

THE WIDER SOCIAL & ECONOMIC IMPACTS OF HSR: SOME EVIDENCE FROM EUROPEAN COUNTRIES

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PREMISE

- ❑ **HSR implementation plays an important role in reshaping travel patterns and activities of people, consequently changing the ways cities develop.**
- ❑ Motivations to develop HSR systems for many countries are (Sussman, 2011):
 - ... **not only:**
 - ❖ Increasing transport infrastructure capacity
 - ❖ Providing a “green” transport alternative
 - ... **but also:**
 - ❖ Promoting economic growth and regional development
- ❑ **The focus here is on the wider social & economic impacts of HSR through some European experiences.**

OUTLINE

HSR and modal shift



HSR and megalopolis formation



HSR and tourism



HSR and temporary offices



HSR and house prices



HSR and social exclusion



Multi-disciplinary approach: Engineering, Economics, Geography, Political Science, Sociology, Psychology

HSR and modal shift

RESEARCH ON HSR SINCE 2008



YEAR	N. USERS							%TRAIN	%CAR	
	HS	ES	TOT HS+ES	Δ%(HS+ES) with respect to 2005	IC	TOTAL TRAIN	CAR			TOT
2005		1460000	1460000	-	1212000	2672000	2758036	5430036	49	51
2006	708000	1127000	1835000	26	1241000	3076000	2753823	5829823	53	47
2007	1413000	609000	2022000	38	1265000	3287000	2738112	6025112	55	45

This shift is still today in favour of RAIL – Travel time now 1h before 2h

HSR and modal shift

Demand on HS trains

Demand on HS trains	Weekday		Saturday		Sunday	
	N. Users	%	N. Users	%	N. Users	%
Generated by new trips	568	13%	274	14%	164	9%
Generated by an increase of trip frequency	44	10%	165	8%	180	10%
from car	355	8%	250	12%	269	14%
from plane + bus (link to Roma Fiumicino)	28	1%	27	1%	25	1%
from IC and/or ES	3144	69%	1300	65%	1233	66%
TOTAL	4539	100%	2016	100%	1871	100%

HSR and modal shift

O-D matrix between Naples and Rome (trips %)

	DEST		PROV. OF NAPLES	ROME	PROV. OF ROME	OTHER	
	ORIG	NAPLES					
CAR	NAPLES	0	0	86	10	3	Weekday
	ROME	53	33	0	0	14	
	NAPLES	0	0	91	8	1	Saturday
	ROME	55	38	0	0	7	
	NAPLES	0	0	81	10	9	Sunday
	ROME	61	26	0	0	13	
NAPLES	0	0	85	10	5	Total	
ROME	57	32	0	0	11		

	DEST		PROV. OF NAPLES	ROME	PROV. OF ROME	OTHER	
	ORIG	NAPLES					
IC	NAPLES	0	0	88	7	5	Weekday
	ROME	62	32	0	0	6	
	NAPLES	0	0	86	7	8	Saturday
	ROME	70	28	0	0	2	
	NAPLES	0	0	87	4	9	Sunday
	ROME	70	25	0	0	5	
NAPLES	0	0	87	6	7	Total	
ROME	68	28	0	0	4		

	DEST		PROV. OF NAPLES	ROME	PROV. OF ROME	OTHER	
	ORIG	NAPLES					
HS	NAPLES	0	0	96	2	2	Weekday
	ROME	68	24	0	0	8	
	NAPLES	0	0	91	1	8	Saturday
	ROME	62	29	0	0	9	
	NAPLES	0	0	82	6	12	Sunday
	ROME	66	27	0	0	6	
NAPLES	0	0	92	2	5	Total	
ROME	66	26	0	0	8		

	DEST		PROV. OF NAPLES	ROME	PROV. OF ROME	OTHER	
	ORIG	NAPLES					
ES	NAPLES	0	0	92	3	5	Weekday
	ROME	85	15	0	0	0	
	NAPLES	0	0	91	2	7	Saturday
	ROME	73	22	0	0	5	
	NAPLES	0	0	88	3	9	Sunday
	ROME	80	20	0	0	0	
NAPLES	0	0	90	3	7	Total	
ROME	78	19	0	0	3		

HSR and megalopolis formation

- ❑ **HSR** has the potential for **megalopolis** formation.
- ❑ **Defining megalopolis:** large agglomerations, megaregions, mega-cities, megaplexes, megapolitan regions, etc.
- ❑ Formation of ***Megalopolis - an integrated economic urban complex*** - created by fusion of multiple cities connected by high-speed transportation of 200-300 km/h (Sussman, 2011).
- ❑ *A geographical area that shares a common labor market and a common market for household and business services” (Blum et al., 2009).*

POSITIVE IMPACTS:

