

Summary:

Simplifying public transport

Barriers against using public transport and measures to make public transport easier

Is it easy to travel by public transport?

There are many factors that can affect whether people choose to travel by public transport or not. The quality of the service is of considerable importance. People put great emphasis on availability, distance by foot to nearest station, ticket price, punctuality, comfort etc. In this report we focus on the importance of the public transport service to be as *easy* to comprehend as possible.

It should not matter how complicated trips passengers choose, how far they choose to travel, how familiar they are with the system or how many different operating companies there is. The public transport system must appear as a complete and simple service. Factors like lower prices and high frequency to raise the overall quality of public transport, is not a topic in this report, because the main focus is to simplify public transport.

People using public transport has questions related to the trip before, during and after it has taken place. Information, such as timetables, route maps, fare information etc., is sometimes hard to fully comprehend. The information is often poorly formulated, so that the transport system may seem unclear and difficult to interpret.

Barriers against using public transport

In this report, barriers are defined as different kinds of obstacles, problems or difficulties related to using public transport. Note here that barriers do not need to fully prevent people from using the public transport service. Many passengers are faithful users of the service in spite of the problems and insufficiencies they may experience.

We can split the different type of barriers into five groups, categorized as follows:

?? **Information barriers.** This includes lack of or even incorrect knowledge about the public transport

service, which may affect two things. First it may affect people's choice of transport mode. This is because both car drivers and public transport users has insufficient and incorrect comprehension of their own or other people's way of travelling. Second, it may create problems when orientating in the system. Informative barriers can cause the public transport service to appear as difficult to follow and hard to get familiar with. This leads to the question: Do people refrain from travelling by public transport because they have limited knowledge of the service available?

?? **Physical barriers.** This includes parameters such as distance by foot to nearest station/bus stop, physical obstacles on the way to and from the station/stop, on the station/stop, on the transport vehicle (for example level differences between vehicle and platform, poor lighting, heavy doors, slippery step etc.) Another physical obstacle, which may prevent people from travelling by public transport, is their own health condition. Elderly and handicapped people often have trouble getting on and off the transport vehicle.

?? **Psychological barriers.** This includes perceived insecurity or fear towards using public transport, and in some cases insecurity concerning the ability to handle the system. There is a positive relationship between knowledge about the public transport system and the ability to feel safe and certain when using it.

?? **Cultural barriers.** Public transport may appear to have a certain image that some people find it difficult to identify with. These types of barriers can also arise from negative attitudes towards public transport.

?? **Practical barriers.** These types of barriers are related to people's preferences, regarding usage of time (waiting time, auxiliary time, transfer time), ticket prices, changing between lines during a trip, flexibility preferences and comfort demand. These sorts of barriers will not be reduced solely by making public transport easier. This is primarily done by a general quality increase. This issue will not be further discussed in this report.

Measures to make a simpler public transport service and to decrease the number of barriers

To decrease the number of barriers and to increase the availability of public transport, the service must be user-friendly, simple and unambiguous.

The report discusses the most important elements regarding the following measures:

- ?? *Passenger information.* This is to increase the users' knowledge about the system and to make trip planning and travelling as easy as possible.
- ?? *Marketing,* especially individualized marketing. This is to give the users knowledge about which possible routes fit their needs.
- ?? *Providing a clear and simple line network/structure.* This must contain fixed routes, recognisable names and numbers, and a clear and plain network.
- ?? *High frequency.* This way the users don't have to memorize the timetables. Another option is *fixed cycle operation* on the routes. This makes timetables easy to memorize.
- ?? *Coordination of the public transport service.* Coordination between the different routes is important for obtaining easy transfers, which in turn will reduce the inconvenience cost of transfers between lines.
- ?? *Improved physical shape of the vehicles.* This is to raise both comfort and availability for all potential users. One example is low-floor buses.
- ?? *Improved physical shape of terminals, stations and stops.* This includes making them more attractive, more suitable for their purposes, more available and easier to orientate in.
- ?? *Design of the overall public transport service.* It is important for improving all parts of the service aesthetically. This is to make the system easy to recognise, user-friendly and attractive.
- ?? *Bus priority to ease public transport passage.* This is a crucial measure towards savings in journey time, reduce transfer time, improve punctuality and contribute to smooth and "seamless" journeys.
- ?? *Simpler fare system and ticketing.* It is important that prices are consequent, and that it is easy to buy and renew ticket coupons. This calls for co-operation between operating companies.
- ?? *Adjust the service for elderly and handicapped.* This is to increase availability to the public transport system for people with reduced mobility, so they can travel on the same terms as other users.

