

**Source:** Juslén J (1997). Social Impact Assessment in Transportation System Planning. Paper for the International Association for Impact Assessment. New Orleans.

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# Social Impact Assessment in Transportation System Planning

This paper is made up of two parts. The first part is based on a study in which the social perspective in transportation planning was investigated. The second part is on the social impact assessment of the Helsinki Metropolitan Area Transportation System.

## **1. The Social Perspective in Transportation Planning**

In 1996 a pre-study was carried out to investigate how the social perspective has been taken into account in transportation planning in Finland during the recent past. The funding for the study was granted by the Ministry of Social Affairs and Health. The study was part of a larger research project headed by the Ministry of Transport the name of which was 'an environmentally advantageous community structure and transportation system'.

### **Objectives and research approach**

The objectives of the study were to achieve a broad view of the social impacts that are looked into, the methods that are used and the problems that arise, when assessing transportation systems. This study was the first step in the development of a SIA-process that could be integrated into transportation system planning.

The research approach used was qualitative in nature. It included a qualitative analysis of a variety of recent publications having to do with road, transportation and land use planning, and community structure. The publications included, for example, planning documents, impact assessments and research documents. All in all 114 publications were analysed.

Information on the social perspective in transportation planning was also gained by interviews. The following groups were interviewed: private traffic consultants, officials from ministries and municipalities, traffic experts from NGO's, researchers from universities, and representatives of different interest groups, eg. the handicapped and car-drivers.

The themes/questions discussed in the interviews were:

- 1) what does the social perspective mean,
- 2) which social impacts are assessed,
- 3) which health impacts are assessed,
- 4) which methods are used in the assessment of social and health impacts,
- 5) how should the social perspective be developed in transportation system planning?

### **Social perspective vs. social and health impacts**

In the beginning of the study the social perspective was defined as looking into the social and partially health impacts of transportation systems. The health impacts that were included in this definition were those that have to do with the psychological and social aspects of health impacts. Other aspects of health impacts were not included, for example, the natural science or biological aspect.

The definition used in the study for the social perspective was quite different from the ones that came up during the interviews. According to the interviews the social perspective included a variety of different aspects. These were the following:

*Equality* A transportation system should be accessible to all. Equality can be looked at from an active or passive perspective. The active perspective looks at equality between different modes of traffic and different groups of people. The passive perspective is concerned with the fact that a mode of traffic has negative impacts on people who don't use it.

*Power and funding* The social perspective in transportation systems has to do with the distribution of power and funding among different groups.

*Communities and politics* The social perspective has to do with the views of communities and the political decisions on transportation systems.

*Values* The social perspective is all about values. One may stress the general good of the public or economic objectives or ecologic objectives etc.

## **Social and health impacts in transportation planning**

As a result of the study several main classifications of social impacts and impacts on psychological health were formulated. Impacts were classified into the following main categories: mobility, transport, physical environment, social environment. These categories included social impacts, for example, concerning equity of mobility, availability of different modes of transport, physical division of residential areas and social segregation. These categories also included impacts on psychological health, for example, control of mobility, stress, feeling of safety in traffic/residential areas. A broader presentation of the impacts identified from the analysis of publications and interviews can be seen in tables 1 and 2.

The assessment of a transportation system is done at a macro-level which means that impacts and impacted areas must be looked into from a rather general point of view. However, the assessment of social impacts often requires the understanding of impacts on the micro-level before the information can be generalised. For example, in order to assess the impacts on access that will occur due to the building of 5 motorways (included in a transportation system plan) one must assess what the impacts of a single motorway are on different types of areas (eg. a suburb, a downtown area, a rural area). Micro-level information is needed to build the general picture of the impacts on the macro-level.

