



# STATION CHARGING SYSTEMS AND FINANCIAL ANALYSIS OF VERTICAL SEPARATION IN EUROPE

PRESENTATION OF RESULTS OF A  STUDY ON RAILWAY STATION  
AND AUXILIARY CHARGES IN EUROPE

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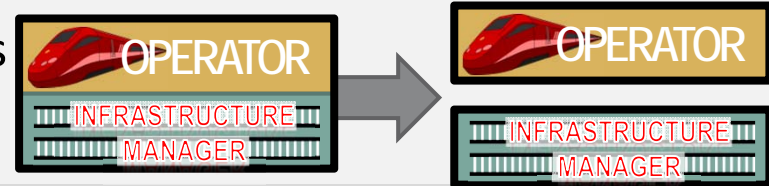
Session 1. Governance and Financing: A New Approach

# Background and Context

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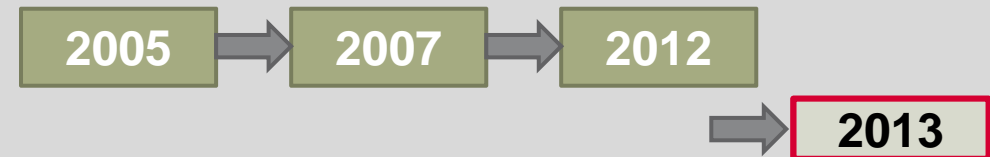
## □ Railway Reform in Europe: Vertical Separation (IM vs. RU):

- Resulting Infrastructure Charging Systems
- EU Directive 2001/14/EC



## □ UIC Studies on Charging Systems:

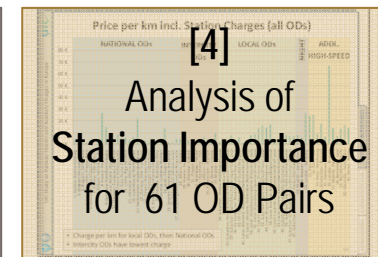
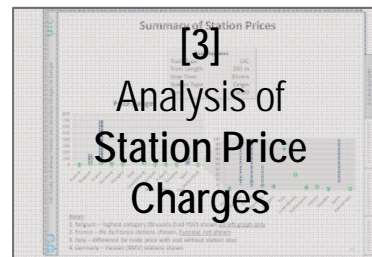
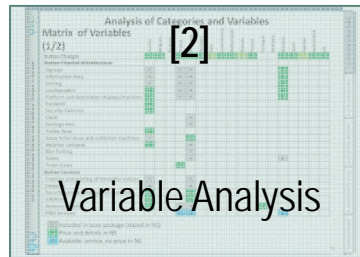
- Passenger Infrastructure Charges:
- Stations and Auxiliary Services:



## □ 2013 Study Goals and Scope:

- State of the Industry (charging systems and principles; tariff levels,...)
- Determine **significance** of station and auxiliary charges
- Scope: 25 EU Countries + Switzerland + Norway

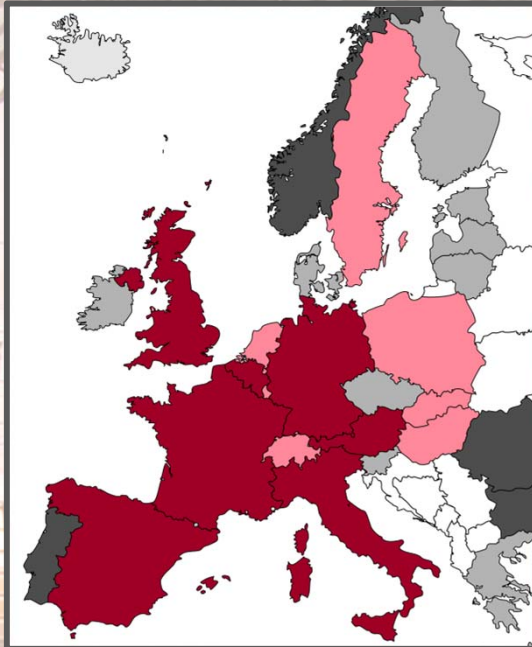
## □ Outputs:



