3.13 SWEDEN

ACCESSIBILITY ATLAS TO ANALYSE REGIONAL ACCESSIBILITY TO LABOUR IN THE FOOD SECTOR

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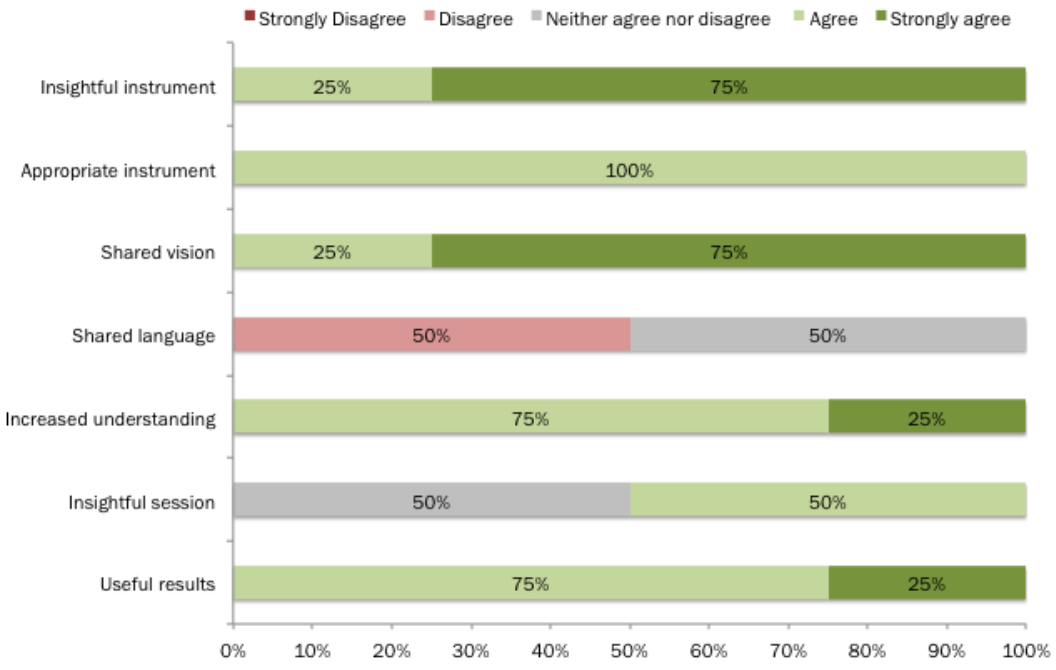
Participants' profile	# Participants: 4
Male | Female	2 | 2
31–45 | 46–60	3 | 1
Transport Planners | Regional Planners	3 | 1
Public organisation	4

Views about the session and the instrument



Accessibility Atlas for the Västra Götaland region

The instrument calculates travel time for car and public transport to one or many selected destinations with a 500 m geographical resolution for the entire Västra Götaland region. It is also spatially compatible with a large number of socio-economic data sets, which enables further analysis. The core of the calculation and data manipulation is developed by a consultancy firm[3] as a plug-in using the TransCAD software package. For further analysis and visualisation other GIS software is used. Public transport travel time calculations are based on time table OD data.

The instrument defines accessibility as the possibility to connect origin and destination points for a specific purpose. The accessibility tool has no predetermined restrictions in terms of accessibility measures. However, at the current development phase, two different measures are used: a location-based accessibility measure and a cumulative opportunity measure. In both cases travel times are used as the distance function. The following features make the tool very useful for planning practice:

- It operates with high-resolution data in 500 m cells. This allows for very accurate mapping and hence a clear relationship between data and reality. It also allows for analysis beyond administrative borders.
- Public transport and car travel analysis is performed within the same high resolution. This allows for detailed comparison between modes.
- The 500 m cells can be linked to socio-economic micro-data, which provides a base for a detailed analysis of accessibility taking into account age, gender, income and place of residence/work. Furthermore, it is possible to conduct labour market and firm data support analysis of accessibility to industry clusters and other business/commercial areas.

Setting the scene

Four planners took part in the workshop. They are all active on the regional level. Three participants work at the Public Transport Unit and one at the Regional Economic Development Unit. The PT planners have different specialisations: supply of public transport in peripheral areas, innovation in PT, and human rights in PT planning (for different user groups). From the instrument developers side, three persons attended the first meeting and two

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[3] The plug-in T500+ performs the calculations and data management during the build-up of the databases. We would like to thank Svante Berglund WSP/Royal Swedish University of Technology for his invaluable support.

the second. The same person acted as facilitator throughout the entire workshop, including the post-workshop focus group session.