**Table 1.** Social variables and impacts concerning transportation systems

<b>VARIABLE</b>		<b>IMPACT</b>
<b>Mobility</b>	<b>equity</b>	An increase in public transportation, cycling, pedestrian traffic and other modes of unmotorised transportation increases equity among people.
	<b>access</b>	Changes in the transportation system will have an impact on access to transport modes, services etc. Distribution of access can be unequal both geographically and socially.
<b>Transport</b>	<b>supply of transport modes</b>	The supply of transport modes has an effect on the behaviour of the public. A decrease in the supply of transport modes may increase dependence on private cars.
	<b>share of public transport</b>	A rise in the share of public transportation correlates positively with a good social and physical environment, equity and low energy consumption.
	<b>share of unmotorised traffic</b>	A rise in the share of unmotorised traffic (cycling, walking etc.) correlates positively with a good social environment, equity in accessibility, social relations etc.
	<b>share of cars</b>	Increase in private cars causes reduction of choice in modes of transport.
<b>Physical environment</b>	<b>traffic and infrastructure</b>	Physical character of traffic and infrastructure can change existing distribution of access resulting in a dramatic curtailment of action space.
	<b>urban sprawl</b>	Possible negative effects on transportation possibilities and social contacts.
	<b>equality among areas</b>	Segregation among areas increases due to differences in transportation infrastructure.
<b>Social environment</b>	<b>status</b>	Status has an effect on the mode of traffic used. Changes in status will affect the shares of different modes of transportation.
	<b>local identity</b>	Changes in transportation may cause the disruption of the neighbourhood's identity.
	<b>migration</b>	Changes in access and amenity may cause migration. High income people may move out of an area because of loss of residential quality.
	<b>displacement</b>	Displacement is caused by changes in land use and can cause the disintegration of the local community.
	<b>segregation</b>	The weakening of transportation possibilities can increase social segregation among different groups of people.

**Table 2.** Psychological health variables and impacts concerning transportation systems

<b>VARIABLE</b>		<b>IMPACT</b>
<b>Mobility</b>	<b>control of mobility</b>	The feeling that one is in control of his/her mobility is important. There are several groups of people (ie. the handicapped, children) to whom the present transportation system does not offer a feeling of being in control.
	<b>mental stress</b>	Mental stress can be caused by non-mobility (ie. in the case of traffic jams) or by stress caused by mobility (ie. overcrowding in the subway).
	<b>fear of mobility</b>	Fear of mobility can be linked with traffic safety, crime or difficulties in using certain modes of transport. Fear of mobility can cause 'car-addiction'.
<b>Transport</b>		
	<b>experiences in traffic</b>	How one experiences traffic differs according to the mode of transport used. A traffic jam is annoying to the motorist because of loss in speed whereas to the pedestrian it can be annoying because of air pollution and noise.
	<b>fear of segregation</b>	The old and the carless may fear losing access to services as a result of lack of public transport.
	<b>feeling of security</b>	The amount of car accidents has an effect on the feeling of safety of car-drivers. The feeling of security among pedestrians and cyclists declines, for example, because of darkness, monotonous environments, dark pedestrian tunnels, difficult-to-cross intersections, fear of violence. The feeling of security in public transportation depends on the amount of personnel, crime etc.
<b>Physical environment</b>	<b>insecurity</b>	Urban sprawl and segregation between residential areas can cause insecurity. Factors that increase or decrease insecurity are fear of crime, disturbances in residential areas, unpleasantness of residential areas

## Methods

The results of the interviews showed that people find it hard to name any specific method that is connected with the social perspective in transportation planning. Instead the interviewees stressed

the importance of assessing different alternatives. The present planning system was criticised for lack of alternatives and for putting too much stress on the needs of private cars.

The prevailing quantitative approach to transportation planning was also criticised because it puts emphasis on the monetary calculation of benefits despite the fact that many significant effects cannot be measured in such a manner. For example, the benefits gained from the shortening of travel-time are not simply calculated in minutes or hours. Instead time spent on a certain type of trip (work, leisure etc.) has a certain value. This was criticised as being a rather artificial way of estimating the benefits of saving travel-time. In this system the shortening of travel-time during working hours is worth approximately 200 Finnish marks per hour (eg. 60 cars save 1 minute in travel-time), whereas the shortening of travel-time during leisure hours is estimated as being worth 10 Finnish marks per hour.

