/18	3.1%	4.6%	4.9%	-0.2%	3.3%	4.6%	3.4%
2020	349.8	241.6	145.3	109.4	9.5	4.0	859.6
% VAR 20/19	-48.4%	-45.1%	-43.0%	-46.1%	-49.5%	-42.1%	-46.3%
2021	442.3	296.5	181.9	127.7	11.6	5	1,065.0
% VAR 21/20	26.4%	22.7%	25.2%	16.6%	22.1%	25.0%	23.9%
2022	571.7	372.9	230.2	166.7	14.5	6.7	1,362.7
% VAR 22/21	29.3	25.8	26.6	30.6	25.2	34.4	28.0

(1) Includes the MLM, MLO and Tranvía de Parla operators. (2) Includes TFM

At 1,386 million in 2015, current demand is edging closer to the volume of passengers recorded towards the end of the financial crisis from 2008–2014.

In 2022, Metro de Madrid was still the highest volume operator, recovering its relative weight, in terms of overall demand, lost during the pandemic. The number of trips taken on Renfe Cercanías has also slightly increased, although not quite reaching 2015 levels when it was almost one point higher than in 2022. The second biggest operator in terms of numbers, EMT, saw its market share go down by 0.4 percentage points compared to 2021, reinforcing the downward trend seen in recent years. Road transport concessions are still slightly below 2021 levels.

EVOLUTION OF TOTAL DEMAND BY OPERATOR

	Metro de Madrid	EMT	Road concessions	Renfe-Cercanías	Light rail (1)	Other railway concessions (2)
Year 2005	40.3%	29.5%	17.3%	12.5%	0.0%	0.4%
Year 2010	42.0%	28.4%	15.8%	12.2%	1.2%	0.4%
Year 2015	41.1%	29.3%	15.0%	13.1%	1.1%	0.4%
Year 2020	40.7%	28.1%	16.9%	12.7%	1.1%	0.5%
Year 2021	41.5%	27.8%	17.1%	12.0%	1.1%	0.5%
Year 2022	41.9%	27.4%	16.9%	12.2%	1.1%	0.5%

(1) Includes the MLM, MLO and Tranvía de Parla operators. (2) Includes TFM



4.2 Evolution of demand by transport ticket



The Travel Pass is the most used ticket, accounting for 78.1% of passengers, 0.6% more than in 2021. The number of other tickets sold has gone down with the exception of the group classified as "Others", which includes those tickets that cannot be classified in the three main existing categories: single, ten-trips and Travel Pass. This trend is a direct result of the exceptional measures implemented to reduce CRTM and Renfe Cercanías fares. This operator offered a free pass, the Frequent Passenger Pass, which is included in the "Other" group, leading to a rise in the percentage of trips taken under this category. Furthermore, the discount applied to multi-trips tickets (30%) and Travel Passes (50%) drove users to opt for the latter, resulting in a decrease in the number of single and 10-trips tickets. Users went from using the 10-trips ticket to the Travel Pass (average decrease of 6.0%) and from the single ticket to the multi-trips ticket (10-trip ticket, average decrease of 13.3%).

By mode of transport, the highest growth in the Travel Pass compared to 2021 was seen in Metro de Madrid, road concessions and those classified as "Other rail concessions (TFM)". Demand for the 10-trips ticket decreased in Renfe Cercanías because it stopped being sold in the last four months of the year and showed an extremely low relative growth in road transportation (EMT and road transport concessions). Despite the single ticket being the only ticket that was not reduced, it showed similar growth percentages for all operators, with the exception of light rail, with a slight (-1.3%) decrease.

Ticket distribution by mode of transport shows that 63.3% of journeys were made using 10-trips tickets on Metro de Madrid.

Multimodal ticket holders are more frequent with regard to road and light rail, accounting for 80% of the total number of tickets.

Demand by ticket type was rather homogeneous over the course of the year, although it is worth mentioning the decrease in the weight of single tickets and 10-trips from September 2022 onwards, when the additional discounts were rolled out.

ANNUAL DISTRIBUTION OF PASSENGERS BY TICKET TYPE 2022

		Metro de Madrid	EMT	Road concessions	Renfe-Cercanías	Light rail (1)	Other railway concessions (2)	TOTAL
Single	Passengers	20,856,896	19,885,346	22,416,521	15,684,180	580,121	462,631	79,885,695
	% Total	26.1%	24.9%	28.1%	19.6%	0.7%	0.6%	100.0%
10- trips	Passengers	115,322,376	40,718,965	15,987,418	7,418,710	1,899,289	917,888	182,264,646
	% Total	63.3%	22.3%	8.8%	4.1%	1.0%	0.5%	100.0%
Travel Pass	Passengers	431,664,282	300,027,943	190,367,763	115,521,209	11,900,666	5,293,612	1,054,775,475
	% Total	40.9%	28.4%	18.0%	11.0%	1.1%	0.5%	100.0%
PTC Child	Passengers	3,802,740	3,189,895	1,135,731	1,040,619	128,124	46,489	9,343,598
	% Total	40.7%	34.1%	12.2%	11.1%	1.4%	0.5%	100.0%
Other	Passengers	22,390	9,046,196	327,912	27,034,817	10,188	0	36,441,503
	% Total	0.1%	24.8%	0.9%	74.2%	0.0%	0.0%	100.0%
TOTAL	Passengers	571,668,684	372,868,345	230,235,345	166,699,535	14,518,388	6,720,620	1,362,710,917
	% Total	41.9%	27.4%	16.9%	12.2%	1.1%	0.5%	100.0%

DISTRIBUTION OF PASSENGERS BY TICKET AND OPERATOR

	Metro de Madrid	EMT	Road concessions	Renfe-Cercanías	Light rail (1)	Other railway concessions (2)	TOTAL
Single	3.6%	5.3%	9.7%	9.4%	4.0%	6.9%	5.9%
10-trips	20.2%	10.9%	6.9%	4.5%	13.1%	13.7%	13.4%
Travel Pass	75.5%	80.5%	82.7%	69.3%	82.0%	78.8%	77.4%
Children	0.7%	0.9%	0.5%	0.6%	0.9%	0.7%	0.7%
Other	0.0%	2.4%	0.1%	16.2%	0.1%	0.0%	2.7%

(1) Includes the MLM, MLO and Tranvía de Parla operators. (2) Includes TFM

4.3 Ticket sales

The sales of the different types of Travel Pass are analysed below. Information regarding the sale of the remaining tickets issued by the CRTM (combined single and 10-trips tickets for the underground and light rail network and 10-trips Metrobús tickets and bus passes from suburban operators) does not offer significant added value to the distribution of the trips indicated in the previous chapter.

The following table shows the distribution by commercial network of the sale of all tickets sold by the CRTM. Metro de Madrid is the main distributor, with just over half of the passes and 83.1% of Metrobús, the 10-trips ticket for zone A. In fact, six out of every ten trips are made on the metro using this ticket. The Logista point-of-sale network then plays a very important role as an external support for the transport network, with 31.0% of Pass sales, 12.5% of Metrobús and a majority 88.0% of suburban service bus passes.

The CRTM is assigned a separate heading, which will be of particular importance as of 2021 following the launch of the “Travel Pass” transport app that passengers can buy tickets on. Until now, the organisation has been primarily involved in distributing annual tickets, promoting conference tickets and selling tourist tickets to end users through its Management Offices, in particular those that go to the airport. Since its launch, the app has gone down well with users, which can be seen in the increase in its share of sales, going from 3.2% at the end of 2021 to 11.0% in 2022.

DISTRIBUTION OF THE SALE OF TICKETS BY DISTRIBUTOR¹

	Metro	Logista	Renfe-Cercanías	CRTM	Other
Travel Pass	51.1%	31.0%	9.7%	7.7%	0.4%
Tourist Travel Pass	71.8%	0.4%	3.4%	24.3%	0.1%
Metrobús (10-trips zone A)	83.1%	12.5%	0.0%	4.5%	0.0%
Suburban bus pass	0.0%	88.0%	0.0%	12.0%	0.0%

¹ Only sales of tickets sold at more than one distributor are compared

21,235,185 30-day and annual Travel Passes were sold in 2022, 33.8% more than 2021, with this growth being uneven between different types of ticket. Following the analysis of sales according to user type, what stands out is the considerable increase in the number of tickets purchased by senior passengers. Almost six million were sold in 2022, 52.8% more than the previous year. This sharp growth was down to the new fare reduction, €3.30 for a 30-day Senior Travel Pass.

General Travel Passes rose by 31.9%, improving on the trend seen in 2021 and mainly driven by the short-term price reductions in the last four months of the year. In the wake of the pandemic, multimodal ticket use by 26–64 year olds had significantly lower recovery rates than other multimodal ticket users. The Youth Pass, normally one of the first ones to bounce back and rise, was this time the ticket with the lowest evolution (26.2%), all within the high values registered.

On the other hand, Blue Card use went down by 0.9% because some users switched over to the Senior Transport Travel Pass, since a large percentage of Blue Card users are over 64. The shift started being seen in 2021, and this year it is even more pronounced.

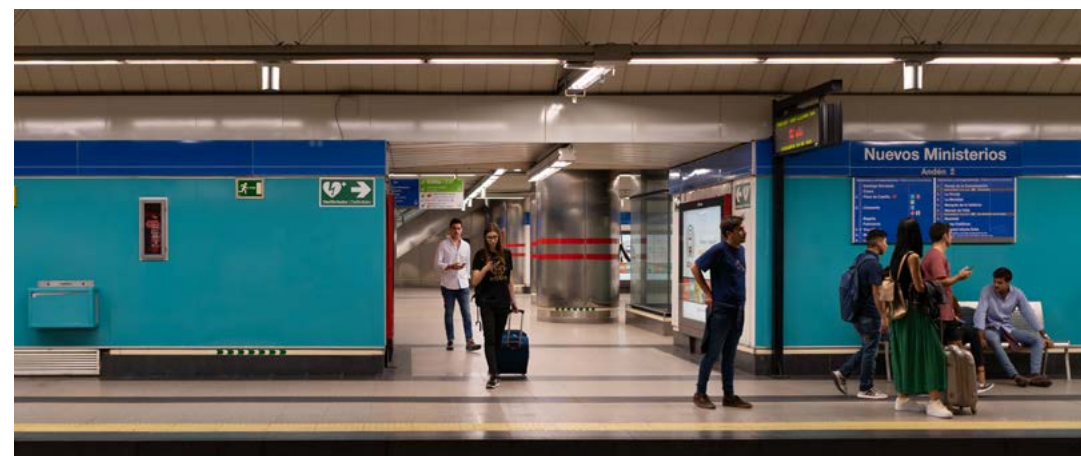


Post-pandemic, the percentage of general-profile users decreased by just over four percentage points and this relative weight has yet to recover, even though sales have risen sharply this year. In fact, in 2022, Senior Travel Passes went up by four points, due in equal proportions to the lower relative weight of purchases made by general and young users. Lastly, it is worth highlighting that the PAE (Employment Activation Programme) has been shelved which, in turn, has eliminated the sales of these tickets.

