TRANSPORT ANALYSIS

Perspectives on travel and travel opportunities

Summary
Report 2018:17

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Summary

In its public service agreement, Transport Analysis has been tasked with preparing a current status analysis and knowledge base regarding the personal transport situation in Sweden with respect to different types of traffic and modes of transport, nationally as well as in urban regions, small and medium-sized towns, sparsely populated areas, and rural areas. Light is also to be shed on international travel, with a focus on other Nordic countries.

The report covers how people travel today and includes an analysis of the travel options available to various groups in society from a developmental perspective extending to 2050.

A person's travel options are affected by accessibility as shaped by transport system configuration, land use, time restrictions, and individual circumstances. The report confirms the perception that Sweden's regions and various societal groups exhibit both similarities and major differences in accessibility that affect the existing opportunities in terms of linking residences, workplaces, leisure activities, etc. Similarly, differences in travel patterns are found in chosen transport modes, travel times, trip lengths, and trip purposes.

However, the fact that some individuals or groups travel less than others does not necessarily mean that the conditions and assumptions concerning them are less favourable. Low mobility may be a matter of choice for a given group, and perhaps even sought for depending on attitudes and values, while for other groups, low mobility may be less a matter of choice, and can impede their independence and participation in society. This is important to consider from the perspective of our transport policy objectives, as it also affects the options available to various groups to adapt to changing circumstances. Consequently, high or low degrees of mobility cannot be considered in isolation, whether the discussion concerns sustainability or fairness.

Accessibility and travel patterns

Various metrics are available for measuring and analysing accessibility. Some are simple, capturing a given aspect that may be of major importance, such as the share of the population living within a given distance of a grocery store. In other cases, the metrics are more composite, and can deepen our understanding of accessibility on a more overarching or general level. Here, we have developed metrics tied to four broad categories, i.e., land use, the transport system, time restrictions, and individual conditions, and then designed a more composite index to express the accessibility of different groups.

We have studied the conditions and assumptions concerning travel based on classifying the population in six ways, three based on individual data (i.e., age and gender, income level, and functional impairment) and three based on geography. This classification is relevant when studying differences between urban and rural areas and is tied to socioeconomic circumstances. The first geographical classification is the Swedish Agency for Regional and Economic Growth's municipality group classification, while the second is the Swedish National Council for Crime Prevention's classification of socially disadvantaged urban areas. In the third geographical classification, called Mosaic, the areas are classified on the basis of a composite metric based on demography, finances, vehicle and population density, interests, and consumption.

The picture that emerges when the various accessibility metrics are analysed unsurprisingly indicates that accessibility is generally significantly better in cities than in rural areas. This is manifested in, for example, proximity to services, public transport, and workplaces. This pattern varies somewhat depending on the mode of transport involved. The options for taking public transport are more limited in rural areas. On the other hand, conditions for travelling by car are generally favourable in terms of access to a car, parking, and driving licence possession.

We also see that a strong public transport offering covaries with lower car ownership, and vice versa. This points to a certain compensatory behaviour that enables travel. What we are seeing likely also indicates how different groups cope with uncertainties or disruptions in the transport system. In areas of high car density, people find individualised solutions for times of disruption. In the case of municipalities and groups facing highly unfavourable conditions for public transport use, the options for dealing with such disruptions are much worse. An individual solution has probably already been arrived at in the form of car ownership in such cases. However, in the longer term, major changes affecting any type of transport, such as a dramatic increase in the price of fuel or a comprehensive change in the public transport offering, can have major consequences for inhabitant accessibility in certain counties or municipalities.

Travel pattern data have been obtained from the national travel survey (TS Sweden 2011–2016). On average, 10 journeys were made per person per week. Mobility measured as the total number of trips per person per week differs among the groups in all classifications, except for the one based on municipality type.

The half of the population with the highest incomes makes the most trips, approximately 12 per person per week. The elderly and those with impaired mobility make the fewest trips, roughly seven per person per week. The 25 percent with the lowest incomes and those living in socially disadvantaged urban areas and areas dominated by *younger low-income earners in rental dwellings in multicultural suburban areas* make somewhat fewer trips than average, i.e., eight to nine per person per week.