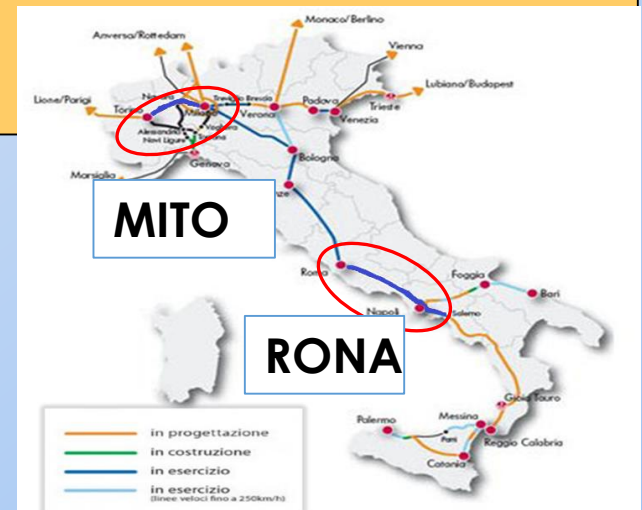
- Larger labor markets and commercial markets, thus greater productivity.
- *“Better and more effective than cities alone in meeting the economic and social challenges” (Ross, 2009).*

HSR and megalopolis formation

- ❑ How one would know that a megalopolis emerges as a result of HSR deployment? (Sussman, 2011)
- ❑ No precise parameters, but some considerations arise:
 - Significant increases in one-day round trips between a pair or group of cities.
 - Increase of generated induced demand.
 - Induced demand for business trips.
 - Increase in the number of daily commuters.
 - Decrease in overnight hotel stays.

However, these parameters may be affected by factors other than HSR infrastructure, making the causal relationship difficult to verify.

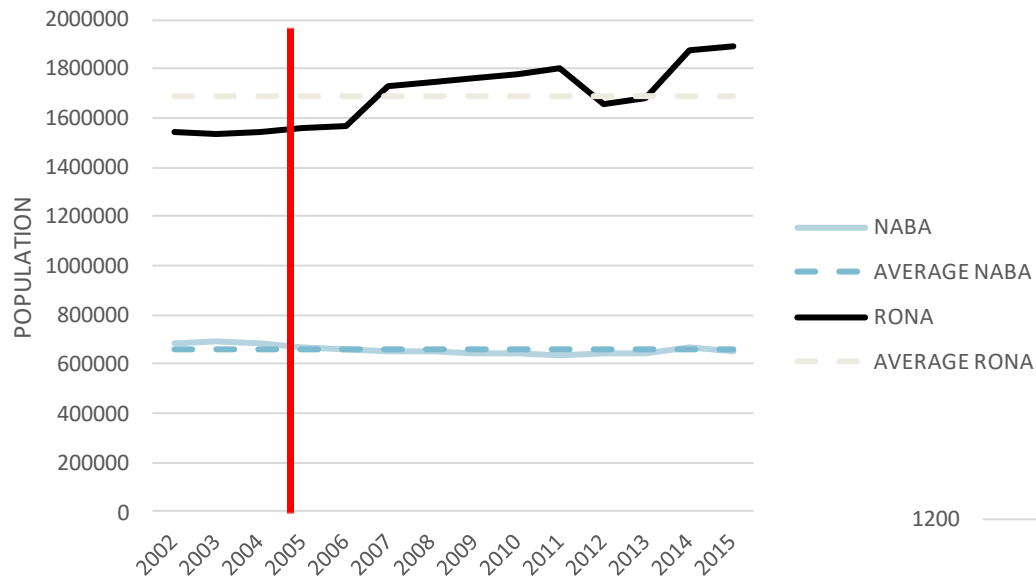
**Two case studies:
RONA and MITO in Italy**



