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Can People with Cognitive Functional Impairments Use Public Transportation ?: National Report for Sweden

**Prepared for
DG Employment and Social Affairs**

by

The MAPLE Consortium

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Lund University, Lund Institute of Technology (Sweden)
South Kildare Community Transport (Republic of Ireland)
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CONTENTS

1. Introduction.....	1
2. Method.....	2
2.1 Selection.....	2
2.2 Approach.....	3
2.3 Analysis.....	3
3. How Sweden organizes public transportation.....	4
3.1 National interest groups and authorities.....	4
3.2 Transportation authorities.....	5
3.3 Local traffic authorities.....	5
3.4 Operators.....	6
3.5 Trainers.....	6
4. Results.....	7
4.1 Interviewee definitions of cognitive functional impairments.....	7
4.2 Travel possibilities.....	8
4.2.1 Measures in place.....	9
4.2.2 Policy documents and the future.....	10
4.3 Special measures.....	11
4.3.1 Education and training.....	12
4.3.2 Information and assistance.....	13
4.3.3 Technical aides.....	14
4.3.4 Service Routes and Special Transportation Services.....	18
4.4 Future prospects.....	19
5. Conclusions.....	20
6. References.....	21

APPENDICES:

APPENDIX 1: Organizations and authorities interviewed

APPENDIX 2: MAPLE semi-structured telephone interview form

Can People with Cognitive Functional Impairments Use Public Transportation ?

1. Introduction

The MAPLE scheme is a European undertaking designed to study, and to discover methods for improving, accessibility to public transportation systems in Europe for people with cognitive functional impairments. In addition to Sweden, the participants are the United Kingdom, Ireland, Greece and France, who are conducting sub-studies based on the same questions that are the basis for this present report. The project application describes the undertaking in broad outline as follows:

"The project aims to promote the mobility, and encourage the social inclusion, of two very broad and heterogeneous groups of people: people with learning difficulties and people with mental health problems. This will be done by identifying, investigating and disseminating measures that will improve the accessibility of public transport systems in Europe, so both facilitating the movement of these people within the physical environment, and encouraging their participation in society.

Whilst a considerable amount of work has been done to remove physical barriers in the physical environment, so improving the mobility of people with a physical or sensory impairment, the consortium believes that the problems faced by people with a cognitive impairment or mental health problems (which might include behavioural difficulties or depression etc.) are much less well understood, and that strategies for assisting these people with their mobility are far less well documented. Although these conditions are largely "invisible", they are often no less restricting in their effect of limiting an individual's mobility and participation in mainstream society."

The overall aim of this sub-project is to survey the measures within public transportation that increase the possibilities for people with cognitive impairments to use public transports and to call attention to "good practice". The project application uses the following formulation, among other things, to describe this:

"Special attention will be paid to awareness among public transport authorities and measures that are currently in place to train staff in how to assist people with cognitive, medical and behavioural conditions (although the expectation is that there will be few examples of such good practice in Europe)."

In addition to investigating what has been done by public transport authorities and their operators to facilitate and simplify independent travel for people with cognitive impairments, another goal is to survey how the parties responsible for public transport define the concept "people with cognitive functional impairments."

There are several important concepts in the sub-projects, beginning with *public transportation*. In the present sub-study, this concept is limited to surface public transports — busses, trolleys, subways and trains.

The next concept is *cognitive functional impairment*. This is a relatively new concept in the context of public transportation, which makes it particularly interesting to obtain a picture of how this concept is regarded by the enterprises that are responsible in various ways for Sweden's public transportation. The definitions offered by the people interviewed are presented as part of the following results. Whenever the person interviewed was unsure of, or had no notion of the concept, the following definition of the word *cognition* from the 1993 edition of the National Encyclopedia was presented prior to the subsequent questions.

Cognition Learning; the thinking functions with whose help information and knowledge are managed. Among the cognitive functions are perception, memory, concept formation, reasoning, problem solving and attentiveness.

2. Method

2.1 Selection

The population selected for the investigation consists of organizations and enterprises that in different ways have been identified as having connections to public transportation and disability issues. Since the transit authorities have the principal responsibility for public transports in the various counties and regions, these organizations have been the main target for the study. But to obtain a complete picture of the issue, it was also attractive to gain the viewpoints of other responsible authorities and interest groups. Finally, it has also been interesting to look at how things are being done, i.e. by operators and trainers.

When striving to acquire the most comprehensive picture possible, two of the interview questions have been used to facilitate so-called snowball selections. One question's purpose was to obtain additional interesting names within the person's own organization, and the other's was to pinpoint interesting names in other organizations. In some cases, other questions have yielded associations to other organizations, resulting in access to additional names at an early stage.

The population selected consists of Sweden's 21 *transit authorities* that are responsible for public transports in their respective counties/regions. In addition there are six *local transit authorities* that are responsible for a certain kind of traffic in a city, for example. The population also includes two large *bus companies* that are active in large parts of the country, around 10 with a more regional stamp, as well as a number of smaller companies that service some exceptional routes. When it comes to trains, today we find one large operator

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

— Swedish State Railways — and a number of smaller companies. A shortage of drivers in the three metropolitan areas (Stockholm, Gothenburg and Malmö) has led to the initiation of special *training procedures* to complement the local transportation schools throughout the country. The selected population also includes 10 different *authorities* and *interest organizations* that are relevant in various ways with regard to questions about cognitive functional impairments and public transportation.