SALES OF THE TRAVEL PASS BY USER PROFILE

YEAR	Normal	Youth Pass	Senior	Blue Card	PAE	TOTAL
1990	3,404,593	1,260,108	599,477	-	-	5,264,178
1995	5,254,389	2,248,617	1,634,361	-	-	9,137,367
2000	7,732,219	2,079,622	2,647,205	-	-	12,459,046
2005	9,075,624	1,723,581	3,091,332	-	-	13,890,537
2010	8,386,456	1,724,270	4,102,935	377,426	-	11,591,087
2015	7,545,684	3,133,459	4,560,714	565,863	503	15,806,223
2016	7,243,501	5,794,760	4,662,945	594,615	4,669	18,300,490
2017	7,534,012	6,489,690	4,785,347	622,085	6,106	19,437,240
2018	7,838,161	7,001,096	4,909,269	646,393	9,597	20,404,516
2019	8,190,707	7,380,467	5,045,493	658,722	43	21,275,432
2020	5,144,388	4,666,184	3,106,657	449,053	3	13,366,285
2021	5,403,521	6,053,143	3,912,489	497,872	-	15,867,025
2022	7,125,611	7,638,706	5,977,678	493,190	-	21,235,185
% VAR. 22/21	31.9%	26.2%	52.8%	0.9%	-	33.8%

The evolution of sales by zones supplements the analysis with a regional viewpoint. However, it should be specified that, due to the significance of flat-rate fares, the zonal approach is limited exclusively to adult passes, which skews the comparison.



EVOLUTION OF THE SALE OF THE TRAVEL PASS BY ZONE

	zone A ¹	Zone B	Zone C	Interzone ²	zones E ³	Senior	Youth Pass	PAE	TOTAL
1990	2,742,169	1,828,803	93,729	-	-	599,477	-	-	5,264,178
1995	3,678,086	3,589,307	235,613	-	-	1,634,361	-	-	9,137,367
2000	4,150,359	5,273,279	388,203	-	-	2,647,205	-	-	12,459,046
2005	4,527,608	5,691,174	496,577	-	83,846	3,091,332	-	-	13,890,537
2010	4,918,640	4,696,330	438,939	354,046	80,197	4,102,935	-	-	14,591,087
2015	5,088,904	3,921,637	370,518	375,532	83,712	4,560,714	1,404,703	503	15,806,223
2016	4,215,656	3,060,871	264,507	238,352	59,366	4,662,945	5,794,124	4,669	18,300,490
2017	4,410,108	3,157,683	268,676	256,510	63,683	4,785,347	6,489,690	6,106	19,437,240
2018	4,604,066	3,269,086	279,270	263,051	69,081	4,909,269	7,001,096	9,597	20,404,516
2019	4,807,561	3,369,597	291,568	306,584	74,119	5,045,493	7,380,467	43	21,275,432
2020	2,975,468	2,141,625	198,597	183,531	46,601	3,106,657	4,666,184	3	13,318,666
2021	3,106,658	2,268,074	211,335	264,870	50,456	3,912,489	6,053,143	-	15,867,025
2022	4,016,141	2,718,908	506,174	307,694	69,884	5,977,678	7,638,706	-	21,235,185
% VAR. 22/21	29.3%	19.9%	139.5%	16.2%	38.5%	52.8%	26.2%	0.0%	33.8%

1 Includes Blue Card from 2007 onwards -

2 Passes B1-B2, B2-B3, B3-C1 and C1-C2

3 Zone outside the Community of Madrid, the scope of which includes part of Castilla - La Mancha

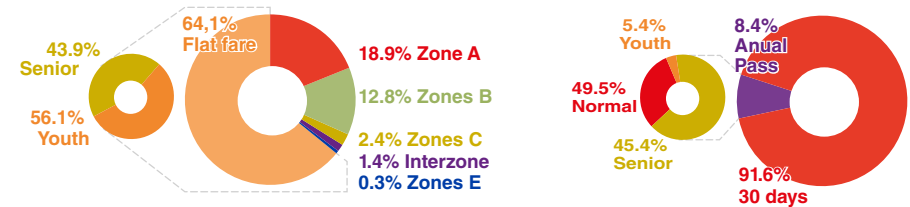
Because 62.8% of tickets are sold at a flat-rate, it is difficult to conduct a zonal analysis of Travel Pass usage. The zonal distribution of sales has remained practically invariable since 2016, coinciding with the apparition of the flat-rate Youth Pass at the end of 2015. Multi-zone ticket sales have skyrocketed in the last year, having fallen below average last year. Zone A, although still the most numerous and making up the majority of sales, maintains the same relative weight as in 2021, which had already decreased compared to previous years. Regional area C Travel Pass usage has more than doubled as a result of fare equalisation in zones B3, C1 and C2, where, when offered equal prices, users prefer to purchase the travel pass with the greatest territorial scope.

With a view to rounding off the zonal analysis, a distribution of Travel Pass users by area of residence has been conducted. The results show that, while most Normal Travel Pass and Senior users live in zone A, only 53.8% of young people live in Madrid. Despite the fact that 52.7% of normal profile tickets are zone A tickets, 68.3% of this group's users live in this zone, giving an idea of how many people commute from the central 'almond' and peripheral areas to the metropolitan and regional crown. 38.1% of young people live in the metropolitan area, which is double the number of those living in zones C and E when compared with the values for Senior Pass or general profile users. This distribution does not take into account that 0.6% of trips are by people who live the provinces bordering the Community of Madrid.

USER DISTRIBUTION BY AREA OF RESIDENCE

Area	Normal	Youth Pass	Senior
A	68.3%	53.8%	64.0%
B	28.2%	38.1%	32.4%
C	2.7%	5.8%	3.3%
E	0.8%	2.3%	0.3%

SALES OF THE TRAVEL PASSES BY PROFILE AND ZONE



The relative importance of annual passes compared to 30-day tickets declined in the wake of the pandemic and remained as such in 2022. Users who purchase the ticket as individuals, due to the uncertainty of events that could arise in the medium term, opted for shorter-duration tickets, even though they were compensated for the periods in 2020 when they were unable to use the ticket. Half of annual travel passes were sold to general-profile passengers while the other half was made up of senior passangers.





An average of 1.6 million 30-day tickets were sold per month, peaking in October when 2,045,435 30-day Travel Passes were sold. Monthly average values are in line with those recorded in 2019, which is clearly down to the discounts applied in the last four months of the year.

28.9% of people living in the Community of Madrid aged 7–84 are believed to have used a monthly Travel Pass on a monthly basis. The figure is even higher if we take into account the total number of different users who have purchased at least one Travel Pass; roughly 45% of the population purchased a personal ticket over the course of the year, whether it was a 30-day ticket or an annual pass.

Travel Pass use went up for all profiles; in 2022, users of youth, adult and senior passengers took 51, 68 and 25 trips per pass, respectively. The average number of trips by youth pass users remained virtually unchanged from 2021, while general-user trips went down (72 in 2021), as well as senior users (27 in 2021).

In terms of social tickets, in 2022 a total of 24.2% more were sold than in 2021, reaching a total of 2,278,298 among the different categories. Ticket sales to people with disabilities went up by 92.2%, exceeding the sales figures recorded in 2019 and previous years. Furthermore, large-family ticket sales were bought in record numbers since these discounts were implemented. This was a 52.3% increase compared to 2021. Nevertheless, as mentioned above, the downturn in Blue Card holders led to a decrease in sales, despite the discounts applied.

SALES OF SOCIAL TICKETS

	Large Family		Disability		Blue Card		Total	
	Sales	% of Total	Sales	% of Total	Sales	% of Total	Sales	% of Total
2010	358,286	45.5%	51,848	6.6%	377,426	47.9%	787,560	100%
2015	709,433	51.1%	112,468	8.1%	565,863	40.8%	1,387,764	100%
2016	975,660	57.8%	118,507	7.0%	594,615	35.2%	1,688,782	100%
2017	1,104,982	59.7%	122,720	6.6%	622,085	33.6%	1,849,787	100%
2018	1,203,418	60.9%	125,198	6.3%	646,393	32.7%	1,975,009	100%
2019	1,293,747	62.2%	127,380	6.1%	658,722	31.7%	2,079,849	100%
2020	805,240	60.7%	73,162	5.5%	449,053	33.8%	1,327,455	100%
2021	1,068,045	64.8%	82,318	5.0%	497,872	30.2%	1,648,235	100%
2022	1,626,882	71.4%	158,226	6.9%	493,190	21.6%	2,278,298	100%
% 22/21	52.3%		92.2%		0.9%		24.2%	

Tourism rose considerably in 2022 which had a knock on effect in terms of ticket sales, with an almost 2.7 times increase. This figure still falls short of 2019 sales of 740,000 tickets, but is a significant improvement after the downturn in the previous years. Furthermore, airport supplement sales rose two-fold compared to 2021, with a total of 3.3 million tickets sold.

In 2022, just over 7,800 tickets were sold to Madrid Destino to be integrated into Madrid City Card sales, in turn, playing its part in helping visitors to Madrid while encouraging them to move around on public transport.

It is worth highlighting the virtual lack of tourist ticket sales to be distributed among congress participants and those attending large-scale events, despite the fact that congress activity looked like it had bounced back in 2022.

SALES OF TOURIST TICKETS BY PROFILE AND ZONES

	Normal	Child	Conferences	Total
1 day, zone A	168,388	6,677	0	175,065
2 days, zone A	64,865	2,212	90	67,167
3 days, zone A	82,662	2,529	0	85,191
4 days, zone A	59,352	1,859	70	61,281
5 days, zone A	40,436	1,300	0	41,736
7 days, zone A	23,399	673	0	24,072
Total zone A	439,102	15,250	160	454,512
1 day, zone T	4,488	112	0	4,600
2 days, zone T	1,878	43	0	1,921
3 days, zone T	2,441	57	0	2,498
4 days, zone T	1,678	30	0	1,708
5 days, zone T	1,336	38	0	1,374
7 days, zone T	1,059	18	0	1,077
Total zone T	12,880	298	0	13,178
Total 2022	451,982	15,548	160	467,690
Total 2021	164,558	7,170	0	171,728
% 22/21	174.66%	116.85%	-	172.34%



5

Strategic lines



CRTM activity has a strategic side to it, the main objective of which is to achieve an integrated, efficient and high-quality public transport system that is environmentally friendly and universally accessible. In 2022, public transport system supply and demand kept recovering, even approaching pre-pandemic levels by the end of the year. At the same time, the development of the lines of work commenced in previous years has remained constant. These included the various relevant actions implemented in the network, the development and application of new technologies, as well as the creation and follow-up of various technical studies and the many projects promoted and participated in by this body.

