

# **WCTR2013Rio**

## **Key Findings and Future Needs**

Reports from  
Topic Area Managers  
and WCTR-Y Chair

# TA A: Transport Modes

**TA Manager:** Anming Zhang (presented by Tae Oum)

(Focus on Single Modes with a few exceptions such as Air+High Speed Rail, etc.)

## **Session Tracks, Number of Oral+Poster Papers, and Session Track Organizers:**

A1	Air Transport (SIG 8)	41 papers	Martin Dresner
A2	Maritime Transport and Ports (SIG 2)	35 papers	Eddy van de Voorde
A3	Rail Transport (SIG 13)	28 papers	John Preston/Ingo Hansen
A4	Urban and Inter-City Road Transport	39 papers	Qiang Meng/Robin Lindsey/ Hai Yang

**Total: 135 Papers, including 12 posters**

# TA A: Transport Modes

<b>A1 – Air Transport (SIG 8)</b>	<b>41 papers</b>
<b>A2 – Maritime Transport and Ports (SIG 2)</b>	<b>35 papers</b>
<b>A3 – Rail Transport (SIG 13)</b>	<b>28 papers</b>
<b><u>A4 – Urban and Inter-City Road Transport</u></b>	<b>39 papers</b>

## Issues dealt with:

Within each mode, a wide range of papers dealt with **productivity, regulation, policy analysis, competition, infrastructure capacity and management, carrier management, operations & logistics, environment, safety, traffic and network management**, etc.

**Types of analysis:** theoretical, methodological, empirical, institutional; engineering, economics, OR, geography, political science, etc.

# TA A: Transport Modes

## The findings/results are advances ...

- in literature on each transport modes;
- for researchers in the field;
- **for advising public policy formulation; carrier management (airlines, shipping, rail carriers); transport infrastructure capacity planning, operations and management (airports, ports, rail, urban transport and road networks)**
- **across the modes:** e.g., HSR rail and its interactions with air transport and freight transport, or choice probability modeling of port hinterland for intermodal freight transport operations.

# TA-A: Transport Modes

## Missing Research (or More Research Needed):

- Climate Change and Public Policy Issues (probably because these papers are shifted to Topic Area F)
- **More research needed on Africa, China, Central America, South America (probably due to data availability)**
- More research needed:
  - ✓ on **transport security cost, who should pay for, impacts on economy;**
  - ✓ on **catastrophic disaster management;**

# TA B: Integrated Freight Transport and Logistics Systems

**Topic Area Manager:** Michael Browne

## **Session Tracks, Number of Oral+Poster Papers, and Session Track Organizers:**

B1	Integrated Supply Chain Management	15 Papers	Seraphim Kapros
B2	Integrated Freight and Fleet Management	6+4 Papers	Jacek Zak
B3	Intermodal Freight Transport	20 Papers	Johan Woxenius
B4	Urban Goods Movement	30 + 2 Papers	Mike Browne & Toshinori Nemoto
B5	Sustainable Freight Transport and Green Logistics	18 Papers	Christophe Rizet & Alan McKinnon
B6	Freight Modelling	17 + 2 Papers	Lori Tavasszvy

# TA B: Integrated Freight Transport and Logistics Systems

- B.1 - Integrated Supply Chain Mangement** 15 papers
- B.2 - Integrated Freight & Fleet Management** 6 papers
- B.3 - Intermodal Freight Transport** 20 papers

**Production and extended supply chains:** Challenges and bottlenecks

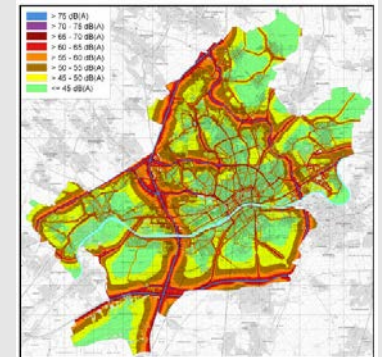
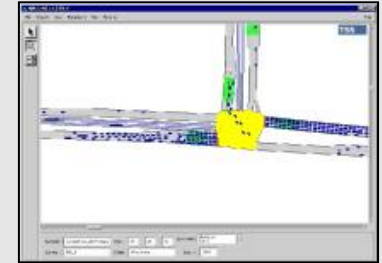
**Product specific issues:** Food supply chains