The intention was to conduct about 30 interviews. This study is based on a total of 27 interviews, distributed as follows: nation-wide interest groups and authorities, 7; transit authorities, 10; local transit authorities, 3; operators, 5; trainers, 2. In order to achieve a broad selection, the transit authorities have been chosen from different parts of the country; in addition to those from the three metropolitan areas, others have been included, e.g. from Blekinge, the smallest county in Sweden, and from a rural, sparsely populated county, Jämtland. A list of the participating organizations is provided in Appendix 1.

2.2 Approach

This study has consisted of telephone interviews with traffic authorities, operators in the Swedish system of public transportation and relevant interest organizations and authorities. The interviews were conducted with the assistance of a simplified interview guide with open questions (Appendix 2).

The questions were presented in such a way that the interviewees, to begin with, offered a picture of the measures that have been taken to facilitate traveling for people with functional impairments. The subsequent questions turned to what has been done to simplify or facilitate travel for people with *cognitive* functional impairments. Once the interviewees had been able to freely describe the measures that have been applied in public transport, they were asked a number of supplementary questions about improvements that we know come up or have been discussed in Sweden, and that to a greater or lesser degree are helpful for people with cognitive functional impairments. In the framework of these measures, questions were also posed as to whether the interviewees have any opinion about how the measures succeed.

2.3 Analysis

Analysis of the interviews has initially been done at the completion of each interview. This stage was followed by a review of all the compiled interview responses.

The figures in parentheses in the results below show how many have commented on the phenomenon/category preceding the parentheses. It should be noted that since these were open questions, it is possible that more interviewees and their organizations have the same experience or opinion but do not present it. Some of the interviewees have not had time to

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

answer all the questions; in these instances the questions about commenting on specific measures have been omitted.

After 27 interviews were conducted, it can be observed that fewer new opinions about the central issues appeared as more and more interviews were carried out. This should be regarded as evidence of good reliability of the results presented.

3. How Sweden organizes public transportation

Surface public transports in Sweden are organized under a number of different authorities. Infrastructure such as streets, roads and bus stops are owned and managed primarily by the National Road Administration outside urban areas and by the municipalities in urban areas. Tracks are mainly owned and managed by the National Rail Administration. On the regional level, public transport authorities are responsible for ordinary public transports, which can mainly be divided up into regional rail traffic, regional bus traffic and city bus traffic. These authorities in turn contract entrepreneurs to carry out the operation of the various bus and train services. Most interregional rail traffic is managed by SJ AB [Swedish State Railways, Inc.], but there are also a number of smaller entrepreneurs in the market. Cross-country bus traffic is for the most part provided by the larger bus companies.

3.1 National interest organizations and authorities

Sweden has a number of authorities that are responsible in different ways for issues involving functional impairments and public transportation. *The Swedish Disability Ombudsman* and *The National Public Transport Agency* both have coordinating responsibility to assure that public transports are accessible by people with functional impairments. *The National Public Transport Agency* is also responsible to procure interregional public transport, by air, rail, sea and land, which would not be commercially viable. *The National Road Administration* and the *National Rail Administration* are responsible for seeing to it that their respective sectors are accessible. *Jernhusen* owns and administers station buildings along our railway lines. *Jernhusen* is a state-owned, for-profit company, but like other state-owned enterprises it is obliged to create accessible environments for people with functional impairments.

The Swedish Handicap Institute, HI, is a nationwide knowledge center in the area of assistance and accessibility for people with reduced functionality. The institute's primary effort is directed towards assuring good-quality and well-functioning assistance for people with functional impairments and improving ease of access for such people in our society.

The Swedish Disability Federation, HSO, is an umbrella organization consisting of a number of associations for the handicapped and disabled. Its assignment is to be the unified voice of the handicapped movements vis-à-vis the government, parliament and central authorities. At present, 43 of

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

Sweden's handicap associations, with ca. 500,000 members, belong to this cooperative organization. There are also cooperative organizations for handicap associations in counties and municipalities. Although they are not part of *The Swedish Disability Federation* they say that they enjoy close cooperation.

The Swedish National Association for Persons with Intellectual Disability, FUB, is an interest organization dedicated to making it possible for children, youths and adults burdened with physical or psychological retardation to live a good life. FUB is an association for Developmentally Retarded children, youths and adults and has about 29,000 members in ca. 165 local associations around the country. FUB looks after such persons' interests in municipalities, county councils, parliament and authorities in various areas of society. FUB is one of the associations included in HSO.

The Swedish Public Transport Association, SLTF, is the branch organization of county and local transportation. Its membership includes the transit authorities of Sweden's 21 counties, as well as those of a number of local (major metropolitan) areas. SLTF also has a number of associated members representing suppliers and consultants closely involved with the transport business. The overriding task of SLTF is to strengthen the competitiveness of public transportation to encourage more people to choose to travel by such means.

3.2 Transit authorities

In today's Sweden there are 21 transit authorities responsible for transportation in a county or a region. Most of them contract service from an entrepreneur, but in some cases they also operate traffic under their own auspices. Their responsibilities include furnishing public transport that is accessible by people with functional impairments. Transit authorities are organized in different ways throughout the country, sometimes as municipal corporations and sometimes as administrations. Here are some examples.