5.1 Intermodality

The interconnection of the different modes present in the public transport system is evident in the infrastructures used for modal integration. These facilities allow for the different transport networks to be structured, facilitating intermodal mobility and connections with high-capacity modes, whether bus, light rail or Renfe-Cercanías railway, in an efficient manner and with added features for passengers.

a Interchanges

Based on the characteristics of their infrastructure, the main intermodal points are classified into three groups: interchanges, intermodal areas and points of interchange. Interchanges play a key role in accessing and dispersing metropolitan travel, whereas intermodal areas and other exchange points deal with urban travel. All in all, almost 16,000 suburban trips and more than 17,000 urban trips leave these locations each day.

There are up to twelve major metropolitan intermodal points located in the city of Madrid. Practically half of all trips by public transport throughout the region pass through one of these large nodes. Signs of recovery in the mobility sector trickled down to demand at Madrid's major interchanges in 2022, which, by the end of the year, had bounced back to 95% of pre-pandemic passenger numbers.



SUPPLY AT THE MAIN INTERMODAL POINTS

	Metro and light-rail lines	Cercanías lines	Suburban bus lines	Urban bus lines
Atocha	1	10	3	18
Nuevos Ministerios	3	9	-	11
Sol	3	4	-	-
Avenida de América	4	-	12	11
Moncloa	2	-	50	19
Príncipe Pío	3	3	23	13
Plaza de Castilla	3	-	33	22
Chamartín	2	9	3	2
Legazpi	2	-	9	20
Aluche	1	1	17	8
Plaza Elíptica	2	-	11	9
Conde de Casal	1	-	15	8

b Promoting the use of bicycles

Bike usage as part of day-to-day mobility has risen sharply in the Community of Madrid over the last number of years, which is why the CRTM has taken several measures to promote bikes as a complementary form of public transport in the region. In 2022, the continued rise in bike use as well as other personal mobility vehicles (PMVs) for all types of mobility, including work-related mobility, was observed. This positive context invites us to continue and strengthen the integration and intermodality projects already launched in previous years as well as to participate in forums on this subject.

Use of the Public Transport Card ('PTC') in public bicycle systems

The operational approaches were upheld in 2022 to ensure the integration of the CRTM Public Transport Card and Multi Cards and the application of benefits or discounts for their users in the public bicycle systems of the Community of Madrid, using compatible, contactless technology.

At the turn of 2022, the number of BiciMad users in the capital kept rising, although there are already reports of a change in the anchor points, bikes and management system for 2023. It is still worth highlighting the large percentage of users of this system that used one of the CRTM contactless cards as a key to unlock a bike.

Bicycle Parking Network (REB Plan)

In 2022, the REB plan maintained its around 200 bicycle parking spaces distributed across 26 different points of the underground, light-rail, interchanges and suburban bus shelter network. REB parking spaces are located at points with good accessibility for cyclists and that facilitate modal exchange between bicycles and public transport. Some bike parking facilities in stations such as Moncloa or Colonia Jardín have been used intensively.

Cycle Route Network (RIB Plan)

This comprises a descriptive inventory, identifying possible actions to improve cycling routes to offer safety, speed and accessibility when travelling to or from public transport stations, along with a range of leisure and sporting routes. The feasibility of new cycle routes was maintained in 2022, holding meetings with technicians from town councils interested in these types of actions. Furthermore, the Poveda bridge for cycling and pedestrian use was inaugurated following a restoration project put forward by the CRTM as part of the Tajuña green route.





5.2 The CITRAM

In 2022, the Centre for Innovation and Public Transport Management of the Community of Madrid, CITRAM, has recovered its pre-Covid-19 service levels, offering a quality service to citizens by integrating real-time information on the infrastructures and services of the different modes of transport operating in the Community of Madrid.

The following are worth highlighting from the different initiatives carried out by this centre:

- ▶ Special monitoring, analysis and verification of all measures taken in the public transport system to manage the Covid-19 pandemic in 2022.
- ▶ Special real-time monitoring of scheduled events, such as the Christmas and Epiphany parades, NATO Summit, Mad Cool, MADO, Rolling Stones concert, EvAU exams, as well as different sporting events such as the Madrid Marathon, Mutua Madrid Open, Women's Race or the Vuelta Ciclista a España. The different demonstrations and races that took place over many weekends throughout the year were also monitored. The aim was to provide a quality and safe transport-system service.
- ▶ Monitoring and analysis of temporary suspensions to carry out infrastructure improvements on metro lines 5, 6, 7 and 8.
- ▶ Improvements to CITRAM's operational applications to streamline the day-to-day work of the centre's operators, as well as improving communication with transport operators. These include rolling out new and improved version of the GEIS (incident manager) tool.
- ▶ Functional improvements to the reporting website: obtaining and managing fleet reports by vehicle registration number and kilometres covered by suburban concessions.

5.3 Innovation and Training Centre

The Sustainable Mobility in Public Transport Innovation and Training Centre was launched in 2019 by virtue of a collaboration agreement signed between the CRTM and the UITP, aiming to facilitate compliance with its purposes and powers, the sharing and disclosure of its actions, training activities in the field of public transport and sustainable mobility, the promotion of innovation and practices of excellence, and any other actions considered to be of public interest within this scope. This constitutes the first centre of this nature in Europe and America, joining two UITP Regional Training Centres already in existence in Singapore and Dubai. The term of the Agreement ended in May 2022, pending renewal if both parties are interested in renewing it.

In order to develop its activities, a number of strategic strands have been defined, such as smart transport planning and management, mobility as a service (MaaS), energy sustainability, electric, autonomous and connected mobility, new fuels and universal accessibility. In 2022, the CRTM signed new partnership protocols with companies and organisations, 66 of which have been signed since the Centre's creation. It is worth highlighting the renewal, in October 2022, of the agreement signed by the CRTM with the Directorate-General for Traffic, the Autonomous University of Madrid and the company ALSA, for the launch of a loop line within the university campus operated by means of an autonomous bus, the first of its kind in Spain, to be put into operation at the turn of 2020. Other projects developed from the innovation centre during 2022 have included:

- ▶ **Second wave of BUS-LAB projects**, a laboratory bus that brings together all innovations in a single bus with improved operation and user comfort, used as a showcase, not just in terms of innovation, but also with a view to continuously improving customer service. In this second wave of projects, the "Driving Assistance" pilot project was tested and the real-time bus occupancy system started being implemented into CITRAM, providing occupancy levels on the variable messaging panels at CRTM stops. Other projects include the "Virtual traffic-light priority project" in Leganés, the "New WhatsApp communication channel" and the latest "Digital guidance system to guide visually impaired people at several suburban bus stops".





- ▶ **“Infrared bus-stop occupancy estimation project”** to design and implement a system to analyse the number of passengers at bus stops to provide real-time status monitoring.
- ▶ **Project to install three** electric-vehicle charging points in the underground car park of the Complutense University of Madrid.
- ▶ **“Driver-configurable active signage project”** with a view to implementing configurable electronic signage on which the bus driver can provide useful service-related information to users, such as the current time or the time remaining until the service commences, as well as the possibility of letting passengers know which line the bus is going to operate on. They can also display emergency messages, and at a later stage even messages usually displayed on DGT-operated road signage.
- ▶ **“Monitoring and dissemination project of the GEOBATT project in the Moncloa interchange”**, strives to develop a new energy technology to supply air-conditioning systems in buildings, by hybridising underground energy use (low-enthalpy geothermal energy) with the storage of electrical energy via flow batteries.
- ▶ **ZEV testing** (Zero Emission Vehicles) at a number of CRTM concessions, where electric buses and hydrogen-fuel-cell buses were tested.
- ▶ **“Project to validate and pay for public transport tickets using Bluetooth beacons”** that entails implementing an automatic and remote Bluetooth validation system to read and verify validations. The user’s mobile phone is the information sender and the receiver is the *beacon* installed on the bus, which reads the ticket information and confirms that it is valid.
- ▶ **“Project to foster multimodal public transport information in universities”**, strives to implement a real-time public transport

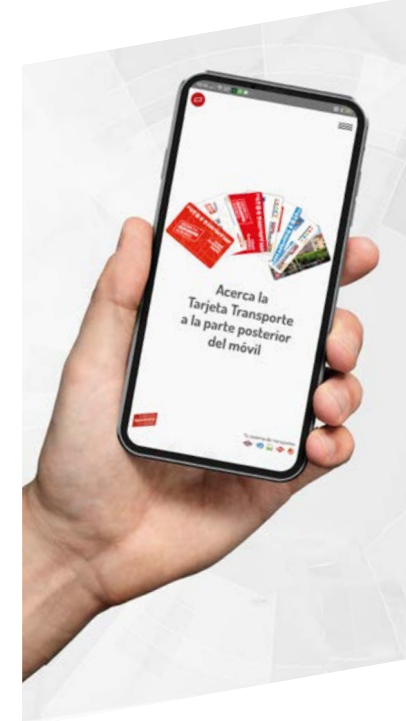
Multimodal Information System outside the scope of a Public Transport facility, in this case the Francisco de Vitoria University.

- ▶ **“Free battery sharing project for light rail line 1 station passengers”**, that strives to implement a free mobile-phone battery lending system for public transport passengers, being rolled out on Madrid’s light rail line 1.

5.4 The new technologies

In 2022, the Consorcio Regional de Transportes continued to undertake projects focused on improving and/or implementing new transport technologies. The key lines of action are as follows:

- ▶ Continuation of the public transport card virtualisation project, to be partially rolled out in 2022. This project will make it possible to use mobile phones as a way to access the public transport system.
- ▶ Continuation of work on incorporating specific aspects of the fare system not covered by the universal offer.
- ▶ Further development of a Business Intelligence/Big Data system with a view to improving knowledge and management of the transport system by exploiting data on supply, demand, etc.
- ▶ Developing, evolving and supporting the IT tools associated with the CRTM’s BIT system (Smart Transport Ticketing). The contract covers the two lines of software development inherent in the aforementioned system: collection and consolidation by CRTM of all the transport card-generated information across the Community of Madrid, and controlling each transport card, which provides financial-commercial information as well as assisting passengers.
- ▶ Execution of the contract, entered into in 2021, entitled “Maintenance and functional improvements to the CRTM web portal. (2020-2023)” the purpose of which is to evolve and carry out corrective maintenance on the aforementioned Portal, as well as to add new functionalities that ensure the quality of the information provided.
- ▶ Development of a multi-modal journey planner.
- ▶ Start-up will continue on the new CRTM Data Processing Centre in the Madrid Digital facilities in Tres Cantos.





