

Social Network Analysis in Transport Workshop

As part of WP1, the University of Nottingham hosted a workshop on 2nd-3rd of March, exploring how Social Network Analysis (SNA) could be incorporated into the travel behaviour research being carried out by the Loughborough University team in WP4.



In the past, studies of transport users have tended to treat travellers as atomistic units, but it has become recognised that such an approach is unsuitable for addressing many pressing questions at a time when policy has moved away from the 'predict and provide' model to one based on improving the use of already existing network capacity. To manage travel demand in such a way we must consider transport users as social actors. Social Network Analysis is a powerful tool for capturing social influences on individual's decision making. By collecting data concerning travel users' social (e.g. friends, family) and spatial (e.g. neighbours) networks, it grants us a richer understanding of travel demand, so allowing us to better predict and manage future demand.

The workshop was a lunchtime to lunchtime event, and speakers included a number of international experts in the fields of both transport geography and sociology (listed below). Twenty two attended the event, including Futurenet members; transport geographers from UWE, Imperial and St Andrews; and computer scientists from Cambridge and Nottingham's Horizon Centre.

Speakers and Presentations:

- Martin Everett, University of Manchester
- Theo Arentze, Eindhoven University of Technology
- Margaret Grieco, Napier University
- Elenna Dungundji, University of Amsterdam
- Antonio Paez, McMaster University

1) Martin Everett: *Social Network Analysis: Methods, Software, Trends and Some Current Research.*

Martin provided a general introduction to the distinct goals and perspectives of network analysis, looking at the traditional areas of application and the types of techniques that have been developed. He briefly outlined the software that is available and discussed the strengths and weaknesses of the more commonly used network packages. He finished with a look at current trends in network analysis and a brief discussion of some current research.

2) Theo Arentze: *Social networks and influence on activity-travel behaviour: an agent-based approach.*

Theo presented recent and ongoing studies from the Eindhoven group that focus on analysis and modelling of behaviour in several areas using an agent-based approach. These include the daily scheduling of activities and trips (joint activities, task allocation, social support), the selection of social contacts and dynamics of social networks, and the influence of social interaction on choice and decision making.

3) Margaret Grieco: *Social networks in the mobility of the sick: a silent policy premise within the organisation of the NHS.*

Margaret's presentation identified the critical but overlooked relationship between social network membership and survival travel. Present arrangements within the UK NHS for the routine mobility of the sick are fractured, fragmented and largely not discussed. The benefits that an explicit social network approach to patient transport could deliver within the NHS framework were then explored.

4) Elenna Dugundji: *Socio-dynamic discrete choice on networks in space: impacts of network size and initial conditions on emergent outcomes.*

Elenna reported on research into the interactions between households and generated feedback dynamics in the adoption of various transportation mode alternatives. A model was used where an agent's choice is directly influenced by their neighbours and peers' choices. Further complexity is introduced in the model through different mechanisms, such as individual-specific socio-demographic characteristics of the agents. Elenna reported significant initial conditions effects and network size effects on the emergent behavioural outcomes.

5) Antonio Paez: *Social influence and the decision to telework*

In his presentation, Antonio described recent research conducted at McMaster University that investigates how social interaction impacts the decision to telecommute. The survey recorded both individual agent characteristics and the interactions with their colleagues at work. The "colleague connection" measures the extent to which behaviour by members of an individual's social networks influence her decision to adopt telework. The results of this research indicate that social interactions at work, as well as socio-demographic and work-related characteristics, do influence an individual's decision to adopt telework.

Outcomes

Martin and Margaret's talks focused on the sociological context to SNA, whilst Theo, Elenna and Antonio focused on methodological applications of it within transport studies. One of the most successful elements of the workshop was the breakout sessions of the second day, where delegates discussed the possible implications and uses of SNA for a project like FutureNet. The diverse mix of specialism ensured a wide ranging and productive discussion of the potentials in this area, which will be explored further in the next workshop. The workshop also provided valuable insights for the travel behaviour survey as part of WP4; a pilot survey is planned for September 2010 before the main survey in March 2011. The second Social Network Analysis in Transport Workshop is planned for in-between the two surveys, provisionally January 2011.