XVIII Congreso Panamericano de Ingeniería del Tránsito, Transporte y Logística

Santander
11-13 June 2014

Accessibility instruments for planning practice:

Bridging the gap between academic research and decision-making

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Outline

The COST Action and our Objectives

The research – Accessibility changes after a new metro line

The workshop – Introducing accessibility measures to practitioners

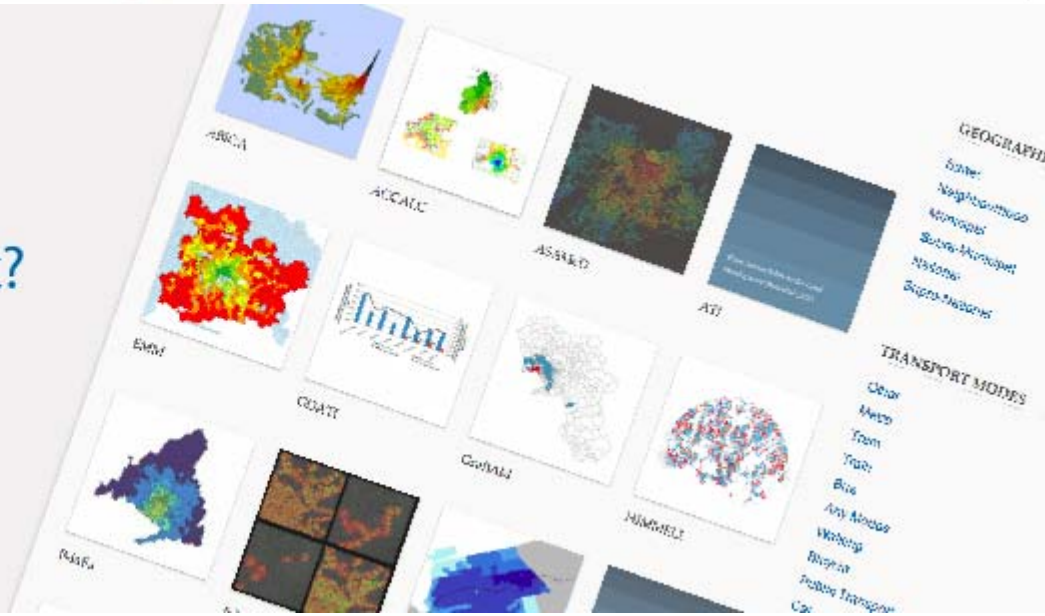
Conclusions

The COST Action

Accessibility Instruments for Planning Practice

Are you looking for an Accessibility Instrument?

Find it here.



http://www.accessibilityplanning.eu/

The COST Action

Accessibility as a measure of opportunity or ease of access for people, with different attributes, to the activities they wish to engage in.

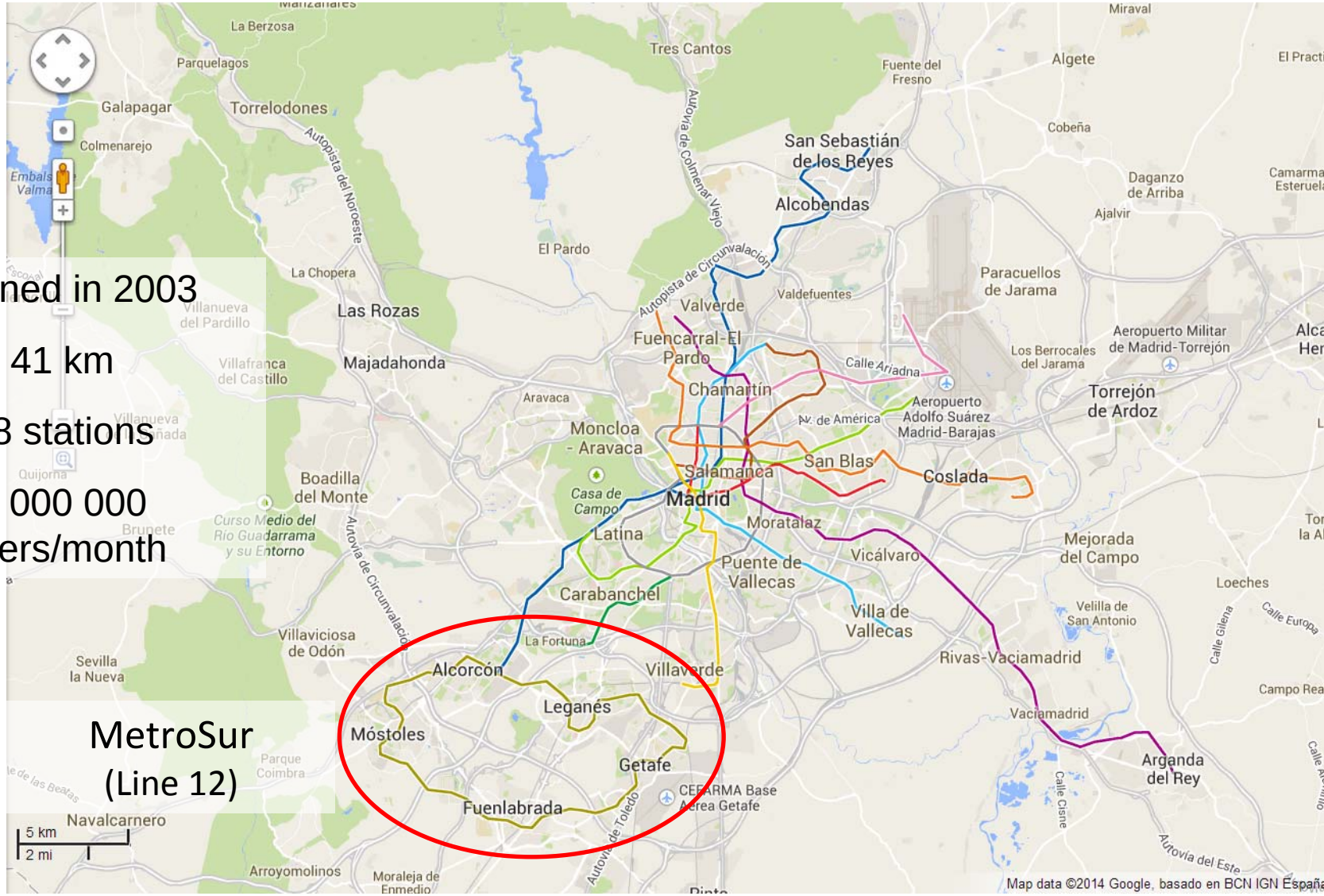
Hull, A.; Silva, C. y Bertolini, L. (Ed.) (2012). Accessibility Instruments for Planning Practice. COST Office, p. xv.