# Qualitative Analysis

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## System Complexity



### Summary

- No Station and/or Auxiliary Charges (9)
- Some Charges (4)
- Simple System (7)
- Complex System (7)

### Observations

- Variable station pricing systems that depend on station importance and other factors are found in *Austria, Belgium, France, Germany, Hungary, Netherlands, Slovakia, Spain*
- Belgium, France, Spain have systems with multiple degrees of freedom. Resulting prices have a high degree of variation
- Italy, Luxembourg, Poland, and Switzerland have a flat fee that has little variation

### Variables

- 7 groups of variables for station access
- 36 different variables related to station access (10 included in base price, 26 charged separately)
- 10 more variables for auxiliary services



# Matrix of Variables

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Matrix of Variables	Austria	Belgium	Bulgaria	France	Germany	Italy	Poland	Portugal	Romania	Slovakia	Spain	Sweden	Switzerland
<b>Station Charges</b>													
<b>Station Physical Infrastructure</b>													
Signage	*	*	*	*	*	*	*	*	*	*	*	*	*
Information Area	*	*	*	*	*	*	*	*	*	*	*	*	*
Seating	*	*	*	*	*	*	*	*	*	*	*	*	*
Loudspeakers	*	*	*	*	*	*	*	*	*	*	*	*	*
Platform and destination displays/monitors	*	*	*	*	*	*	*	*	*	*	*	*	*
Escalator	*	*	*	*	*	*	*	*	*	*	*	*	*
Security Cameras	*	*	*	*	*	*	*	*	*	*	*	*	*
Clock	*	*	*	*	*	*	*	*	*	*	*	*	*
Garbage bins	*	*	*	*	*	*	*	*	*	*	*	*	*
Trolley Base	*	*	*	*	*	*	*	*	*	*	*	*	*
Areas ticket issue and validation machines	*	*	*	*	*	*	*	*	*	*	*	*	*
Weather canopies	*	*	*	*	*	*	*	*	*	*	*	*	*
Bike Parking	*	*	*	*	*	*	*	*	*	*	*	*	*
Toilets	*	*	*	*	*	*	*	*	*	*	*	*	*
Ticket Gates	*	*	*	*	*	*	*	*	*	*	*	*	*
<b>Station Services</b>													
Creation and printing of timetable notices	*	*	*	*	*	*	*	*	*	*	*	*	*
Cleaning	*	*	*	*	*	*	*	*	*	*	*	*	*
Security service (premium or standard)	*	*	*	*	*	*	*	*	*	*	*	*	*
InfoPoint	*	*	*	*	*	*	*	*	*	*	*	*	*
Announcements	*	*	*	*	*	*	*	*	*	*	*	*	*
PRM Services	*	*	*	*	*	*	*	*	*	*	*	*	*
<b>Station Categorization (Physical Structure)</b>													
Platform Capacity (e.g. number of tracks)	*	*	*	*	*	*	*	*	*	*	*	*	*
Tariff Separation (Track access v. building access)	*	*	*	*	*	*	*	*	*	*	*	*	*
<b>Station Categorization (Station Importance)</b>													
Passenger Traffic	*	*	*	*	*	*	*	*	*	*	*	*	*
Train Traffic (e.g. stops per day)	*	*	*	*	*	*	*	*	*	*	*	*	*
Connection Point	*	*	*	*	*	*	*	*	*	*	*	*	*
<b>Service Characterization</b>													
Service Type (long-distance v. regional v. local)	*	*	*	*	*	*	*	*	*	*	*	*	*
Stop Type (origin/destination/intermediate)	*	*	*	*	*	*	*	*	*	*	*	*	*
Trip Length	*	*	*	*	*	*	*	*	*	*	*	*	*
Stopping Time	*	*	*	*	*	*	*	*	*	*	*	*	*
<b>Train Characterization</b>													
Train Type	*	*	*	*	*	*	*	*	*	*	*	*	*
Train Length / number of cars	*	*	*	*	*	*	*	*	*	*	*	*	*
Charge per pax	*	*	*	*	*	*	*	*	*	*	*	*	*
<b>Peak vs. Off-Peak pricing</b>													
<b>Auxiliary Services</b>													
Parking Charges	*	*	*	*	*	*	*	*	*	*	*	*	*
Parking Time Differentiation - Short v. Long-term	*	*	*	*	*	*	*	*	*	*	*	*	*
Parking Differentiation - Train type/Length	*	*	*	*	*	*	*	*	*	*	*	*	*
Water	*	*	*	*	*	*	*	*	*	*	*	*	*
Wastewater disposal	*	*	*	*	*	*	*	*	*	*	*	*	*
Rolling Stock Cleaning	*	*	*	*	*	*	*	*	*	*	*	*	*
Pre-heating	*	*	*	*	*	*	*	*	*	*	*	*	*
Pre-cooling	*	*	*	*	*	*	*	*	*	*	*	*	*
Fueling Facilities Access	*	*	*	*	*	*	*	*	*	*	*	*	*
Maintenance Facility	*	*	*	*	*	*	*	*	*	*	*	*	*

