



Integration of the public transport system in Madrid Region



Consortio Regional de Transportes de Madrid (CRTM)





CONTENT

1. Introduction to Madrid Region
2. Integration model of Madrid public transport system
 - 2.1 Administrative integration
 - 2.2 Fare integration
 - 2.3 Modal integration
 - 2.4 Technological integration
3. Conclusions and future challenges



1. Introduction to Madrid Region

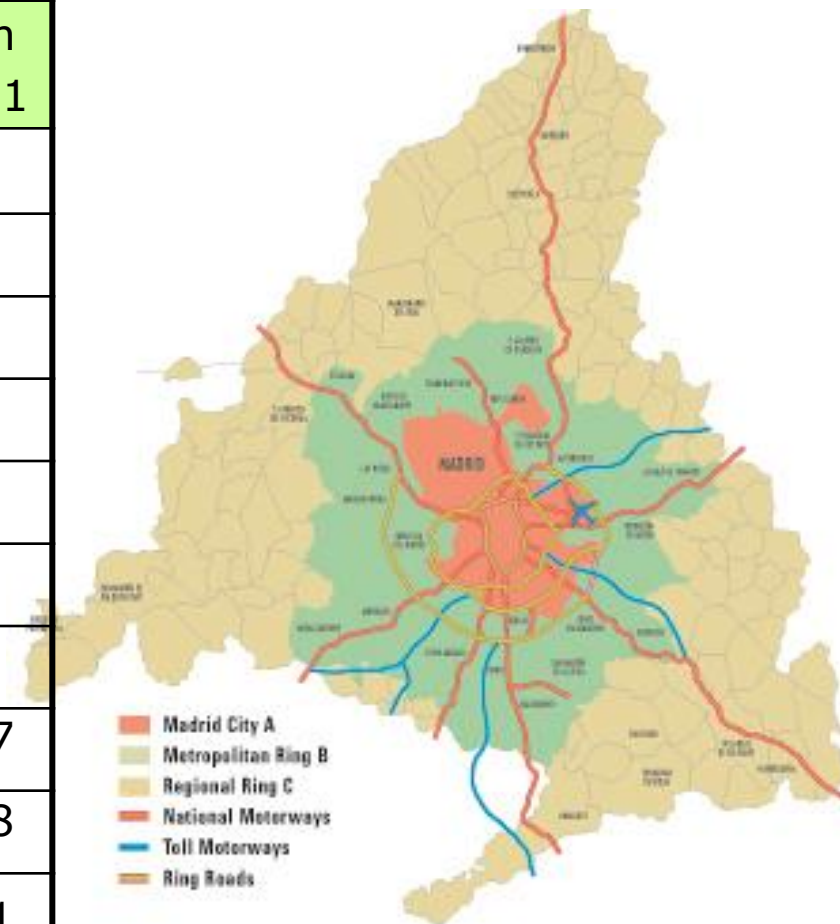
1. Introduction to Madrid Region



MADRID REGION TERRITORY

Madrid is one of 17 autonomous regions of Spain, formed up by **179 municipalities**, with almost **6.8 million inhabitants** in an area of **8,028.5 km²**.








Town size	Number of municipalities	Population 01.01.2021
Up to 100	8	610
101-500	19	4,593
501-1,000	17	11,994
1,001-5,000	54	139,262
5,001-10,000	30	231,006
10,001-50,000	28	595,911
50,001-100,000	13	941,890
100,001-250,000	9	1,520,577
+ 250,001	1	3,305,408
Total	179	6,751,251



1. Introduction to Madrid Region








PUBLIC TRANSPORT MODES AND OPERATORS

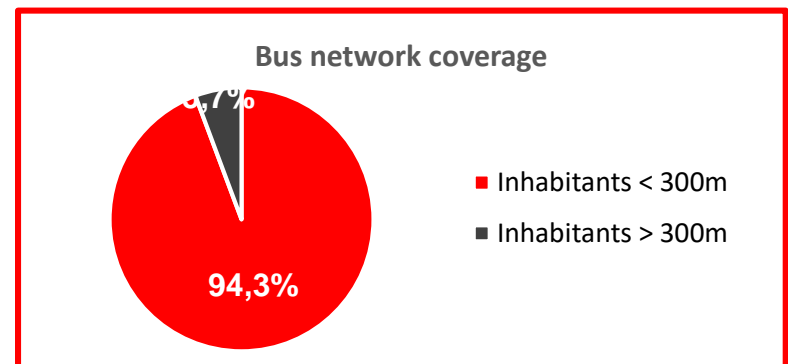
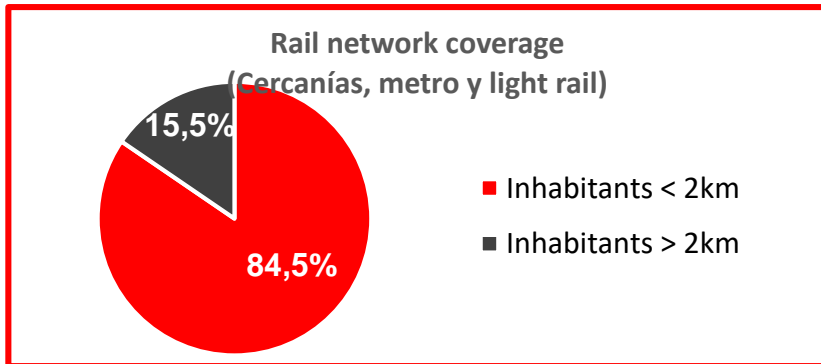
	Metro (underground) system	Metro Madrid: Public company owned by Madrid Region (100%), plus 2 sections under concession.
	Madrid city urban buses system	EMT: Public company owned 100% by Madrid municipality
	Suburban railway system	Cercanías Renfe: Public company owned by National Government
	Metropolitan and regional buses: Interurban buses	27 private companies operating 30 concessions
	Urban buses in other municipalities	35 municipalities: urban bus services under concession (6), 1 public municipal services and 28 integrated in the interurban concessions
	Light rail system	3 concessions by private operators
	Big bus interchanges	5 concessions (construction and operation) by private operators

1. Introduction to Madrid Region



SUPPLY OF PUBLIC TRANSPORT (2021)