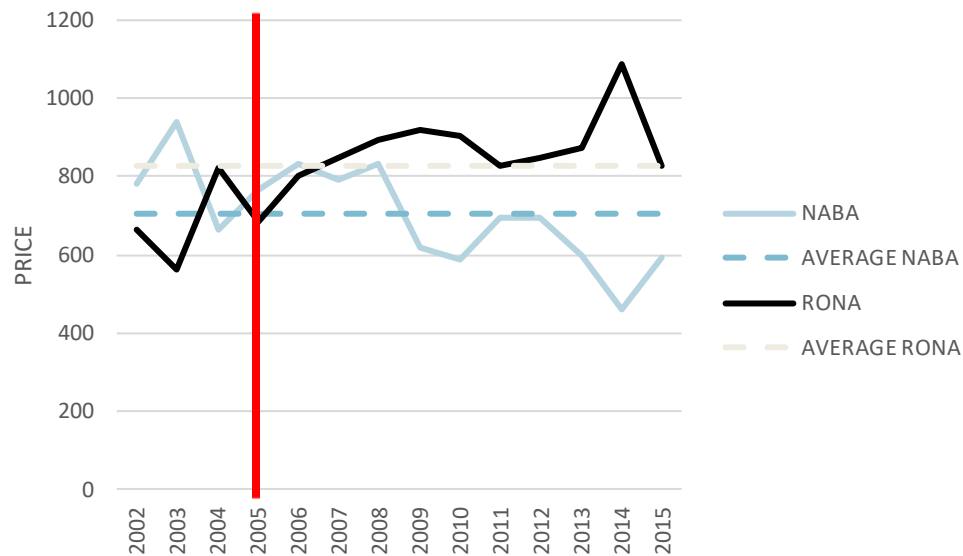
HSR and megalopolis formation

RONA HSR CORRIDOR vs NABA NON HSR CORRIDOR

Δ POP



Δ HOUSEPRICE



MITO MEGALOPOLIS

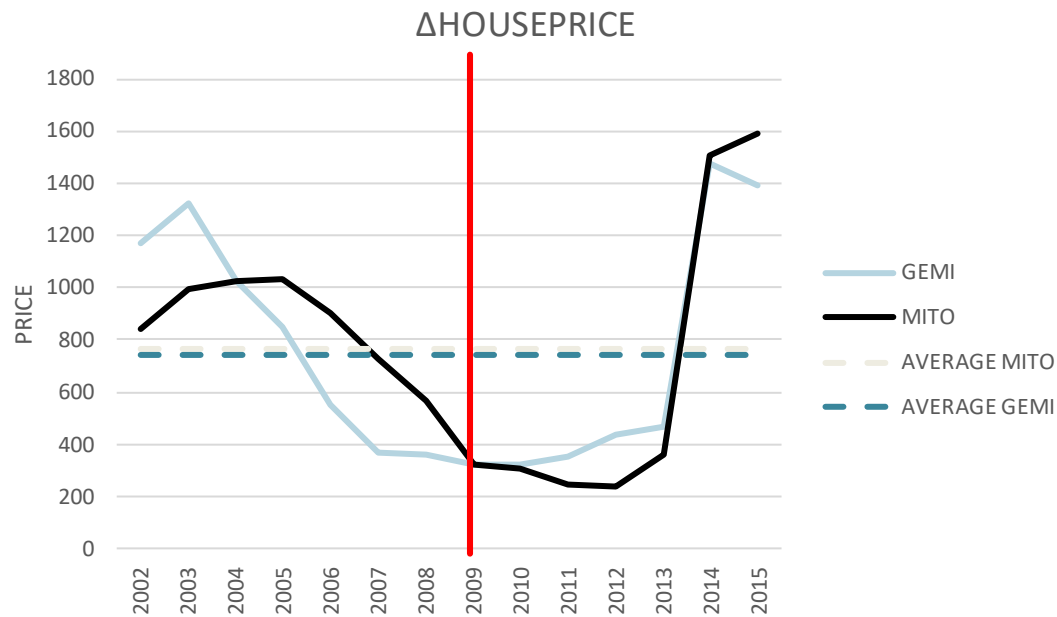
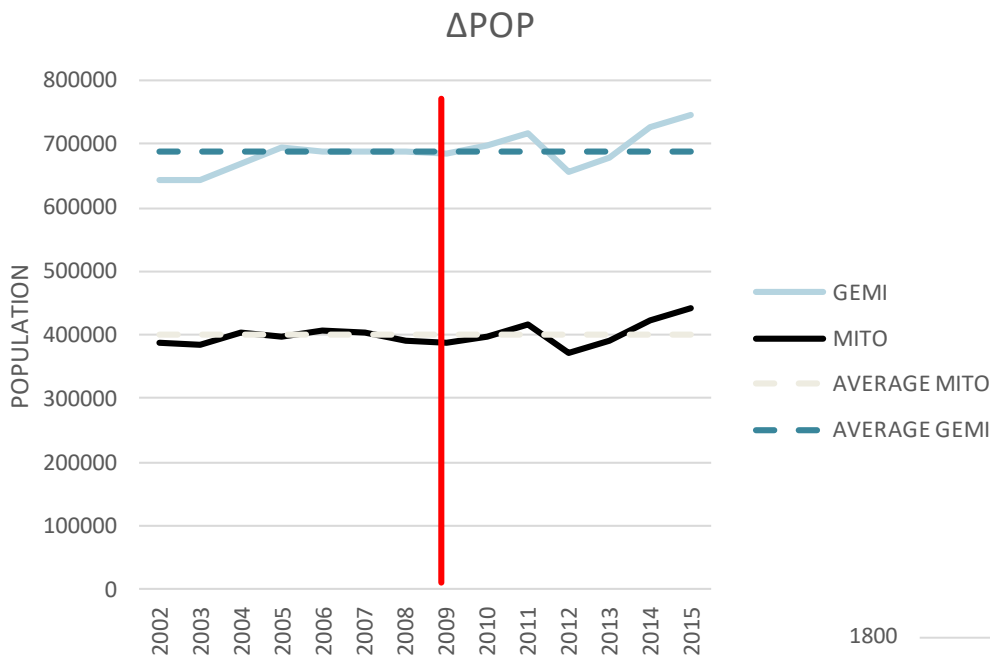
MITO 148,3km (Milano-Torino)
(Inauguration Dec 2009)



<i>HSR</i>		TRAVEL TIME	
		BEFORE	AFTER
	MILANO-TORINO	1h40min	49min

HSR and megalopolis formation

MITO HSR CORRIDOR vs GEMI NON HSR CORRIDOR



Other potential corridors to analyse are:

- ❑ Paris - Lyon in France
 - ❑ Frankfurt - Cologne in Germany
 - ❑ Madrid - Seville in Spain
 - ❑ Corridors in Japan, China, Taiwan
- ❖ **HSR** links may be **used to shape the direction of megalopolises** within a new corridor **through policies and decisions on operations** (e.g., frequency, number of stops), inter-modal linkages, station locations, etc.
- ...therefore**
- ❖ **Megalopolises or megaregions** present the need for planning on a **new spatial scale** with new boundaries and linkages. This implies **institutional change**.