- *Skånetrafiken* plans and provides public transportation in Region Skåne and, in cooperation with other actors, also in the rest of the Öresund region.
- *Västtrafik* plans and provides public transportation in western Sweden, and is also responsible for buses, trolleys, ferries and trains in the Västra Götaland region.
- *Stockholm Transport, SL*, is responsible for traffic in the Stockholm region.
- *Hallandstrafiken, HLT.*, has corresponding responsibilities in the county of Halland.

3.3 Local transit authorities

When transportation authorities were established in their present form, some local authorities chose to retain the local enterprise rather than relinquishing it

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

to regional auspices. At present, six local transit authorities continue to operate traffic locally. Among them are the following.

- *Trafikkontoret* [traffic department] in Gothenburg, which operates trolley traffic in the city. At present they own the trolley pool, but consign the administration of operations to Västtrafik.

- *Lunds lokaltrafik* [Lund transit], which operates service in the city of Lund.

- The former *Umeå Lokaltrafik AB*, which was recently reorganized and is now one division, along with the transportation service for elderly/disabled persons (Special Transportation Service, STS), under the municipality's Social Structure Office.

3.4 Operators

Most of Sweden's public transportation is procured by various contracting firms who then provide transport services themselves. SJ is by far the largest operator of train services. It is a state-owned for-profit company that emerged as one of 6 companies when the earlier State Railways was restructured in 2000. Among other smaller train operators are the following.

- *Tågkompaniet* that runs Tåg i Bergslagen [trains in the mining district] among others
- *Linx* that services the Copenhagen-Gothenburg-Oslo and Oslo-Karlstad-Stockholm lines
- *BK-tåg* that mainly provides the rail service in Småland.

Bus traffic has somewhat more operators, but here again it is the two largest operators — *Swebus* (formerly SJ bus) and *Connex* (formerly Linjebus) — who account for most of the market. Among the other operators is *Arriva*, primarily servicing routes in southwestern Sweden.

3.5 Trainers

The need for more drivers in public transport has resulted in the opening of a special training program in Malmö, for example. This training center for public transportation is a cooperative undertaking. The Employment Office, the city of Malmö and the bus companies Arriva, Connex and Swebus join in providing comprehensive training for bus drivers. According to the center itself, the training comprises everything required for driving a bus in the public transportation sphere from an operator's license to ticket sales, customer service and crisis management. In Gothenburg among other places there are similar training programs for taxi drivers and drivers employed in Special Transportation Services.

4. Results

4.1 Interviewee definitions of cognitive functional impairment

Cognitive functional impairment is a comparatively new concept in the context of public transportation, which makes it particularly interesting to get a picture of how the concept is viewed among the various enterprises that are in different ways responsible for Sweden's public transports. Those interviewed have described cognitive functional impairment with such words as *retarded development*, *mental retardation*, *learning disorder* and *poor information processing*. Some said that this is an "invisible" functional impairment that is consequently not so easy to detect. One also included autism, and another mentioned poor eyesight and hearing as cognitive functional impairments. Many of the interviewees expressed uncertainty about the denotation of cognitive functional impairment. What follows is a compilation of the interview responses.

- vague concept (5)
- mental retardation (5)
- learning difficulties (3)
- retarded development (2)
- poor information processing (29)
- poor understanding/comprehension of reality (2)
- invisible functional impairment (2)
- orientation problems (1)
- poor judgment of distances, etc (1)
- autism (1)
- retarded development, poor eyesight, impaired hearing (1)

The Swedish Handicap Institute, HI, contributed a more extensive definition of the concept in its response. Because HI can in many ways be regarded as a national benchmark in the area of handicaps, its definition is presented below.

"Cognition is what goes on in the human brain when it receives, processes and mediates information. We employ our cognitive faculties when we seek information, receive information, store it in our memories, process it, and make decisions — perhaps on the basis of old information that has been reprocessed with the acquisition of new information. Then we carry out the decisions taken and act, finally evaluating our actions to see whether they have been well or poorly carried out.

Impairments in the functioning of cognition can imply that one finds it hard to remember things, or to orient oneself in time and space; one may experience a decrease in one's ability to solve problems, or to deal with numbers or language. These impairments may result from illnesses or injuries that impact on cognitive ability, e.g. retarded development, acquired brain damage,

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden
aphasia, autism, ADHD, dementia syndromes, whiplash injuries and functional disorders of a psychological nature.

Examples of cognitive functional impairments:

- *Psychological functional impairments.* Several different functional impairments can arise in the company of psychological maladies, e.g. sensibility to stress, difficulties in understanding words and abstract thoughts, aberrant perception of time, disorientation, and problems with gathering one's thoughts and focusing one's attention. People who have psychological functional impairments may require new opportunities — for example, correspondence courses if they find it hard to participate in large groups. Bad environments may have to be adapted so that they feel safe and, at the same time, allow for meetings between people.
- *Retarded development. Learning disablement, retarded development and mental retardation* are different words for the same thing — a congenital defect or one that emerged at an early stage. Functional impairments among people with retarded development include reduced short-term memory, often in association with limited mobility and impaired sight and hearing. Such people find it more difficult than other people to learn things, and learning takes more time. They may find it difficult to understand abstract information, such as written instructions, numbers and letters. We can distinguish among grave, moderate and mild degrees of retarded development. Only a small number of people fall into the first category.
- *Dementia* is a collective term for a group of special symptoms indicating that certain brain functions have deteriorated. One definition of dementia goes like this: "An acquired condition that results in intellectual diminishment and memory losses with social consequences."