5.5 Relevant activities

a. Special public transport mechanisms

2022 saw a full recovery of the social, cultural and sporting industries that Madrid is renowned for, after two years of restrictions and anti-covid measures in place in the wake of the pandemic in 2020. Things went back to the way they were before the Covid-19 pandemic with large-scale events being held once again such as football matches and concerts with no restrictions on capacity, not to mention large-scale events that had been repeatedly postponed for health reasons.

Therefore, the Consorcio Regional de Transportes de Madrid oversaw the planning and coordination of special public transport measures, working closely with event organisers, transport operators and other stakeholders. These measures included strengthening the offer and number of staff on multiple metro and EMT lines, implementing special bus shuttles, night services and route diversions as a result of traffic disruption, carrying out campaigns to foster public transport and publishing specific access maps for the city's public transport network. All events were overseen by the CRTM's Integrated Public Transport Management Centre (CITRAM). The events in the city of Madrid were held in collaboration with Madrid City Council to weigh up the mobility plans put forward by the organisers as a condition to them being

given the green light by the Madrid City Council. Throughout the year, the mobility plans for a total of 66 festivals, sporting, artistic and/or socio-cultural events that would have a considerable effect on the general mobility in the city were weighed up with a view to ensuring that attendees could get to these events safely.

Some of the highlights included the Mutua Madrid Open tennis tournament, the 18th Women's Race, the celebration of Real Madrid C.F.'s Champions League victory, the Madrid Pride events (MADO 22), music festivals such as Mad Cool or the Coca Cola Music Experience, events to celebrate National Hispanic Heritage Day or the final stage of the Vuelta Ciclista a España (Tour of Spain).

A special public transport reinforcement plan was implemented over the Christmas period in the region to respond to the increased mobility at this time of year. As part of this campaign, special public transport measures were put in place for the traditional San Silvestre Vallecana race, the Epiphany parades and for the Articus Christmas fair, held at the Casa de Campo fairgrounds.

It is also worth highlighting the special measures put in place for the NATO Summit held in Madrid between 28 and 30 June 2022, where more than 40 international delegations, with their respective Heads of State and their Foreign and Defence Ministers, came together in the capital. The Summit was held in the IFEMA Trade Fair Centre.

Over the course of the summit the general traffic and over-ground public transport networks were repeatedly disrupted and at times streets and access roads were blocked as the official motorcades passed through. In an attempt to prevent mobility in the city from being brought to a standstill, alternative lines and modes of transport were offered, with people being urged to use public transport instead of private transport and free rides on EMT buses being offered during the three-day Summit.

Furthermore, at the President's request, a special EMT shuttle service was put in place that ran from the Mar de Cristal station to IFEMA's Puerta Norte to transport IFEMA and organiser staff and for media covering the event.

b. aParca+T Park-and-Ride Plan

"aParca+T", the Strategic Plan for Modal Interchange Car Parks of the Community of Madrid, drawn up in 2018, is an ambitious long-term plan that strives to foster the use of public transport and intermodality through a network of smart car parks, with the CRTM unifying the management thereof while making them free for users whenever combined with public transport. The objective is to provide the existing network with a homogeneous image and conditions of use, extending this network with new spaces and facilities, with more than 90 car parks planned and more than €200 million earmarked for investment.

"La Estación" in Colmenar Viejo, the network's first car park in the network, was launched in 2019 as a pilot scheme with a view to implementing the technological platform that would go on to form the basis for the future "aParca+T" network, striving to detect real needs and demand in order to, further down the line, duly set out the definitive characteristics and conditions that the future management platform would require.

In 2021, three other APARCA+T Network pilot car parks were launched in the city of Madrid: Avenida de Portugal, Nuestra Señora del Recuerdo and Estadio Metropolitano, in accordance with a collaboration agreement entered into between the Empresa Municipal de Transportes de Madrid (EMT) and the Consorcio Regional de Transportes de Madrid to carry out a pilot project that offered public transport users free access to three public car parks as an interchange hub in the municipality of





Madrid. Furthermore, the El Casar car park in Getafe was included in the Construction Project to extend metro line 3, which is already underway. The service is expected to become part of the APARCA+T Network by 2024.

On 31 January 2022, the Ciudad Universitaria car park was officially inaugurated as a pilot car park in the APARCA+T Network. A new agreement was drawn up and signed with the Complutense and Polytechnic Universities of Madrid to govern the use of the parking spaces for the APARCA+T Plan.

Likewise, in 2022, an agreement was reached with Renfe Cercanías to incorporate several modal interchange car parks on the A-6 corridor into the APARCA+T Network, currently operated under concession by Renfe Cercanías. These are the car parks in Las Rozas, Pinar de las Rozas, El Barrial and Las Matas.

c. The A-2 Bus-HOV lane

With regard to fostering reserved lanes to access Madrid, in 2022, the CRTM worked in close collaboration with the Ministry of Transport, Mobility and Urban Agenda, the Directorate General of Traffic and the Madrid City to sign Addendum number 2 to the Agreement signed and to set up the Agreement Monitoring Commission to execute the “Project to Improve the accessibility of public passenger transport to Madrid, Bus-HOV lane on the A-2, entrance and exit”, comprising three phases; the first two relating to the entrance lane and the third to the exit lane.

The proposed solution consists in reserving the left-hand lane of the highway entering and leaving Madrid for buses, motorbikes and vehicles with two or more occupants (HOV) during rush hour. The inbound lane will have a reduced number of boarding points and users will need to remain in the lane until its end in Madrid (Avenida de América). Several boarding and exiting points will be available in the outbound lane. In order to properly operate the reserved lanes, a series of ITS devices will be installed (variable signage panels, marker lights, cameras to read registration numbers, etc.) to allow for real-time management.

This represents a very low-cost solution in comparison with reserved platforms, and with the additional advantage of allowing flexible management of the entire infrastructure, making it possible to adapt to the conditions of each section and to temporary incidents. The estimate is that this initiative will benefit a total of 11.2 million passengers per year, corresponding to the 40,000 passengers along the corridor who would use the Bus-HOV lanes each day, with the average travel time saving compared with current figures being estimated at around 7 minutes, although this could range from 15 to 25 minutes for those passengers travelling a greater distance along the lanes. This is a low-cost project in

terms of investment (€13 million), but has major social and environmental repercussions. The main aim is to reduce the number of private vehicles, encourage public transport and shorten trip times, as well as reducing pollutant atmospheric emissions. As this is a pilot scheme, if all goes well and the results are positive, it could be rolled out on other routes leading into the city of Madrid over the coming years.

d. Improvement work on the underground network

In 2022, a number of projects were carried out on the metro network with a view to improving the quality and safety of the public transport service in the city. These led to temporarily suspending some sections on lines 5, 6, 7, 8 and line 7b.

To make up for the lack of public transport between the affected stops, the CRTM offered a number of special bus service, with over-ground routes and frequencies that matched those of the metro, at no additional cost to users. Furthermore, complementary metro lines were also strengthened to deal with the increase in passenger numbers.

Therefore, from 13 February to 27 May, the Pinar del Rey station on line 8 was closed with no service running between the Colombia and Mar de Cristal stops due to renovation and consolidation work being carried out on the tracks. To make up for this, an alternative transport system was put in place between these stations, operated by the EMT, with 10 buses running every 3–4 minutes.



Similarly, line 5 was closed between Oporto and Aluche, also due to issues with the track. From 26 February to 12 March, work was carried out to consolidate and strengthen the ground under the track. An 18 buses special EMT service ran every 2–3 minutes to ensure user mobility.

There was no service running on line 6 between 30 July and 9 September on the section between Sainz de Baranda and Nuevos Ministerios due to improvement works being carried out in four stations: Avenida de América, Diego de León, Manuel Becerra and O'Donnell. Asbestos removal and other complementary renovation and accessibility improvement works were carried out. To mitigate the impact on users, an alternative EMT 20-articulated bus service running every 3–5 minutes was put in place.

Also, on 24 August the service on line 7b between San Fernando and Hospital de Henares was suspended for an indefinite period due to work being carried out to strengthen the infrastructure and the ground in order to guarantee its stability. To make up for this, the CRTM added the suburban lines 280, 281, 282, 283, 284, 288, 289, and the San Fernando de Henares urban line 1.

At the end of the year, work needed to continue on removing asbestos as well as improving and maintaining the facilities at the Avenida de América station. Therefore, between 3 and 18 December, metro line 7 service was out of service between Cartagena and Gregorio Marañón. For these two weeks, Gregorio Marañón and Cartagena were the first stops on their respective lines. The special service put in place ran between Cartagena and Avenida de América with 4 buses running every 5–6 minutes.

In total, nearly three million passengers availed of the special services put in place by the CRTM while work on the different metro lines was being carried out.



Finally, it is worth highlighting that, in April, the improvement and modernisation works came to an end in the Cuatro Caminos stations that commenced in 2021 and which had no effect on train circulation. This renovation was mainly carried out on the main foyer and the distribution corridors on lines 1 and 2. Cladding, installations and obsolete technology were replaced and drainage and sanitation systems were upgraded. The icing on the cake was the station's decoration with murals that pay homage to the history of the underground as well as bringing back the totem pole at the station entrance after 85 years.

e. Measures to support the Ukrainian community

2022 was marked by the Russian army's invasion of Ukraine. This war led to a mass exodus of Ukrainian citizens who sought refuge across Europe. Spain collaborated closely with the international community to help and take in people fleeing the armed conflict, with the capital being one of the main points of entry into the country. The Community of Madrid adopted a number of measures transport-related actions to support Ukrainian refugees coming to the region.

On the one hand, the Isabel Zendal Hospital, not far from the airport, was set up as a primary healthcare centre and a gateway for the refugees. Furthermore, here they could get free Public Transport Cards to use the CRTM transport services. These cards were valid for 15 days, extendable for a further 15 days.

On the other hand, the government set up a Refugee Reception Centre in Pozuelo de Alarcón where they processed the arrival of approximately 450 Ukrainian refugees per day. From here, accommodation was arranged and the necessary paperwork was processed to grant them temporary residence in Spain.