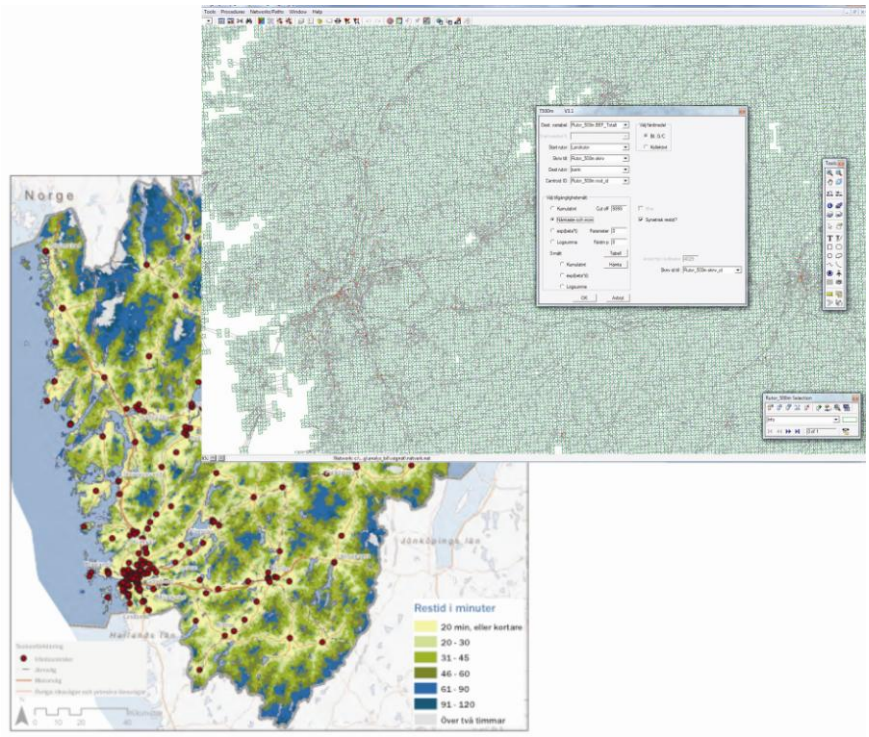

Figure 3.31: Screenshot of T500+ in TransCAD (right) and an accessibility map in ArcGIS (left)

The participants do not use accessibility instruments or other planning tools in their daily work. Information is most often acquired from professional knowledge, internal reports, databases and consultancy reports. However, the instrument developers have since 2010 worked together with the Regional Authority, specifically with a group of planners, on the development of the instrument. The participants were involved in this group. During this process the participants have been introduced to accessibility as a concept in planning as well as to the more technical aspects of the instrument. Their general knowledge about the instrument is good, but practical everyday experience is lacking. Concerning accessibility indicators and maps, the instrument developers had produced a printed atlas with different accessibility maps,[4] which was used by the participants in their planning practice.

[4] See the following link for a pdf version of the Accessibility Atlas: http://vgr.se/upload/Regionkanslierna/regionutveckling/Publikationer/2011/1105_Tillganglighetsatlas-VG.pdf

Describing the workshop

The workshops followed the COST 4-step model, however, with slight changes, since the pre-workshop meeting overlapped with step 1 of the first workshop. The process could thus be 'kick-started' at workshop one from an already commonly defined planning question and maps based on this knowledge. This resulted in a situation where workshop one went through steps 1, 2 and halfway through step 3 producing not only specific accessibility questions but also a first version of interventions. Accordingly, the second meeting restarted at stage 2 again, to revisit and evaluate the accessibility questions in the light of the new maps and data provided. From that step, new planning questions and the revised interventions were later developed.

Step 1

This step was prepared during the first pre-workshop meeting. As the participants already had good knowledge about the instrument, this occasion was used to fill in the pre-workshop survey. In addition, the group started step 1 of the workshop process by discussing a common planning problem. The common planning problem was defined as follows: How can a qualified labour force reach the food sector in Skaraborg via public transport commuting? The instrument used in the case cannot perform online simulations of new infrastructure or timetable modifications. Due to this limitation, the instrument developers produced a number of maps for the first physical meeting based on the outcomes of the pre-meeting.

Figure 3.32: Two planners discussing the content of the maps during meeting one

The first workshop was programmed to last 3.5 hours. The maps were presented and the participants were given time to discuss the content of the maps and what they represented. The results of the discussion were summarised under three headings: 1) ability to understand the maps, 2) usefulness of maps for the planning question, and 3) missing information. Based on the discussion the planners agreed on formulating the planning problem in six accessibility questions.

Step 2

One map that answered question 6 was produced online at the first meeting and included in the discussion. Based on the questions in step 1, the instrument developers used the time between meeting one and two (three weeks) to produce a new set of maps within the possibilities of the instrument. These formed the basis for the discussion at the second meeting.

The second workshop started with a presentation of the new maps. One experience from the first meeting was that a large number of paper-maps hindered discussion. The maps and statistics for the second meeting were compiled on four A1-sized posters that were put on the wall, 'forcing' planners and instrument-makers to stand together and discuss. This method proved to have very positive results.