The age and gender differences in the numbers of trips are sizeable. The elderly makes fewer school- and work-related trips, but more trips for shopping, services, and leisure. Children make fewer trips for shopping and services, while young women (aged 18–40 years) make more trips to family and friends (including to pick up and drop off children). Middle-aged men (aged 41–64 years) travel more by car and make fewer trips on foot than average. Generally, middle-aged men also have the longest journeys. The elderly makes the fewest trips via public transport or bicycle. The half of the population with the highest incomes makes the most trips for school and work, as well as the most trips by car, but no differences are tied to income when it comes to trips made for other purposes.

Residents of socially disadvantaged areas and areas dominated by *younger low-income earners in rental dwellings in multicultural suburban areas* make fewer leisure trips and trips to family and friends. Those living in socially disadvantaged areas also make the fewest trips by car. On the other hand, the lengths of trips made by those residing in socially disadvantaged areas are not significantly different from the trip lengths of those living in other areas.

Residents of large cities make more trips via public transport than do residents of other areas. In particular, those residing in areas dominated by *highly educated young urban high-income earners* make the fewest trips by car, the most by public transport, and the most on foot. When residents of these areas do travel by car, they are among those with the longest driving

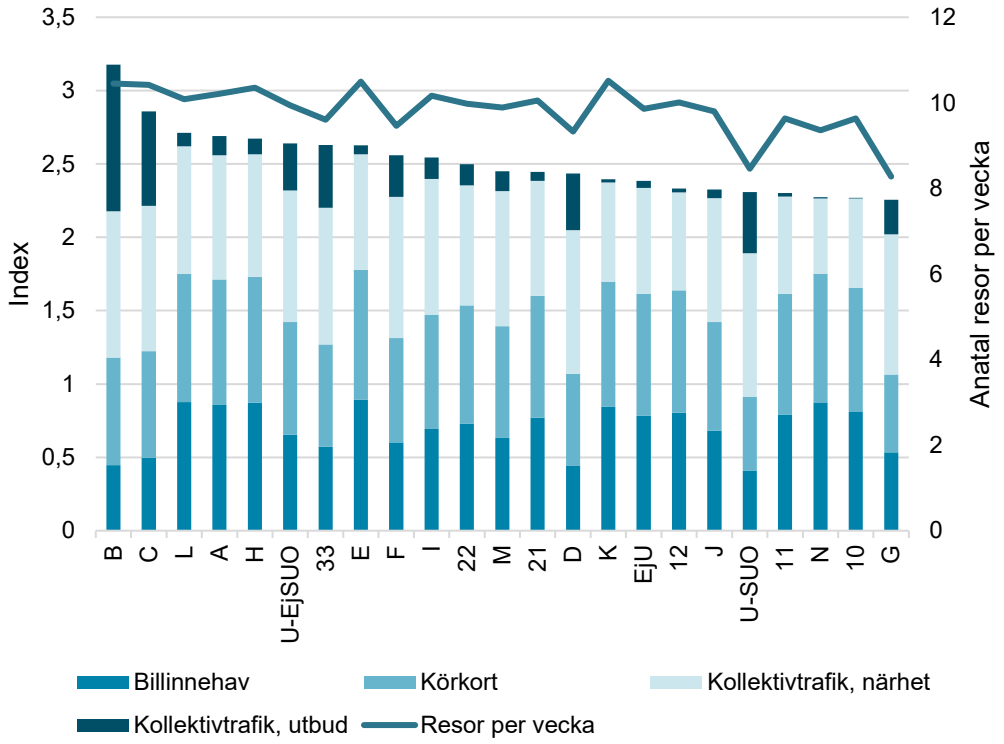
distances. Children and residents of areas dominated by *young singles and students with low incomes* bicycle the most. However, children cycle the shortest distances and generally have shorter journeys. Those who cycle the farthest per trip comprise the 25 percent with high incomes and residents of areas dominated by *families with high incomes, higher education, and children in well-to-do exurbs*.