**Communications:** V2V and V2I

**Port hinterlands:** The importance of intermodal initiatives

**Governance issues in intermodal transport**

**Modal choice, modelling and decision support systems**



# TA B: Integrated Freight Transport and Logistics Systems

## B.4 – Urban Goods Movement 30 papers

**Frameworks and approaches:** Stakeholders, measures and actions

**Case Studies:** Management and transferability

**Analytical tools:** Surveys, models and evaluation

**Planning and policy interventions:** Decision-making and the role of partnerships

## B.5 – Sustainable Freight Transport & Green Logistics 18 papers

**Methodology issues:** Calculations, life-cycles, carbon efficiency

**Policy initiatives:** Green corridors, policy instruments

**Company approaches:** Private sector actions, collaborations in the supply chain

**Humanitarian Logistics:** Cases, analysis and frameworks



# TA B: Integrated Freight Transport and Logistics Systems

## **B.6 – Freight modelling** 17 papers

**Global supply chains:** Location, integration and transport

**Large scale models:** Interregional freight flows, multi agent simulation

**Supply chain design:** Carrier and receiver, changing concepts

**Network analysis:** Simulation, optimization (link to data issues)

## **Missing Research**

**Social aspects**

**Integration** (it is there but there are gaps)

**Combining the various levels in the supply chain** (some progress – much to do)

**Understanding stakeholder behaviour**

# TA C: Traffic Operations, Management and Control

**Topic Area Manager:** Manfred Boltze

## **Session Tracks, Number of Oral+Poster Papers, and Session Track Organizers:**

C1	Traffic Theory and Modelling	17+3 Papers	Nicolas Geroliminis
C2	Traffic Control and Management (SIG 15)	21+9 Papers	Hideki Nakamura
C3	Transportation Network Analysis	9 Papers	Meng Qiang
C4	Safety Analysis and Policy (SIG 3)	44+5 Papers	Ian Savage
C5	ICT for Traffic Systems	10+2 Papers	Costas Panou
C6	Infrastructure Management (SIG 5)	8+3 Papers	Rabi Mishalani

TA C: Total of 131 papers, including 22 posters.

# TA C: Traffic Operations, Management and Control

- C.1 – Traffic Theory and Modelling** 20 papers
- C.2 – Traffic Control and Management** 30 papers
- C.3 – Transportation Network Analysis** 9 papers

**Traffic Assignment and Route Choice Models:** oversaturated networks, impact of traffic information

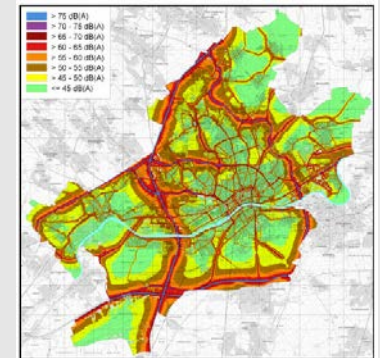
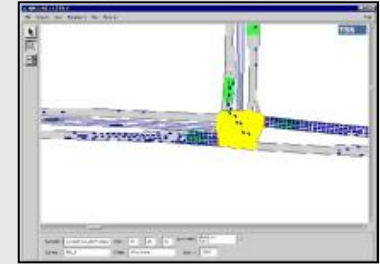
**Traffic Flow Models:** basic parameters, oversaturated networks, heterogenous traffic, agent-based simulation

**Online Traffic Control:** LOS estimation, dynamic OD estimation, incident detection

**Traffic Signal Control:** cooperative systems (C2C and C2I), pedestrian behaviour, BRT and Transit signal priority

**Dynamic Traffic Management:** flexible lane operation (merging sections, hardshoulder lanes), incident management

**Capacity Analysis for Road Infrastructure:** roundabouts



# TA C: Traffic Operations, Management and Control

## C.4 – Safety Analysis and Policy 49 papers

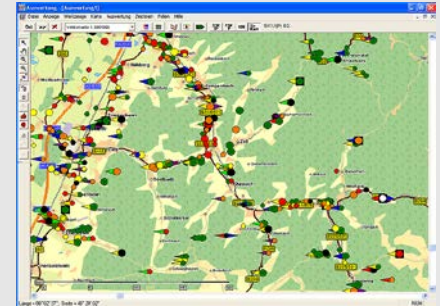
**Comparative Studies:** international, seasonal distribution

**Safety Analysis for Road User Groups:** senior + young drivers, pedestrians, cyclists, motorcycles

**Modeling:** predicting crash frequency

**Factors Influencing Traffic Safety:** urban street structure, speed limits and enforcement, sun glare, using mobile phones, road geometry