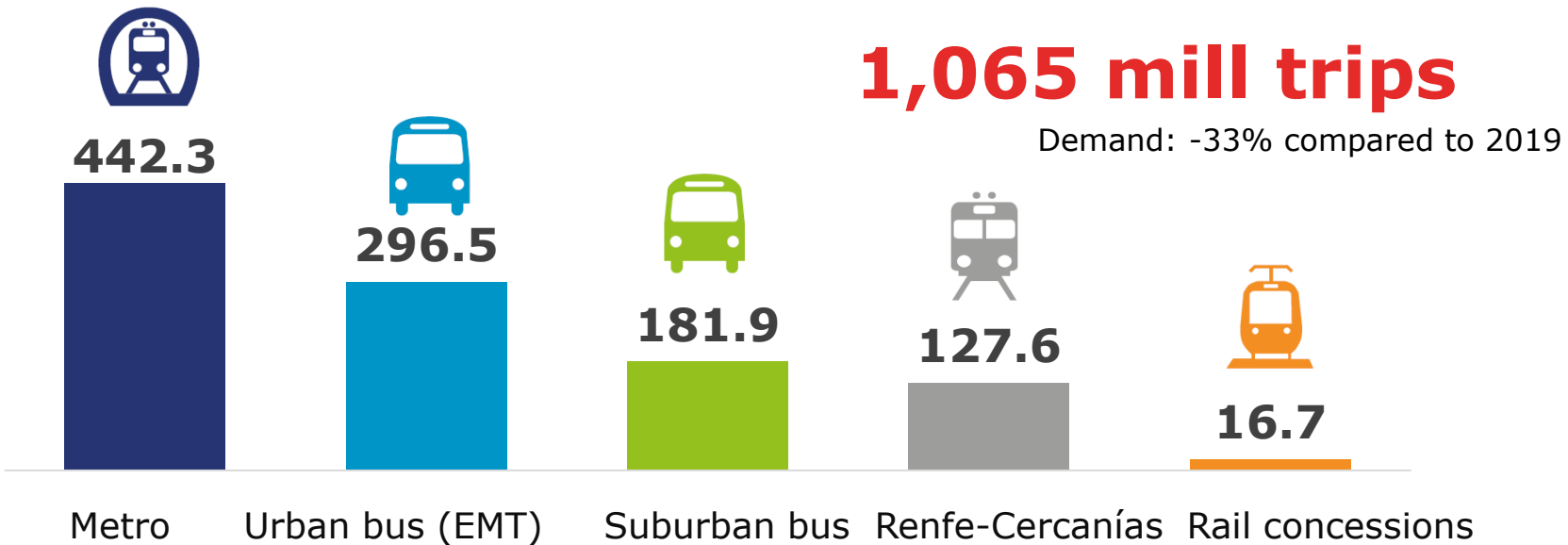
Public transport system in Madrid region (2021)							
Operator	No. Lines	Network length (km)	Lines length (km)	Stations/stops - newtork	Stations/stops - line	No. Vehicles	Veh-km (millions)
 Metro	12+Ramal	269,5	269,5	237	287	2.320	191,3
 Urban bus in Madrid city (EMT)	220	1.628,8	3.972,5	4.779	11.320	2.095	92,6
 Suburban bus	468	8.651,0	22.080,0	8.529	22.408	2.068	183,5
 Renfe-Cercanías	11	361,4	714,0	95	203	1.056	140,5
 Light rail and other rail concessions	5	54,8	54,8	62	63	241	16,7
TOTAL	717	10.965,5	27.090,8	13.702	34.281	7.780	624,6



1. Introduction to Madrid Region



DEMAND OF PUBLIC TRANSPORT (2020)



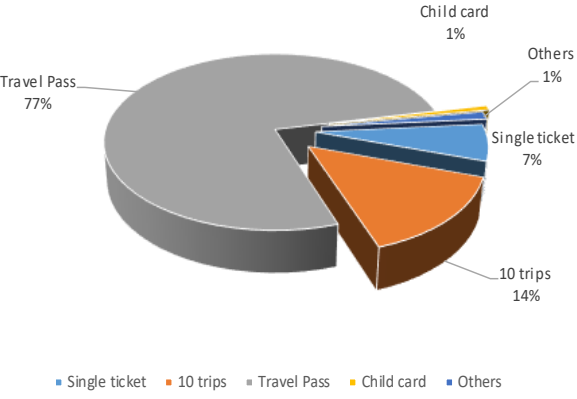
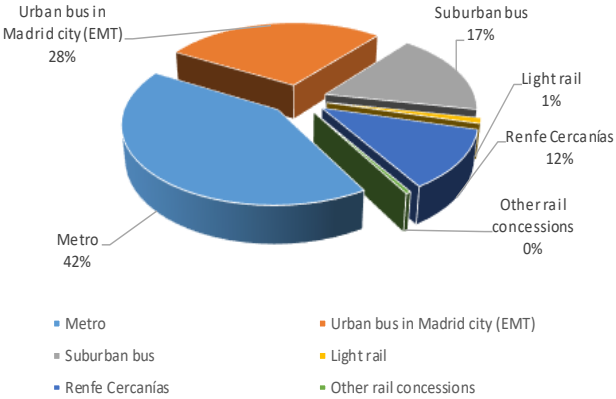
76.7%	Travel Pass	816.6 mill trips
14.6%	10 trips	155.1 mill trips
6.60%	Single ticket	70.5 mill trips
0.8%	Child pass	8.5 mill trips
1.3%	Others	14.3 mill trips

1. Introduction to Madrid Region



DEMAND OF PUBLIC TRANSPORT (2021)

Public transport system in Madrid Region 2021											
Modes of transport	Single ticket		10 trips		Travel Pass		Child card		Others		TOTAL
Metro	18.160.010	4,1%	92.560.715	20,9%	327.860.496	74,1%	3.718.644	0,8%	6.268	0,0%	442.306.134
Urban bus in Madrid city (EMT)	17.435.295	5,9%	36.112.798	12,2%	235.109.561	79,3%	2.622.211	0,9%	5.212.060	1,8%	296.491.925
Suburban bus	19.878.067	10,9%	15.042.588	8,3%	146.003.127	80,3%	901.519	0,5%	77.180	0,0%	181.902.481
Light rail	587.521	5,1%	1.511.119	13,0%	9.396.649	80,8%	123.809	1,1%	8.441	0,1%	11.627.539
Renfe Cercanías	13.998.830	11,0%	9.187.730	7,2%	94.346.440	73,9%	1.078.002	0,8%	9.033.723	7,1%	127.644.725
Other rail concessions	412.094	8,2%	728.329	14,4%	3.863.294	76,6%	41.942	0,8%			5.045.659
TOTAL	70.471.817	6,6%	155.143.279	14,6%	816.579.567	76,7%	8.486.127	0,8%	14.337.672	1,3%	1.065.018.463