Opportunities for travel: today and in the future

The number of trips appears to covary with the conditions surrounding travel, and with the subjective assessment of the available travel opportunities. High car and driving licence possession levels correlate with more trips by car, while a strong public transport offering correlates with more trips via public transport. Simultaneously considering multiple factors, we still see a weak but positive link, i.e., better travel opportunities covary with more trips made. The index consists of quantitative data regarding:

- the share of households with a car,
- the share of individuals with a driving licence,
- the share of individuals with at least one public transport departure per full day in the same square kilometre as their residence, and
- the normalised offering of the number of public transport departures in the same square kilometre as the residence.

Those who enjoy the most favourable conditions for travel based on the index reside in the areas dominated by young highly educated people with good finances in flats in large cities. These groups also make large numbers of trips. However, residents of areas dominated by *young and middle-aged families with children with good incomes in exurbs outside small and medium-sized cities*, i.e., groups with high levels of car ownership and driving licence possession, make the most trips. Residents of socially disadvantaged areas and younger low-income earners in rental dwellings in multicultural suburban areas exhibit low travel activity, both compared with other groups and based on their conditions and circumstances. The groups that face the least favourable conditions and circumstances are all situated in some type of peripheral location, i.e., rural municipalities.



Key: Antal resor per vecka = Number of trips per week. Billinnehav = Car ownership. Körkort = Driving licence. Kollektivtrafik, närhet = Public transport, proximity. Kollektivtrafik, utbud = Public transport, offering. Resor per vecka = Trips per week.

Figure 1. Conditions and assumptions surrounding public transport, car travel and number of trips made per week.
Source: Our own processing of data from TS Sweden, Samtrafiken AB, (SCB, 2017f), Swedish Transport Authority (road traffic register), and Sampers.
Remarks: Municipality types: 33 urban municipalities, 22 urban municipalities near a large city, 21 remote urban municipalities, 12 rural municipalities near a large city, 11 remote rural municipalities, and 10 extremely remote rural municipalities. SUO: U-SUO – urban socially disadvantaged areas, U-EjSUO – other urban areas, EjU – non-urban areas. Mosaic areas: A – families with high incomes, higher education, and children in well-to-do exurbs outside of the major cities, B – urban highly educated young high-income earners with tenant ownership in major cities, C – younger well-educated middle-income earners in flats in and around major cities, D – young singles and students with low incomes in rental dwellings in and around major cities, E – young and middle-aged families with children with good incomes in exurbs outside small and medium-sized cities, F – low and middle-income households in flats outside major cities, G – younger low-income earners in rental dwellings in multicultural suburban areas, H – established and older middle-income earners in houses with children who have moved out or are older, I – middle-aged and elderly couples with good incomes in tenant-owned residences in suburbs of major cities, J – single-person households with low incomes in rental dwellings in city suburbs or smaller towns, K – middle-aged-to-elderly couples with higher incomes in exurbs of small and medium-sized cities, L – elderly and retired couples with medium incomes in houses outside medium-sized cities, M – flat-dwelling retired people who often live in specially adapted housing, and N – elderly and retired people in smaller towns and rural areas.

One of the transport policy objectives is to ensure a transport supply that is socioeconomically sustainable in the long term for the citizenry and business community throughout Sweden. To achieve these objectives in the long run, we need to consider several supportive and counteractive trends. This means that additional policy instruments should be considered.

Future travel opportunities are influenced by the evolution of both global trends and transport-related factors, such as new transportation technologies and new business models, in parallel with increased pressure to achieve the transport policy objectives, including that of reducing greenhouse gas emissions. One key global trend is urbanisation combined with a growing and ageing population. The bulk of this population growth will occur in today's urban areas. In the

future, our transport system will consequently need to meet increased transport demand and address the risk of congestion in urban areas, as well as offering basic accessibility in more sparsely populated areas where cars are currently important for accessibility. The ageing population will entail an increase in the dependency ratio, which, in the long run, risks eroding appropriations for investments in and the maintenance of transport infrastructure, as well as funding for public transport, especially in more sparsely populated areas.

Another key global trend is that the economy is being transformed and is increasingly concentrated in urban regions; access to workplaces should increase as both the population and the economic centres of gravity shift to those urban areas. A weakness is that the housing shortage is expected to persist in these areas in the foreseeable future, with new construction unable to keep up with demand. Commuting is consequently expected to remain a strategy for coping with the imbalance between the housing and labour markets.