HSR and tourism

- ❑ **The transportation system is an essential component of successful tourism development.**
- ❑ **Existence of strong local potentialities.** The presence of HSR is insufficient to develop tourism products (places) that are little known.
(QUALITY OF PROMOTION OF THE DESTINATION).
- ❑ **The existence of local strategies.** The effects of HSR are not automatic .
(PROMOTION OF THE SERVICE ITSELF).
- ❑ **HSR CAN SUPPORT THE DEVELOPMENT OF URBAN TOURISM, PARTICULARLY FOR SHORT STAYS.**

High-speed rail stimulates tourism

2012-March-30 08:53 Shenzhen Daily

PASSENGERS with high-speed train tickets from Shenzhen or Guangzhou to Wuhan can enjoy discounts of 30-40 percent when visiting major tourism attractions in Central China's Hubei Province in April, a promotion of Hubei tourism authority said Wednesday.

Economy-class tickets for high-speed trains from Shenzhen to Changsha, capital of Hunan Province, and Wuhan, capital of Hubei Province, on April 1, the opening day of Shenzhen-Wuhan High-Speed Rail, have sold out.

The high-speed rail, which cuts the Shenzhen-Wuhan journey to four hours, is expected to greatly stimulate tourism along the line.

"Hubei is now better connected with Pearl River Delta cities and we are inviting Guangdong travelers to enjoy sakura flowers in Wuhan University and visit our tourism attractions, such as Yellow Crane Tower, Three Gorges Dam and Donghu Lake," Zhang Dahua, Hubei tourism chief, said at a promotion Wednesday.

Shenzhen travel agencies are also mulling package tours to Wuhan and Changsha.

According to Liu Ke, marketing manager of China Travel Service Shenzhen Co., the three-day trip to Wuhan costs 2,000 yuan (US\$317.25).

It costs 540 yuan for an economy seat to Wuhan and 390 yuan to Changsha.

According to line operator Guangzhou Railway Group, there will be 20 pairs of trains a day between Shenzhen, Changsha and Wuhan and the intervals for departures at Shenzhen North Railway Station are between 30 minutes and 90 minutes. (Han Ximin)

HSR and tourism

- ❑ **Four tourist destinations: Rome, Paris, Madrid, Naples.**
- ❑ Investigating the **impact of HSR on the choice of a tourist destination.**
- ❑ **HSR** has an **impact** on this choice in the case of **Paris and Naples.**
- ❑ The **French HSR system is “capillary”** w.r.t. to the Italian one and it is considered an alternative transport mode.
- ❑ For **Madrid and Rome**, an impact exists since **HSR is chosen for visiting cities close to them.**

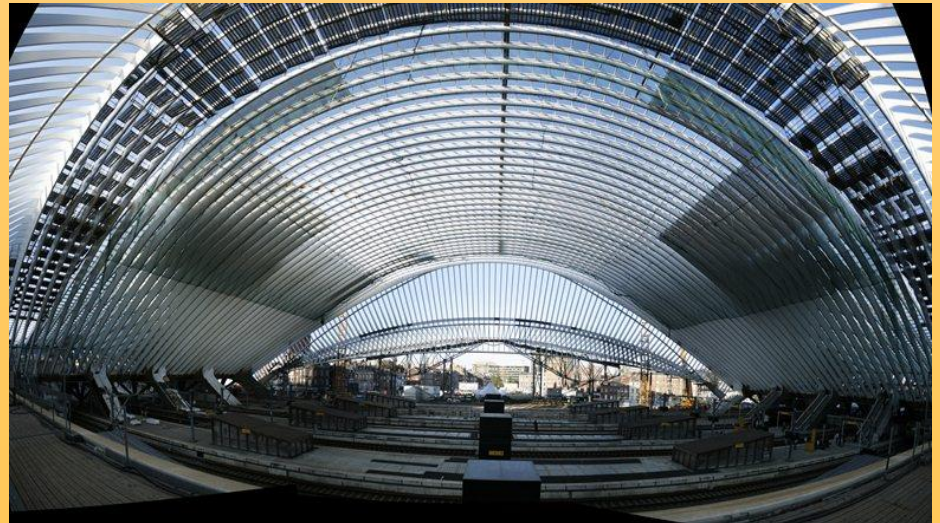


HSR STATIONS: PIECES OF ARTWORK



HSR station at Reggio Emilia (Italy) by S. Calatrava

HSR station at Liège-Guillemin (Belgium) by S. Calatrava



HSR and temporary offices

HSR STATIONS: PIECES OF ARTWORK



**HSR station at Haramain
(Saudi Arabia) by N.
Foster**

**HSR station at Naples-
Afragola (Italy) by Z.
Hadid**



BUT THEY ARE ALSO WORKPLACES...