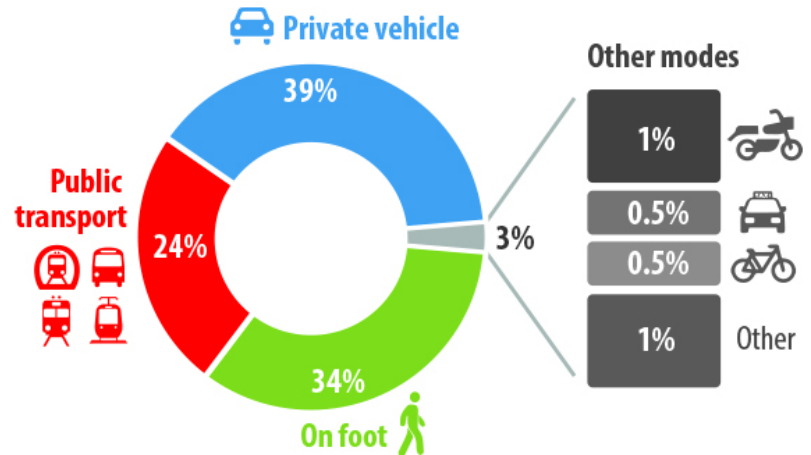
1. Introduction to Madrid Region



GENERAL MOBILITY BY MODE AND PURPOSE

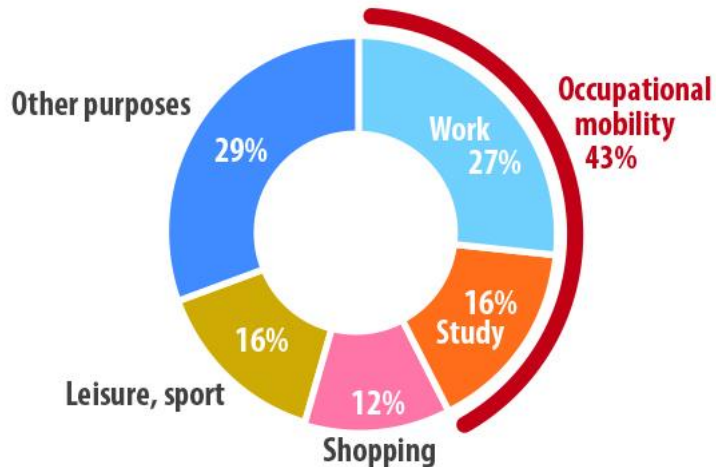
The total number of trips in the Madrid region during a weekday is **15.8 millions** (Household Survey 2018).

MODAL SPLIT OF TOTAL TRIPS IN MADRID



66% of this trips are made by mechanized modes and 34% by walking

TRIPS BY PURPOSE



And are classified by **purpose** as follows:



2. Integration model of Madrid public transport system

2. Integration model of public transport system

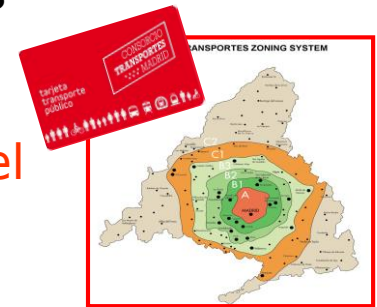


INTEGRATION MODEL OF MADRID TRANSPORT AUTHORITY: CRTM

Administrative Integration: With the creation of the Consorcio Regional de Transportes de Madrid (CRTM), as **unique public transport authority**, gathering responsibilities of the Madrid Region and the adhered local governments.



Fare Integration: With the implementation of the **Travel Pass**, which is presently used in almost 77% of public transport journeys.



Modal Integration: Assuming that different transport modes are complementary, expanding network and services, both railways and buses, being **intermodality a key issue**.



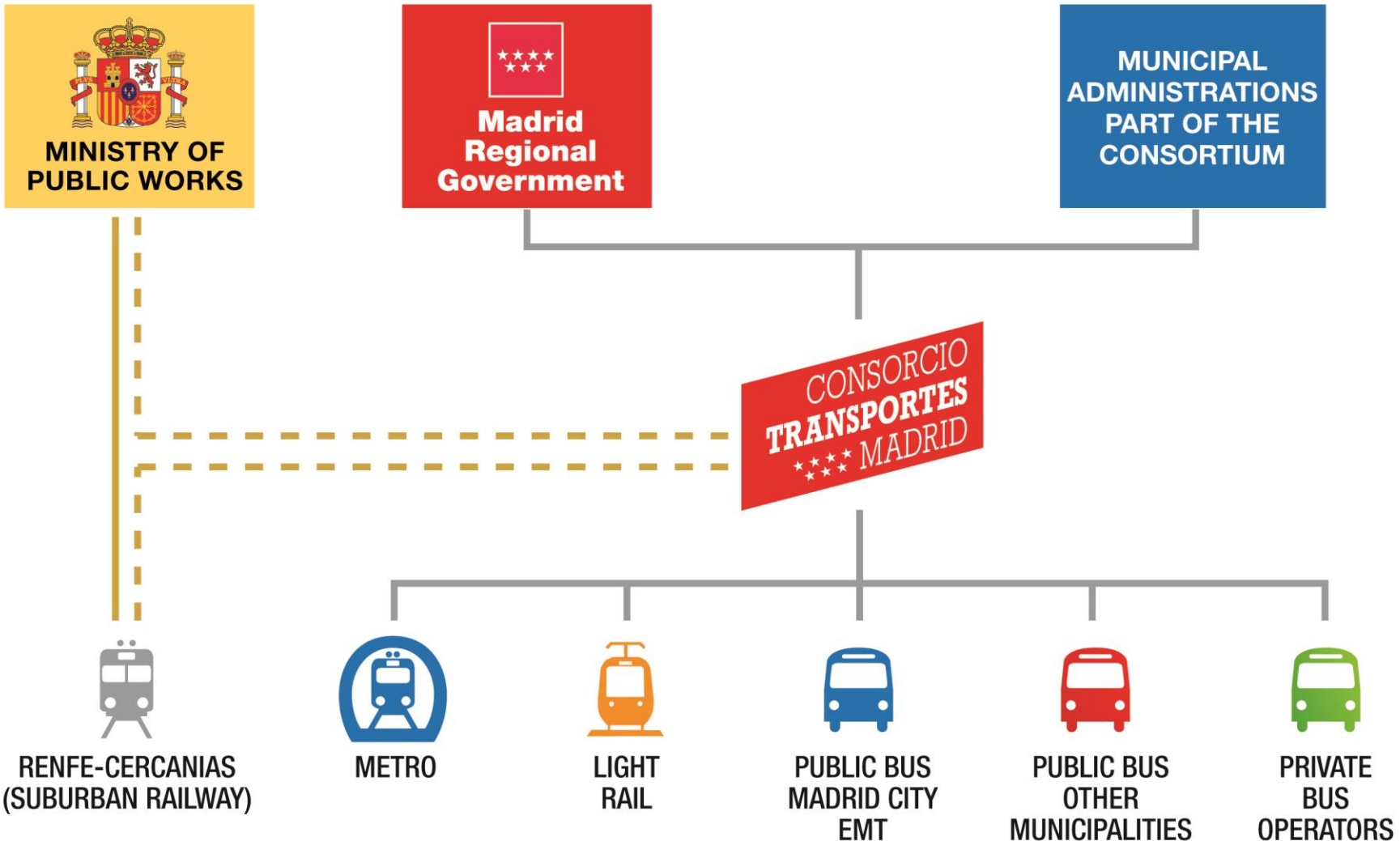
Technological Integration: Integration of data, protocols and processes between operators and customers.