As it was not easy to get to and from the two aid centres on public transport, a special EMT service was put in place to make it easier to get to and from the centres. It ran on the hour every day from 28 March until 15 August from 9:00 to 21:00.

In summer, the special service was no longer needed due to the dwindling number of refugees so the Pozuelo de Alarcón Reception Centre was moved to the centre of Madrid where there was no shortage of public transport services.



5.6 Universal accessibility

In 2022, the CRTM continued its regular initiatives to promote accessible mobility for all citizens, from ensuring compliance with the accessibility regulations in force to fostering best practice in this regard. The following actions stand out in this area of universal accessibility:

- ▶ Participation in the Council for the Promotion of Accessibility and Removal of Barriers of the Community of Madrid.
- ▶ Online video interpreting service in sign language for the deaf and hard of hearing, located in the CRTM's customer service offices.
- ▶ Development of a Framework Agreement with SECOT (Spanish Seniors for Technical Cooperation) to foster activities geared towards encouraging older people to be more active within the scope of public transport.

Furthermore, throughout 2022, the actions geared towards complying with Royal Decree 1544/2007 and Decree 13/2007, on accessibility to means of transportation for people with disabilities, have been consolidated with regard to urban and suburban bus transport stops in the municipalities of the Community of Madrid.

Actions such as laying tactile paving surfaces around the stop to guide blind and partially sighted people, providing information on the location of the stop, as well as making the wait for people with reduced mobility more comfortable via new seats with armrests and ischiatic support for people who have difficulty sitting down. Similarly, work has been carried out in close collaboration with local councils, to get rid of barriers between the bus stop and the roadway by means of platforms or docks.

Metro de Madrid has continued rolling out its 2021–2028 Accessibility and Inclusion Plan, with a view to ensuring that 84% of its stations are fully accessible by the time the plan is fully implemented. This €332-million plan encompasses 24 stations, in which 103 lifts are to be installed.

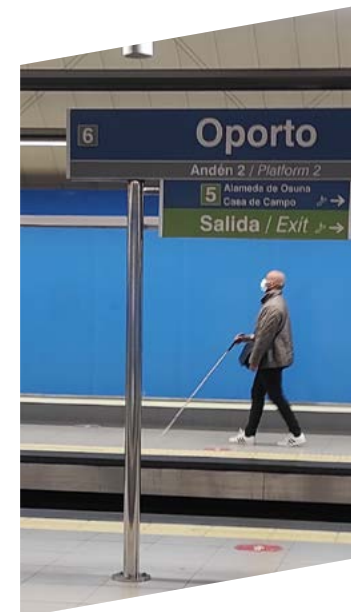
ACCESSIBILITY OF PUBLIC TRANSPORT MODES (31 December 2022)

Accessible Metro de Madrid stations -> **70%**

Accessible light-rail and other railway-concession stations -> **100%**

Number of Metro de Madrid lifts -> **558**

Accessible city and suburban buses -> **100%**





5.7 The environment

The CRM continues to uphold a firm commitment to the environment, and is one of the main players responsible for implementing the measures envisaged regarding public transport in Madrid in the "Strategy for Air Quality and Climate Change of the Community of Madrid. Plan Azul +", highlighting its work as a member of the Air Quality Section of the Environment Council of the Community of Madrid and of the Task Force responsible for the implementation of the protocol of measures to be adopted during episodes of high nitrogen-dioxide pollution in the city of Madrid.

In the field of environmental sustainability, and in application of the Modernisation Plan for suburban buses in the Community of Madrid, one of the main measures was the incorporation of new cutting-edge vehicles in terms of atmospheric emissions to replace older models with less evolved technologies, which were therefore more polluting. The total number of vehicles renewed in 2022 was 143.

With the renewal complete, more than 83% of the fleet providing regular public transport services for suburban passengers in the Community of Madrid fulfils the most demanding levels established in the Euro VI standard, almost meeting the levels corresponding to the Euro V or EEV standards. In this way, the Madrid suburban fleet is among the country's most modern, with an average age of 5.6 years.



As for EMT's rolling stock, we have stuck to our commitment to renewing vehicles, by incorporating 354 new natural gas and electric vehicles. Following the withdrawal of the last diesel vehicles as of 31 December 2022, the EMT has been operating a 100% clean bus fleet in accordance with European fuel standards for urban transport. The number of "zero-emission" electric vehicles rose to 180, accounting for 8.6% of the total. On the other hand, average fleet age was reduced to 4.8 years.

CHARACTERISATION OF BUS FLEETS

By emissions regulation (EU Directives)

	Euro VI	Euro V/EEV	Euro IV	Euro III	0 emissions	TOTAL
Urban buses of Madrid (EMT)	1,512	398	0	0	180	2,090
CRTM Road concessions	1,720	349	0	1	5	2,075

By type of fuel

	Diesel	Natural gas	Natural gas/diesel	Hybrid	Electric	Hydrogen	TOTAL
Urban buses of Madrid (EMT)	0	1,896	0	14	180	0	2,090
CRTM Road concessions	1,412	253	4	401	4	1	2,075

5.8 Service quality

The CRTM understands that service quality should be user-centred. Therefore, quality and customer service are addressed by the Consortium together. This ensures that user expectations and satisfaction play their part and are compared with the criteria and indicators adopted when measuring service quality and adopting improvement initiatives. In recent years, control and supervision procedures have been refined for the different operating, supply and service contracts and the service provided by the different transport operators. This involves developing and measuring quality indicators in accordance with objectives in line with the demands of users and those established contractually with these operators.

The service is monitored and controlled using in-house resources, through the body's inspection team, as well as by contracting technical support who develop specific measurements and studies. The work performed directly by inspection staff exceeded 6,300 hours of effective inspection work in 2022. This work involves actions to check legal obligations, oversee studies and to keep on top of assessment indicators. To achieve greater development and depth in the evaluation of various indicators, specific work is outsourced.



Perception studies of different modes of transport and analysis of complaints and suggestions received are used to incorporate and compare the user perspective. Perception surveys for each mode of transport provide an overview of customer expectations and their level of satisfaction therewith. Meanwhile, an analysis of the complaints and suggestions received serves to focus and weigh up specific issues, by subject-matter, mode of transport, operators or even line, identifying aspects for strategic or short-term involvement, as applicable, and incorporating swift improvements.

Furthermore, throughout the year, CRTM conducted more than 9,711 surveys on users of the public transport system of the Community of Madrid in order to ascertain their level of satisfaction with the service.

The different studies conducted across the respective modes of transport reveal an overall average rating of 7.9/10 for the modes of transport that make up the Madrid network as a whole. The overall score is derived from the general rating given to the service by each survey respondent.

Mode of transport	OR
EMT	7.98
Metro	7.86
Suburban/urban other municipalities	7.77
Metro Ligero Oeste	8.28
Cercanías Madrid*	7.34
Tranvía de Parla	7.90
Average	7.90

OR: Overall Rating.

- EMT, Suburban and urban-related data in other municipalities come from studies directly overseen by the CRTM.
- The data relating to metro, Cercanías Madrid, Metro Ligero Oeste and Tranvía de Parla have been provided by the respective operators who have overseen the corresponding studies.
- (*) The data shown for Cercanías Madrid corresponds to the Perceived Quality Index, obtained by aggregating the quality attributes weighted by importance.



In addition, the extensive network of in-person support offices, as well as telephone and online information services, are an additional element of great utility in relation to service-quality control and the early detection of anomalies, especially in terms of issues relating to tickets and cards. In 2022, 1,950,000 people were attended to in person and just over 1,200,000 by telephone or online, representing a total of 3,150,000 customer-service interactions.

5.9 Studies

The studies and projects carried out by the CRTM correspond to the functions and objectives of this body's different areas of activity in fulfilling its responsibilities.

a. Planning and execution project for the Conde de Casal Transport Interchange

In 2022, the development of the basic and execution project for the Conde de Casal Transport Interchange (both following the BIM* methodology) was completed, which also includes the associated documentation for the subsequent tender for the service concession contract.



* Building Information Modelling (BIM) is a collaborative working methodology to create and manage a construction project.



This transport infrastructure, planned by the Consorcio Regional de Transportes in the 2004–2007 Interchange Plan, resolves the intermodal connection between lines 6 and the future line 11 of Metro de Madrid, the suburban lines into Madrid via the A3 Valencia road corridor and the EMT lines with their railhead at Conde de Casal.

The interchange will have a built surface area of 7,547 m², 13 platforms serving 12 suburban lines and 3 EMT lines, and is estimated to be used by 63,500 passengers daily.

This strives to improve the passenger experience on the public transport network by cutting down on travel and interchange times, making it safer more comfortable, accessible and inclusive, through a sustainable design that integrates with the surrounding urban space.

From an environmental perspective, the project cuts down on the acoustic impact of the buses to a minimum and prioritises the infrastructure’s self-consumption using photovoltaic energy and geothermal energy. Furthermore, the project is an example of sustainable architecture, having been awarded the BREEAM exceptional category environmental certification in the design phase.

b. Study of the design of the Public Transport System in south-eastern Madrid

The purpose of the study is to put forward, evaluate and choose different types of public transport that adequately respond to the significant number of urban developments in the south-east of the municipality of Madrid, with a view to fostering public transport and planning sustainable mobility in these developments as they are brought to life.

This study covers almost 5,800 hectares, accounting for almost 10% of the total area of the municipality of Madrid, and comprises the following large urban development units: Nueva Centralidad del Este, El Cañaveral, Los Cerros, Los Ahijones, Los Berrocales, El Ensanche de Vallecas and Valdecarros

Different public transport options have been looked into for this area: new suburban line to Mejorada del Campo, extension of metro line 2, BRT (Bus Rapid Transit), light rail lines, express bus and conventional bus lines and new metro stations on existing lines. 16 different public transport solutions were put forward and evaluated with a view to being implemented by 2050, when all areas should be urbanised.

The proposal also takes into account the corresponding modal points of interchange, interchanges and park-and-ride facilities, with a view to coordinating these options together and with the rest of the transport network.

The possibilities studied point towards a proposal based around the existing metro network running through the area, with the addition of bus lines that have the capacity to meet the future mobility needs of these developments.

c. Verification studies for indicators established in the suburban transport Quality Plan

The data used to monitor and control the Quality Plan for suburban road transport in the Madrid Region comes from a range of different sources. Systematic service operation records, audits and control mechanisms based on specifically contracted studies are used. In 2022, different measures were undertaken with external support to check the telephone support and online information services provided by transport operators, the functioning of dynamic passenger information points and various aspects regarding the cleanliness and upkeep of vehicles, as well as how comfortable the vehicles are and the information provided by the driver via the mystery customer.



