WORKSHOP

"Bringing new types of data closer into practice in transport planning and modelling"

Date	Location	Attendees
16 October 2017	D2, Lindstedtsvägen 5, Floor 3 (entrance floor), KTH Campus	100 Seats

Welcome to Workshop

In the last decade, there has been increase of interest and effort in utilizing new and richer type of data (or commonly called as "Big Data") in transport analysis and modelling. In many cases it was motivated with a decreasing of response rate for traditional travel diary collection methods and the need to reduce the cost by utilizing widely available new mobile technologies. At some other cases it was motivated by the need for a more accurate spatio-temporal description of how people travel over longer periods of time or because of the new revelation of transport as a service. Drawing and utilizing insights from this ubiquitous data, however, remains a challenge due to fast moving technologies, its unprecedented degrees of heterogeneity and lack of theoretical underpinning. Furthermore, with the increase of data type and depth involve, the data management and the security and privacy issues of the users are becoming a serious concern of various different authorities.

In an effort to bring these types of data closer to practical use in transport planning and analyses, this workshop will discuss three following topics: 1) the current use of travel diary in the Swedish transport research and practice, 2) GPS, GSM, accelerometer, and fusion data analysis, and 3) security, privacy, and practical issues in collecting and utilising the big data in practice.

This workshop is expected to understand better the challenges and opportunities of new type of data that are not usually found in traditional data analysis problems, and to further push the feasibility of integrating this new type of data to improve transport planning and modelling framework in Sweden

Workshop Schedule

Time	Activity	Speaker
09:30-9:50	Room opens from 09:30 for re-registration and coffee	
9:50-10:00	Opening remark and housekeeping	Yusak Susilo (KTH)
Ubiquitous data and transport and urban planning in Sweden (chaired by: Ida Kristoffersson, VTI)		
10:00-10:30	Current data use and needs in Swedish transport practice	Karin Brundell-Freij (WSP/K2 Lund)
10:30-11:00	GPS data for network performance analysis	Erik Jenelius (KTH)
11:00-11:30	The use of GSM data analysis in Swedish urban and transport planning assessments	John Östh (Upsalla University)
11:30-12:00	Combining and leveraging passive and active data in transport policy and planning	Caitlin Cottrill (Aberdeen University)
12:00-13:00	Lunch	
Examples across the globe (chaired by: Gyözö Gildofalvi, KTH)		
13:00-13:45	Learning from smart cards: Lessons from Singapore	Kay Axhausen (ETH Zurich)
13:45-14:15	City operation and transportation	Miro Holecy (IBM)
14:15-14:30	Fika	
Recent local developments and issues (chaired by: Clas Rydergren, Linköping University)		
14:30-15:00	MEILI and the search for a travel diary collector	Adrian Prelipcean (KTH)
15:00-15:30	TRavelVU an app for collecting travel survey data	Leif Linse (Trivector)
15:30-16:00	Rules and regulations on privacy of big data in particular in tracking people movements	Evelyne Sørensen (Activemind.de)
Short break – preparation for panel discussion (chaired by: Wilco Burghout, KTH)		
16:05-16:55	Panel Discussion, features: Eva Lindborg (Trafa), Tomas Julner (TrafikStockholm/TrV), Isak Jarlebring Rubensson (Stockholm County/Trafikförvaltningen), Karin Brundell-Freij (WSP/K2 Lund), Kay Axhausen (ETHZ), Evelyne Sørensen (Activemind.de)	
16:55-17:00	Closing remark	

Description of Speakers

Karin Brundell-Freij | WSP/K2, Lund

10:00

Karin Brundell Freij is an expert and senior consultant on WSP Analysis and Strategy. She is also an adjunct professor in research and doctoral education on public transport at K2 Lund University. She has more than 30 year experience working in both academic and practitioner worlds.

Presentation topic: *"Current data use and needs in Swedish transport practice"*

Erik Jenelius | KTH, Stockholm

10:30

Erik Jenelius is Assistant Professor in Public Transport Systems with the Department of Transport Science, KTH Royal Institute of Technology, Stockholm, where he is also the Director of the iMobility Lab, and is involved in the use of emerging sensor technologies to address urban mobility problems. His research interests include data-driven traffic and mobility management, transportation network and resilience analysis, and public transport systems planning and operations.

Presentation topic: *"GPS data for network performance analysis"*

Information about historical, real-time and expected future traffic conditions is important at all levels of travel planning, traffic management and transport policy. In recent years, GPS devices installed in vehicles and smartphones have emerged as a new type of traffic sensor. These probe vehicle sensors are often opportunistic in the sense that their original purpose is not to collect traffic data, but have a great potential for cost-efficient traffic monitoring. Unlike stationary sensors they can collect area-wide travel time data for any part of the network where equipped vehicles move. However, a number of limitations mean that new sophisticated methods are needed to process the data and generate useful information, compared to traditional sensors. This presentation will discuss the current state and developments in the utilization of GPS data for network performance analysis.