2.1 Administrative integration



INSTITUTIONAL FRAMEWORK



2.1 Administrative integration



MAIN OBJECTIVES OF THE CRTM

- **Planning** of public transport infrastructures.
- **Planning of transport services** and Definition of **co-ordinated operating programs** for all Transport Modes.
- Establishment of an **integrated fare system** for the whole Public Transport Network.
- Development of a **management policy** and **finance framework** of the System
- **Audit** the integration of public transport with new urban planning.
- Creation of an **overall image** of the Public Transport System where CRTM holds the external relation with the users.

PTA functions vs OPERATOR functions

Strategic level: only Public Transport Authority (CRTM)

Tactical level: CRTM very important, operators less

Operational level: only operators

2.2 Fare integration



FARE SYSTEM

Single tickets (One trip ticket): Valid for only one trip and bought on board.



1,5 – 2 €

12,20 €



Ten trip ticket: Valid for ten trips and in advanced purchase. In the central zone A, this ticket is useable in Metro and Municipal Bus Company. For suburban buses, there is a common ticket for all the companies.



Tourist Tickets: 1, 2, 3, 4, 5 and 7 days.



Multimodal and Integrated Travel Card: Valid for unlimited number of trips during a period of one month or year, *Regular Travel Card.*

2.2 Fare integration



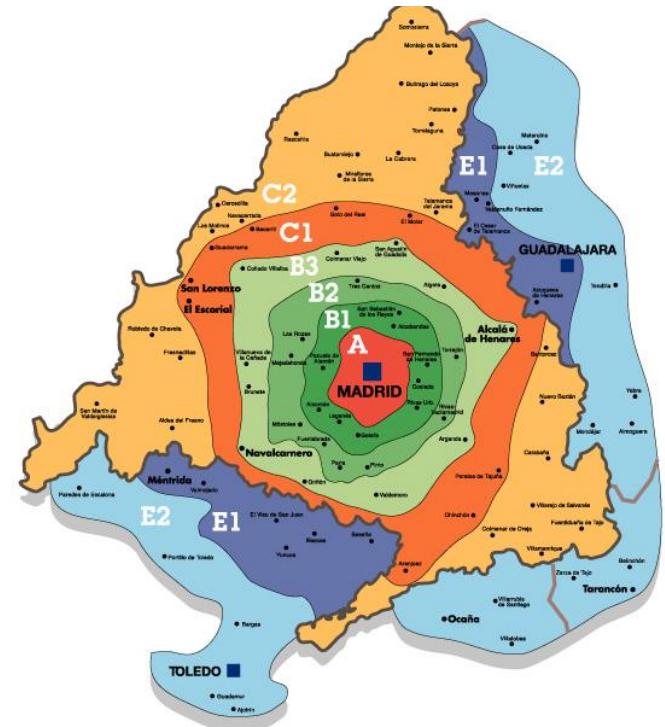
TYPES OF MULTIMODAL TRAVEL PASSES

Abono Transportes is a multimodal and integrated travel pass of unlimited use for a period of time (30 days or year), in buses, metro and railways of the region, within a validity zone.

There are different types of *monthly passes*:

- **Standard** pass: users between 26 and 64 years old: 54.60 – 82.00 EUR
- **Youth** pass: valid from 7 until 25 years old: 20 EUR
- **Senior** pass: persons 65 years old or older: 3.30 EUR (for free in 2023)
- **Child** pass: free, valid from 4 to 6 years old

FARE ZONE SYSTEM

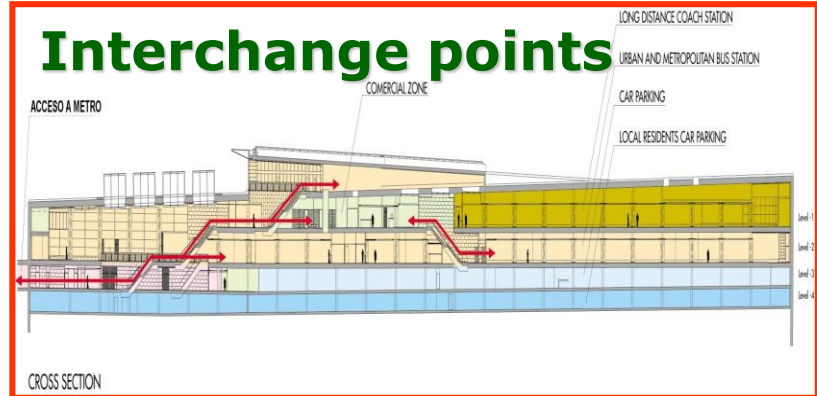
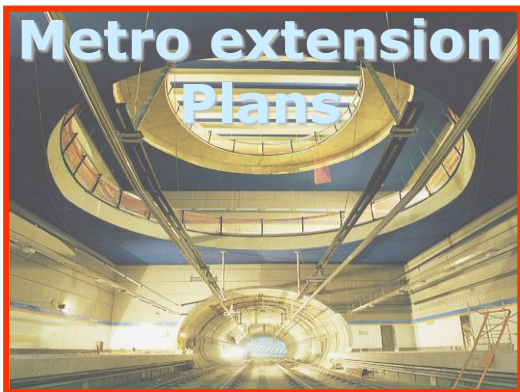


Besides these three monthly passes, there are *annual passes*.