4.2 Travel possibilities

For a number of years, Sweden has been working at making public transportation accessible by people with functional impairments. The ambition to create a society open and available to everyone can be discerned on the national level in the "From Patient to Citizen" bill (prop. 1999/2000:79), serving as a clear guideline. A number of laws have bolstered the requirement for accessibility, such as "the Planning and Building Act" (SFS 1987:10) and "The Disability and Public Transportation Act" (SFS 1979:558). Changes in "the Planning and Building Act" (SFS 2001:146) will probably have great consequences for accessibility to the public environment. These changes imply, among other things, that clear guidelines will be imposed for accessibility in the preparation of and changes to public places. Unlike its predecessors, this law works retroactively, and it means not only that new constructions must be accessible, but also that existing obstacles must be removed.

Authorities like the National Road Administration, the National Rail Administration and The National Public Transport Agency, among others, have been working on a common project called "The Whole Trip" (Rikstrafiken et al. 2003), in which accessible environments have been created through applied experiments. They have also issued a number of publications and decisions by authorities about accessibility for people with functional impairments on the whole. The National Road Administration points to three main areas where it particularly wants to invest:

- Accessibility to bus stops and boarding/debarking vehicles
- Better treatment by drivers and other personnel
- Better information both before and after the trip.

4.2.1 Measures in place

The work on accessibility has also yielded practical results in the daily operations. All of the transit authorities queried have carried out *measures to generally facilitate travel by people with functional impairments*. Most of them have introduced low-floor or low-entry buses throughout their city bus networks, or are in the process of doing so; see the figure below. Most of them are also in the process of introducing accessible buses in their regional bus networks. Similarly, audible stop announcements and automatic displays indicating the next stop are already in place or being installed; see the figure below. This is being done initially in the city bus networks and in the busiest regional bus routes. At certain transfer points there is also special spoken information that can be activated by pressing a button. For several years now, Umeå has had an outdoor announcement notifying what bus is arriving and where it is going; Helsingborg is one of the other places where a similar system is being tried out. The responses below have been divided into categories. The number of respondents mentioning a category is shown in parentheses.

- low-floor vehicles (13)
- stop announcement/display (12)
- stops/infrastructure (9)
- monitoring interest group opinion (3)
- tactile markings (2)
- driver training (2)
- talking schedules at stops (1)



Figure. Low-floor bus in the Landskrona city bus network and a display for showing the next stop.

All those interviewed either believed, or knew for sure, that people with *cognitive functional impairments travel by means of the present public transport system*. They thought that such people primarily employ special departures to which they are accustomed and that they are dependent on routines when they travel. Since this population is not homogenous, however, some respondents were of the opinion that far from everyone can travel. Those left out would primarily be people with several different functional impairments. The comments of the respondents are presented below.

- Yes, people with cognitive functional impairments use today's public transport services. (18)
- Such people primarily employ departures and routes with which they are familiar. (3)
- They mainly travel with urban transports and services for which they can make reservations through a central dispatcher. (2)
- Ticket procedures are an obstacle because they have difficulties understanding them. (1)
- Their travel possibilities depend on the degree of their functional impairment. (1)
- More such people travel than one can imagine. (1)
- Such people do not travel very much; someone has to show them how to travel. (1)

4.2.2 Policy documents and the future

Sweden has decreed that all public transportation must be accessible by people with functional impairments by the year 2010. Work on creating accessible public transports is underway in virtually the entire country, yet *no organization has produced a specific policy document for assisting people with cognitive functional impairments*. However, accessibility in general is dealt with in various business blueprints, etc. Some communities have a special action program for accessibility questions in which cognitive functional impairments are included to some extent. The interview responses reveal that at present, the main emphasis is on limited mobility and impaired vision, as reflected in policy documents.

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

- We have business concepts, plans for the infrastructure, or the like that deal with accessibility issues. (5)
- There is no specific accessibility program. (4)
- We have produced a brochure about bus stops, including specific advice and recommendations. (2)
- An action program for accessibility issues has been circulated for comment. (2)
- We have a special accessibility program. (1)
- Our goal is that everyone who is able to reach a bus stop should be able to travel. (1)
- We have produced an easy-to-read “contract” regarding quality, treatment by personnel, etc. (1)
- Our ambition is to create good public transport period. Introducing more easy accessed bus stops for the driver also results in more accessible bus stops for disabled people. (1)

On the whole, *organizations today are primarily discussing accessibility for functionally impaired people in general*. There are also some discussions about *cognitive* functional impairments, but these discussions have first and foremost dealt with lack of knowledge. Here are some of the respondents’ comments.

- We discuss accessibility for functionally impaired people in general. (7)
- We have a special reference group/disabilities council/visionary team. (3)
- Our transit authority is working to progress from special solutions to accessible ordinary public transports.
- We are discussing the adaptation of local services to individual needs. (2)
- We are conducting a reorganization so as to improve our accessibility. (1)
- No animated discussion is going on at present. (1)

4.3 Special measures

No one claims to have undertaken any *special measures to facilitate travel for people with cognitive functional impairments*. However, several respondents think that the measures that have been taken also make things easier for this population. What they particularly have in mind are the pictographs included in information materials and on signs, and the special announcement functions inside and outside their vehicles, which have been mentioned above. The comments of the interviewees are compiled as followed.