John Östh | Uppsala University 11:00

John Östh is Associate Professor in Geography and GIS at the University of Uppsala. John research is oriented towards development of new GIS-related software and methods, as well as micro-data analyses in population and economic geography. He is currently leading an International research project (including SE, UK and USA) comparing socio-economic and demographic segregation using a novel technique (EquiPop) allowing for the comparison of micro-level data between locations and over-time. He is also the administrator of the PLACE data, an Uppsala University located research data containing longitudinal records for all Sweden resident individuals between 1990 and 2010.

Presentation topic: *"The use of GSM data analysis in Swedish urban and transport planning assessments"*

Caitlin Cottrill | Aberdeen University 11:30

Dr Caitlin Cottrill is a Senior Lecturer in Digital Economy at the University of Aberdeen's Centre for Transport Research. Her primary research focuses on the use of data and technology in enabling more efficient transport planning and policy-making, and in the protection of personally identifying spatio-temporal information.

Presentation topic: *"Exploring passive and active data sources for transport policy and planning"*

New technologies and platforms are transforming how we approach transport planning and policy making. Not only have they created new mechanisms for the communication of timely, reliable information, but they also represent new sources of data for improving the way we understand mobility and the access it provides. At the University of Aberdeen's Centre for Transport Research, some of the data source we're looking at include:

- Social Media: By examining social media tools such as Twitter, we gain a deeper understanding of the transport needs and concerns of the population, and can work to transfer that information into usable data for transport service providers.
- Smartphone Apps: Smartphones represent game changers in the transport arena, providing direct access to individuals and the passive and active data they generate.

By drawing upon these new tools and the data they generate, we can develop new models for development and operations of transport services and networks that are more effective, more efficient, and more responsive to the needs of the urban community.

Kay Axhausen | ETH, Zurich

13:00

Dr. K.W. Axhausen has been Professor of Transport Planning at the Eidgenössische Technische Hochschule (ETH) Zürich (Swiss Federal Institute of Technology) since 1999. He holds his post in the Institute for Transport Planning and Systems of the Department of Civil, Environmental and Geomatic Engineering. Before his appointment at ETH he worked at the Leopold-Franzens Universität, Innsbruck, Imperial College London and the University of Oxford. He holds a PhD in Civil Engineering from the Universität Karlsruhe (now KIT) and an MSc from the University of Wisconsin – Madison.

He has been involved in the measurement and modelling of travel behaviour for the past 35 years contributing especially to the literature on stated preferences, micro-simulation of travel behaviour, valuation of travel time and its components, parking behaviour, accessibility impacts and travel behaviour measurement.

He was the chair of the International Association of Travel Behaviour Research (IATBR) and is editor-in-chief of Transportation and earlier of DISp, both ISI indexed journals.

Presentation topic: *"Learning from smart cards: Lessons from Singapore"*

Big data give a rich insight into travel behaviour, especially if they are tied directly to it, such as public transport smart cards. This talk will discuss various analyses and uses of the Singapore smart card data, which cover about 95% of all movements. Topics will be the value of a seat, boarding and alighting times from busses, bus travel times between stops and finally integration into a fast simulation systems based on MATSim. It will close with a discussion of the limitations of big data, and especially smart card data.

Miro Holecy | IBM

13:45

Miro Holecy is a Transportation and National Infrastructure CTO in IBM's Global Center of Competence for Government. He is a member of IBM Academy of Technology. The last 20 years, Miro has devoted much of his time to clients in Government, Retail and Telecommunication sectors focusing on selling and delivering complex technical solutions. His leadership has contributed to award-winning deliveries of Intelligent Transportation projects in Australia, Asia and Europe.

Miro is also facilitating an IBM community focusing on the City Operations which shapes the IBM Smarter Cities strategy. Miro is teaching Techncal Leadership

Innovation Master Class and Operational Modeling Class. Specialties: City Operations, Intelligent Transportation, Strategy, Internet of Things, Cognitive Computing, Complex System Integration, Delivery Excellence. Miro has a Strategy MBA (2013) from Warwick Business School, UK and MSc in Artificial Intelligence from Technical University in Kosice, Slovakia. Miro is an avid skier, enjoys sailing, mountaineering and traveling. He lives with his wife, his two sons in Stockholm, Sweden.

Note: Miro's opinions are his own and not the views of IBM.

Presentation topic: *"City operation and transportation"*

Cities are changing and the speed of the change is just increasing. In this change, more and more data are available. All this data creates significant opportunities within the transport area but also some challenges. Miroslav Holecy will give a Industry view of this change and walk through real life examples from around the world. He will share insights what has been done and what we can learn.

Adrian Prelipcean | KTH, Stockholm

14:30

Adrian C. Prelipcean is a PhD student at the Department for Transport Science at KTH. He is the a main developer and data scientist of the Meili collection system, the Meili travel diary web application and implemented several analysis packages for comparing traditional paper and pen surveys with the automated surveys collected by Meili. His research interests include spatio-temporal data mining, artificial intelligence and machine learning, system development, database management systems, and modeling travel behaviour.
In parallel, Adrian Prelipcean is the CTO of Airmee and leads the company's research, development and innovation efforts.