The analysis of recent literature showed that the methods used to include the social perspective in transportation planning were methods used in social impact assessments in general. The main methods used were:

- 1) past experience and research (eg. case studies, university research)
- 2) use of demographic data and other government data
- 3) surveys and interviews
- 4) public involvement.

## **Public Participation**

Several problems were identified in reference to public participation. These problems had to do with the inclusion of the local perspective in transportation system planning, the long time-span in planning and the representativeness of the transportation planner and consultant. The interviews revealed that some transportation system planners felt their work to have such a weak connection with local areas or the locals, that public participation was not necessary. One planner stated that 'there is no need to include the local viewpoint in planning because our plans are rather general. In addition to this transportation system planning is so technical an affair that public participation has not seemed suitable'.

It was also realised that the time-span in transportation system planning is so long and the time-perspective of the public so short that these two do not meet. The public thinks in terms of a couple of years whereas the transportation planner thinks in terms of decades. In addition to this there is the question of the size of the area being planned. The larger it is, the less of interest it is to the public.

The representativeness of the people taking part in transportation planning was also seen as problem because users of the transport system have not been allowed to take part in planning. To improve the situation it was suggested that different types of people, ie. people with a varying abilities (children, adults, the elderly, the handicapped) should take part in the planning process. There was a lot of debate on whether planners should stick to looking at matters simply from the viewpoint of different modes of traffic, or also from the viewpoint of different types of people according to their abilities.

## **Conclusions**

The social perspective has to do with equality, power, funding, communities, politics and values. It includes much more than the assessment of social and health impacts. Social and health impacts

concerning transportation systems can be classified under mobility, transport, physical environment and social environment. When looking at mobility we must remember to defend accessibility since an increase in mobility does not always increase accessibility among different groups of people. An increase in mobility may even decrease accessibility in the form of traffic congestion. The assessment of social impacts of transportation systems requires the investigation of micro-level impacts and the generalisation of the results for the macro-level.

The methods used in the social impact assessment of transportation systems (macro-level) are rather unknown but quite similar to the ones used in the assessment of transportation projects (eg. road plans). On the other hand it seems that these methods are inadequate in macro-level -assessments. The development of methods alone will not be sufficient to develop the social impact assessment of transportation systems. There is also a need to develop the planning culture in the following ways:

- 1) by shifting from a positivistic to a more hermeneutic (understanding) viewpoint,
- 2) by including the idea of equity,
- 3) by including a broader range of values,
- 4) by including the open formulation and assessment of alternatives into planning.

Lack of public participation is due to several reasons: some planners feel public participation is not necessary in such a technical field of planning, others feel that the time span from transportation system planning to building is so long that people will not participate. On the other hand the need to include the users viewpoint was stressed by other interest groups.

## ***2. The Social Impact Assessment of the Revision of the Helsinki Metropolitan Area Transportation System 1998***

The Helsinki Metropolitan Area Transportation System 2020 -plan was approved in 1994. It was decided that the plan would be revised every four years with the first revision paying special attention to public transportation needs and environmental goals.

In this part of the paper I will briefly present the working programme for the social impact assessment of the Revision of the Helsinki Metropolitan Area Transportation System 1998. The social impact assessment was begun in April 1997 and should be ready in October 1997. It is being done as part of the environmental impact assessment of the transportation system.

The main challenges that are being tackled in the social impact assessment of the Transportation System Plan are:

- 1) what baseline data is relevant and sufficient for the SIA?
- 2) which impacts should or can be assessed?,
- 3) how should public participation be arranged?
- 4) which alternatives should be assessed? What are the contents of the alternatives?
- 5) (how) should impacts on different types of community and different types of people (children, adults, the elderly, the handicapped etc.) be assessed?

The steps of the social impact assessment could be called the tasks of the assessment because they can take place simultaneously or in a different order than the one presented in table 3. For example, the organization of interaction may take place throughout the assessment process.