Objectives

COST Action: to introduce an easily understandable measure of accessibility to planning practitioners

Our WG: to analyze changes in accessibility after the opening of a new metro line

The research



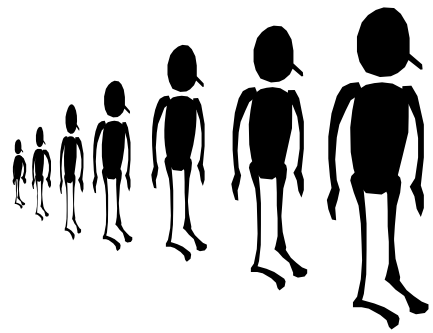
The research

Null hypothesis

After the opening of the new metro line we expect:

1. A **decrease** in **travel time** and transportation stages to centres of interest

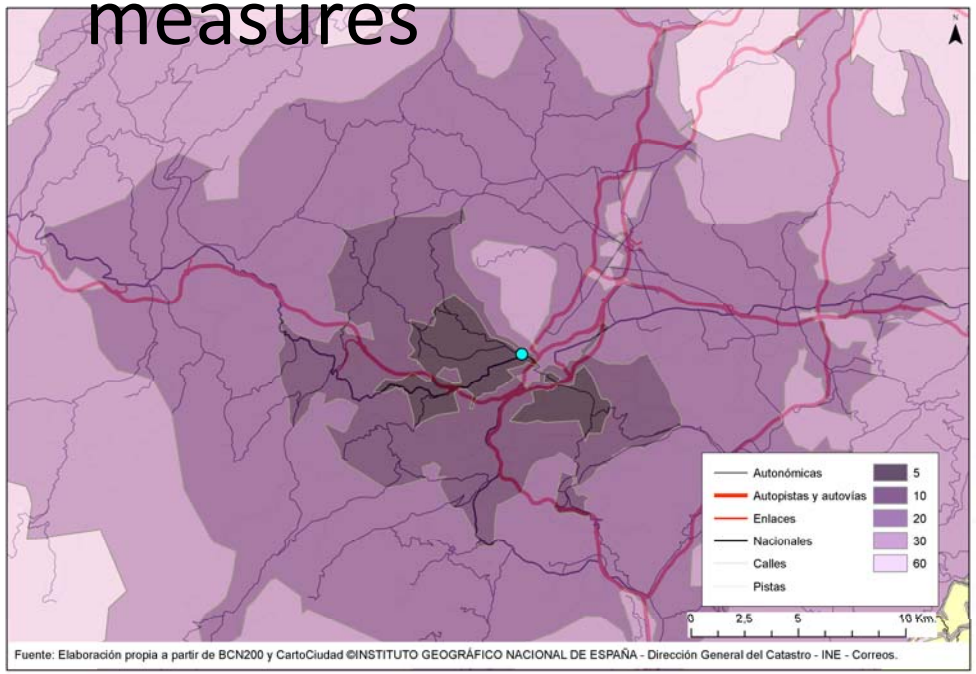
2. An **increase** in the amount of **opportunities** in terms of population and number of jobs



The research

Methodology

Isocrhones measures



Contour

Población según tiempos medios de acceso en el Municipio de Madrid

Cuadro: 4.3 Acceso de la población del año 2000, utilizando la red de transportes del 2000.