- No, no special measures have been introduced. (6)
- The measures mentioned previously are also good for this population, especially announcements and displays. (3)
- A project introducing icons and countrywide symbols is underway. (2)
- More lucid timetables are being introduced. (1)

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

- We are working on a special classification system that will be included in the timetables. (1)
- Our buses have dedicated pictographs. (1)
- There are certain parts of our driver training program devoted to customer service, conflict management and medical treatment. (1)
- We have audible announcements outside the buses. (1)

Based on previous knowledge in this area, we are already aware that some measures/systems can help people with cognitive functional impairments to a certain extent (Grönvall 1996). Questions were posed during the interviews about this phenomenon to find out whether such measures are in place and, if so, whether the interviewees have any opinions about them. The systems/measures are presented below according to the individual descriptions in the interview form.

4.3.1 Education and training

None of the organizations interviewed have introduced any special *educational program for their personnel regarding cognitive functional impairments*. Today's driver education programs include sub-topics concerning how to greet people, passenger safety and first aid, and to some extent these relate to dealing with the cognitive functional impairments. Some programs include role-play, for example how to welcome aboard passengers with dementia or retarded development. Many authorities also provide special courses for drivers concerning understanding of impairments in general. The respondents' comments are presented below.

- Although the transit authorities generally provide dedicated education about functional impairments, the emphasis is on impaired mobility and vision. (9)
- The drivers are schooled in welcoming people on board, service, etc. (7)
- No special training is provided. (3)
- Our training includes nothing at all about cognitive functional impairments. (1)
- The training program for taxi drivers in Gothenburg includes a three-day supplementary course devoted to physical and psychological functional impairments, as well as an extra half-day for drivers for special schools [for children with mental retardation]. (1)

None of the organizations interviewed has any *special training program regarding people with cognitive functional impairments*. Some transit authorities on the local level have helped out with minor changes and certain information if someone has contacted them and asked for it. Only one of the interviewees claimed to have tried to initiate cooperation with a special school, but stated that the school for the most part delegated travel training to individual initiative. The comments of the respondents appear below.

- We do not have a training program. (10)

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

- We receive queries and occasionally help out with unusual solutions. (5)
- Others are responsible for education and training. (3)
- Simplicity is important. (1)
- We have plans for a project involving travel training and travel hosts. (1)
- DHR (Swedish Federation of Disabled Persons), PRO (Swedish Pensioners' National Organization) and rehabilitation clinics have had special sessions of "test it at the meeting" where a vehicle has been present to enable experiencing how it feels to board a bus. (1)
- On the local level we have contributed by means of field/study trips. (1)
- Travel education is very much a matter of individual people; it is not provided for everyone. (1)

None of the organizations has any special *procedural plan for emergency situations in which a passenger takes the wrong bus and needs help, becomes aggressive or is confused*. Most respondents confirm that such situations arise, but are resolved on a case-to-case basis. They emphasize the importance of drivers' having good knowledge about this area, and having a positive attitude in this context. One operator emphasizes that things work very well precisely because its personnel are well motivated and know how to help out if necessary. Another interview expressed the importance of driver involvement like this: "Some drivers 'eject' passengers at the next bus stop, whereas others phone in to arrange help or direct the passenger in the right direction after completing the trip." Several authorities or operators also refer to the dispatching centers with which the drivers have contact and that try to provide help when necessary. The comments of the respondents appear below.

- Drivers are given a certain amount of orientation during their general training. (8)
- We have no such plans. (6)
- This is the responsibility of the entrepreneurs, and they handle it through the dispatching centers. (4)
- It depends greatly on the individual driver and his/her reaction to the situation. (3)

4.3.2 Information and assistance

The design and distribution of information can greatly influence the possibilities to use public transportation. However, *special information for people with cognitive functional impairments, such as meetings, written material, or Internet sites* is almost nonexistent. No organization has conducted any methodical information meeting regarding people with cognitive functional impairments. However, one operator tells about annual visits to "day centers" for people with such impairments, during which the operator and a representative of the transit authority provide information about local traffic and respond to questions.

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

Several operators adjust their timetables in accordance with the wishes of individuals, which has primarily been utilized by people with vision impairments. A number of organizations have adapted their information on web sites in line with current standards of accessibility. The comments of the respondents appear below.

- We have no special information. (4)
- Our home page is adapted (among other things, it has been tested with the Bobby test tool). (3)
- We provide some information on audiocassettes. (2)
- We provide user instructions for all functional impairments. (2)
- We make all information as clear as possible. (2)
- We provide advertising material using a lot of pictures and little text. (1)
- We have been invited to occasional information meetings. (1)

Another important issue may be whether *personal assistance is available on the vehicle*. Trains have hosts/hostesses who can provide assistance when necessary. However, a line is drawn that one must be able to take care of oneself between various transfers because of the lack of continual service. On buses, the driver alone is responsible for personal assistance. Certain individual hospital routes are an exception; designated personnel can provide assistance during the trip. At present, in Jönköping, there is an experiment involving traffic hosts/hostesses who are primarily available at the major bus stops but who can also help out on buses in certain situations. The comments of the respondents appear below.