**Safety in Work Zones**



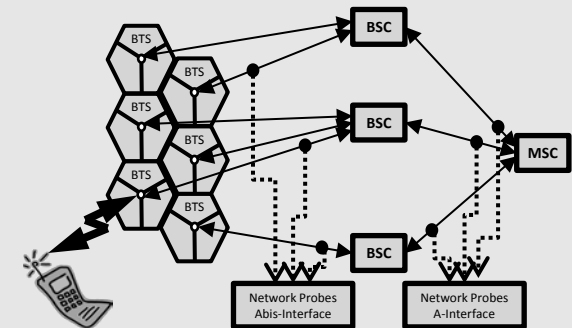
## C.5 – ICT for Traffic Systems 12 papers

**Video Image Recognition Technology:** Analysis of vehicle trajectories, mixed traffic performance, pedestrian conflicts

**Probe Vehicle Data (FCD), Floating Phone Data (FPD)**

**Impact of Information Provision** on network performance

**Warning System** to improve workers safety in work zone areas



# TA C: Traffic Operations, Management and Control

## C.6 – Infrastructure Management 11 papers

### Infrastructure Live Cycle Assessment

### Optimal Maintenance, Rehabilitation and Replacement Policies:

considering the impact of construction activities on the road network performance (e.g. delays) in this optimization

### Optimal Sampling for Infrastructure Condition Assessment

### Missing Research

### Environment-responsive Traffic Control

### Quality Management

### Floating Phone Data

### Mixed Traffic Flow

... and so many others ...



# TA D: Activity and Transport Demand Analysis

**Topic Area Manager:** Sergio R. Jara-Diaz

## The Past

The error term:  
from a practical assumption (Gumbel→MNL)  
to a central role (HL, ML, GEV).

$$U_i = V_i + \epsilon_i$$

AIRUM

# TA D: Activity and Transport Demand Analysis

## The Present

51/108

Understanding trip patterns and **behaviour**:  
time, consumption, space, income, social networks.

Also LV, perceptions, interaction terms.

“Emerging” modes: bike, walk.

# TA D: Activity and Transport Demand Analysis

## The Future

Improved theories of behaviour: expanding, complementing, substituting.

Data on systematic choices: massive data (smart cards, smart phones, GIS); time use data; expenditures; location, dynamics.

$$U_i = V_i + \epsilon_i$$



# TA D: Activity and Transport Demand Analysis

Sincere thanks to  
**Doina Olaru**  
and to the 18 session chairs

# TA E: Transport Economics, Finance and Evaluation

**Topic Area Manager:** Fusun Ulengin, Marco Ponti

E1	Ex post Evaluation at the Macro, Regional and Project level	Bonnel Patrick	<a href="mailto:patrick.bonnel@entpe.fr">patrick.bonnel@entpe.fr</a>
E2	Systems Analysis and Integrated Assessment	Fusun Ülengin	<a href="mailto:fulengin@gmail.com">fulengin@gmail.com</a>
E3	Transport Infrastructure Investment and Economic Analysis	Elizabeth Deakin	<a href="mailto:edeakin@berkeley.edu">edeakin@berkeley.edu</a>
E4	Methodological Progress of Evaluation Approaches	Werner Rothengatter	<a href="mailto:rothengatter@iww.uni-karlsruhe.de">rothengatter@iww.uni-karlsruhe.de</a>
E5	Transportation Pricing and Finance	Andreas Kopp	<a href="mailto:akopp@worldbank.org">akopp@worldbank.org</a> ,
E6	Transport Economic Regulation– (SIG4)	Marco Ponti	<a href="mailto:marco.ponti@polimi.it">marco.ponti@polimi.it</a>

# TA E: Transport Economics, Finance and Evaluation

Total papers **81**, of which **12** posters

E1-1	Ex post Evaluation at the macro, regional and project level, 12 p.	992	3292	1089	1355		
E1-2		1353	2201	2304	1797		
E1-3		2368	2547	1224	2008		
E2-1	Systems Analysis and Integrated Assessment, 6 p.	775	913	1535	2082	2137	2163
E3-1	Transport Infrastructure Investment and Economic Analysis, 22 p.	1693	2077	2216	3202		
E3-2		939	2146	3138	1502		
E3-3		1680	3024	2795	1081		
E3-4		1072	1567	2559	2711	3379	
E3-5		835	990	1615	1387	1693	
E4-1	Methodological Progress in Evaluation Approaches, 13 p.	2965	3161	1929	3315		
E4-2		2602	3005	2771	1260		
E4-3		880	964	1069	1135	1233	
E5-1	Transport Pricing and Finance, 20 p.	2514	2542	2806	2940	3226	
E5-2		1768	2043	2066	2208	2393	
E5-3		1628	2622	3498	3550	3601	
E5-4		1080	1942	2501	3230	1389	
E6-1	Transport Economic Regulation (SIG 4), 8 p.	2578	2686	2971	2126		
E6-2		1230	1959	2276	2943		