Centros de Transportes

Centro: Aeropuerto

Distrito	0-15 min		15-30 min		30-60 min		60-90 min		más de 90 min		Pob.	T.M.	T.M.P.	E.T.P.
21 BARAJAS	4.707	13,1%	30.342	84,4%	900	2,5%	-	-	-	-	35.949	20,2	19,7	0,5
16 HORTALEZA	-	-	3.882	2,6%	130.333	88,9%	12.451	8,5%	-	-	146.666	45,3	43,6	2,0
20 SAN BLAS	-	-	14.116	10,9%	105.407	81,7%	9.417	7,3%	-	-	128.940	44,6	46,6	1,6
15 CIUDAD LINEAL	-	-	-	-	189.804	84,9%	33.843	15,1%	-	-	223.647	50,4	51,4	1,9
4 SALAMANCA	-	-	-	-	118.805	80,9%	28.002	19,1%	-	-	146.807	56,8	56,3	2,0
5 CHAMARTIN	-	-	-	-	77.760	55,7%	61.744	44,3%	-	-	139.504	58,3	57,8	2,6
7 CHAMBERI	-	-	-	-	9.959	6,7%	138.047	93,3%	-	-	148.006	64,2	64,5	2,6
3 RETIRO	-	-	-	-	5.273	4,4%	115.606	95,6%	-	-	120.879	66,6	66,5	3,0
1 CENTRO	-	-	-	-	8.214	6,2%	125.292	93,8%	-	-	133.506	67,9	68,3	2,9
14 MORATALAZ	-	-	-	-	-	-	106.917	100,0%	-	-	106.917	71,9	71,8	3,1
6 TETUAN	-	-	-	-	1.077	0,8%	140.172	99,2%	-	-	141.249	71,8	71,8	3,1
19 VICALVARO	-	-	-	-	752	1,5%	51.002	98,5%	-	-	51.754	71,2	72,5	2,6
13 PUENTE DE VALLECAS	-	-	-	-	14.190	6,2%	214.679	93,8%	-	-	228.869	73,8	74,1	3,6
2 ARGANZUELA	-	-	-	-	1.744	1,3%	128.221	98,7%	-	-	129.965	75,8	75,8	3,4
12 USERA	-	-	-	-	2.832	2,4%	113.778	97,6%	-	-	116.610	77,8	76,7	3,4
9 MONCLOA-ARAVACA	-	-	-	-	-	-	92.411	85,2%	16.098	14,8%	108.509	79,6	77,0	3,2
18 VILLA DE VALLECAS	-	-	-	-	7.169	12,1%	34.275	58,0%	17.664	29,9%	59.108	85,5	77,9	3,8
17 VILLAVERDE	-	-	-	-	-	-	109.743	86,6%	16.941	13,4%	126.684	78,9	79,5	3,6
8 FUENCARRAL-EL PARDO	-	-	-	-	-	-	202.253	97,6%	4.936	2,4%	207.189	80,3	80,0	3,2
10 LATINA	-	-	-	-	-	-	190.240	74,9%	63.821	25,1%	254.061	85,0	85,0	3,1
11 CARABANCHEL	-	-	-	-	-	-	167.049	75,7%	53.512	24,3%	220.561	86,2	85,6	3,4
Total Municipio de Madrid:	**4.707**	**0,2%**	**48.340**	**1,6%**	**674.2**									**2,9**

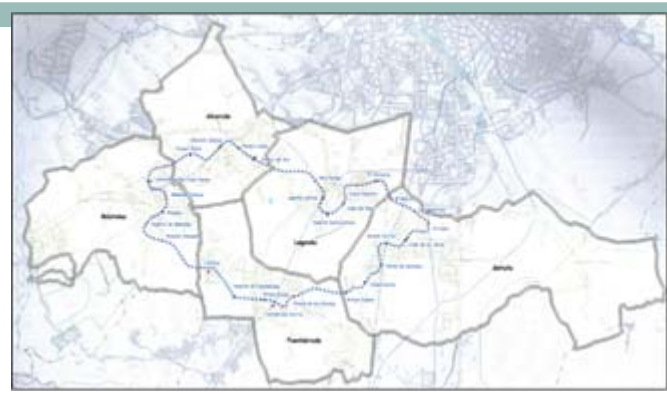
Impedance
Opportunities

Methodology

Contour measures

- "**Average Travel Time", ATT,** based on the average travel time per trip
- "**Average Transfer Index", ATI**, based on the number of stages during the trip
- "**Contour Catchment", CI**, (Curtis, SNAMUTS): as the ratio of inhabitants and jobs within in an area of 30 minutes by public transport