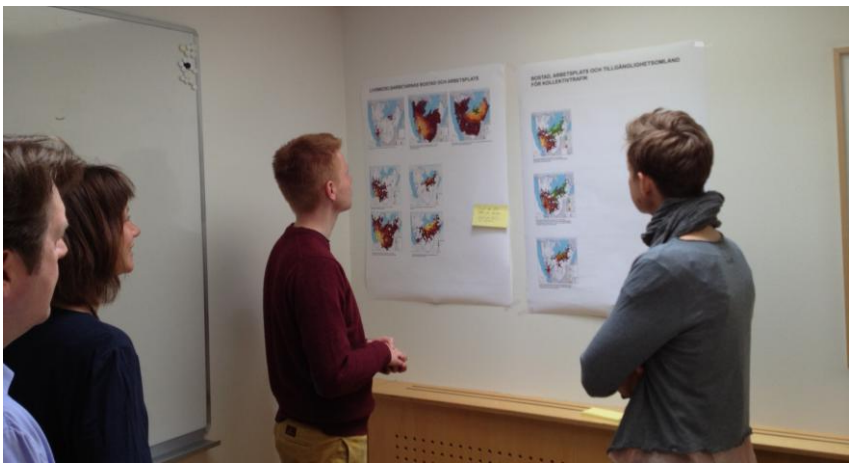

Figure 3.33: All four planners discussing the content of the maps on posters during meeting two

During the ensuing discussion several of the issues from the first set of maps came up again, although most of them were addressed by the new maps. In some cases, due to the limitations of the instrument, no additional solutions could be developed.

Step 3

The group was able to agree on two preliminary planning interventions already at the first meeting, based on the available maps. These interventions provided one of the inputs for the production of the maps for the second meeting. During the second meeting each of the new maps and statistics were discussed in light of the accessibility and planning questions. Labour statistics proved very useful for positioning the food sector within the regional economy. Location maps of production facilities and places of residence of workers in the food clusters also provided a very good background to the travel time maps for public transport to each of the two regional clusters. The end result of the discussion was that the planners realised that public transport would not be able to create a single, integrated, regional commute-based labour market.

Step 4

Based on the new revised maps and labour market statistics, the planners agreed on two new planning interventions during the second meeting. First, a new direct train connection should be built, to link the main urban areas in the Skaraborg food production cluster to the new train corridor between Trollhättan and Göteborg. The aim is to cut travel time from 118 minutes in 2011 to 70 minutes. Second, the currently weak east–west connection between the urban areas in Skaraborg should be strenthened, by combining express-bus systems and bicycle pools into a sustainable daily commute alternative.

Lessons on usability

The workshop's 4-step model was very good to use as a structuring device to explain to planners what was going to take place. However, it was a bit complicated to follow in a practical setting (notwithstanding that how the actual process plays out is probably very context dependent). In our case, the planners had basic prior knowledge about the planning instrument and accessibility as a concept. This proved to be very useful in the subsequent sessions since the focus could be kept on the planning problems and the process could proceed without interruptions at a normal pace.

During the sessions the maps proved to be very powerful for visualisation of large volumes of detailed data. This was a crucial advantage since our instrument operates with a 500 m cell resolution. One very important—and somewhat surprising—lesson was the impact of the maps and the accessibility language. The detailed maps and micro-data had a real impact on the decisions made. The planners could easily translate the map output into their planning reality. The risk of information overflow should be highlighted—too many and too complex maps can be confusing. We used six different themes

(travel time, accessibility to labour, accessibility to workplace, location of labour, location to workplace, education level of labour). This was enough to support the discussion and the decisions. Furthermore, we experienced that workshop interaction was better facilitated with wall posters, instead of individual paper maps or overhead projection of maps. On a more general note, the workshops showed that accessibility as a concept is far from intuitive. However, since a basic understanding was already established beforehand it worked as a very useful integrator between public transport and regional economic development planners.

Usability is a good indicator as long as the analysis is limited to basic functions, such as travel time, and the result can be relatively easily linked to socio-economic data via GIS software. One half-day session is enough to give planners the basis to follow the instructions to set up and execute the travel time analysis and then link the outputs to the GIS software. However, in our case the instrument-makers produced most maps between the two meetings, mostly due to the need for detailed socio-economic input data.

The data input process, the design of the databases and the calculation of travel time for new public transport timetables involve extensive data capture. This basic restriction limits simulation potential, and thus limits usability in situations where planners want to understand how changes in public transport infrastructure and services influence geographical accessibility.

The most useful improvement of the instrument is the development of a possibility for live modelling of future accessibility scenarios, whereby alterations are made to the infrastructure and/or public transport system. Given the present data structure of the software, this would require substantial work. A more realistic scenario would be to combine the strengths of our instrument with other instruments. Within the current COST Action there are a number of different instruments that are useful in scenario planning. One additional avenue to explore is the potential of specific software solutions to conduct part of the analysis directly in the public transport timetable database.

There is a general need to simplify the data input into the model. Currently the planning organisation needs specific expert knowledge to update road infrastructure and timetables for public transport. The detailed steps required for adapting the data to the demands of the model are particularly challenging.

One final lesson is related to the general knowledge and experience with statistics and GIS, which was relatively weak among the workshop group. One alternative route to reaching a basic usability level without altering the instrument would be to increase the planners' knowledge in qualitative methods (even a modest increase has visible effects on usability).