# TA E: Transport Economics, Finance and Evaluation

## Main overall results:

**Public Private Partnership:** well studied and developed, with a wide range of case studies and innovative approaches proposed, also criticizing current practices

**CBA improvements:** a rather common mistake exposed, and several important improvement suggested

**Congestion in public transport:** begins to appear as a relevant economic issue

**HST economics:** well present, also in critical terms

**Optimization of urban transport:** some innovative theoretical contribution, of special interest given also the fact that CBA is not consolidated in this service sector

**Road congestion:** this remain a rather central theme, together with pricing issues

# TA E: Transport Economics, Finance and Evaluation

## Weak areas and possible further research issues:

**Macro economics of transport policies and investments:** almost absent, even if the present crisis suggests a special attention to this issue (shadow cost of labour, etc.)

**Economic regulation both of services and of infrastructure:** still in its infancy, both in terms of theory and of good practices and case studies

**Evaluation and monetization of external costs:** nothing new, even if their importance is growing, and their trends deserve much more attention

**Distributive aspects both of policies (tariffs, taxes, public transport) and in CBA of investments:** not enough developed, even if they are crucial for public decisions

**Option theory:** this may well become an important tool for evaluating also public investments (especially in terms of flexibility, and de-investing potential)

# TA F: Transport, Land Use and Sustainability

**Topic Area Manager:** Ruth Steiner

## **Session Tracks, Number of Oral+Poster Papers, and Session Track Organizers:**

F1	Land Use and Transport Policy and Planning (SIG1)	28+5 Papers	Kenji Doi Maddi Garmendia
F2	Land Use, Transport and Environmental Interactions and Modelling (SIG1)	25+1 Papers	Francisco Martinez Cristian Cortes
F3	Urban Environment, Livability, and Non-motorised Transport	20+4 Papers	Eva Heinen Karst Guers
F4	Transport and Climate Change (SIG11)	26+5 Papers	Patrick Jochem Yoshitsugu Hayashi
F5	Sustainability and Environmental Ethics (SIG11)	24+3 Papers	Cameron Gordon

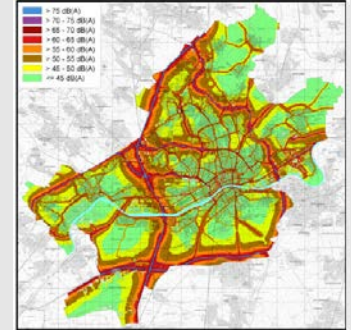
TA C: Total of 141 papers, including 18 posters.

# TA F: Transport, Land Use and Sustainability

## F.1 – Land Use and Transport Policy and Planning 33 papers

**Accessibility and Mobility:** residential location and travel choice, transit corridors and urban development, commuting

**Transport Capacity:** large scale projects, bus rapid transit, high-speed rail, parking and urban space, goods movement

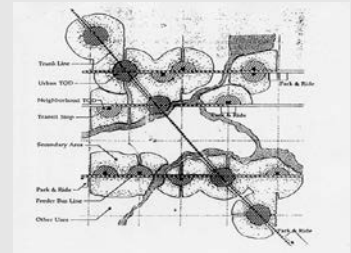


## F.2 – Land Use, Transport and Environment Interactions and Modeling 26 papers

**Transport and Land Use:** integrated transport-land use models, disaggregated, multicriteria, agent-based

**Transport and Urban Environment:** urban form, transit and housing, trip generation and mode choice, attitudes and lifestyles

**Modeling of Policies:** pricing, energy, air quality, and environmental impacts



# TA F: Transport, Land Use and Sustainability

## F.3 – Urban Environment, Liveability, and Non-motorized Transport 24 papers

**Planning for Modes and Context:** integration of modes, pedestrians, bicycles, urban, intercity, rail, BRT, HSR

**Transport Interactions with Urban Environment:** land use and transport, transit-oriented development, neighborhood design and health, residential dissonance and travel, individual mobility, social and spatial dynamics, air quality and environment