\* Included in base package (stated in NS)  
 Price and details in NS  
 Available service, no price in NS

## Categories of Variables (Stations)

- **Station Physical Infrastructure**
- **Station Services**
  - Creation and printing of timetable notices
  - Cleaning
  - Security service (premium or standard)
  - InfoPoint
  - Announcements
  - PRM Services
- **Station Categorization (Physical Structure)**
  - Platform Capacity (e.g. number of tracks)
  - Tariff Separation (Track access v. building access)
- **Station Categorization (Station Importance)**
  - Passenger Traffic
  - Train Traffic (e.g. stops per day)
  - Connection Point
- **Service Characterization**
  - Service Type (long-dist. v. reg. v. local)
  - Stop Type (origin/dest./interm.)
  - Trip Length
  - Stopping Time
- **Train Characterization**
  - Train Type
  - Train Length / number of cars
  - Charge per pax
- **Peak vs. Off-Peak pricing**

- Auxiliary Services:**
- Parking Charges
  - Parking Time - Short v. Long
  - Parking Diff.- Train type/Length
  - Water
  - Wastewater disposal
  - Rolling Stock Cleaning
  - Pre-heating
  - Pre-cooling
  - Fueling Facilities Access
  - Maintenance Facility

# Origin-Destination Pairs

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## National and International ODs