The research



- Town Halls
- Universities
- Shopping Centres
- Hospitals
- Industrial states

Accessibility to 25 centres 2000 and 2009

Scenarios

Year **2000**: Determination of levels of accessibility and coverage of public transport networks and healthcare in the Region of Madrid

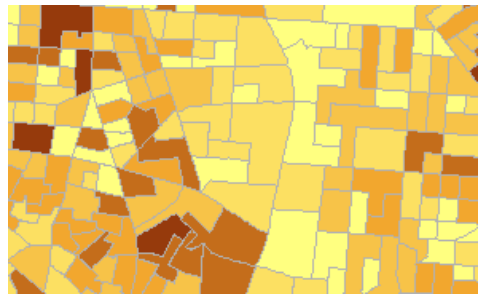
Year **2009**: own computation with identical methodology

Input Data

Offer: Location of centres

Network: Pedestrian access and public transport- EMME

Demand: Population (census tracts)



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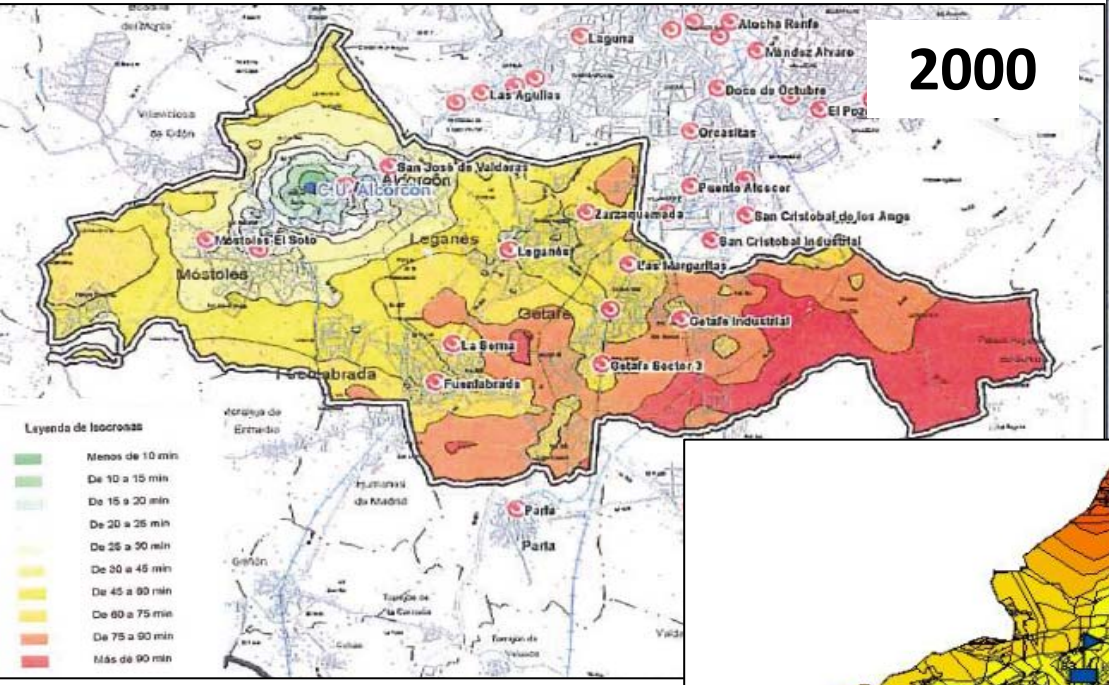
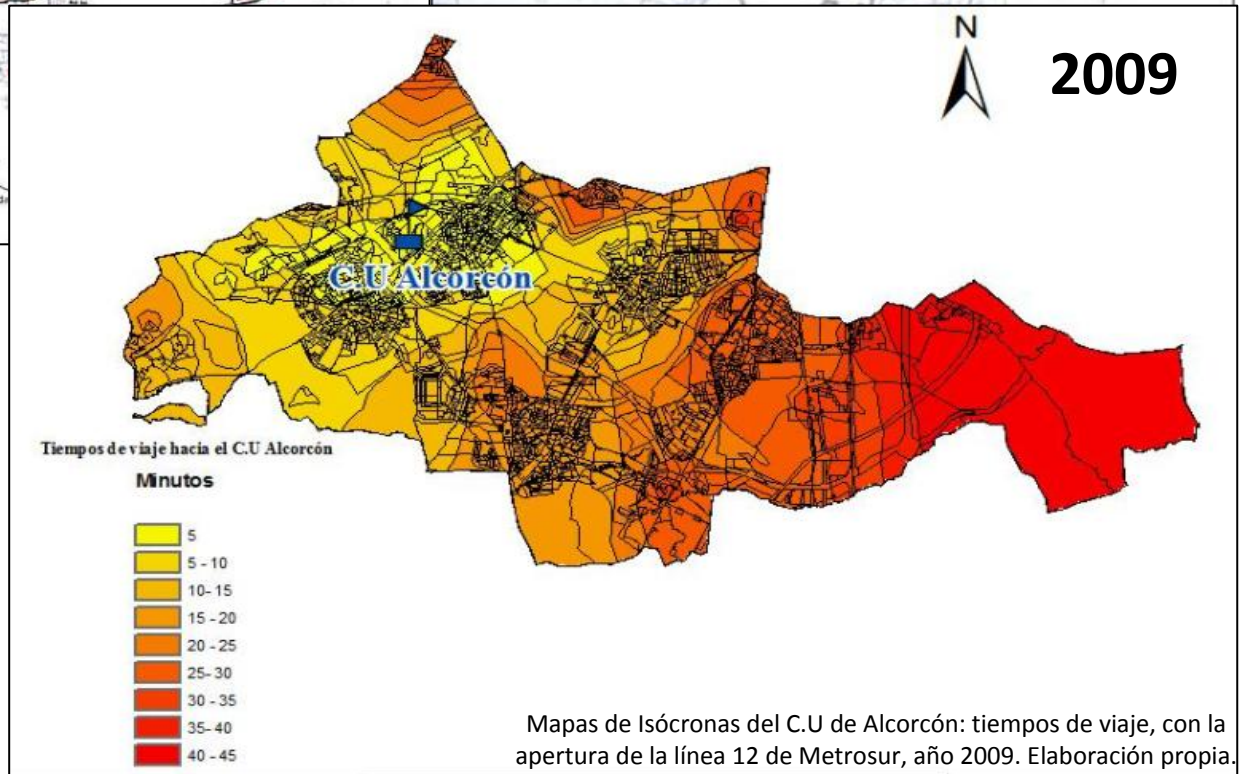
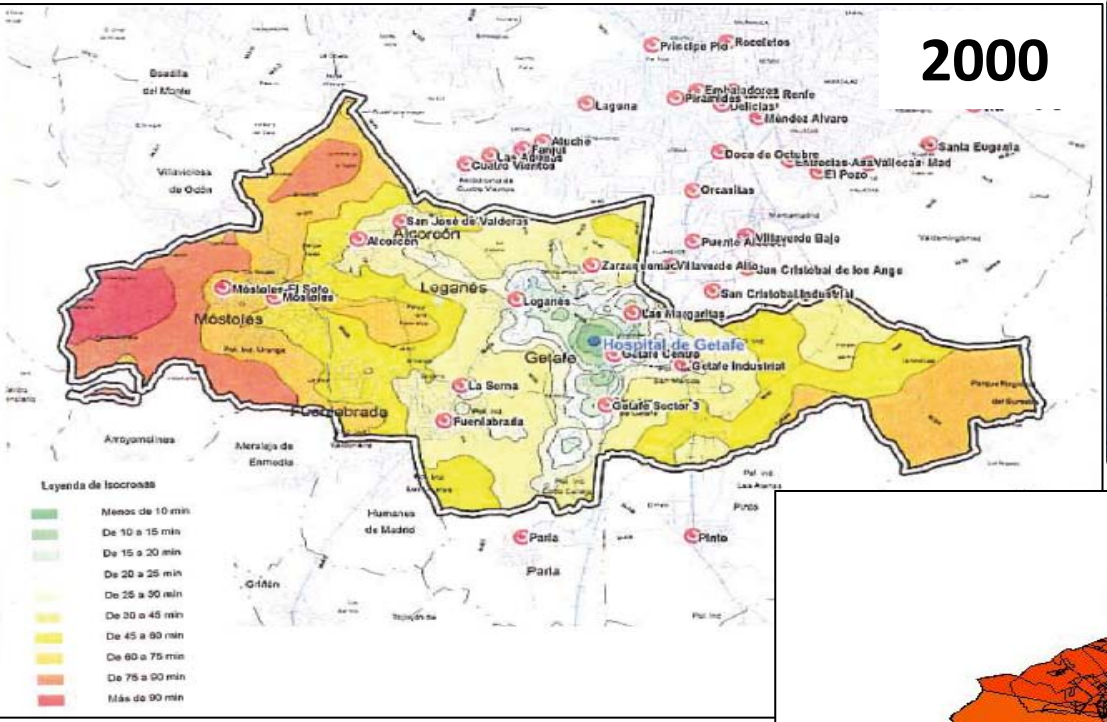


Mapas de Isócronas del C.U de Alcorcón con respecto a los municipios: Alcorcón, Fuenlabrada, Getafe, Leganés y Móstoles, del año 2000. Fuente: CRTM.