.....Investments in HSR systems can:

- ✓ increase the number of business travellers
- ✓ Encourage the development of offices inside and around stations

What are temporary offices?

Fully-equipped offices to be rented by mobile workers for a given time-period.

“Mobile workers” are all the professionals who spend part of their time working in different places. They usually do not own head-offices.

Regus is the world’s leading provider of flexible workspaces with 1500 locations globally.

HSR and temporary offices

**Regus in Italy
since 1996**



Turin
City Centre



Milan
Duomo



Milan
Carobbio



Rome
EUR



Naples
Garibaldi

Offices



City

City centres
Signature buildings
Business parks
Key office centres



Community

Small town
Local
Community integrated

Third places



Airports



Rail station



Service Station



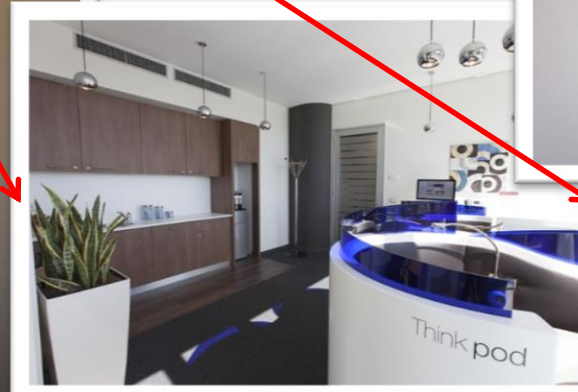
Retail centres



HSR and temporary offices

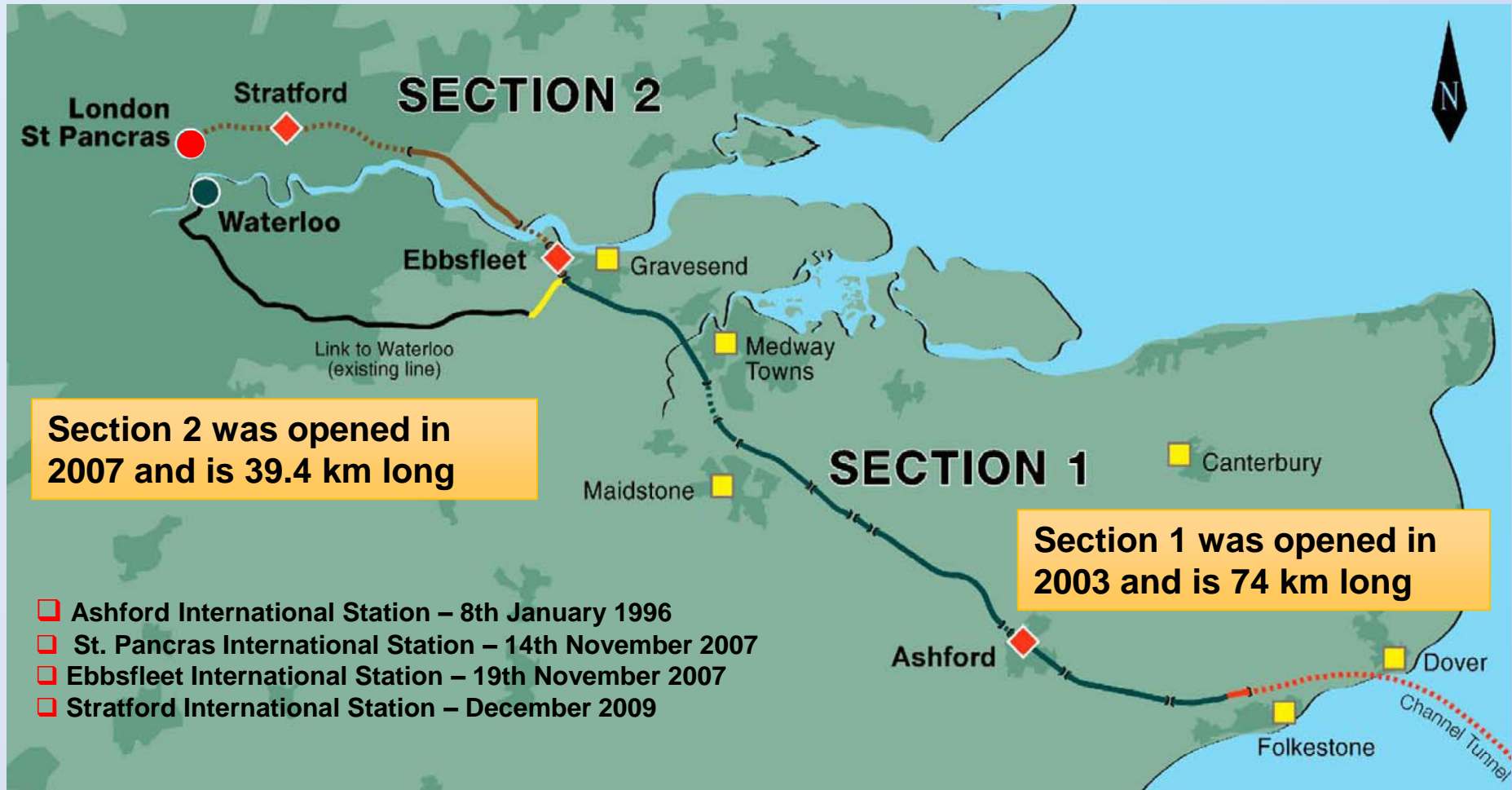
Regus offices inside the
HSR station of Naples
since Sep 2013