## Local ODs



### □ OD Pairs:

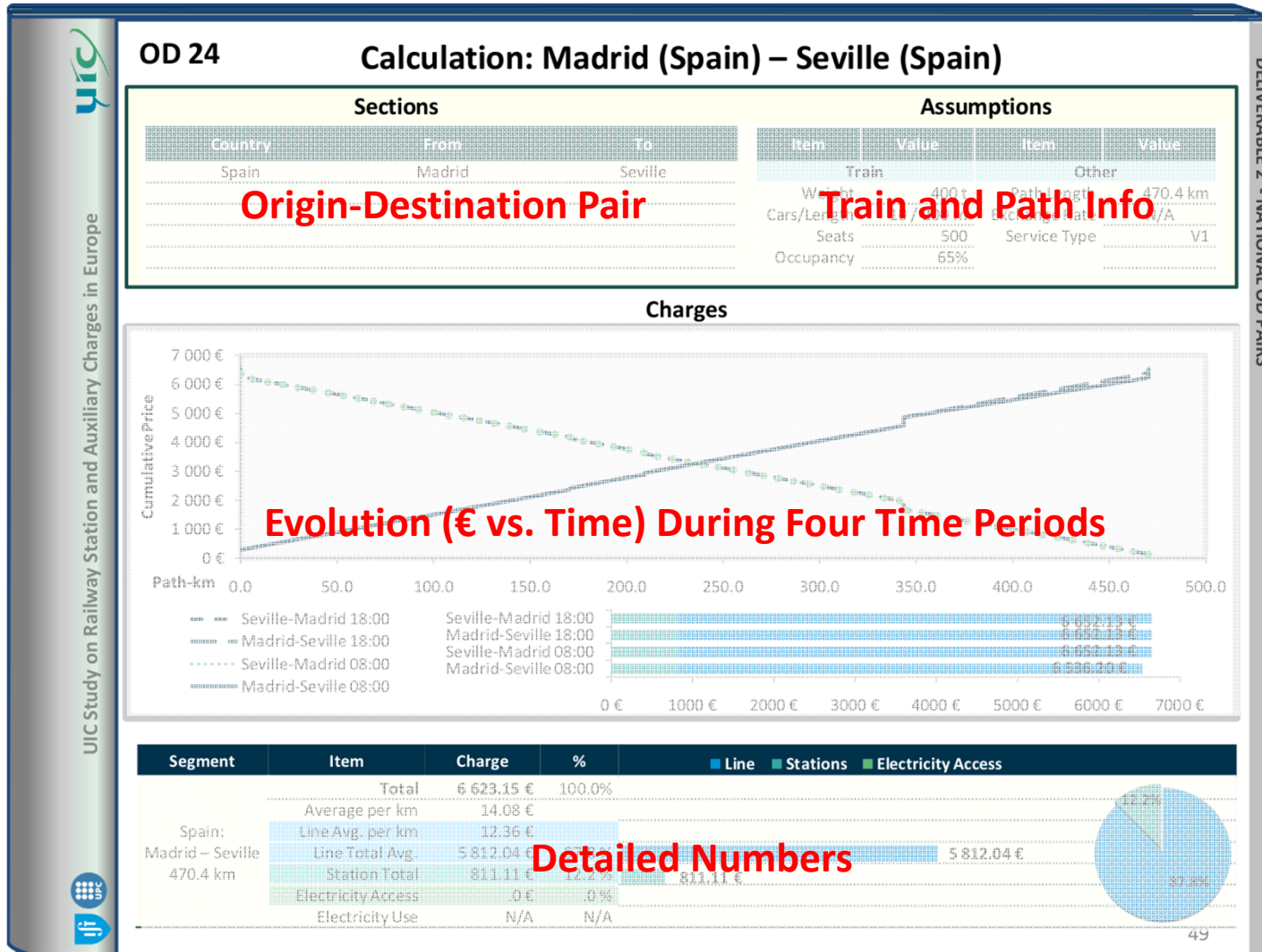
- 27 National Pairs (High-Speed and Conventional)
- 10 Conventional (Intercity)
- 10 Suburban/Local
- 3 Night Train
- 11 Additional High-Speed

### □ Assumptions:

Item	HS	IC	Local	Night
Time Periods	Peak/Normal	Peak/Normal	Peak/Normal	Night
Stops	Main Stations	Main + Secondary Stations	All Stations	Main Cities
Train	UIC	10 cars, 80 seats/car	2 x DB Class 481	ZEFIRO 250
Stop Time (min)				
• Origin/Dest	20	20	1	20
• Intermediate	5	5	1	5
Capacity	500	800	1000	500
Load Factor	65%	50%	Peak: 80% Off-peak: 20%	75%

# Sample Calculation Sheet (1)


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# Sample Calculation Sheet (2)

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UIC Study on Railway Station and Auxiliary Charges in Europe



**OD 24**

**Calculation: Madrid (Spain) – Seville (Spain)**

DELIVERABLE 2 - NATIONAL OD PAIRS

**Station Charges (1/1)**

Station	Category	Pax	Stop Time	Station Price	Parking Price	Total Price
Madrid–Puerta de Atocha	1	325	20	279.5	2.18	281.68
Ciudad Real	2	54		54	0	54
Puertollano	2	54		54	0	54
Córdoba–Central	1	325	20	279.5	2.18	281.68
Sevilla-Santa Justa	1	162.5	5	139.75	0	139.75