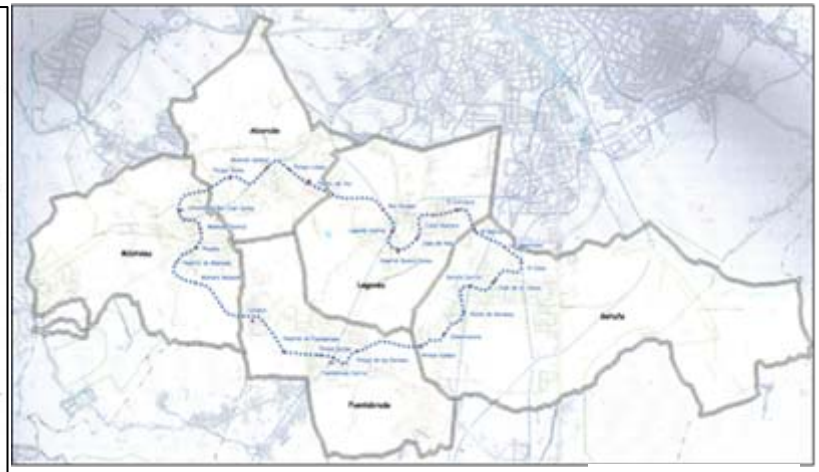


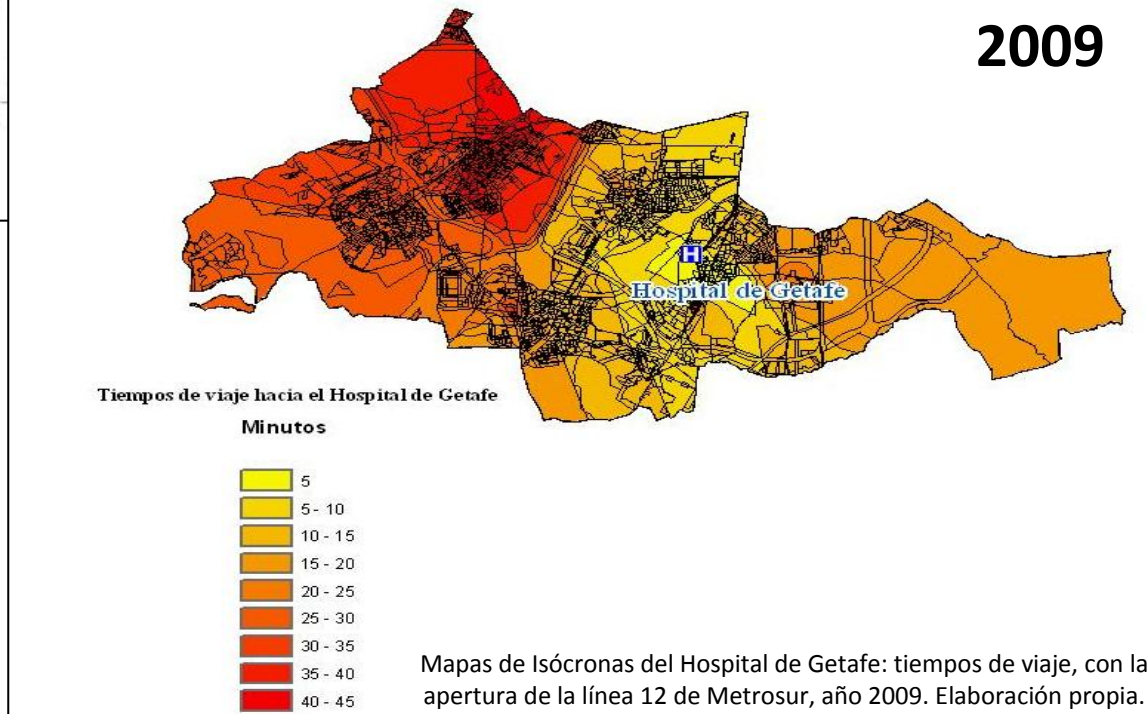
Mapas de Isócronas del C.U de Alcorcón: tiempos de viaje, con la apertura de la línea 12 de Metrosur, año 2009. Elaboración propia.

The research



Mapas de Isócronas del Hospital de Getafe con respecto a los municipios: Alcorcón, Fuenlabrada, Getafe, Leganés y Móstoles, del año 2000. Fuente: CRTM.





Mapas de Isócronas del Hospital de Getafe: tiempos de viaje, con la apertura de la línea 12 de Metrosur, año 2009. Elaboración propia.