6th FLOOR



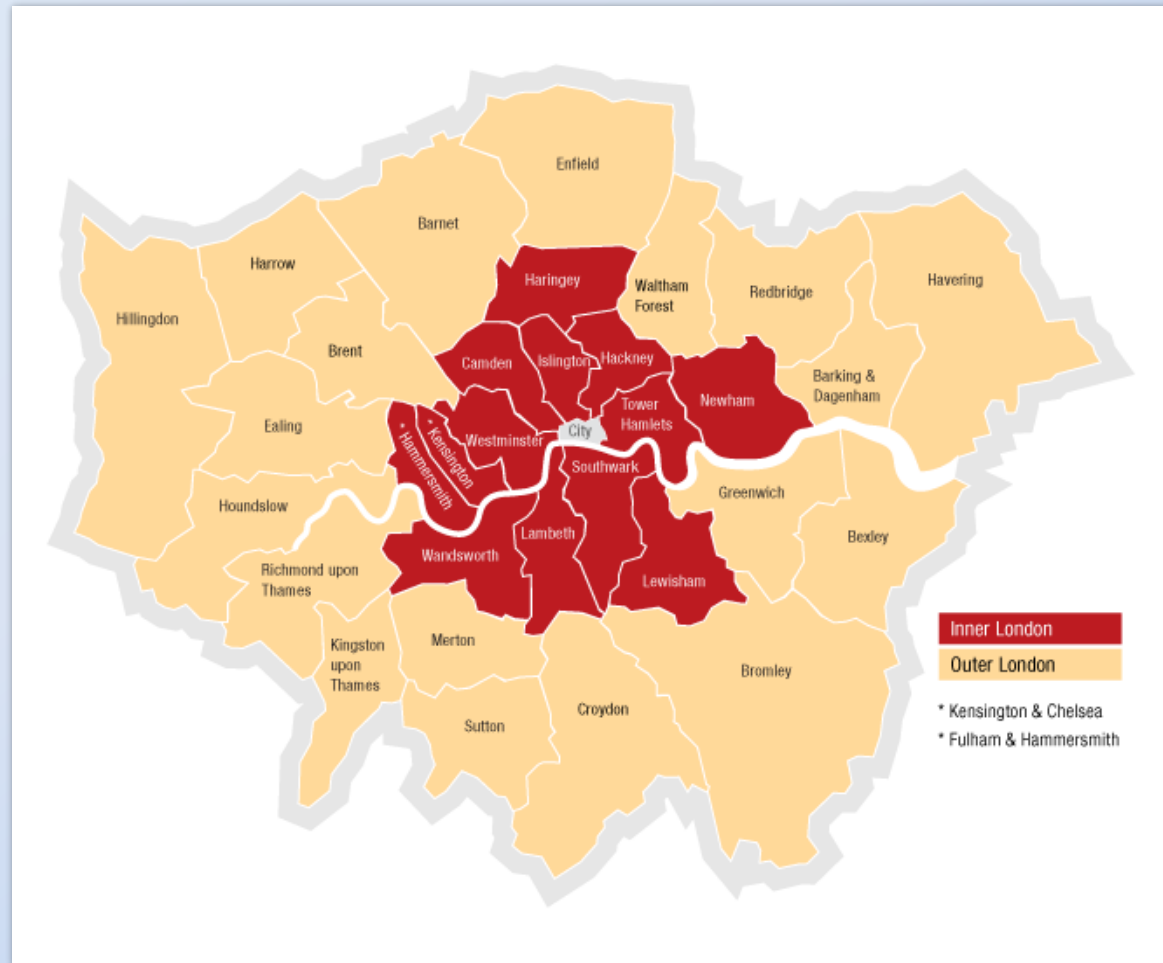
Temporary offices are also rented by locals and not only by mobile workers.