Station Charges

**Line Charges: (1/1)**

**172.13 Security Fee**

**Madrid – Seville 8AM**

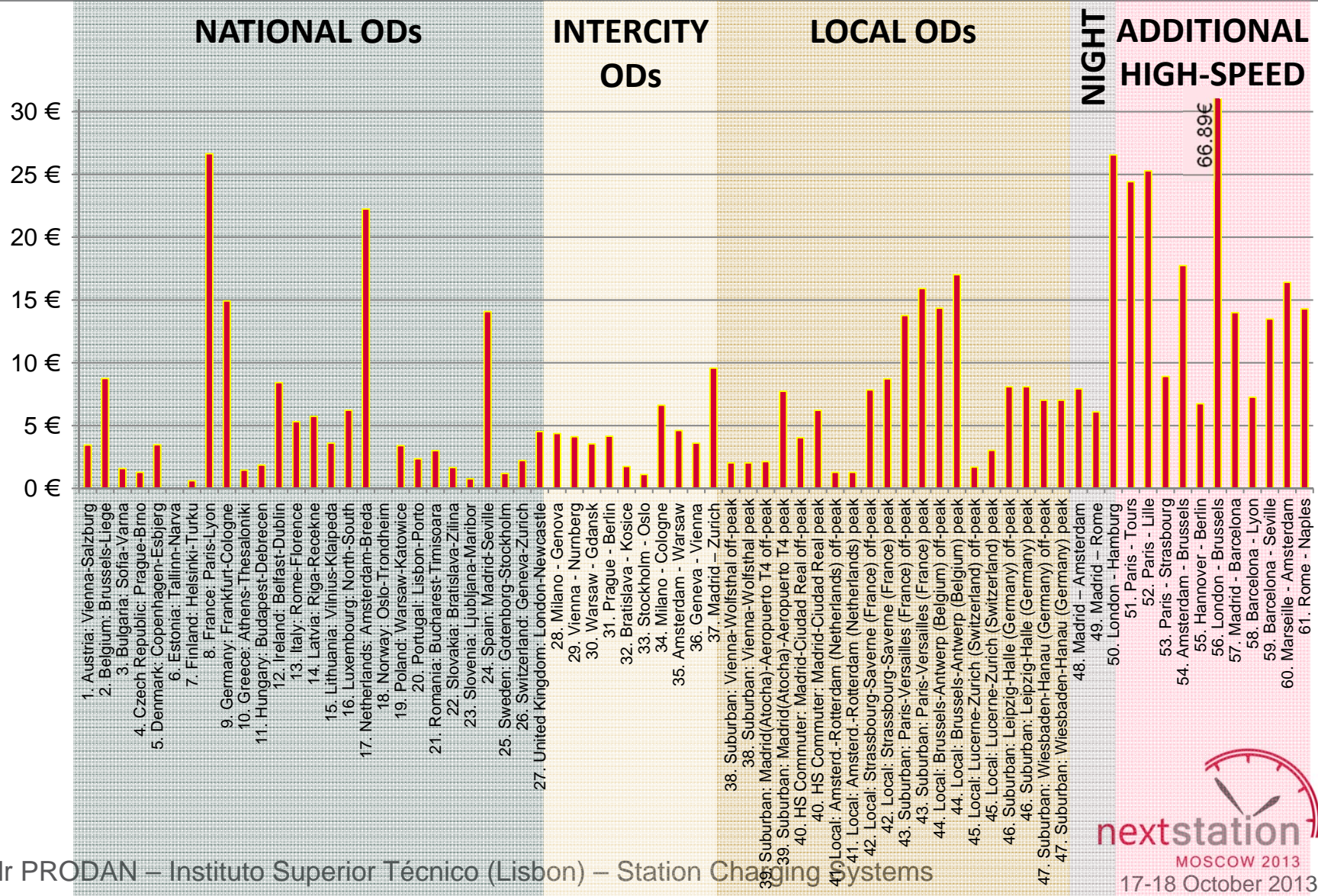
No.	Section	C	From	To	Km.	Station
10	A2	29.20	MADRID-PUERTA DE ATOCHA	BIF. CERRO NEGRO / STA. CATALINA	2.4	1
10	A2	132.64	BIF. CERRO NEGRO / STA. CATALINA	LOS GAVILANES - AGUJA KM. 13.400	10.9	
10	A2	10.95	LOS GAVILANES - AGUJA KM. 13.400	LOS GAVILANES	0.9	
10	A2	124.12	LOS GAVILANES	PARLA A.V.	10.2	
10	A2	53.54	PARLA A.V.	BIF. TORREJON DE VELASCO	4.4	
10	A2	79.10	BIF. TORREJON DE VELASCO	YELES	6.5	
10	A2	223.90	YELES	LA SAGRA	18.4	
10	A2	243.37	LA SAGRA	ABLATES	20.0	
10	A2	192.26	ABLATES	MORA Y ORGAZ	15.8	
10	A2	184.96	MORA Y ORGAZ	LOS YEBENES	15.2	
10	A2	181.31	LOS YEBENES	URDA	14.9	
10	A2	126.55	URDA	EL EMPERADOR	10.4	
10	A2	237.29	EL EMPERADOR	MALAGON	19.5	
10	A2	257.98	MALAGON	CIUDAD REAL	21.2	