The research

No.	Activity Centers	ATT (min) 2000	ATT (min) 2009	% reduction
1	Alcorcón Town Hall	36.8	30.1	18.20
2	U.C. Alcorcón	48.4	35.2	27.27
3	C.C San José de Valderas	39.4	34.1	13.45
4	I.A. Urtinsa	40.3	35.3	12.40
5	Alcorcón Hospital	38.7	32.7	15.50
6	Getafe Town Hall	41.8	38.2	8.61
7	U.C. Getafe	43.2	41.9	3.00
8	C.C Sector 3	50.5	37.4	25.94
9	I.A. Los Ángeles	62.2	58	6.75
10	Getafe Hospital	37.2	35.8	3.76

The research

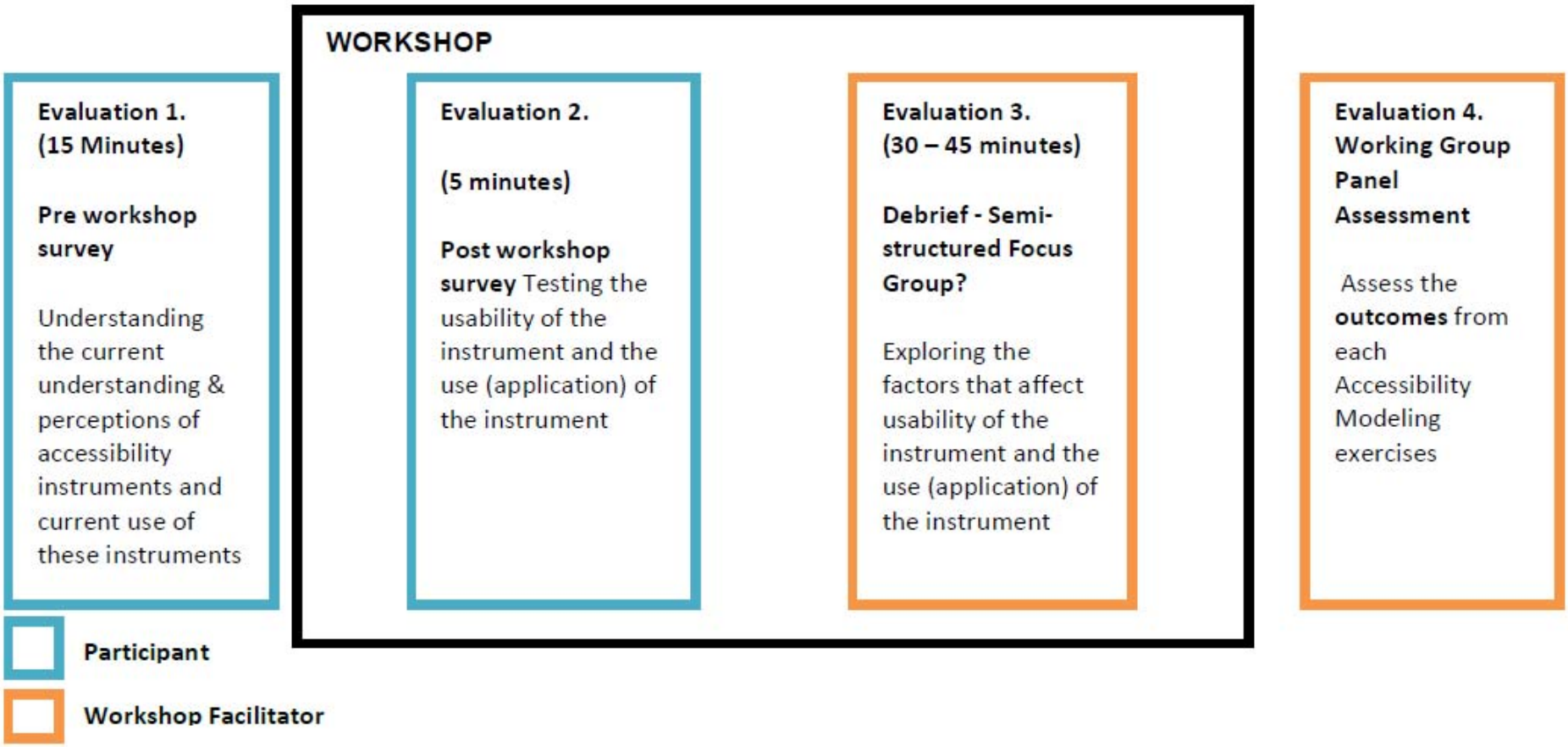
Ratio of inhabitants within 30-minute transit