HIGH SPEED ONE IN UK



HSR and house prices

The Greater London contains 32 London boroughs plus the City of London. **Camden and Newham boroughs experienced a significant renewal thanks to the inauguration of the HSR stations.**



HSR and house prices

**St Pancras International
HSR Station in Camdem
Inaugurated in 2007**

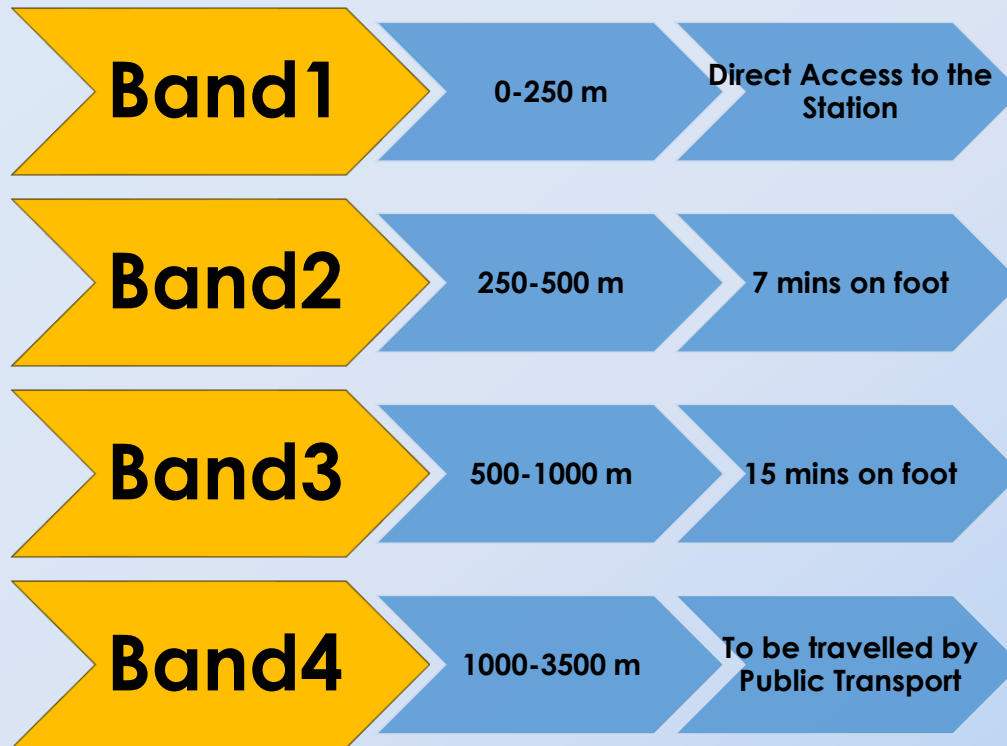


HSR and house prices

**Stratford International
HSR Station in Newham
Inaugurated in 2009**



HSR and house prices



It has been demonstrated that within Band1 and Band2 (***catchment area***), real estate located within walking distance from the station **benefited from the improved accessibility** rather than an estate located away 1000 m from the station.

HSR and social exclusion

DISTINCTION BETWEEN SOCIAL EXCLUSION AND POVERTY

□ According to **Silver (1994) social exclusion** is “A multidimensional process of progressive social rupture, detaching groups and individuals from social relations and institutions and preventing them from full participation in the normal, normatively prescribed activities of the society in which they live.”

□ **According to the UN (1996) poverty is** “A condition characterised by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information”.

Low income categories are not necessarily experiencing social exclusion.

SOCIAL EXCLUSION AND TRANSPORT: WHAT IS THE RELATIONSHIP?

“The process by which people are prevented from participating in the economic, political and social life of the community because of **reduced accessibility to opportunities**, services and social networks, due in whole or part to insufficient mobility in a society and environment built around the assumption of high mobility”.

(Kenyon et al., 2003)

HSR and social exclusion

The Seven Social Exclusion factors proposed by Church *et al.* (2000)

Physical



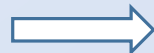
Physical nature of the transport system can create physical and psychological obstructions for people with restricted mobility.

Geographical



Places geographically far from the transport infrastructures may limit people in doing activities in the immediate proximities.

From services



The increasing diffusion of shops and centralised services may result inaccessible if not served by infrastructures and services of public transport.

Economic



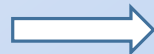
Costs of travelling can limit chances in making a transport mode choice than who has better economic possibilities to travel.

Time-based



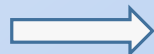
The departure/arrival times do not match those desired by the users.

Based on fear



Some people may be worried and feel in danger travelling in public spaces.

Based on Space Management



Some strategies for security and management of spaces in stations dissuade social-excluded people in using public transport.