- Only the drivers can provide assistance on our buses. (9)
- We provide assistants in certain facilities. (2)
- We have hosts/hostesses on our trains. (2)
- Experiments with travel hosts/hostesses are underway. (1)
- Personal assistance is available as an alternative to information via telephone. (1)
- We provide extra assistance on special patient transports. (1)

4.3.3 Technical aids

Some technical systems both inside and outside buses have already been mentioned as improvements to facilitate the travel of functionally impaired passengers, including *announcements in the buses about stops in text, symbols and speech*. Several authorities say that they have displays and automatic audible announcements in their buses or plan to introduce such systems. The comments of the respondents appear below.

- Most of our buses have displays and spoken announcements. (5)
- We are currently installing displays and spoken announcements in most vehicles. (5)
- Pictographs are used as complementary information. (1)

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

- In rural areas, the drivers know the passengers and can thus provide personal service. (1)
- Spoken announcements are made on all trains, and the newer ones also have displays. (1)

A special pictograph system with views of different important bus stops has been introduced in Umeå. The former Swedish State Railways (SJ) has had a special pictograph system for information at train stations (KFB 2000:63); the Swedish National Railway Administration is now in charge and is reviewing the system. While SJ was operating the stations, it initiated a major renovation program. This included great emphasis on orientation: instead of pedestrian tunnels, bridges over the tracks provided better visibility, and in the waiting rooms, approaches to the trains were oriented in the direction you knew the tracks should be even before you entered the station.

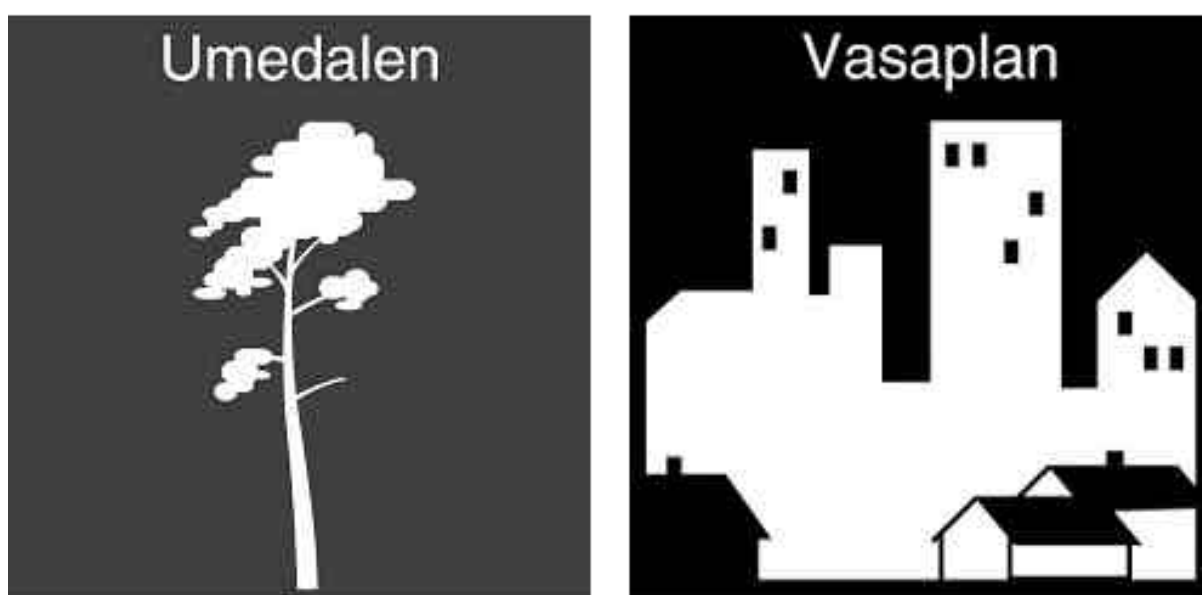


Figure: Pictographs that are shown along with the name for the last stop on a route outside the buses in Umeå.

At bus stops, as well, measures have been introduced and various technical systems have been put in place, including *real-time information or other announcements of vehicles in text, symbols and speech*. On certain main routes, especially in the larger cities, real-time information has been introduced at bus stops. In Helsingborg, among other places, an experiment is going on with audible announcements outside the buses telling which bus is arriving and where it is going. A similar system has been in place in Umeå for a couple of years now. The comments of the respondents appear below.

- We have real-time systems on some routes. (6)
- We are planning to introduce real-time systems. (3)
- Information is provided on the ordinary bus stop stanchions and in the timetables. (2)
- We are testing announcements outside the buses. (1)
- We've had announcements outside the buses for some years. (1)

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

- We have special tactile information boards where audible information can be activated by pressing a button. (1)
- We are working on a marking system for customized bus stops (1)
- There are displays of stop information at the bus plaza. (1)



Figure. Real-time information and spoken information at a bus stop in Helsingborg.

Managing tickets is in itself a difficult part of a trip for some people with cognitive functional impairments. One way to simplify this is different kinds of *help functions at ticket machines employing personnel or various technical systems*. At present, different transit authorities have different systems for selling tickets. Some counties have not introduced any ticket machines at all, while others (e.g. Skåne) use machines for the sale of most tickets, especially for trains. In all places it is still possible to buy bus tickets from the driver, but there are often cards of some kind that give rebates and reduce the driver's need to handle money. In such systems the drivers are the natural assistance required. In the rail system in Skånetrafiken the usual procedure is to buy your ticket with cash inserted into a machine or use your reduced rate card in the same machine. You can also buy your ticket from the conductor on the train for an extra charge.