**Table 3.** The steps of the social impact assessment

Planning the assessment, formulation of alternatives Baseline condition from the social perspective Organization of interaction Identification and scoping Assessment of alternatives Reporting of assessment
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### **Planning the assessment, formulation of alternatives**

The planning of the assessment was done in co-operation with the Helsinki Metropolitan Area Council (which will be referred to as the Area Council in the following text). The planning group included an SIA-consultant and officials from the traffic and development departments of the Area Council. In the planning of the assessment one important goal was to integrate the assessment into the planning and assessment procedures already being used in the Area Council. This would reinforce the possibility that SIA would become an integrated part of the Councils operation in the future.

New alternatives were not formulated for the SIA. The alternatives that were to be assessed were the ones formulated by the Area Council for the environmental impact assessment. These included a public transport -alternative and a private transport -alternative. The former alternative is made up of public transportation projects, for example, railways, subways, cable cars, bus routes, terminals, information systems - the latter includes several road plans and plans for pedestrian and bicycle traffic (see appendix A).

### **Baseline condition from the social perspective**

This part of the assessment process is mainly based on information gathered for a large research project on the living conditions in the Helsinki Metropolitan Area. The data gathered from the research project has been analysed to identify the main characteristics of the different types of community structures in the Metropolitan Area. The different types of community structures that are being characterised are the downtown area, urban suburbs, suburbs, and areas along the main railway.

The variables that may be included in the characterisation of the community structures are income, age, family structure, cultural and social tendencies, habits of mobility, neighbourhood quality, accessibility of services, time spent commuting to and from work etc. For example the people living in the downtown area can be characterised as having an income level that is higher than in the urban suburbs and lower than in the suburbs. Single-person households and households with over 65 year-olds are typical of the downtown area. The population is culturally and socially active (but not with their neighbours), and walking, cycling and public transport are the typical modes of transportation.

## **Organization of interaction**

The Area Council is using a variety of methods to organize the interaction between the planners and the public. The interaction between the Area Council and the public includes, for example, seminars and a sequence of group works. An internet-based system is being used to inform and receive comments from the public. The information generated from the aforementioned interaction will be used, as much as possible, in the social impact assessment. In addition to this a survey is being carried out as part of the group works. The purpose of this survey is to identify social impacts caused by the transportation system and to gather information for the assessment.

## **Identification and scoping**

The identification and scoping will look into social and health impacts. These will be identified from various sources of information:

- 1) objectives set for the transportation system,
- 2) the analysis of newspaper articles,
- 3) the analysis of the information gathered from the survey and the other forms of interaction,
- 4) and previous studies and assessments.

The following variables were seen as most relevant according to the preliminary analysis of the survey results: equity among different types of people, changes in accessibility especially concerning pedestrian and bicycle traffic and access to services, disruption and segregation of residential areas, the artificiality and monotony of the environment, and exposure to pollutants and traffic noise.

## **Assessment of alternatives**

The alternatives will be assessed from the viewpoint of the impacts that are identified in the identification and scoping -stage. The assessment will include separate analyses of the impacts on the different types of community structures. The assessment will look into the effects of each alternative on the downtown area, the urban suburbs, the suburbs and the areas along the main railway. The significance of impacts on different types of people will also be assessed.

**Table 4.** A simplified example of an assessment matrix

<b>ASSESSMENT OF THE DOWNTOWN AREA</b>			
<b>VARIABLE</b>	<b>ZERO ALTERNATIVE</b>	<b>PUBLIC TRANSPORT ALTERNATIVE</b>	<b>PRIVATE TRANSPORT ALTERNATIVE</b>
equity			
accessibility			
disruption to residential areas			
exposure to pollutants & noise			

### **Reporting of assessment**

The results of the assessment will be included in the assessment report of the whole EIA. In addition to this a more detailed report will be produced on the process, methods and experiences gained in the social impact assessment.

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