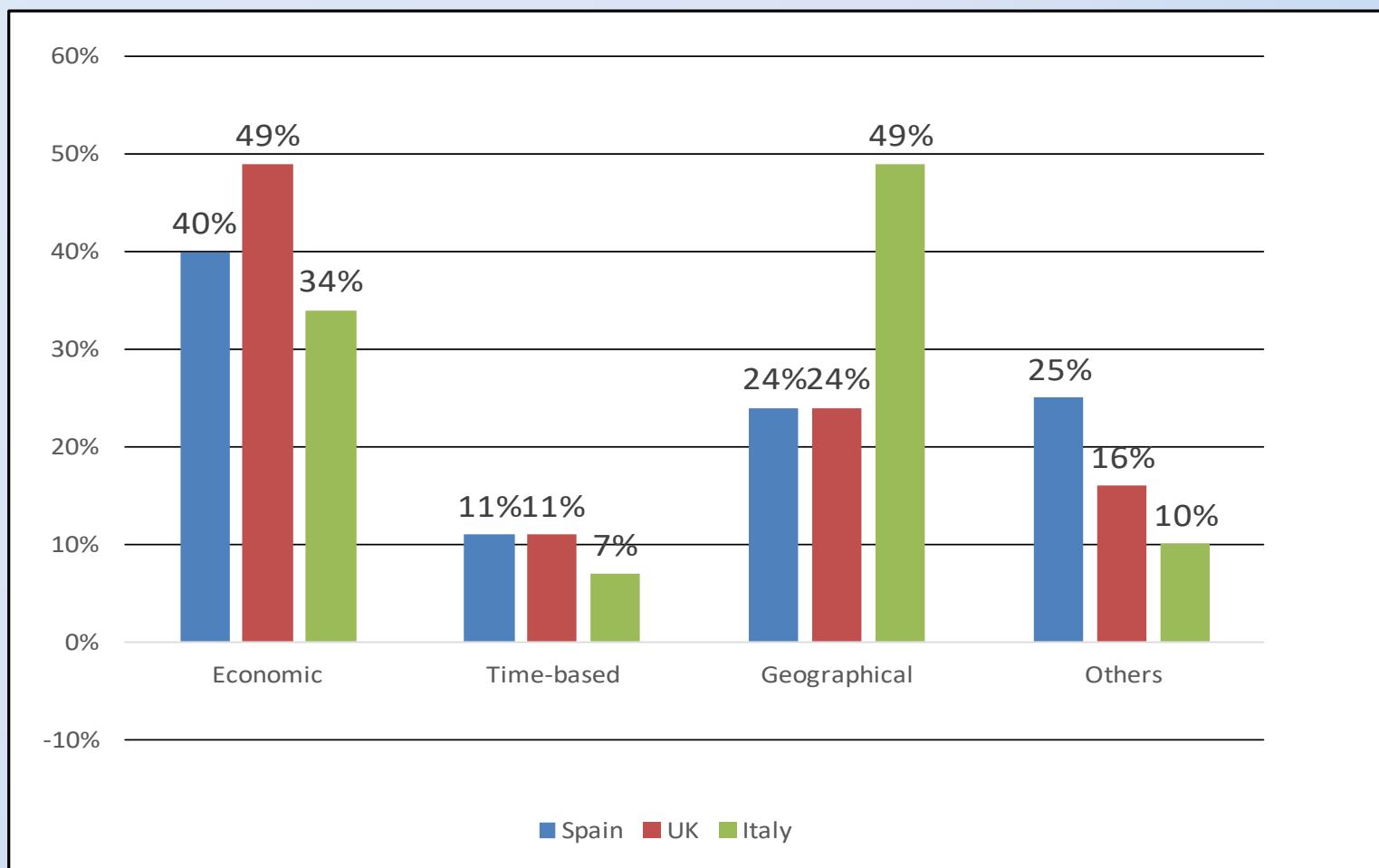
HSR and social exclusion

Spain – UK – Italy: Economic, Time-based and Geographical exclusion



HSR and social exclusion

Spain – UK – Italy: Economic, Time-based and Geographical exclusion



SOME PUBLICATIONS ON HSR SYSTEMS IMPACTS

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3. **Pagliara, F.**, de Abreu e Silva, J., Sussman, J. and Stein, N. (2013): Megacities and High Speed Rail systems: which comes first?. In *Transportation Demand Management*, G. Wulfhorst and B. Buttner, pp. 125-142, Technische Universität München.
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4. Delaplace, M., **Pagliara, F.**, Perrin, J. and Mermet, S. (2014): Can High Speed Rail foster the choice of destination for tourism purpose? *Procedia Social and Behavioral Sciences*, 111, pp. 166-175.
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7. **Pagliara, F.** (2014): *High Speed Rails Systems: Impacts on Mobility, on Tourism and on Mobile Workers*, LAP Lambert Academic Publishing, Saarbrücken, Germany.
8. **Pagliara, F.** (2014): Some concerns on the role of High Speed Rail Systems in tourists' destination choice. *Proceedings of the International Conference on Traffic and Transport Engineering 27-28 November*, Belgrade.
9. **Pagliara, F.**, Delaplace, M. and Vassallo, J. (2014): High-Speed trains and tourists: what is the link? Evidence from the French and the Spanish capitals. *Conference proceedings of Urban Transport XX – Urban Transport and the Environment in the 21st century*. *WIT Transactions on the Built Environment*, 138, pp. 17-27.
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SOME PUBLICATIONS ON HSR SYSTEMS IMPACTS

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16. **Pagliara, F.**, Biggiero, L., Patrone, A. and Peruggini, F. (2016b): An analysis of spatial equity concerning investments in high-speed rail systems: The case study of Italy, *Transport Problems*, Vol. 11, 3, pp. 55-68. 11.
17. Delaplace, M., **Pagliara, F.** and La Pietra, A. (2016): Does high-speed rail affect destination choice for tourism purpose? Disneyland Paris and Futuroscope case studies, *Belgeo*, 3, pp. 1-23.
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