5.10 European projects



Since its creation, the CRTM has participated in various European projects focused on research and technological development in the field of transport and mobility, fostering cooperation and the exchange of experiences with its European counterparts.

As part of the Horizon 2020 programme, the European SCALE-UP **“User-centric and data driven solutions for connected urban hubs”** project kicked off in mid-2021, in which three major urban hubs [Antwerp (Belgium), Madrid (Spain) and Turku (Finland)] started working towards a common goal: to develop data-driven, user-centric strategies for clean, inclusive and smart mobility through multi-use and well-connected urban hubs that reach the levels needed to meet European climate and transport targets. This will be achieved by rolling out 28 scalable mobility solutions to be developed within the participating cities, 8 of which will be in Madrid.

Within the project, the CRTM shall oversee the implementation of measures related to improving and putting in place new and effective forms of governance, integrating park-and-ride with public transport, integrating data and MaaS (Mobility as a Service), while managing major multimodality-focused events.

To carry out all the work, roughly €9 million has been earmarked, co-financed by the European Commission, with a view to getting the 48-month project off the ground.

More information at www.scale-up-project.eu/

3 stunning cities.

3.9 million active citizens.

28 urban mobility strategies.

23 committed partners.



On the other hand, October 2022 saw the commencement of the SUNRISE project, **“Strategies and Technologies for United and Resilient Critical Infrastructures and Vital Services in Pandemic-Stricken Europe”**, to facilitate close collaboration between European Critical Infrastructures (CIs) and help them to be better prepared and equipped to properly assess and manage future risks in the wake of pandemics. It will develop access control, remote inspections, and demand forecasting technologies and tools to handle these situations. The project focuses on the health, water, energy, digital infrastructure and, in the case of the CRTM, transport industries, and will roll out a pilot for each of them.

To carry out all the work, the 36-month project has 41 partners from 15 countries and a budget of €11.6 million, co-financed by the European Commission.

More information at www.sunrise-europe.eu/

6

Citizen relations



In 2022, the CRTM kept up its fundamental work as coordinator of user information, rolling out communication campaigns and actions with a view to getting demand levels back to pre-Covid-19 pandemic figures.

The CRTM institution website and the multitude of communication campaigns carried out were the most important elements in this mission.

Customer service and, in particular, the Management Offices, which are a direct point of contact for users, are of utmost importance when it comes to providing a comprehensive and high quality service.

6.1. User information

a The website www.crtm.es

The CRTM corporate portal (www.crtm.es) is the largest source of information on the public transport system of the Autonomous Region of Madrid thanks to the constant work in updating its contents (service modifications, new developments in transport network design, maps and publications, etc.). Proof of this are the visits received by the website, more than 15.3 million in 2022, as well as the more than 15.0 million visits to its public transport card management module (<https://tarjetatransportepublico.crtm.es/>).

With regard to the website, great lengths have been gone to with a view to providing the media with information on the most notable actions being carried out by the institution and all its latest news. To this end, during 2022, the institutional website published 101 press releases and 956 warnings, with their respective photographic support.

b The “Tarjeta Transporte” app

The mobile travel card top-up app, that commenced beta testing in 2019 with 500 users, was extended throughout 2020 to more than 50,000 users and then became publicly available in July 2021 for Android and in September 2022 for Apple. The app currently being tested allows users to top-up transport tickets on their card under the same conditions as any other distribution network (tobacconists, etc.), topping up transport cards, whether personal (PTC) or Multi, via mobile. Furthermore, the number of transport cards that may be used with each mobile phone is unlimited, with each card being topped-up separately.

This app has proven to be extremely useful; almost 410,000 active downloads by the end of 2022.

c The Open Data portal

With the aim of spreading information about the Community of Madrid’s public transport system, over the course of this year, the CRTM continued with its roadmap for progress in its open-data policy. This is a pioneering initiative in the Community of Madrid, the fruits of which can now be seen in the CRTM Open Data platform (<https://datos.crtm.es>); in the re-use of this information by companies, non-profit organisations, universities and the entire general public; and in the Multimodal Mobility Portal (<https://datos.crtm.es>), published within the operational context of the European CiViTAS ECCENTRIC project, a portal allowing users to explore and download mobility data, discover and create applications, and involve others in resolving major problems connected with mobility and transporting people.

These data generated by the CRTM are being used as a raw material, providing value-added services and innovative products to citizens.

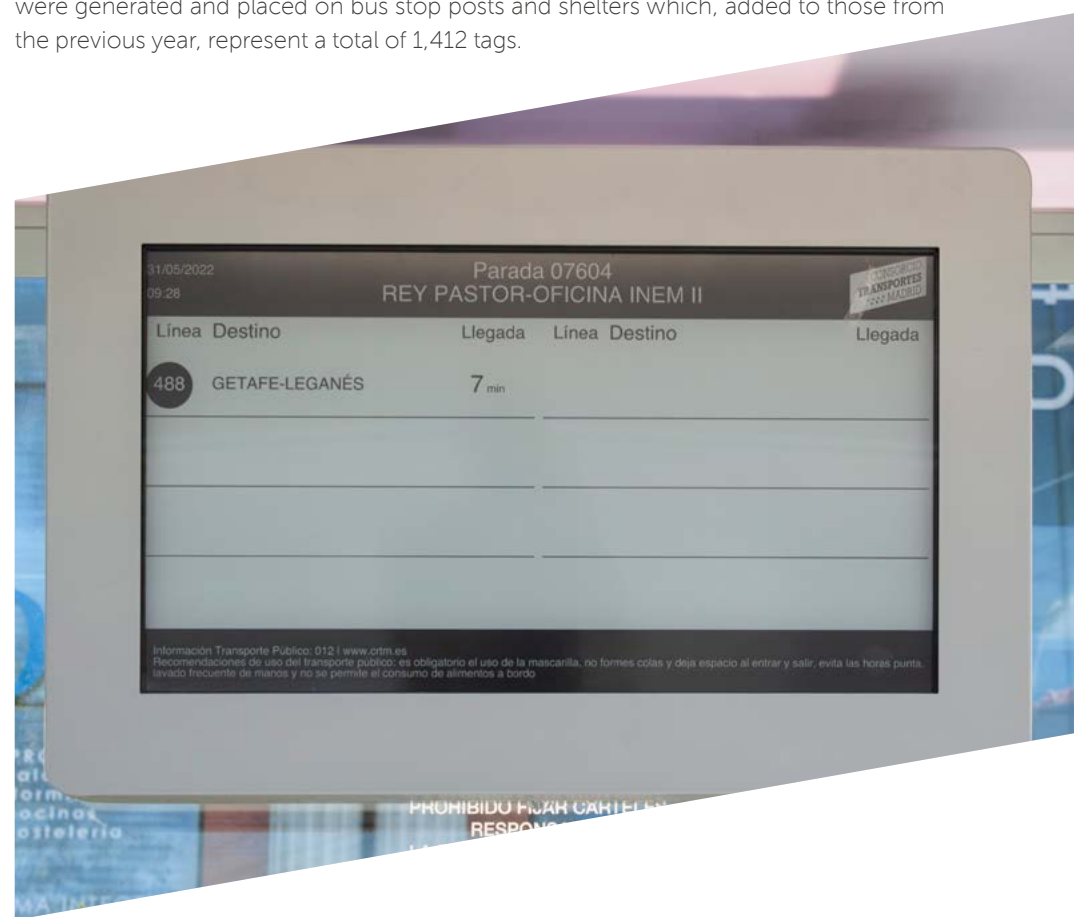
d Information at stops

Providing real-time user information at bus stops is of the utmost importance when it comes to keeping up to date with any possible incidents or delays in the service and improving their travel experience.

“Pide Tu Bus” is a smartphone “Stop on Demand” bus service installed at a bus stop in Valdemorillo, through which “Pide Tu Bus” users inform buses that they are waiting at the stop so that they can pick them up. To do so, they can scan a QR code or send an SMS, which will alert vehicle drivers of the need to stop at that point, while the system informs users of the waiting time for the service to arrive. In 2022, nearly 9,100 requests for the service were received, 46% of which were sent via SMS, and 54% by scanning the QR at the stop.

The Passenger Information Points (PIV), which are panels installed at bus stops, are just one of the many significant technological innovations the CRTM is rolling out. Within the network of suburban and urban buses of the Community of Madrid, a total of 492 panels have been installed, distributed across 475 bus shelters, 9 more than the previous year, plus another 17 devices distributed in hospitals, bus stations and control centres. In the case of the EMT network, the number of panels available is 800 devices, 11 more than the previous year, of which 220 have operational Wi-Fi.

Another development in 2022 were the NaviLens codes placed at stops on the suburban network. These codes, that can be used by all users, help visually impaired people locate a bus stop and obtain information on when the next buses are due to come. To use them, simply download the NaviLens or Navilens Go app and scan the code at the stop (this can even be done if you are standing some distance away), and then just follow the verbal instructions provided by the phone. Throughout the year, 646 NaviLens code tags were generated and placed on bus stop posts and shelters which, added to those from the previous year, represent a total of 1,412 tags.





e Transport maps

Since its creation in 1986, the CRTM has been developing a frequent Transport Information Publications Programme with different collections structured by themes and regions. This editorial programme fulfils one of the basic premises of the Law governing the CRTM, specifically article 2.2.j "Providing information to users". In 2022, in line with this programme, the following transport information publications were published:

Series 1a. Map of the Community of Metro de Madrid network

This map, showing the geography of the metro and Metro Ligero network is updated twice a year for the website.

Series 3. Madrid Transport Map

This map, published at a scale of 1:20,000, shows the entire underground and surface transport network in the municipality of Madrid. As is normally the case, updates are posted quarterly on the

CRTM website, as well as an update printed using special ink on vinyl in September that is installed on the EMT bus shelters in Madrid.

Series 4. Transport map for the Autonomous Region of Madrid

As its name suggests, this is a map of the entire transport network of the region in two areas; one at a scale of 1:50,000 of the so-called Metropolitan Area and another at a scale of 1:200,000 for the rest of the Autonomous region of Madrid. This map also comes with an updated list of suburban-bus operating companies. As well as being posted on the website, different formats and versions of the map are placed on the planners of the more than 3,470 CRTM bus shelters.

Series 5. Transport maps for districts of Madrid

The 1:10,000 scale district transport maps and, once redesigned, the 11 sheets will be kept up to date throughout 2022 and updated every six months on the CRTM website. The importance of this map lies in its in-depth geographic database that is easy to update based on the Consortium's corporate GIS. This cartographic base is used, among other things, to create area maps of metro and Cercanías stations or graphic support for specific actions.