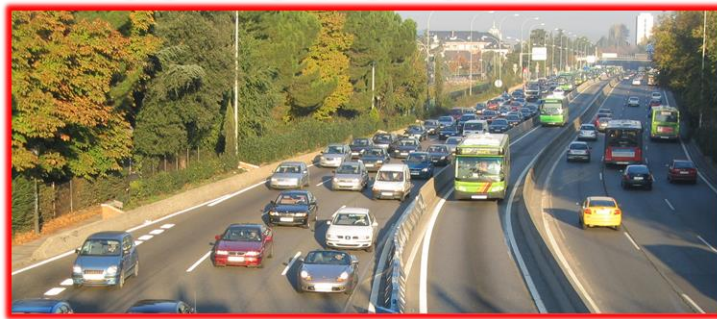
2.3 Modal integration



EXAMPLES OF MODAL INTEGRATION



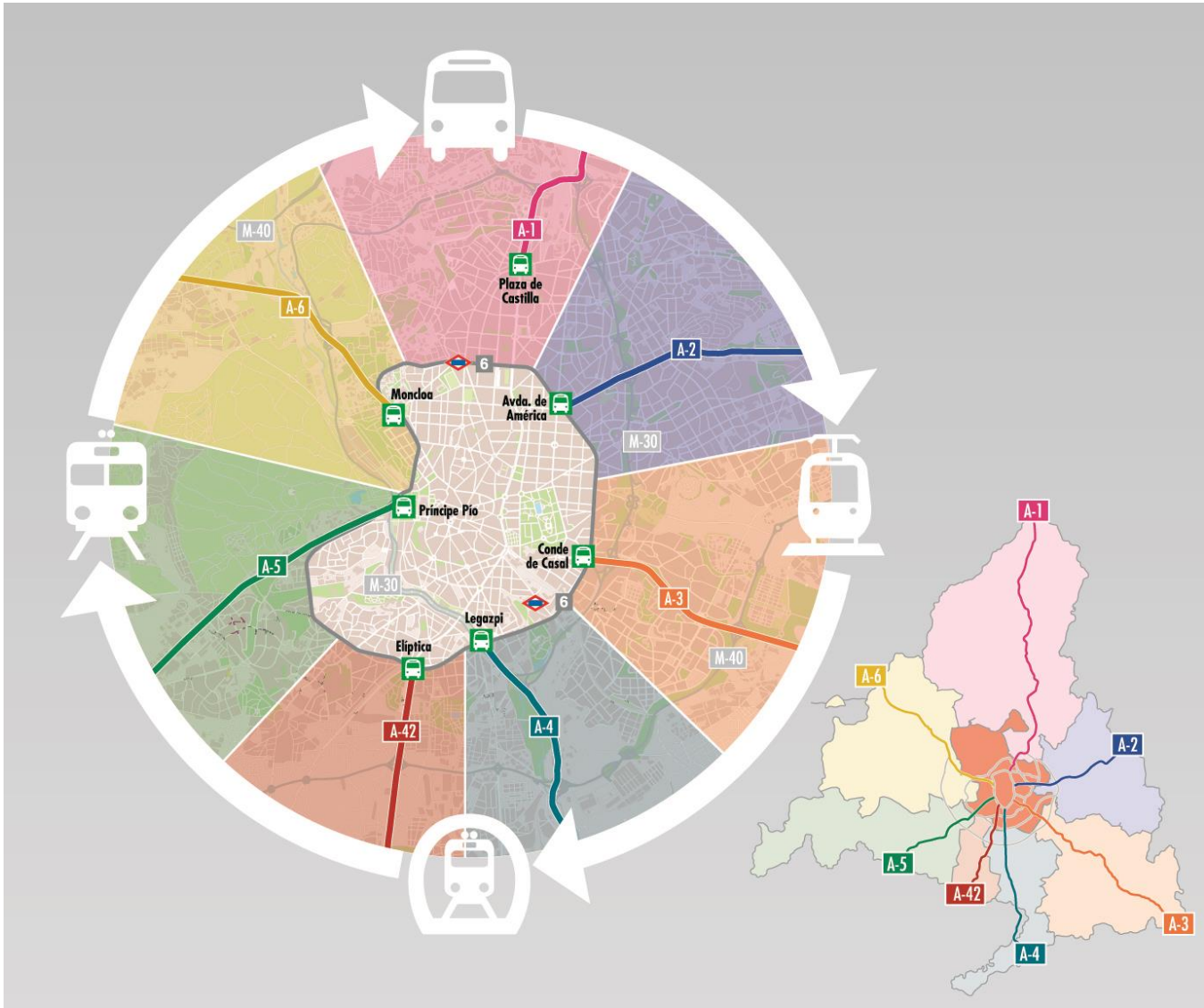
Bus-HOV and BRT



2.3 Modal integration



METROPOLITAN BUSES INTERCHANGE PLAN

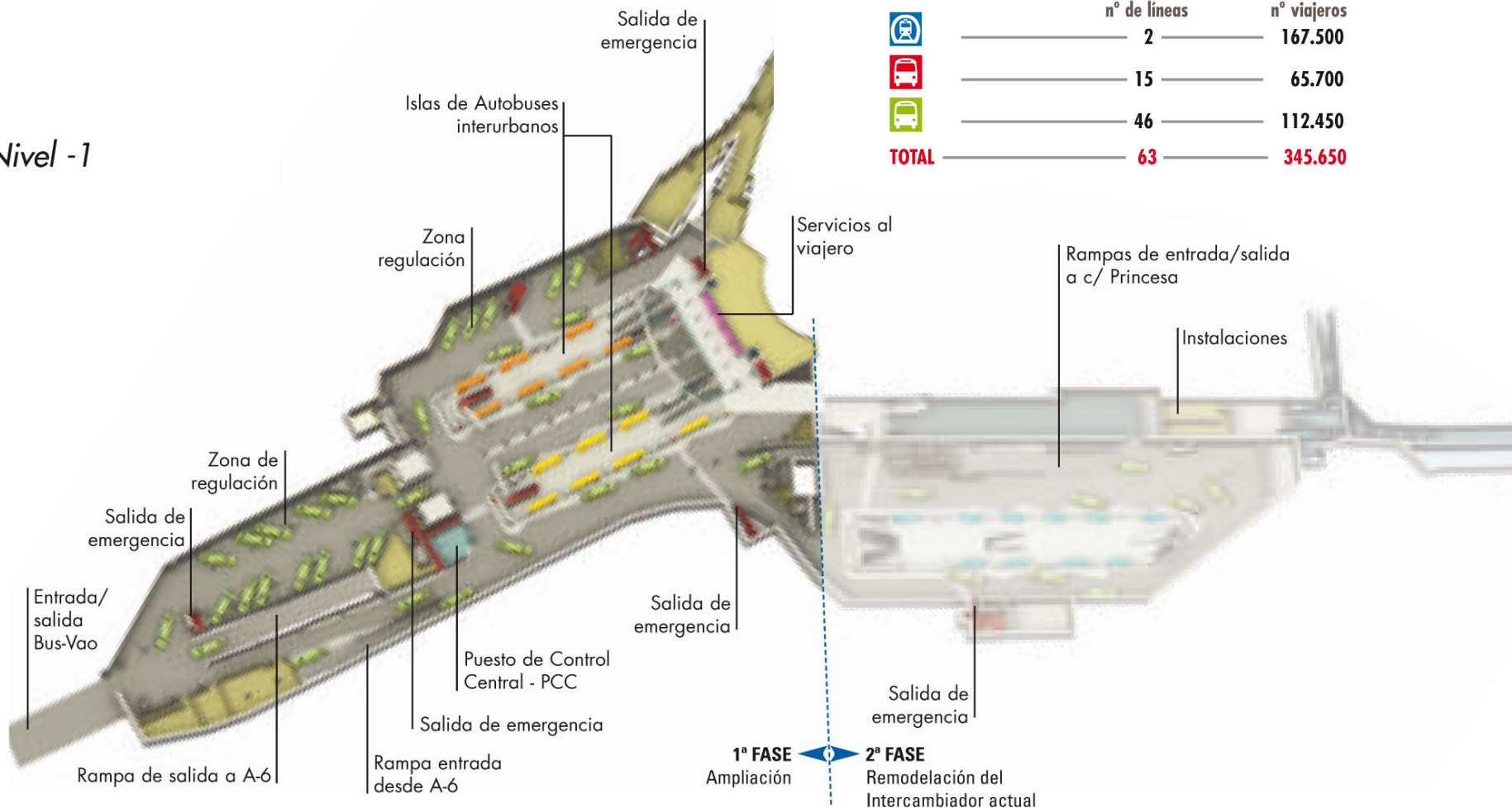


2.3 Modal integration



EXTENDED MONCLOA INTERCHANGE

Nivel -1



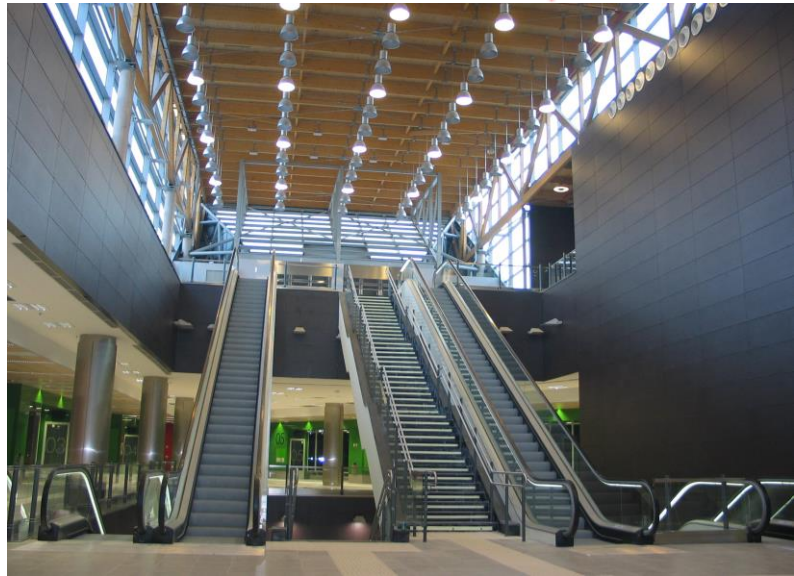
NÚMERO DE VIAJEROS SUBIDOS Y BAJADOS EN MONCLOA

	nº de líneas	nº viajeros
	2	167.500
	15	65.700
	46	112.450
TOTAL	63	345.650

2.3 Modal integration



PUBLIC TRANSPORT INTERCHANGES

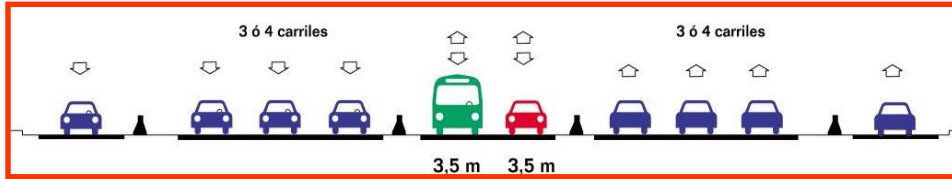


2.3 Modal integration

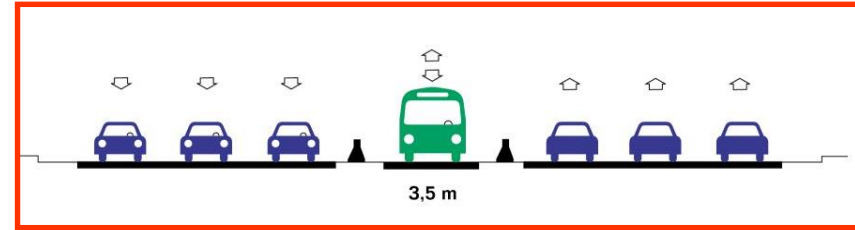


BUS-HOV LANE

Bus-HOV section: 12.3 km



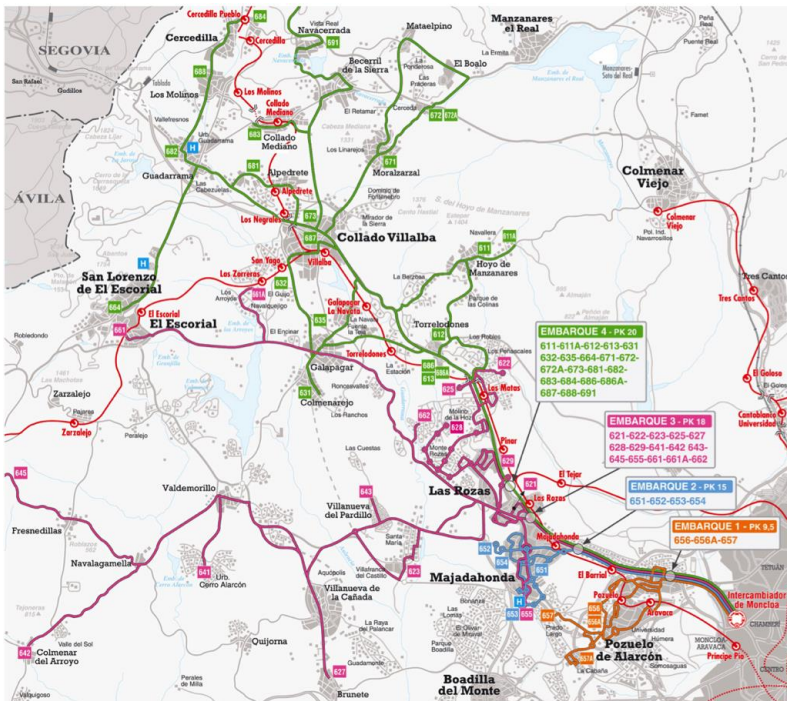
Busway (only-bus) section: 3.8 km



MAP OF BUS ROUTES USING BUS-HOV LANE

Conception of the system:

1. Busway section arriving to Madrid city, **REVERSIBLE**
2. Bus terminal underground integrated with metro.
3. Good metro accessibility



Bus-HOV entry	bus routes
PK 9,5	3
PK 15,3	4
PK 17,5	15
PK 20	21
Total	43