Several transit authorities have pooled their resources to launch the purchase of a new ticketing machine system. The ambition is to be able to accommodate as many functional impairments as possible. Some of the authorities have special impairments councils that will be asked to contribute opinions about the system. One of the respondents expressed some misgivings about the new procurement. He thought that since we do not know at present which needs different groups have, there is a risk that certain functions that provide flexibility for the future may be omitted because of cost considerations. The comments of the respondents appear below.

- There are no separate ticket machines at present; tickets are sold by the drivers on board the busses. (3)

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

- A joint procurement with other transit authorities is underway. (3)
- Our handicap council has participated and offered opinions prior to procurement. (1)
- There is a limited amount of information for the drivers at today's reservation centers so they can offer the proper assistance to passengers using Special Transportation Services. (1)
- The busses are equipped with readers for "distant" Smart Cards. (1)
- As a result of the "Whole Trip" project, we are studying the staffing of important transfer points. (1)
- Ticket machines are a problem. (1)

Only a few of the interviewees were aware of any *special personal assistance for people with cognitive functional impairments*. Some knew about an aid called the quarter-hour clock that shows the number of quarter hours remaining before a certain predetermined activity; other referred to palmtop computers and pictographs. SL is involved, discussing how it can help in developing a universal, preferably electronic, orientation system. The comments of the respondents appear below.

- We are unaware of any special assistance or aids. (2)
- The "Quarter-hour clock" and other clocks. (2)
- Some kind of universal orientation system is needed so that people with functional impairments are not overburdened with services. (1)
- Pictographs function as personal assistance. (1)
- Handitek has developed a special palmtop computer, sold by Geva. (1)



Figure. The Quarter-hour clock shows how many quarters it is for a certain event (Handitek)



Figure. A special palmtop computer for people with cognitive disabilities

4.3.4 Service Routes and Special Transportation Services (STS)

Service Routes were introduced in Sweden about 20 years ago. The aim was to supplement the ordinary public transport of the time with special routes providing extra good service to the passengers. This good service was achieved through short distances between bus stops, small and accessible buses and a timetable that allowed the drivers to provide a little extra personal service. Service Routes still exist in some parts of the country, but most transit authorities are in the process of abandoning the concept and striving instead to make ordinary public transport accessible to people with functional impairments. In some places that still have Service Routes, an attempt is being made to change the character of the service and to call it *local service* instead. Such routes are primarily regarded as a complement to ordinary services in areas where the passenger base is too small to justify providing ordinary service.

Special Transportation Service (STS) is to be found throughout the country and is doubtlessly employed by many people with cognitive functional impairments. The Swedish STS system provides legal entitlement to STS trips if an individual examination concludes that the need exists. At present about 5% of the Swedish population is entitled to STS. During recent years, STS has increasingly come to be viewed as a complement to ordinary public transport, and in many places the attempt is being made to shift certain STS trips over to ordinary services. However, the organizations for the handicapped are skeptical about this approach and state that STS is for many

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

people an alternative to a car rather than to a bus. The comments of the respondents appear below.

- We have Service Routes or some form of dial-a-ride service. (6)
- The Service Routes are being continually integrated into the ordinary system. (3)
- We are working at turning some STS into ordinary services. (2)
- STS is still regarded as something different from ordinary public transport, but can eventually be seen as an integrated part of it. (1)
- In our present train-taxi system you can book special vehicles. (1)
- The transit authority is working with the municipalities to create a new system of regulations for STS that should result in better links between systems. (1)

4.4 Future prospects

The interviewees were asked to *think back over the examples of improvements described above and to consider whether there may be any other service that is particularly relevant to people with cognitive functional impairments*. What emerged was an awareness of the importance of personal service and reducing disturbances while traveling. The comments of the respondents appear below.

- The personal assistants of people so impaired help them. (1)
- They have trouble coping with complexity; transfers are difficult. (1)

A final question was posed to the interviewees: *Do you have opinions about people with cognitive functional impairments and present and their future prospects for using public transportation?* The most common reply was that they knew too little, and needed more expertise, to be able to provide for people with cognitive functional impairments. They also said that it would be interesting to know whether there are any special system modifications or technical systems that make things particularly easier for this group on the whole. The comments of the respondents appear below.

- We know too little about what is required for this group of people. (4)
- Stop announcements outside the buses seem interesting. (1)
- Signs must be so universal and so unambiguous that you don't have to stop and ponder. (1)
- If we could get outside financing we would be very interested in experimenting with travel hosts/hostesses and travel training. (1)
- There is a lack of specific norms for handicap adaptation. (1)
- Improving accessibility takes a long time. (1)
- The ticketing system is an important issue. (1)
- There is general awareness of the existence of this group of people, but they are usually overlooked. (1)
- As long as such people have difficulty coping with all aspects of a trip they will find it hard to travel. (1)

5. Conclusions

The overall conclusion to be drawn from these interviews is that very little has been done for people with cognitive functional impairments. Those transit authorities that have started to make ordinary public transport more accessible have primarily concentrated on the problems of people with vision and motor impairments. If we disregard the Swedish systems of Service Routes and Special Transportation Services, the commonest measures for facilitating travel by people with functional impairments are introducing low-floor buses and audio and/or visual announcements inside vehicles. Announcements and displays, which can be of assistance to all travelers, can be assumed to provide especially valuable support for people with cognitive functional impairments. Among the measures that have been taken on a large scale, we should also note the simplification of the layout of waiting rooms, etc, that have occurred in connection with the renovation of train stations, as well as the pictograph systems that are being used.

