

## **Workshop B3 - Passive and sensor data: potential and application**

Workshop chair:

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The type of data collected for transport modelling is dictated by the type of research question the modeler attempts to answer. In turn, the quality of the data will influence model results and their credibility. For decades reliance has been on primary data collected via surveys and other more aggregated data methods including sensors, floating cars, and overall counts. These are costly, often insufficient to capture new mobility aspects, and surveys require participant engagement.

New methods, taking advantage of passively collected data have been increasingly considered as replacement or complement of the existing methods. Data from mobile phones, Wi-Fi scanners, cameras, Bluetooth devices, GPS trackers, as well as smart card data represent valuable sources of knowledge on travel patterns and use of transport networks.

The workshop includes three sub-themes:

- use of mobile network data for O-D matrix estimation, route choices, traffic and exposure to air pollutants;
- data mining techniques applied to smart card data to augment understanding of travel by public transport;
- combined kits (including automated cameras, activity tracking/fitness monitors, GPS) to collect data on daily patterns of activity.

A dominant feature of this workshop is the methodological change from hypothesis testing and verification, to discovery of knowledge through data-mining and visualization.

Papers for oral presentation

- Kanako Izawa, Sohta Itoh and Eiji Hato.  
Multi-scale pedestrian behavior monitoring based on three-dimensional trajectory observations data collected through Wi-Fi and GPS
- Candace Brakewood, Niloofar Ghahramani, Jonathan Peters and Eunjin Kwak.  
Big Data Sources from GPS-enabled Smartphone Applications: An Exploratory Analysis of Transit App Data
- Alejandro Tudela.  
Obtaining public transport OD matrices from data collected using sensors installed in buses
- Catherine Morency, Martin Trépanier, Nicolas Saunier, Hubert Verreault and Jean-Simon Bourdeau.  
The challenges of using 5 parallel passive data streams to report on a wide range of mobility options

Papers for poster presentation related to workshop

- Teresa Harms, Doina Olaru, Brett Smith, Francesco Cangiano and Yuchao Sun.  
New Data Collection Methods for Researching Travel Behaviour: Wearable Cameras and Activity Monitors

- Takahiko Kusakabe, Hideki Yaginuma and Daisuke Fukuda.  
Estimation of bus passengers' waiting time at a coach terminal with Wi-Fi MAC addresses
- Van Hieu Mai, Takahiro Kusakabe, Yoshiki Suga and Takashi Oguchi.  
Travel time estimation in mixed traffic using Wi-Fi detector based data
- Viktoriya Kolarova, Tobias Kuhnimhof and Stefan Trommer.  
Assessment of real-world vehicle data from electric vehicles – potentials and challenges
- Fearghal King and Mohamed Mahmoud.  
An exploration of 'passive big data' sources to inform best practice travel time studies – Lessons learned from Metro Vancouver
- Patrick Bonnel, Mariem Fekih and Zbigniew Smoreda.  
Origin-Destination estimation using mobile network probe data
- Luc Pellecuer, James E. Tate and Sam Chapman.  
Prospective use of anonymised vehicle GPS data: towards the prediction of the temporal variation of air quality
- Takumi Ban, Toshiyuki Yamamoto and Tomotaka Usui.  
Analysis on day-to-day variability of time-dependent origin-destination matrices by trip purpose with aggregated mobile phone location data