2.3 Modal integration



Left lane reserve for BUS-HOV in A2 corridor



2.3 Modal integration



Bicycle Parking Network (reB)

- Bicycle parkings in the surroundings of Metro, Light Rail, Commuter rail and Interurban bus stations.
- With an inverted "U" bike parking bar.
- Currently there are 29 locations with 220 available parking spaces, with the final objective of 600 parking spaces.



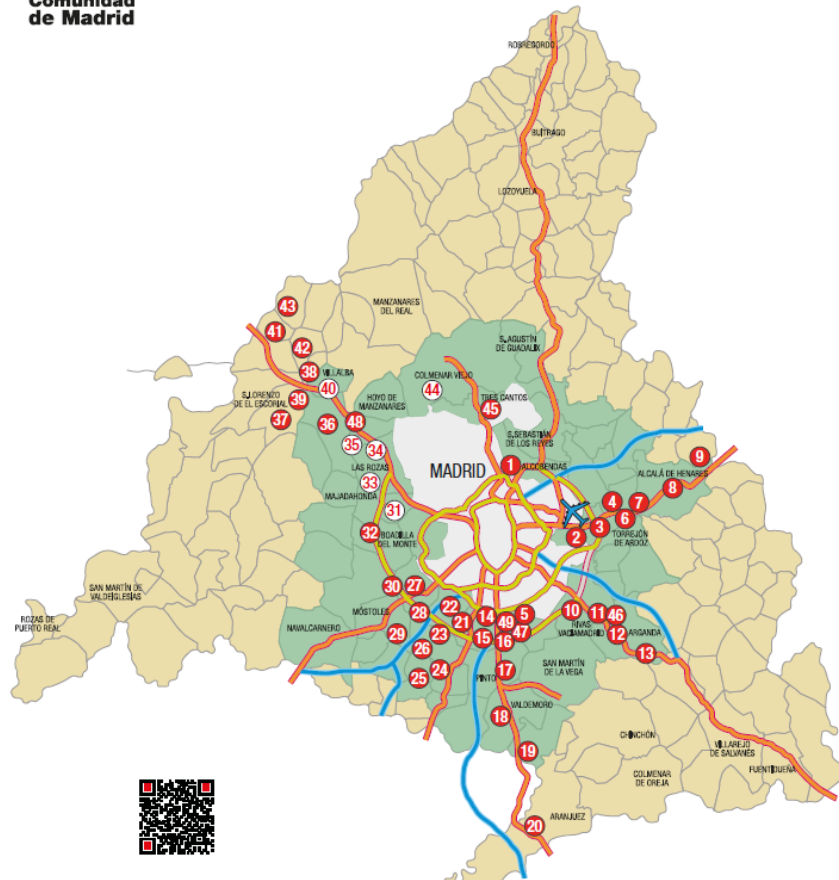
2.3 Modal integration



Park & Ride in Madrid Region



Aparcamientos en la Comunidad de Madrid ligados al transporte público (no incluye el municipio de Madrid)



49
Aparcamientos

Localización

- 1 Valdeasfuentes-Alcobendas
- 2 Coslada
- 3 San Fernando de Henares
- 4 Torrejón de Ardoz-Pza. España
- 5 El Bercial
- 6 Soto del Henares
- 7 La Garena
- 8 Alcalá de Henares
- 9 Meco
- 10 Rivas Futura
- 11 Rivas Vaciamadrid
- 12 La Poveda
- 13 Arganda
- 14 Las Margaritas
- 15 Getafe-Sector 3
- 16 Getafe-Industrial
- 17 Pinto
- 18 Valdemoro
- 19 Ciempozuelos
- 20 Aranjuez
- 21 Leganés
- 22 Zarzquemada-Leganés
- 23 La Serna-Fuenlabrada