In addition to the measures mentioned above, there are experiments and functioning activities on a small scale involving aids and assistance that simplify matters for this group. Many of the measures listed below could advantageously be introduced on a significantly larger scale and thus provide support for more people, including those with cognitive functional impairments.

- The *destination signs with special pictographs* being used in Umeå could very well be used to advantage in many other places. Many towns and regions already have special attractions or activities that are used as advertising to attract visitors, and in many instances these “ads” could be adapted as suitable pictographs. When a local bus route terminates in an ordinary residential area, it may be more difficult to find a suitable symbol or icon, but even that problem can be solved in cooperation with the local handicap organizations.
- *Real-time information* about when the next bus will arrive at a stop can, like time generally, be too abstract for some of those with cognitive functional impairments, but for many it is undoubtedly an aid that simplifies traveling.
- *Loudspeaker information* at bus stops and announcements outside the buses are helpful not only for people with impaired vision but also for people who cannot read.
- *Personal aids* in the form of special clocks like quarter-hour clocks and hand-held computers can continue to be a prop for certain people. Considering how many people are unaware of such aids, however, one can conclude that they are not a major factor in public transport today. The “universal” electronic orientation system that SL is considering could be a substantial aid to this group of passengers in the future.

Can People with Cognitive Functional Impairments Use Public Transportation?: National Report for Sweden

- Various experiments with *special service personnel at stations and bus stops and in vehicles* provide support for many groups in society, and can in some cases be extremely helpful for people with cognitive functional impairments.

After all the improvements mentioned in this study have been carried out, measures that can eventually provide better support for people with cognitive functional impairments, we come down to the fact that it is the human element, the ordinary employees on trains and buses, that is the single most important service factor for well-functioning public transportation. For people with cognitive functional impairments, therefore, it is important to continue to develop *individual training* in traveling by bus and to intensify the *education and training* of drivers and train hosts/hostesses.

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APPENDIX 1:

Authorities and Organisations interviewed

Appendix 1 Organizations and authorities interviewed

National interests organisations and public authorities

Handikapp ombudsmannen, The Swedish Disability Ombudsman

Rikstrafiken, The National Public Transport Agency (One person)

Vägverket, The Swedish National Road Administration (One person)

Hjälpmiddelsinstitutet, The Swedish Handicap Institute

HSO, The Swedish Disability Federation

FUB, The Swedish National Association for Persons with Intellectual Disability

SLTF, The Swedish Public Transport Association

Public Transport Authorities

Blekinge länstrafik

Dalatrafik

Gotlands kommun

HLT, Public Transport Authorities of Halland county

Jönköpings Länstrafik AB

KLT Kalmar Läns Trafik AB

Länstrafiken i Jämtlands Län AB

Skånetrafiken

Storstockholms Lokaltrafik, Stockholm Transport

Västtrafik

Special lokal Public Transport Authorities

Trafikkontoret [traffic department] in Gothenburg

Lunds lokaltrafik [Lund transit]

The former *Umeå Lokaltrafik AB*,

Operators

SJ

Connex

Swebus

Arriva

Tågkompaniet

Educators

Färdtjänstförarutbildning i Göteborg. Education for Special Transport Service operators in Gothenburg.

Utbildningscentret för kollektivtrafik i Malmö. The Education center of public transport in Malmoe, a school for bus drivers in southern Sweden.

APPENDIX 2:

MAPLE semi-structured telephone interview form

Appendix 2 MAPLE semi-structured telephone interview form

MAPLE Semi-Structured Telephone Interview Questions; Transport providers and operators

Interviewer:

Date:

Overview questions:

Have you taken any specific measures to make it possible for persons with disabilities to travel?

How do you define cognitive disability? Which groups of persons do you think of?

(Interviewer: If persons does not have an answer: Prompt by giving example of problems from the MAPLE user group definition list)

Do persons with cognitive disabilities travel with the service you provide?

Have you made any measures specifically targeting persons with cognitive disabilities?

Is there any documentation in policy documents, etc. on such measures?

Are there any ongoing discussions on any such future measures in your organisation?

Questions on specific measures:

Based on previous experiences, I have some examples of specific measure taken, in order to make it easier for persons with cognitive disabilities to travel in public transport. Please answer whether you provide the following services, and comment on them:

Education program for staff

Training programs for persons with cognitive disabilities, e.g. travel training

Information for persons with cognitive disabilities, e.g. meetings, written material, web based information

Action plans for staff to follow, e.g. if a person gets lost, gets aggressive or very confused, in emergency situations.

Bus stop announcement on board buses, trams, and trains

Real time information for departure at bus stops

Personal assistance on board vehicles

Special help functions at ticket machines; personal or technical

Personal technical aids, e.g. palm computers, mobile phones

After having considered these examples, are there any other services you come to think of, specifically relevant for persons with cognitive disabilities?

Concluding questions:

Do you have any concluding remarks regarding persons with cognitive disabilities and their current and future possibilities to travel with public transport?

(Interviewer: These two questions are for snowball sampling, please note contact addresses and telephone numbers:)

Are there any other persons in your organisation I should ask these questions?

Are there any other organisations I should ask these questions?