?? *Park and ride.* This may give a flexible use of public transport in combination with car, and will make the trip easier and less time-consuming for many users.

This list of measures is very extensive, and we have not looked at each one in detail. The intention behind this list is to give an overview of the variety of possible measures, and give suggestions to how the public transport system can be improved, with the purpose of making the service easier and more accessible to potential and existing users.

Passenger information must be priority no. 1

One of the main focuses in this paper are measures towards passenger information. Information about the public transport service is an absolute requirement for users being able to plan and carry out a trip or a journey. It is often easier to use the car than to get information about the public transport service available.

Poor information also leads to difficulties in learning what possibilities there are, and orientating in the system. It is one of the most important action plans for creating a service that is easy. Information shall cover all demands the users have on all parts of the trip. Therefore, the information must be easy to get, easy comprehensible, unambiguous, complete and logical. Besides, it must at all times be correct. Information that is wrong can be worse than no information at all, and may lead to lack of confidence towards the service.

Case studies

The report presents examples of schemes or programmes that have been carried out in cities of different sizes, and in rural regions, both in Norway and in other countries. In the evaluation of these examples, we turn our focus towards the effects of these schemes, both on market share of public transport and travel habits, and on level of satisfaction among the public transport users. The projects will be discussed with respect to whether the actions that were carried out actually did lead to an easier public transport service.

Examples from cities and city areas

In Glasgow, Scotland, it has been carried out an extensive conversion of the bus line network. It is designed using the same principals as for the underground railway system, and so given the name '*The Overground*'. The system contains 18 lines with a high frequent service,

good flow or capacity in the public transport system, and several transfer junctions. Passenger information is also designed to make it as easy as possible for the users to get familiar with the system. This altogether has created a very easy public transport system.

We have picked three projects from Sweden; from Sundsvall, Jönköping and from Göteborg. The projects in Jönköping and Sundsvall are sorts of schemes where several measures have been carried out simultaneously. We also present one such scheme from Hundvåg in Stavanger, Norway.

The Göteborg scheme was a change of the route structure, where the public transport route network was shaped as a star. That means that all bus routes have the same origin at one central point. All routes meet at approximately the same hours at the centre of the star. We can find similar solution in Schaffhausen, Switzerland, where there has been a high increase in public transport market share during the last decades. The development of star-shaped line network is an important measure towards making public transport service easier.

A project from Drammen, Norway, is also presented in this paper. During the 1990's, they carried out an extensive change of the public transport line network, with more emphasis put on the routes with heavy traffic.

Most of these cases are examples of schemes, that is a composition of different measures, which altogether are aimed to have a positive effect on the use of public transport. Common factors for these projects are change of route structure, higher frequency level, introduction of low-floor buses, improvement of interchanges, and a great emphasis on information and marketing of the service. In addition, almost all these projects have done some sort of bus priority measures.

Examples from rural regions

Public transport development in rural regions may be difficult due to low demand. In this paper, we present two examples that show two ways of designing a public transport system that meets the customers' demand, and at the same time is cost-effective for operating companies as well as for the authorities.

One of the projects is carried out in some rural regions in Vest-Agder county, Norway, where a new bus service was developed. This bus route was designed to be a dial-a-bus service. Also, more objective service offers were developed, adapted to different arrangements and activities in the region. These new bus services are primarily aimed at young and elderly people.

Another project is a 5-year project, which has been carried out in Ockelbo, one of the smallest municipalities

in Sweden. Here, they co-ordinated the ordinary scheduled traffic, the school bus system and the transport service for handicapped into one single transport system. This resulted in a better service for all passengers. What is special about this project is that using the service is free of charge.