10	A2	38.94	CIUDAD REAL	MALAGA-AGUJA KM. 174	3.2	1
10	A2	273.80	CIUDAD REAL-AGUJA KM. 174	CALATRAVA	22.5	
10	A2	158.19	CALATRAVA	PUERTOLLANO	13.0	
10	A2	194.70	PUERTOLLANO	BRAZATORTAS	16.0	1
10	A2	232.42	BRAZATORTAS	VENTA LA INES	19.1	
10	A2	278.66	VENTA LA INES	CONQUISTA	22.9	
10	A2	216.60	CONQUISTA	VILLANUEVA DE CORDOBA	17.8	
10	A2	107.08	VILLANUEVA DE CORDOBA	ARROYO DEL VALLE	8.8	
10	A2	289.61	ARROYO DEL VALLE	ADAMUZ	23.8	
10	A2	205.65	ADAMUZ	BIF. CAMBIADOR ALCOLEA	16.9	
10	A2	108.30	BIF. CAMBIADOR ALCOLEA	CORDOBA-CENTRAL	8.9	
10	A2	154.71	CORDOBA-CENTRAL	BIF. MALAGA-A. V.	14.3	1
10	A2	54.09	BIF. MALAGA-A. V.	ALMODOVAR	5.0	
10	A2	261.81	ALMODOVAR	HORNACHUELOS	24.2	
10	A2	235.85	HORNACHUELOS	PEÑAFLOR	21.8	
10	A2	186.08	PEÑAFLOR	GUADAJOZ	17.2	
10	A2	371.08	GUADAJOZ	MAJARABIQUE	34.3	
10	A2	108.19	MAJARABIQUE	SEVILLA-SANTA JUSTA	10.0	