No.	Activity Centers	CI(r) 2000	CI(r) 2009	%Increase
1	Fuenlabrada Town Hall	0.25	0.32	31
2	U.C. Fuenlabrada	0.16	0.24	52
3	C.C Loranca	0.29	0.30	2
4	I.A. Cobo Calleja	0.08	0.8	0
5	Fuenlabrada Hospital	0.02	0.26	>100
6	Leganés Town Hall	0.39	0.42	9
7	U.C. Leganés	0.31	0.34	9

The research

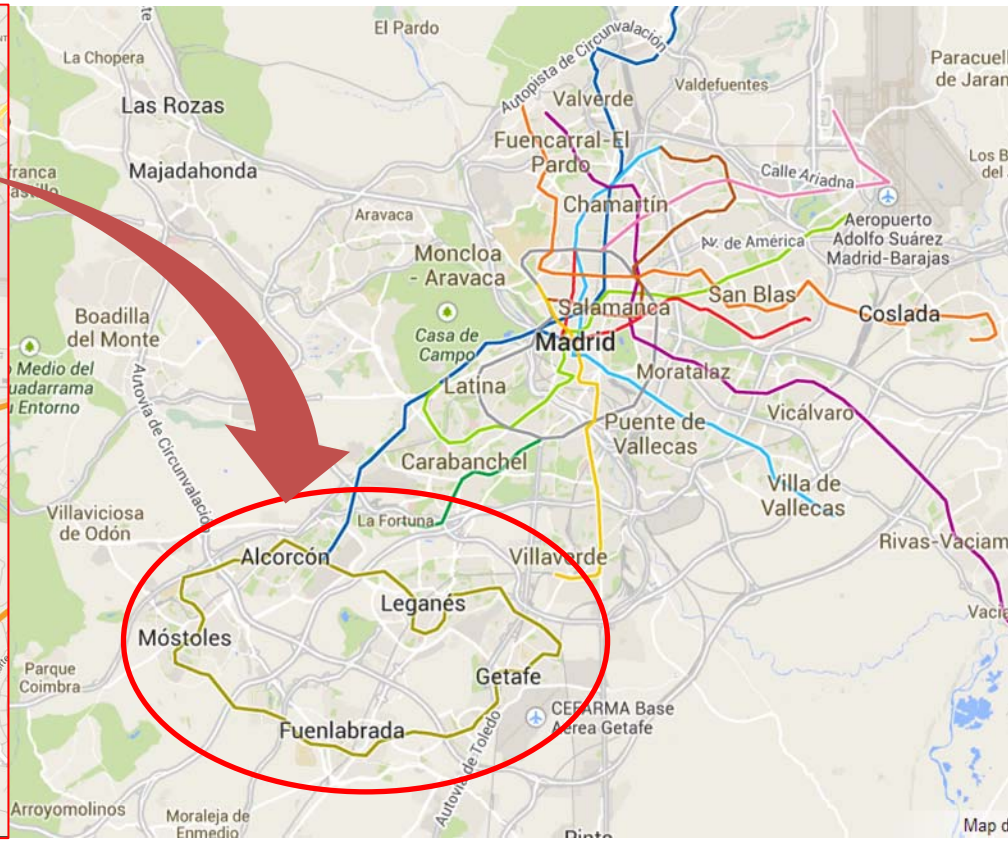
- There was an important reduction in travel time towards the selected activity centres
- Alcorcón and Fuenlabrada were the most benefited municipalities
- The highest reduction was towards U.C. Alcorcón (University Rey Juan Carlos).
- Isochrone maps were able to highlight the changes generated in the reduction in travel times
- Contour catchments (CI) showed that there have been significant changes in all the municipalities

The workshop



The workshop

The implications of the development of a new mega-leisure facility on the accessibility of Southern Madrid



The workshop

Participants profile	#Participants: 5
Male | Female	3 | 2
31-45 | 45-60	3 | 2
Transport planner | Urban planner | Researcher	1 | 3 | 1
Public organization	4 | 1

The workshop

How can we **increase accessibility** without **collateral effects** in other parts of the city?

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The workshop

- The project will impact accessibility in all modes of transport, thus actions should consider all modes jointly.
- Maintenance and eventual improvement of current accessibility levels should be a key goal. This might imply adding new lanes, modifying public transport fees, take advantage of new railway investments, and so on.
- Intersectorial planning is a must, and GIS are seen as an adequate tool to integrate information from different sources.

Conclusions

- Contour measures indicated the impact of the new infrastructure
- The suggested indicator (i.e isochrones) is deemed useful to practitiones, albeit subject to improvements. The main strength is its simplicity and ability to be integrated with other datasets in a GIS.
- Isochrones must be included sustainable mobility plans linked to new developments
- There is a need of a better integration of data sources to better analyze land use and mobility needs through a transverse perspective

Thank you for your attention!

www.transyt.es
www.ucm.es/tgis

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