Presentation topic: *"MEILI and the search for a travel diary collector"*

Leif Linse | Trivector

15:00

Leif Linse, MSc Kommunikations- och transportsystem, Linköpings Universitet, consultant at Trivector. Leif's special interests are traffic analysis/modelling as well as software development.

Presentation topic: *"TRavelVU an app for collecting travel survey data"*

Trivector has over the past 5 years developed a travel survey app called TRavelVU. Using GPS and accelerometer data it provides semi-automatic detection and classification of trips. It employs data cleaning and analysis methods based on research in this field. It acknowledges that no app will be able to perfectly detect all trips, so it is designed to make it easy for humans to check and correct mistakes by the algorithms. During the last year it has been put into practice of which some will be presented at the conference.

Evelyne Sørensen | Activemind.de 15:00

Dr Evelyne Sørensen is a consultant in the areas of data protection and data security for activeMind AG (www.activemind.legal). She has been working with data protection law since 2005 and have 12 years of experience in research (university) in comparative data protection law.

Qualifications

Master of Science in EU Business and Law
Bachelor of Laws (LL.B.)
Business lawyer (core area: EU Law and Danish Law)
PhD in Data Protection Law

Certifications

EIPA - Certification Programme for Data Protection Officers

Presentation topic: *"Rules and regulations on privacy of big data in particular in tracking people movements"*

Big Data is the umbrella term for various methods and technics, which enable to gain unexpected insights from the vast number of data tracks which are left behind on the Internet. The traditional differentiation between personal data and non-personal data, which characterizes data protection law, becomes obsolete. In the age of big data, all data is personal data. Analytical algorithms make any anonymization impossible in the long run. This comes with consequences: the scope of data protection becomes much broader than before.

Proven concepts and technical elements for the protection of personal data in relation to Big Data get to their limits. The distinction between anonymization and

pseudonymity becomes increasingly blurred. The new General Data Protection Regulation (GDPR), coming into effect on 25 May 2018, does not solve this problem, but includes some suitable approaches, in order to strengthens the rights of the data subjects. In addition, innovative approaches are needed which create an adequate balance between the interests within a digital society. An important keyword in this context is “privacy by design”, which is attributed central importance in the GDPR. Thus, technical and organizational protection measures, such as pseudonymity and encryption, can be used as additional compensators to meet the GDPR’s requirements

Panel discussion 16:05

Panel Members

Eva Lindborg | Trafa

2015 – ongoing	Senior Adviser, Trafikanalys (Transport analysis) Project Manager for a development project about new solutions for collecting data on travel behaviour. Monitoring development of models for cost-benefit analysis, e.g. the report Travel surveys as input data to travel demand models –problems potential and future needs in Sweden and Norway.
2013-2015	Transportstyrelsen (Swedish Transport Agency), Cost-benefit analysis of regulations in the transport system.
2009-2013	Trafikverket (Swedish Transport Administration), Cost-benefit analysis of infrastructures, infrastructure planning
2010	Master of Science in Business and Economics.
2009	Bachelor of Science, Economics
2007	Degree of Bachelor of Arts and Science, Gender studies

Tomas Julner | TrafikStockholm/TrV

Tomas Julner (b. 1952) is a civil engineer (M.Sc.) with 20+ professional years in the transportation field. First as a consultant within ITS/Road Traffic Management, then a number of years working with airline systems. Later as a Project Manager for the Swedish National Road Administration where he was responsible for the technical systems in the TMC in Stockholm and on to the national level. Tomas has been on assignments for SweRoad (the consultancy branch of Swedish Transport Administration) in both India and Sri Lanka.

Tomas also manages research projects funded by the Swedish Transport Administration in the ITS field. During his career he has often crossed borders

between academia - companies and government.

He is a senior project manager for Trafikverket and responsible complex systems and projects with different parties involved. Specifically, Tomas is responsible for traffic data acquisition and handling in the Stockholm area.

Isak Jarlebring Rubensson | Stockholm County, Trafikförvaltningen

Isak Rubensson divides his time between being a cost-benefit analyst at Trafikförvaltningen SLL and pursuing a PhD in Transport Science. During his time at SLL he has been, among other projects, overseeing the implementation of a revenue forecast model built on smart card fare collection data. That model have been used to great success in the planning of the last change of the public transport fare scheme in Stockholm (January 2017). Isak's current research aims at using collected data from public transport operations and fare collections to closer study distributional impacts of the public transport system.

Participation and registration

Participation to the workshop is free of charge however preliminary registration is necessary.

The workshop takes place one day before the national transport research conference, which is also located at KTH.

To register, please contact Lennart Leo via Email before 3 October 2017.

For any other information, please contact Yusak Susilo.