

Summary:

Consequences for individuals and households of traffic-reducing measures

Knowledge, knowledge gaps and research needs

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The aim of this project is to describe the knowledge and knowledge gaps concerning (negative) consequences for individuals and households of the implementation of traffic reducing measures. The main conclusion is that there are few studies regarding this issue. Nevertheless, we can establish that various traffic mitigation measures have different kinds of effects and consequences for different groups. The consequences of reduced car-use are often greater for those who have disabilities affecting their ability to walk or people who live in suburban and rural areas or in households with children in kindergarten or school.

Literature study

The work is based on literature studies. We searched first for literature on the consequences of specific traffic-mitigation measures for different groups, but this proved fruitless. We therefore decided to search first for literature on the traffic-reducing *effects* of specific measures and actions (including which groups were those most affected by the measures). We then searched for literature as to what kind of negative *consequences* there would be for various groups. This was combined with more general knowledge and literature reviews on interrelations between development of land use, transport systems, travel behaviour and traffic volumes.

Based on this, we first made a *general discussion* of different types of measures and the effects that these can be expected to have on travel behaviour and car-use, as well as the kinds of consequences individuals and households may experience as a result of reduced car-use. We also discussed the characteristics of individuals and households, as well as of contexts of spatial structure, and how these may influence whether and to what extent households and individuals are experiencing negative consequences.

We then described and discussed the *effects and consequences of different types of specific traffic mitigation measures*, choosing to spend more time on measures that help reduce car-use among commuters. In shedding light on the effects and consequences of one kind of traffic-reducing measures more carefully, we believe we have identified the main types of effects and consequences, as well as which groups that experience the greatest impacts of the implementation of traffic-reducing measures.

The main finding is that there seems to be little documented empirical knowledge of which groups of people that experience the greatest consequences when a specific traffic mitigation measure is implemented. We have referred the literature we have found. Based on this we have defined what we consider to be the most important knowledge

deficiencies. We have proposed research and evaluation projects that can help eliminate or reduce these deficiencies.

Measures - effects – consequences

Various kinds of *measures* can be implemented to reduce car traffic volumes. If these measures are to reduce car traffic (assuming a constant population), they have to have an *effect*. The measures must result in the people in a city, or in a district of a city, travelling less on average. They need to: Travel rarer; Travel shorter distances (change destination), or; Being the driver of a car in a lower proportion of journeys.

This may have negative *consequences* for those who change their travel behaviour and for their household. This can among others regard: Time expenses; Reduced accessibility; Direct costs, and; Indirect costs.

Individual-based car-dependency and urban structural context

Which steps are implemented, which effects they will have on travel behaviour and traffic volumes, as well as the physical and perceived consequences of behaviour change is *contingent*.

We found that this among others is related to individual- and household-related car-dependency. This concerns whether the individuals are: Adults without severe disabilities without children living in the house; Persons living in households with children in kindergarten or school; Individuals who, because of individual-related factors are having trouble getting around without a car (disabled, etc.).

It is also related to spatial structure. We chose to group individuals and households by whether they live in and travel to /from urban, suburban or rural areas, thus affecting the opportunities they have to change destination and mode of transport.

The conditions also relate to type of journey: Work and school trips (less flexibility in the short term); Travel related to the necessary shopping, service, etc. (medium flexibility for many); Optional leisure and travelling (medium flexibility).

Because of these contingent conditions of individuals, contexts and journeys, one cannot realistically expect to arrive at universal, quantitative answers as to what effects a measure, such as halving the availability of parking spaces at a workplace, will have, or what the consequences will be for a particular type of household. We can, however, have knowledge regarding whether certain measures *tend to* contribute to reducing traffic volumes; we know the conditions necessary for this to take place; and we know who is likely to be most affected by various measures.

The effects and consequences of specific measures

A variety of types of traffic mitigation measures are discussed: Restrictive measures to reduce car use on travels to work (parking restrictions, limitations on road capacity); Traffic reduction in the inner city; Parking; Information measures and campaigns to reduce car use; Car sharing and car pooling.

The effects and consequences associated with restrictions on car use for journey to work are more rigorously discussed, because this is where data access was best. The main finding is, anyhow, that there is little empirical knowledge. We found that parking restrictions at the workplace and capacity constraints on the road network contribute to sharply reducing car-use for commuting, particularly when combined with other changes in terms of transport choices.

It appears from our investigations that those who live in car dependent areas, experience the greatest consequences related to reducing car use. There is also a weak tendency that families with children report greater consequences. Also, there is a greater fear of negative consequences of reduced car-use than is actually reported after measures are implemented. Nevertheless, we can affirm that we found few studies on the consequences of traffic mitigation measures on work trips or on the strength of these effects among various groups.

As regards the other types of measures examined, the conclusion is essentially that there are few good studies of their effects, even less knowledge about which groups are affected after implementation of the measures, and almost no studies concerning the consequences for different groups of reduced car-use resulting from specific traffic-reducing measures.

This may be because it is difficult to conduct scientific studies on this topic that can be used in producing general knowledge. The effects and consequences the measures may have, and for whom, depend on too many contingent conditions of the urban structure and transport systems, as well and on those who reduce their car-use because of traffic-reducing measures.

Knowledge and knowledge gaps

On the one hand, one may hence conclude that the general discussions, coupled with the review of possible effects and consequences of the traffic-reducing measures, offer a relatively good foundation for understanding effects and consequences of traffic reducing measures for individuals 'and households' welfare, as well as for regional and social distribution. On the other hand, one may conclude that we hardly have found literature discussing the effects and consequences of traffic reducing measures for individuals 'and households' welfare or for regional and social distribution.

If we choose the latter perspective, we can define the most important knowledge gaps or research questions as:

- What traffic-reducing *effects* do traffic mitigation measures have (several kinds of measures may be included) on people with different properties (the ability to move around, if they live with smaller children) living in different kinds of spatial contexts? How strong are the effects for various groups and under what circumstances?
- What negative *consequences* might these measures have on the welfare of different types of household and on regional and social distribution?

These are the same questions that we started out with in this work.

Proposals for research and evaluation projects

When describing long causal chains or when discussing complex matters, as both are the case here, case-studies are often an appropriate method. The studies that led to the greatest insight into the problem in this review were case studies. Further empirical research on the effects and consequences of traffic-reduction research should therefore be organized as case-studies. This could be case studies of single cases or comparative case studies with more cases. Both quantitative and qualitative methods could be useful and necessary in such case studies

The Little and Luscher (1995) framework for investigating the social and distributional impacts of implementing transport measures can be adapted and used when carrying out empirical research on social and distributional effects of traffic-reducing measures. The following research tasks were defined:

1. Identify and define relevant and realistic traffic-reducing measures to be examined.
2. Identify and define the objectives and criteria for achievement of objectives.
3. Identify and define the relevant consequences and relevant groups (ability to move around, living with children, spatial structure).
4. Identify or develop methods to assess how different kinds of traffic-reducing measures will affect the welfare of different households, as well as regional and social distribution of the consequences (case studies recommended).
5. Identify and define mitigation measures to minimize the negative effects of traffic mitigation measures.

Carrying out research this way and obtaining new empirical knowledge about the effects and the consequences of implementing physical traffic mitigation measures enables production of knowledge that sheds light on the relevant consequences and their distribution. This may be important input for future planning and decision-making. New knowledge may help to accelerate transition towards development of more environment- and climate-friendly land use and transport systems, with fewer negative consequences for individuals and households.