Series 6. Transport Maps for municipalities in the Autonomous Region of Madrid

This is without a doubt one of the Transport-Information-Publications Programme's most ambitious projects, since the function of transport mapping at municipal level is twofold: as well as providing information on the transport network, it is used as a reference

street map for residents and visitors. In 2022, a total of 8 maps were updated and the first edition of the Miraflores and Valdemorillo maps was created. It is worth highlighting that the more than 90 published Series 6 maps are updated every time a change is made to the municipality's transport network or, in any case, every two years. Lastly, these maps are installed at bus stops with bus shelters in each of the municipalities, including information on the main public facilities in the area.

Zone maps of Metro and Renfe-Cercanías stations

The so-called "zone maps" are proximity maps located close to the entrances at metro, light rail and suburban railway stations and major transport interchanges. As well as being posted the website, a paper version of this map is installed in the lobby and platform planners in the stations and on the information sheet in the Public Transport Card Management Offices. In 2022, a total of 37 zone maps were created, some as of which were brand new while others were updated versions. The maps also feature legends in Spanish and English and the signage and labelling criteria has been improved in close collaboration with Metro Madrid.

Examples of updates include adding the Centre for Displaced Ukrainians in the Prado del Rey zone map (ML2) and the new indoor athletics track in Gallura in the Laguna zone map (line 6).

Information brochures, publications and other graphic materials regarding actions and modifications to the network

Graphic and cartographic support is provided for a number of studies and presentations of new services, in particular on the website, in the city of Madrid and in suburban areas alike. It is worth highlighting the large version of the metro network map in the "mupi" box that Madrid City Council asked the CRTM to install at the exit of the city's main metro entrances, that has gone down extremely well with users. Information leaflets have also been produced in collaboration with Metro de Madrid on how the construction work affects lines 6, 7b and 8.

Lastly, a special edition map is being produced for the Global Mobility Call congress. This map is a hybrid of the 3 Series and the 4 Series, which will be distributed at the stand the CRTM shares with Metro de Madrid.



Other actions worth highlighting

In spring 2022, we worked closely with Metro de Madrid to update the Laguna station zone map to include the new Gallur municipal sports facilities, in particular its covered athletics track. The decision was taken to modify the station's signage to provide information on directional slats on the best way to reach this sports facility as well as a nearby healthcare centre.

Other publications

The 2020 CRTM Annual Report will be published in 2022 and a number of CRTM reports that had previously only existed in paper format will be digitised and uploaded onto the website: 1988, 1990, 1992, 1995, 2000 and 2004. PDF files of all the reports are also available on the CRTM website.

CRTM photo archives

In 2022, the project to catalogue the CRTM's photographic archive came to an end. This archive comes from the Consortium's own historical image bank, not to mention contributions from transport operators and even from photographers who have donated their collections. In fact, the process of digitising and cataloguing all this graphic material had already begun years before. Each image has been catalogued with a number of descriptive words so they can be easily located in a search engine. This image bank has grown exponentially and currently houses more than 100,000 files, making it a key source of graphic reference for transport and urban planning in the Community of Madrid.



6.2. Customer service

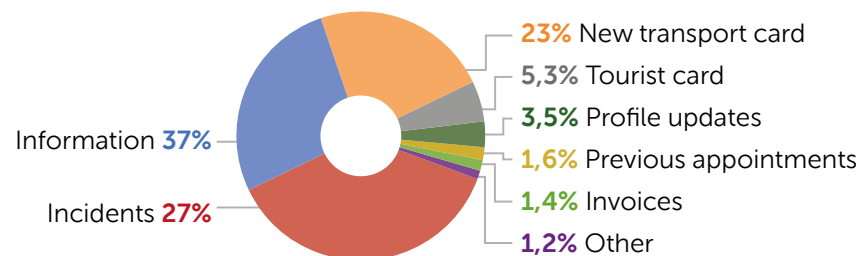
a The Public Transport Card Management Offices

The face-to-face service channel comprises a network of 23 Management Offices strategically located in the Community of Madrid. In 2022, these offices received a total of 1,952,460 visits from users, providing assistance in a number of ways.

2022 was the year things got back on track in the wake of the Covid-19 pandemic, with a rise in the number of trips and, at the same time, an increase in operations at the Management Offices for information, incidents and lost cards, as well as in the number of tourist cards sold. Furthermore, the war in Ukraine, the measures taken to deal with the knock on effect of the economic crisis, with considerable reductions in travel pass prices, had a huge impact on personal Public Transport Card purchases which, in turn, led to a rise in the number of people calling into the Management Offices.

Of all the operations performed at the Management Offices, 23% corresponded to registering new users in the system (new PTCs and tourist cards), and 77% to information and the management of after-sales services.

TYPE OF OPERATIONS CARRIED OUT IN MANAGEMENT OFFICES (2022)



The Management Offices that attended to the largest number of users in 2022 were: Airport T4 with 289,759 users, Moncloa with 178,254, Sol with 171,240, Príncipe Pío with 153,565 and Atocha with 140,356 users.

In 2022, the CRTM conducted a study into the quality of the service provided by the network of Public Transport Card Management Offices to ascertain customer satisfaction levels and how likely they would be to recommend them. A total of 2,206 surveys were conducted among personal Public Transport Card users who had called into an office in the previous months. Users are highly satisfied with the service, with an overall average rating of 9.4 out of 10.

This high level of satisfaction was recorded regardless of user age, the type of customer service received and the office they called into.

82% of respondents stated they were highly satisfied with the service received (they gave ratings of 9 or 10 on a scale from 0 to 10).

b The tarjetatransportepublico.crtm.es website

868,091 users were assisted via the website, of which 59% requested a prior appointment to be assisted in an office, 27% requested a new or replacement PTC to be sent to their address and 12% requested information via the email address tarjetatransportepublico@madrid.org. The remaining 2% correspond to requests for invoices.

c Telephone customer service

In 2022, a total of 222,780 calls related to the public transport system of the Community of Madrid were received on the 012 hotline. This service works in coordination with the CRTM to meet the information needs of transport users in the Community of Madrid.

The channel provides information to users, facilitates appointments for paperwork in the Management Offices as well as receiving and recording complaints.

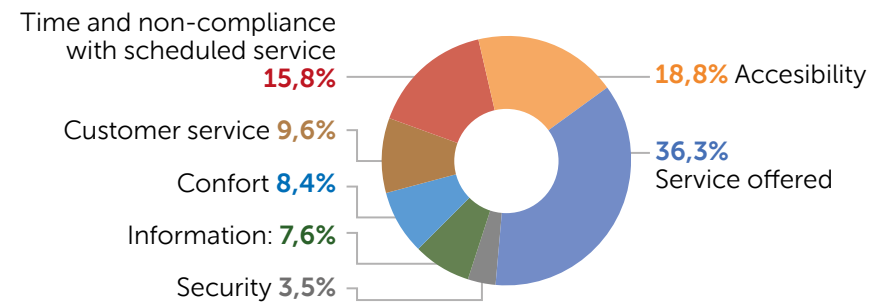


6.3. Complaints

In 2022, the Community of Madrid transport system recorded 45,875 complaints, an increase of 43% when compared with the previous year (31,995 in 2021). This figure is similar to pre-pandemic levels. The ratio of complaints per million passengers stood at 34. Therefore, taking into account the rise in passenger numbers, the ratio has gone up by 13% compared to the previous year, when there were 30 complaints per million passengers. These figures include the complaints received through the different channels available to users: CRTM website and offices, complaints books and offices of the different public transport operators, 012 hotline, the general suggestions and complaints system of the Community of Madrid (SUQUE) and other bodies through their respective registers.

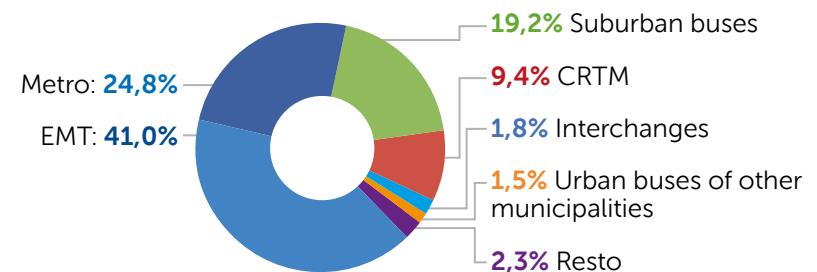
Below are the most significant causes and reasons for the complaints being filed and suggestions being made that could be categorised.

REASONS FOR COMPLAINTS (2022)



These complaints are split between the modes of transport as follows:

DISTRIBUTION OF COMPLAINTS BY MODE OF TRANSPORT (2022)



6.4. Communication campaigns

The CRTM conducts communication campaigns to promote public transport and sustainable mobility, and to inform users of the activities organised by the body. In 2022, it focused its communication strategy on trying to win back passengers who had changed their mobility habits in the wake of the pandemic.

Other initiatives were also carried out to foster sustainable mobility and to publicise new services and fares. All campaigns are listed below:

- ▶ Campaign to publicise the new senior pass fare which entered into force on 1 January 2022
- ▶ Campaign to publicise the fare aggregation of zones C1-C2-B3, which came into force on 1 January 2022
- ▶ “Did you know...??” public transport dissemination campaign
- ▶ Dissemination of the Community of Madrid’s “Travel in peace of mind” campaign
- ▶ Diffusion of the “Return to public transport” campaign
- ▶ Campaign to inform users of stop on demand on night-time services – “Next stop your house”
- ▶ Campaign to publicise the launch of the mobile top-up “Travel Card” app
- ▶ Collaboration in publicising European Mobility Week
- ▶ Collaboration in publicising the “Take Your Books to the Streets” campaign



On the other hand, this year the CRTM continued to give talks in secondary schools on the values and benefits of public transport and its importance in the fight against climate change. This initiative kicked off in February 2021 as a pilot scheme and could be developed into a more long-term one.