Strategies towards a simpler public transport service

This report shows that there are several barriers that may prevent people from travelling by public transport, and that there are several potential measures that may reduce these barriers. The existence of barriers and the extent of them vary depending on several variables, for example size and population density of the region in question. It also depends on the level of service, people's age and life cycle, how often one travel by public transport and familiarity with the transport system.

In other words, this problem cannot be solved by one single measure. First of all, a long-term strategy plan for making the public transport system easier has to be initiated. This process should be based on the following major elements:

- ?? Exploring the problems on a local level
- ?? Strategies towards a simpler route service
- ?? Strategies towards an easier fare system and ticketing
- ?? Market communication
- ?? Regional co-operation

Exploring the problems on a local level

First step in the process of developing an easier public transport service is to get an overview of the problems on a local level. One has to evaluate the type of barriers that exists, and how many people who get affected by them. The most important methods to serve this purpose are:

- ?? "*Fellow traveller studies*". This is to evaluate the problems the users of the service face during the trip. An observer follows both familiar and unfamiliar users of the public transport system on a trip. During the trip, he or she observes and registers the problems and difficulties appearing during the trip. This type of study can give important insight to different aspects of the service and in turn point out what service product needs to be improved.
- ?? *Interviews* to find the extent of barriers. This includes both quantitative and qualitative interviews. Another type of interview is called focus group interviews,

- where the interviewer gathers a group of people to informally discuss a chosen subject.
- ?? “*User tests*”, where experts on different areas test the functionality in the public transport system in question.
- ?? “*Function analysis*”. This analysis systematically evaluates, reviews and assesses all demands and requests related to public transport product.

Strategies towards a simpler route service

A central strategy to develop a simpler route service is to raise the frequency level so that learning the timetables is unnecessary. This may be very expensive, and has to be assessed given the public transport market in every region. Therefore, it is just as important to investigate whether it is possible to carry out an efficiency plan towards raising frequency on more centralized sections. Possible solutions are:

- ?? Trunk network with supplementary local routes
- ?? “Star-shaped” network
- ?? Developing better interchanges and bus priority measures

Both trunk network and star-shaped network (route structure in which all lines emanates from one central node) will imply an increase in transfers between lines, and often longer walking distances to the bus stops. This requires both development of suitable interchanges and high punctuality. High punctuality is especially important in a system based on the fact that most of the passengers need to perform one or more transfers. High punctuality can be obtained by prioritising public transport in the traffic system.

An important principle for development of public transport systems has been “think tram – drive bus”. This means to give the bus network the same advantages as the tram network, especially related to design of the network, flow, frequency and travel time.

Strategies towards a simpler fare system and ticketing

The fare- and ticketing system must be designed as simple as possible seen from the users point of view. This implies co-ordination between different operators, so that the users can rely on a consequent fare- and ticket system. Possible solutions are:

- ?? One card for all types of trips
- ?? Easier ticket sale system

Electronic ticketing systems will raise the possibility for the users to carry only one card for all trips, regardless of distance and number of trips per month. Such cards contribute to an easy payment system, without requiring the users to know all the different fare- and discount prices. Operators also have to arrange for an easier ticket sale system. The goal is to prevent the users from striving to get tickets and coupons, and instead make it as easily available as possible.

Market communication

Market communication is important to obtain a good relationship with the customers. This term includes factors regarding the operators handling of and communication towards their passengers.

- ?? *Passenger information*. This form of communication should be priority no 1.
- ?? *Travel guarantees*. This is to visualise the operators’ responsibility towards their costumers.
- ?? *Safety and service*. This may be obtained through security, emergency phones, service minded drivers etc.
- ?? *Rating of customer satisfaction*. This is a method for evaluating satisfaction and barrier level among the customers, and in this way make a foundation for improvements of the service.

Regional co-operation

The common situation nowadays is that more than one company operate within a city or a region. People also have a more differentiated travel pattern than earlier, which implies that they have to face several operators with different information, fare- and ticket systems. This implies co-operation between regions on the following:

- ?? Fare system
- ?? Bus routes and transfers
- ?? Passenger information

The different companies should co-ordinate their efforts to create a *complete, simple and accessible* public transport system.