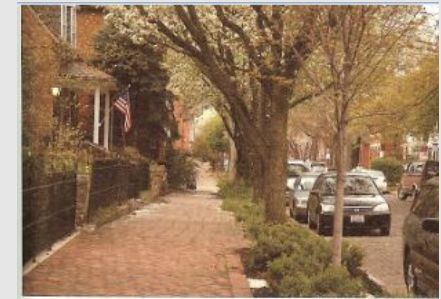
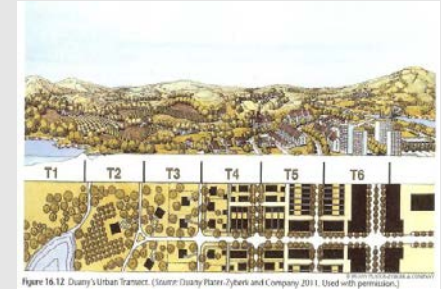
## F.4 – Transport and Climate Change 31 papers

**Technology:** fuel source, electric vehicles, electrification of system, building and raw materials, operational efficiency

**Impacts:** CO<sub>2</sub> emissions, oil demand

**Policies:** tax incentives, vehicle retirement, fuel taxes, sales taxes, emissions trading, equity

**Modes:** air, high-speed rail, multimodal, inland navigation, freight





# TA F: Transport, Land Use and Sustainability

## F.5 – Sustainability and Environmental Ethics 27 papers

**Demographics:** aging population, youth, shrinking metropolis, intergeneration equity

**System characteristics:** performance measures, social and human capital, happiness, quality of life

### Missing Research

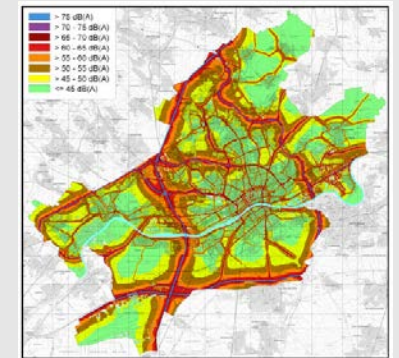
Geospatial Modeling

Multi-level Modeling

Integrated Transport-Urban Models

Urban Design and Mode Choice

...and so many others...



# TA G: Planning, Policy and Management

**Topic Area Manager:** Antonio Musso

## **Session Tracks, Number of Oral+Poster Papers, and Session Track Organizers:**

G1	Institutional Performance Governance and Decision-making Processes	36+3 Papers	Angel Aparicio
G2	National and Regional Policy Development	23+2 Papers	Bruno Montella
G3	Urban Transport Policy (including non-motorised modes) (SIG 10)	60+9 Papers	Stephen Ison
G4	Social and Equity Impacts of Transportation	36+2 Papers	Karen Lucas
G5	Transport for Tourism, Mass Events and Emerging Policy Issues	10+2 Papers	Paolo Guglielminetti
G6	Transport and Security (SIG 14)	7 Papers	Yoram Shiftam

TA G: Total of 172 papers, including 18 posters.

# TA G: Planning, Policy and Management

**G.1 – Institutional Performance Governance and Decision-making Processes**

36 papers

**G.2 – National and Regional Policy Development**

23 papers

**G.3 – Urban Transport Policy**

60 papers



**Policies and Governance:** decision making processes, demand management, regulatory issues

**Non Motorized Modes:** requirements analysis for cyclists and pedestrians, case studies (national/locals)

**Energy Policies:** electric vehicles management

**Transport and Land Use:** impacts assessments (mainly economic point of view), accessibility

**Urban Mobility:** Pricing, parking issues, public transport, paratransit



# TA G: Planning, Policy and Management

## G.4 – Social and Equity Impacts of Transportation 36 papers

- Society:** gender issues, mobility for elderly and physically-challenged people
- Social Exclusion:** remoteness, poverty, rural mobility, accessibility
- Equity :** Public Transport supply, economic assessments based on case studies

## G.5 – Transport for Tourism, Mass Events and Emerging Policy Issues 10 papers

- Mass Events:** travel demand related to sports mega events (Olympic Games, etc. )
- Tourism:** impacts due to High Speed; mobility, land use and tourism



# TA G: Planning, Policy and Management

## G.6 – Transport and Security

7 papers

**Security :** mobility management in case of natural disasters/extreme weather;

### Missing Research/Gaps

- major interest for **“sustainability”** issues needed
- **less emphasis on case studies, more on generalized trends, more research needed on theorizations (broader perspectives)**
- more focus on **emerging countries**
- **more assessments based on socio-economic studies** (especially for gender issues, non motorized modes)
- **“Security”**: still a niche field of study

... and so many others ...