- 24 Fuenlabrada
- 25 Humanes

Localización

- 26 Parque Polvoranca
- 27 Alcorcón
- 28 San José de Valderas
- 29 Las Retamas-Alcorcón
- 30 Móstoles-El Soto
- 31 Majadahonda
- 32 Boadilla del Monte
- 33 Las Rozas
- 34 Las Matas
- 35 Pinar de Las Rozas
- 36 Galapagar-La Navata
- 37 El Escorial
- 38 Alpedrete
- 39 Las Zorreras-Navalquejigo
- 40 Villalba
- 41 Los Molinos-Guadarrama
- 42 Collado Mediano
- 43 Cercedilla
- 44 Colmenar Viejo
- 45 Tres Cantos
- 46 Rivas Urbanizaciones
- 47 El Casar
- 48 Torrelodeónes
- 49 Alonso de Mendoza

31 Tarifa 1 Gratuito

2.4 Technological integration

CITRAM: Public Transport Innovation and Management Center



Source data from different transport operators and other organisms



Multimodal management tools

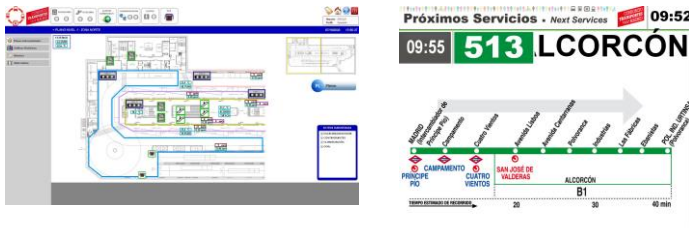


Human Factor

Supervision, coordination and centralized action in real time 24/7



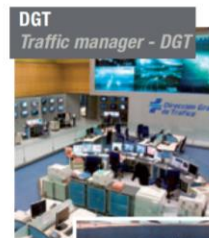
- Continuous monitoring of the status of public transport system
- Protocols for each mode of transport
- Real time Transport information to users.