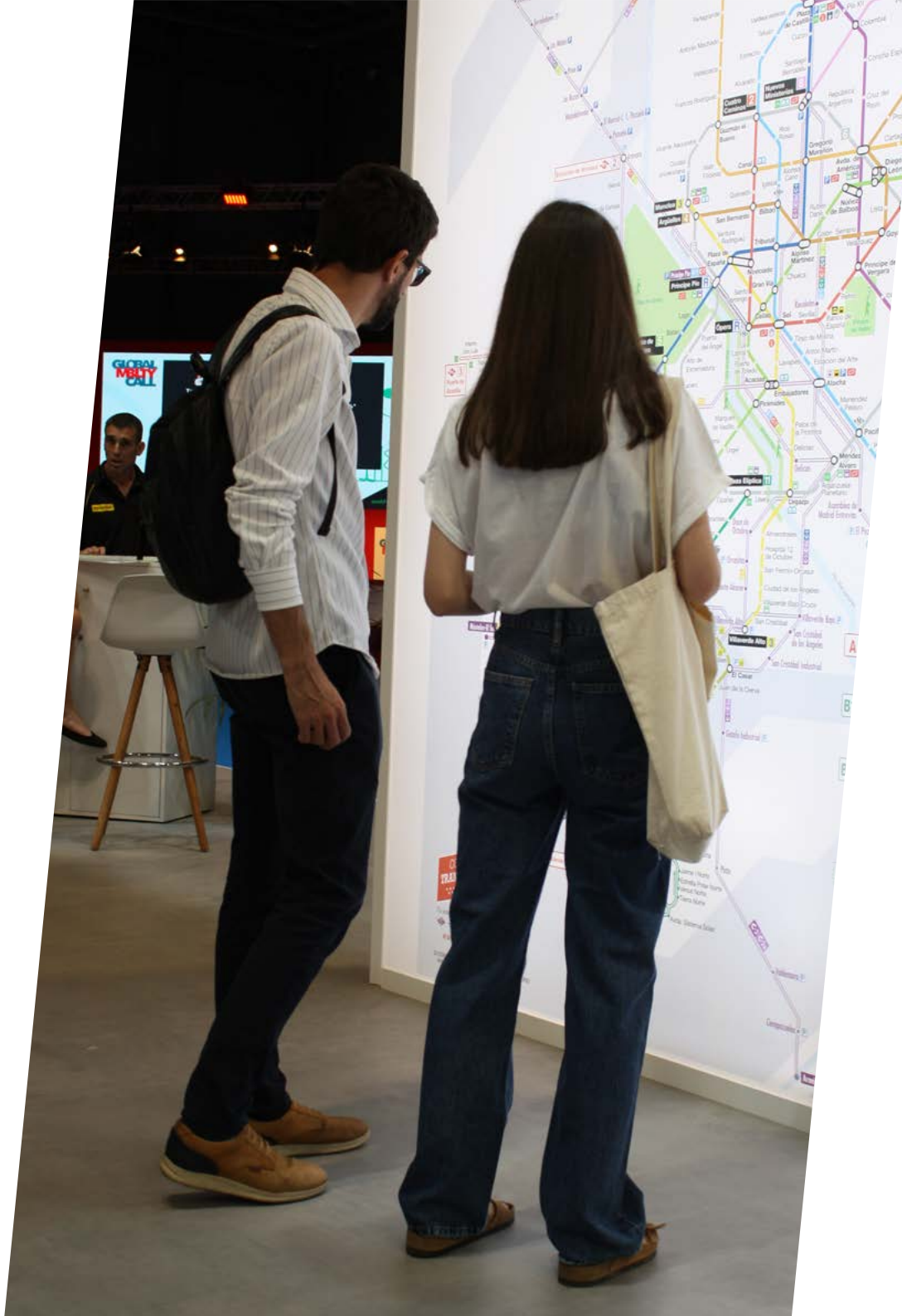
In the 2021–2022 academic year, the talks took place from November 2021 to May 2022, visiting educational institutions in Madrid (districts of Vallecas, Villa de Vallecas, Tetuán, Moratalaz, Hortaleza and Latina), towns in zone B1 (Alcorcón, Alcobendas, Coslada, Getafe and Paracuellos de Jarama), zone B2 (Parla and Tres Cantos), B3 (Alcalá de Henares, Arganda del Rey, Galapagar, TorreloDONEs and Villanueva de la Cañada), C1 (Sevilla la Nueva) and C2 (La Cabrera). A total of 129 sessions were delivered to roughly 3,600 students at all levels of Secondary Education, Baccalaureate and Vocational Training.

To make it easier for those delivering the workshops, the CRTM created a leaflet containing a brief summary of the information covered in the talks to be handed out to secondary school students attending the sessions, outlining the benefits of sustainable mobility and using public transport, including messages such as “Move around Madrid at your own pace”, “Gain freedom by using public transport”, as it is “comfortable, safe, economical, clean and sustainable”.



7

Institutional relations



The experience of the CRTM and the integrated model of the transport system of the Community of Madrid have traditionally been the subject of international visits and, slowly but surely, numbers are rising and almost reaching those seen before the pandemic.

The most prominent associations in the sector (UITP, EMTA, the Metropolitan Mobility Observatory) fostered an exchange of experiences on the impact of Covid-19 on transport systems and the challenges it has faced in the wake thereof, as well as the effect the energy crisis has had on our transport systems.

7.1. International presence

The CRTM is present in the most prominent industry associations:

UITP (International Association of Public Transport)



UITP is an association that promotes the exchange of knowledge and experiences among different public transport agents on a European and global level, as the leading association in the sector with over 1,500 members in 96 countries. Further info at www.uitp.org

The CRTM participates in several of this association's committees and commissions, such as that of the Transport Authorities. This active presence of the CRTM has given our body relevance at both a European and global level.

In 2022, the CRTM participated in a wide range of forums, webinars and meetings to share the experience of the different industry stakeholders with regard to restoring confidence in public transport systems and deal with the challenges of the energy crisis and decarbonisation.

Furthermore, as part of the framework of the Innovation and Training Centre that the UITP and CRTM collaborate in, online training sessions were held in Spanish on "Financing" in March and "Fundamentals of public transport" in September, and a face-to-face training module was held in Madrid in November on "Public Transport Managers".

EMTA (European Metropolitan Transport Authorities)



EMTA (European Metropolitan Transport Authorities) is an association that fosters the exchange of knowledge and experience between different European transport authorities. It is made up of 32 members from 20 countries representing the

biggest public transport authorities in Europe, such as Paris, London, Berlin, Amsterdam, etc.

As a member of this association, the CRTM has become a key player at European level, as one of the association's objectives is to foster initiatives and recommendations to the European institutions, bringing together the interests of public transport authorities.

The CRTM holds the position of Treasurer of EMTA and, since its creation in 1998, it has actively participated in the meetings, forums and working groups fostered by the association, as well as being the member responsible for drawing up the Public Transport Barometer of the European Metropolitan Areas, which includes data on the public transport systems of the 32 partners that made up the association at the end of 2022.

The two annual meetings of the General Assembly were held in 2022, the first one in May in Lisbon (Portugal) and the second in Vienna (Austria) in October. Webinars and conferences were held alongside this, in which European transport authorities debated on the measures put in place to restore demand and confidence in the wake of the Covid-19 pandemic and challenges that the future has in store. Further info at www.emta.com

International visits and advice

The experience of the CRTM and the integrated public transport management system of the Community of Madrid attract a large number of delegations interested in finding out about the planning and construction methodology of the regional infrastructure and the integrated management system for public transport in Madrid. In 2022, 28 visits were received from national and international delegations from Latin America, Brazil, Chile, Colombia, South Korea, Costa Rica, European Union, Spain, United States, France, India, Netherlands, Peru and Uganda.

El sistema de transporte público de la Comunidad de Madrid, referente mundial
28 visitas de delegaciones de 14 países en 2022



7.2. Other initiatives



Metropolitan Mobility Observatory (MMO)

The Metropolitan Mobility Observatory (MMO) is an analysis and reflection initiative formed by the Public Transport Authorities (PTA) of the main Spanish metropolitan areas, the Ministry of Agriculture, Food and Environment, the Ministry of Development, the Ministry of Industry (through the Institute for Diversification and Energy Savings) and the Ministry of Internal Affairs (through the DGT), in order to reflect on the

contribution of public transport to improving quality of life and sustainable development in cities.

The MMO publishes an annual report analysing the mobility of the participating metropolitan areas, which is presented at technical meetings where aspects related to sustainable mobility are also discussed.

The CRTM has been a constant presence at its annual meetings ever since this initiative was launched. In 2022, the CRTM took part in the 19th MMO Technical Seminar, held in León on 21 October under the slogan "Impact of active mobility in Low Emission Zones (LEZs)". The workshop was split into two thematic sessions. The first focused on the challenges to achieve climate neutral cities by 2030. The second was on the implementation and regulation of municipal LEZs in accordance with the Law on Climate Change and Energy Transition.



7.3. Institutional events

A key aspect of the CRTM's work is the institutional representation at a number of events attended by municipal, regional or national authorities, with a view to highlighting some of the public transport-related initiatives or activities carried out.

An example was the Global Mobility Call, the first edition of an international congress held in Madrid from 14 to 16 June at IFEMA to foster a sustainable mobility model, while promoting cutting-edge technology and business models. The CRTM participated in a number of the congress' sessions with a view to fostering innovative mobility and public transport solutions, as well as having its own stand to showcase the technologies applied to this industry of strategic interest for the Community of Madrid, such as planning and smart transport management, energy sustainability or universal accessibility.

7.4. Consorcio Regional de Transportes de Madrid Acknowledgements

The Association of Traffic Engineers and Mobility Technicians awarded the “Women and Traffic Management” prizes to those women who, whether they work for the government, universities or private companies, strive to improve traffic and mobility in Spain.

Six of the CRTM’s women received this award in previous editions, not to mention those awarded in 2022 to Ana Corroto, Technical Advisor to the External Relations Department and Soledad Pérez-Galdós, Infrastructure and Innovation Coordinator. These awards recognise the unwavering commitment and professionalism of the organisation’s employees with regard to mobility management, with a view to offering a quality public transport service in the Community of Madrid.

On the other hand, at the Global Mobility Call in June 2022, Aire Libre magazine recognised the great lengths the CRTM’s has gone to with a view to “fostering sustainability and the 2030 Agenda”.



Another 2022 event worth highlighting was the 10th anniversary of the Public Transport Card (PTC), with an institutional event held at the Nuevos Ministerios station to present the “10th anniversary special edition” of the PTC (a print run of 120,000 cards) and a commemorative publication entitled “10th anniversary of the Public Transport Card (2012–2022)”, looking back over the milestones of the last 10 years.

Also worth mentioning is the exhibition held in the Patio of Puerta del Sol’s Royal House of the Post Office on Intelligent Transport Systems (ITS) on 28 September, with a view to showcasing how these systems improve the quality of the service provided to citizens, and how they play their part in the mobility of the future. On display in this exhibition was, among others, the autonomous bus that is in circulation at the Autonomous University of Madrid, the 21st century bus shelter, the Metro Station 4.0, the solar panels on buses and the urban logistics drones.



unimos Personas



Tu sistema de transportes



www.crtm.es