# TA H: Transport in Developing Countries

**Topic Area Manager: Antti Talvitie**

**Session Tracks, Number of Oral + Poster Papers, and Session Track Organizers:**

H1	Institution building; Decentralization; HR	8+0 Papers (30)	Tengiz Gogelia
H2	Urban transport and Traffic Mgmt	17+3 Papers (60)	Kazuaki Miyamoto
H3	Planning and evaluation	9+5 Papers (47)	Binyam Reja
H4	Performance based contracting	5+0 Papers (15)	Konsta Sirvio
H5	Informal transport; Other	13+4 Papers (51)	Aaron Golub

TA H: Total of 64 papers, including 12 posters were presented.

**However, 203 papers and posters in TA H were reviewed and accepted. (Shown in red font)**

**Of these, 72 were submitted for review.**

**Important Issue: Many authors from the developing countries do not have the resources to attend the WCTRS conference and present their papers**

# TA H: Transport in Developing Countries

## H.1 – Institution building, Decentralization, HR

9 papers

Organization Analysis, Deregulation

Transport and development

## H2 – Urban Transport and Traffic Mgmt (SIG7)

20 papers

Transport Planning

Travel Demand and Projects

Travel Behavior

BRT, Paratransit and Driver Behavior

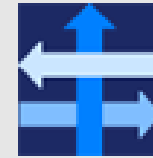
# TA H: Transport in Developing Countries

## **SIG 7**

Special Interest Group on **Urban Transport in Developing Countries**

A joint activity of **WCTRS** and **CODATU**

One of the original SIGs in WCTRS since Yokohama Conference in 1989, established by Professor Michel Frybourg



## **Website**

<http://www.yc.tcu.ac.jp/~sig7/>

## **Facebook**

<https://www.facebook.com/wctrssig7>





# TA H: Transport in Developing Countries

## **H3 – Planning and evaluation** 14 papers

Modeling and Simulation in Evaluation

Access, Modeling , Megacities

Financial Issues in Evaluation

## **H4 – Performance-based Contracting, Performance Indicators** 5 papers

Performance based Evaluation

## **H5 – Informal Transport, Other Issues** 12 papers

Rural Transport Issues

Transport Policy in Developing Countries

Social and Ethical Issues in Transport in Developing Countries

# TA H: Transport in Developing Countries

**Research Questions:** Wide range of issues were researched

Market areas, Location of development,

Regulation and deregulation

Planning, Access to transport, Mobility, Travel demand and Travel behavior

Transport networks, Simulation, Urban form, Megacities, the Environment

Financing, Performance indicators

BRT, Paratransit, Informal transport, Motorcycle transport, Rural transport

Transport policy , Social and ethical issues

## **Contents**

Case studies

Analysis Tool

Concept

# TA H: Transport in Developing Countries

## Missing Research

Institutional change, Accountability

Political economy and its effects and importance in decision-making

Procurement, Corruption, Elite capture

Gender, Equity, Income distribution and its effects

Land Use, Land Use –Transport Interaction, TOD

PPP, Privatization, Value Capture

... More research in all the above topics and new topics ...

# WCTR-Y Conference, 14 July

**WCTR-Y Chair:** Bruno Santos

## General summary

Theme “Transport Policy – Varying Research Applications”  
Understand to help the decision making process

1 day, 4 sessions, 11 papers

Very productive

- quality of the work presented
- level of discussion between colleagues
- networking
- being directly involved in WCTRS matters



# WCTR-Y Conference, 14 July

## Topics discussed

### **Data analysis techniques to support decision making**

How to convert big datasets into added value information

Highway management, public transport planning & traffic light control

### **The accuracy of prediction methods & models**

The misconceptions, illusions and cognitive bias

# WCTR-Y Conference, 14 July

## Topics discussed

### **Urban mobility (non-motorized transport)**

Use of bikes by rail users – detailed accessibility characterization  
Simulation-based optimization for dynamic bike allocation balance

### **Transport infrastructure planning and policy**

Past policies in Hungary - PPPs  
Sustainable road networks planning  
Environmental impacts assessment

### **Ethics of low carbon cars**

Impacts of low carbon vehicle technologies  
Will “Horizon 2020” originate unfair burdens on some social classes?  
Transport policy + socio-economic policies

# WCTR-Y Conference, 14 July

Join us!!



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# **WCTR2013Rio**

## **Key Findings and Future Needs**

Reports from  
Topic Area Managers  
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