2.4 Technological integration

CITRAM: Public Transport Innovation and Management Center

- **Coordination** with more than 40 **transport operators** of the 179 municipalities in the region and other **control centers**
- Managing center **24/7**
- Connection with **10.854 cameras**
- Monitoring of more than **5.000 vehicles**
- More than **6.000 information displays** for the user
- More than **40 incidents/week managed**
- More than 60 **reports/year done** with multimodal approach



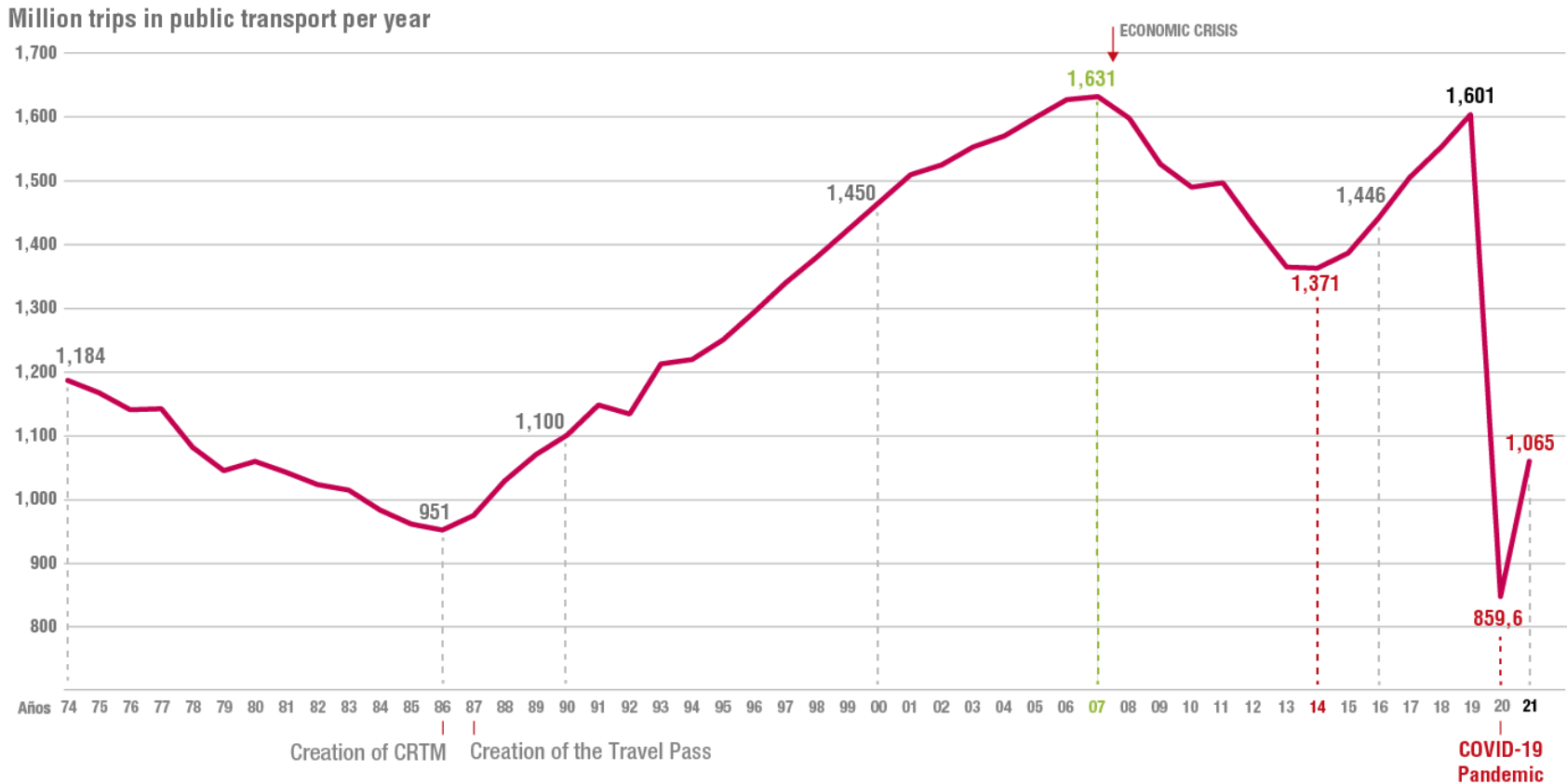


3. Conclusions and future challenges

3. Conclusions and future challenges



PUBLIC TRANSPORT DEMAND EVOLUTION



Since the creation of CRTM (1986), the public transport demand has risen 68% (until 2019) while the population has increased 36%

3. Conclusions and future challenges



FINANCING: ECONOMIC SUSTAINABILITY OF THE SYSTEM

Public subsidies	2021 (M EURO) (settled budget)		% over total
Central Administration	126,9	8%	
Madrid Region	1,272.3	80.5%	
Madrid City	164.5	10.5%	
Other cities	19.0	1%	
Total	1,582.7	100%	70%
Fee revenues	668.3		30%
Total	2,251.0		100%

Fare coverage in 2019: 41%

3. Conclusions and future challenges



FUTURE CHALLENGES



- **Increase ticketing options and new technology**, implementation NFC payment devices (card virtualization in the mobile, Big Data and BI, EMV)
- **“APARCA+T” plan**, to integrate all Park & Ride lots in one app, with real time occupancy, booking in advance, etc.
- **Intermodality and Shared Mobility (MaaS)**: to enhance the integration of public transport with other shared mobility services: *TP+bici-sharing, TP+car-sharing,...*
- **INNOVATION AND TRAINING CENTER FOR PT**: in collaboration with UITP, the center acts as a es un centro que acts as a laboratory of ideas and innovation projects, accelerating the creation and growth of companies in the region.
- **Infrastructures**:
 - Implementation of BUS-HOV in A2 highway
 - Metro extensions
 - New interchanges



Thank you very much for your attention

www.crtm.es

unimos Personas

Consortio de Transportes de Madrid.
Tu sistema de transportes.