Line Charges (per segment)



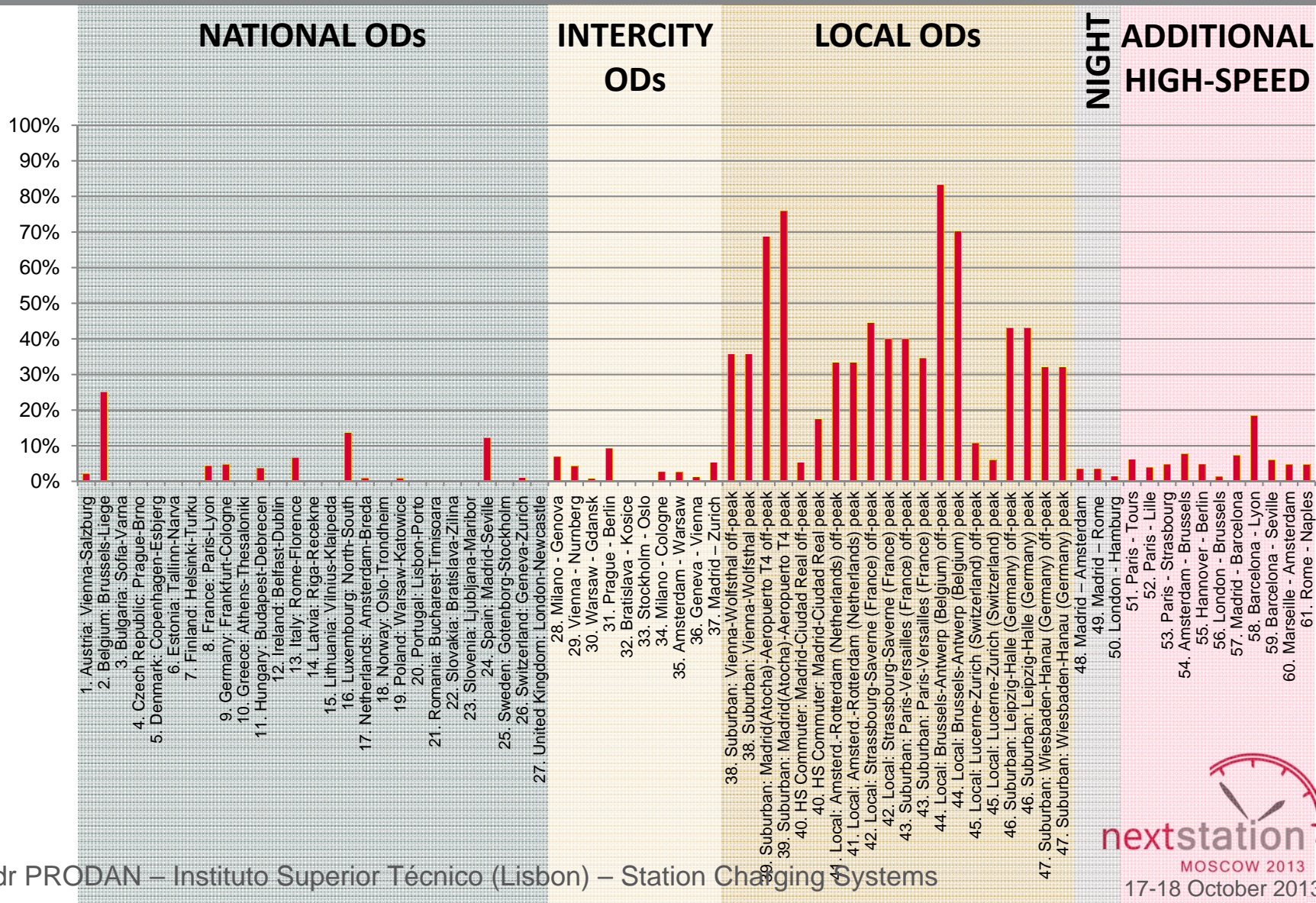
# Price per km incl. Station Charges (all ODs)

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# Station Weight on Total OD Charge



# Conclusions

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## Qualitative Analysis

- ❑ A significant number of countries have **no auxiliary or station tariff systems**
- ❑ A group of countries have relatively simple systems, where stations are categorized by only a few variables
- ❑ A few countries have highly-complex systems, whose structure depends on numerous variables from multiple Infrastructure Managers
- ❑ Auxiliary charges are hard to compare across countries as they vary in structure

## Quantitative Analysis

- ❑ Most differentiate station prices based on station importance
- ❑ Station charges are important, but do not exceed track access charges
- ❑ Only a few countries have high station charges

## Station Charges vs. Total Charges

- ❑ **Intercity and High-Speed Services:**
  - ❑ Normally low weight (below 10%), higher weight in high-speed than conventional Intercity, In some countries weight is high (up to 25% in Belgium)
- ❑ **Local/Suburban Trains (with many station stops):**
  - ❑ Charges are extremely important: 40% (avg) - 80% (max) share of total fee



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*Thank you*

*Благодарю*

*for your kind attention*

*за ваше внимание*

**PROJECT TEAM:**



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With direction and support by the

**Committee**

**High-Speed and Intercity**