The introduction and breakthrough of new technologies and new business models, such as increased digitisation, electrification, automation, and the sharing economy, could, with the proper guidance, help solve accessibility problems in both urban and rural areas. To prevent urban traffic congestion, high-capacity public transport needs to be sufficiently attractive to counter the competition from driverless cars, which probably means that public transport will be driverless as well. This will require integrated development and transport planning supporting the expansion of high-capacity public transport. With respect to rural towns, driverless vehicles may reduce the need for traditional public transport and replace it with vehicles customised for lower passenger volumes that operate independent of any scheduling. If such services do not come into existence, people with low incomes who lack the necessary resources to solve mobility problems by themselves will face significant difficulties meeting their mobility needs. The transport supply for such groups should consequently be paid particular attention.

Driverless cars will probably lead to lower transport costs as well, with associated economies of scale and agglomeration effects. In other words, activities will be concentrated in large cities, while the areas outside them will lose their attractiveness in terms of, for example, access to services. If such is the case, this means that we will also come to see a continuing, and possibly even intensified, gap between city and country and different groups in terms of the available means to travel to their desired destinations.

There is currently disagreement over just when driverless personal vehicles will become prevalent, but one estimate is that they will account for half of traffic by the early 2040s. However, the trend towards driverless transport is expected to move more quickly in both public transport and taxi service. Increased use of information and communications technology (ICT) will mainly affect travel patterns and, to a lesser extent, the number of trips made. ICT can better assemble the daily scheduling puzzle, increasing travel flexibility in time and space.

The transition to freedom from fossil fuels and to vehicles with better environmental performance will be accelerated by new and stricter vehicle requirements, and by restrictions in the form of, for example, environmental zones. As long as these new powertrains entail higher transport costs compared with current levels, the changeover could negatively affect the travel options available to certain groups. There is consequently reason to keep an eye on the means available to groups with few options and more limited financial resources to maintain their accessibility.

Accessibility and distribution

In addition to this uncertainty, there are other aspects that could easily be overlooked or insufficiently attended to in the transport policy debate, i.e., mainly issues concerning distribution and fairness, two areas emphasised in the review and analysis performed.

A certain intrinsic tension, or contradiction, exists between efficiency and uniform distribution/equality. This emerges clearly in the transport sector in connection with the use of accessibility as a term. Accessibility can be viewed as the interplay between land use and the transport system, and how well they jointly succeed in providing (groups of) individuals the means to reach activities or destinations via one or more types of transport. Accessibility is also tied to financial efficiency (as influenced by, e.g., growth, population, and employment) and, to some extent, to equality as well, as improved accessibility is considered to benefit people and companies. Improved accessibility means that passengers can, for example, make their trips more cheaply than before, or be able to reach destinations that were previously inaccessible; similarly, it means that companies can find more suitable personnel, and lower the costs of shipping intermediate goods and of shipping final products to customers.

However, the correlation between accessibility and growth from a geographical perspective is often unclear. For example, changes in accessibility between two regions or cities may favour one and disfavour the other. It should also be borne in mind that accessibility can to some extent be achieved without physical travel, for example, via digital communication.

The aspiration to reduce inequalities while enhancing growth through improved accessibility may not always be possible. Providing basic accessibility via public transport even in the most remote parts of the country or providing support to particularly disadvantaged groups may not be socioeconomically beneficial. It thus becomes a question of considering values, and the level of accessibility to which everyone in society can be considered entitled. This will also have repercussions for the perspectives on which infrastructure planning should be based or that are currently dominant: *utilitarianism*, in which socioeconomic analyses are the primary tool for increasing total benefits to society, or *egalitarianism*, in which planning is mainly intended, based on a distribution perspective, to ensure that all groups can participate or share in the benefits on equal terms.

TRANSPORT ANALYSIS

Transport Analysis is a Swedish agency for transport policy analysis. We analyse and evaluate proposed and implemented measures within the sphere of transport policy. We are also responsible for official statistics in the transport and communication sectors. Transport Analysis was established in April 2010 with its head office in Stockholm and a branch office in Östersund.

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