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MOBILITY BARRIER FOR DISABLED PEOPLE

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ABSTRACT

The aim of this paper is to understand why people with disabilities travel less than people with any difficulty and why they use different transport modes. For that, we had a quantitative and qualitative approach. Our research is based on the National Travel Survey (NTS) that was conducted in France in 2007-2008. Secondly, and to provide in-depth elements for the understanding of situations faced by disabled people, we carried out fifty semi-structured interviews with people who may be experienced difficulties when travelling.

We will try to detect difficulties that people may face when they are travelling, by observing separately each mode: walking, car, public and specialized transport.

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INTRODUCTION

Currently, a situation of handicap is defined as not being able to have a normal life, resulting from the interaction between personal factors and environmental factors (Fougeyrollas et al., 1998; OMS, 2001). Previous studies have shown that people with disabilities travel less, make shorter trips, and use different modes than the other (Dejoux and al., 2010; Bakker, 2004; Hauet and Ravaud, 2002; Madre, 1997). This paper should help to understand these differences. For that, we used both a quantitative and qualitative approaches.

The first part of our work is based on the French National Travel Survey (NTS) that was conducted in France in 2007-2008 (Armoogum and al., 2007). The Main purpose of this survey is to measure the mobility of people living in France. It allows the study of travel practice and use of personal and public transport modes. With a sample size of about 20,000 respondents households, it consider all trips whatever their purpose, length, duration, transport mode, the period of year or time of day. From this survey, we will detect the difference in term of transport modes for people with and without difficulties when they are travelling. However, the quantitative approach doesn't allow us to detect the specific difficulties encountered by people. Therefore, we have completed our research with a qualitative approach.

The purpose of using a qualitative method is to provide in-depth elements for the understanding of situations faced by disabled people. In the qualitative approach, the individual is seen in its entirety, practices are placed in their context. It is a detailed analysis of individual behaviour, differing, from the quantitative approach that seeks to reduce in groups (Blanchet & Gotman, 1992; Rocci, 2007). Within our study, we used this qualitative approach with two main objectives: first to improve the knowledge of people with difficulties when they are travelling and to detect environmental factors (physical or social) that make it easier or on the opposite create barriers to mobility of people. We will focus in this paper on the difficulties related to the physical environment encountered by people during their mobility.

We thus carried out about fifty semi-structured interviews with people who may be experiencing difficulties when they make trips, in two French regions: Ile-de-France and Loire Atlantique. The Ile de France, with 11 million of inhabitants with an extensive system of public transport is the highest urbanized area in France; but with significant difference in availability and accessibility by area of residence. In addition, a service transportation on demand (door to door) is available in six of the eight departments. Our second area of study has a population density much lower and public transport or specialized transportation services are infrequent in rural areas. This second field of study enabled us to compare an urbanized and a rural area, with different level of access to public transport or transportation on demand, but also where places of work may be located away from home.

According to the French NTS, in 2007, about 10% of the population over 15 years (i.e. 5.1 million individuals) reported some difficulties when they make trips. In the French NTS we can identify three levels of travel difficulties: simple difficulties, limitations on certain itinerary and limitations on all itineraries. We know that people with difficulties travel less than people without (about 1.8 trips per day per person for people with difficulties against 3.4 for people without any difficulty) and we can see in the table below that their distributions of main transport modes are different (Table 1). We find that about 33% of the trips made by people reporting some difficulties are walking trips or in a wheelchair. For people reporting

any difficulty this figure is 19%. Therefore, people with difficulties seem to walk more than those without, this confirm the papers of Hopkin et al., 1978 and Pieters, 1995. Furthermore, even if cars accounted for a smaller share of all the trips made by people reporting some difficulties (58 % compared with 68 %), the share of car passengers was higher. Finally, the share of trips made by public transport is lower, while reasonably those made in specialized transportation are in greater numbers.

Table 1 Breakdown of the principal transport modes used by people with travel difficulties and those without.

Main modes of transport	People reporting any difficulty	People reporting some difficulties	Whole population
Walk	19.2%	33.1%	20.0%
<i>Including wheelchair</i>	0%	1.4%	0.1%
Two wheels	4.3%	1.8v	4.1%
Car	68.3%	57.5%	67.7%
<i>Including car driver</i>	60.1%	44.0%	59.3%
<i>Including car passenger</i>	8.2%	13.5%	8.4%
Urban transport	7.0%	5.2%	6.9%
<i>Including bus and tramway</i>	3.0%	3.2%	3.0%
<i>Including subway,RER</i>	3.5%	1.3%	3.4%
Others	1.2%	2.4%	1.3%
<i>Including specialized transport</i>	0%	1.9%	0.1%
Total	100%	100%	100%

Sources: INSEE - NTS 2007-08

The objective of this paper is to detect travel difficulties encountered by people, that lead to a lower level of mobility and some preference/reluctance for certain modes. For this, we now present the difficulties encountered for each mode.

1- DIFFICULTIES ENCOUNTERED WHEN WALKING

As we have said, people reporting difficulties make more walking or in wheelchair trips, which concerns 33% of their trips (against 19% for others). Several hypotheses could explain this difference: disabled people makes shorter trips, closer to their home, or the other transport modes are not accessible for them, encouraging them to walk only. Difficulties encountered for other transport modes will be discussed later in this paper.

However, many complains of walking or in a wheelchair trips were cited during the interviews. The obstacles on pavements are the first difficulties of walking or in a wheelchair trips, according to people affected by a motor or visual impairment. Various obstacles on the sidewalks, like garbage cans, poles, mailboxes, billboard, coffee tables, cars, bicycles or motorcycles parked badly...can lead to difficulties when travelling. People with visual impairments do not always identify these obstacles, and can bump into them or have difficulties to get round them. People with motor impairments, also mention the problems of obstacles on the sidewalk, making passage in wheelchairs or with crutches difficult or impossible. George, who is 54 years old and suffering from poliomyelitis, explains: “When I am on the sidewalk, we have all problems that everyone can meet. Cars parked on the curbs, works which are not indicated. So it forces us to skirt around the block, or people who dump

cumbersome on the sidewalks... you find oneself with a mattress on the sidewalk and how you go through with a wheelchair”.

The other difficulties for walking seem more specific to the type of impairment of the person.

For example, the visually impaired cite the lack of contrast of sidewalks, steps, poles... because it makes their identification difficult or impossible for them. These persons may also experience difficulties to check out a location: either because of difficulty for reading the names and numbers of the streets, or because they are too high and / or written too small, or the writing have not enough contrast with the bottom road sign; but also in intersections or roundabouts complicated, especially because of the noise. Indeed, people with visual impairments can take mark through various noises (cars travelling or stationary, pedestrian crossing, works ...). If these mark are too numerous or too intense, from too many sources, check out may be more difficult.

Those declaring a motor impairment cite other difficulties for their mobility, specially the configuration of the sidewalks (which may be related to design or wear): holes, bumps, slopes, cobblestones, lack of curb... as Eloise, who have the multiple sclerosis states: “with a manual wheelchair it is impossible to travel alone, because of banked sidewalks or there are sometimes no curb to go down the sidewalks. So we arrive at the end of the sidewalk and then we must go look for another curb elsewhere...and sometimes to be on the road”.

Apart from the difficulties encountered during the trips on the sidewalk, some other difficulties are mentioned by respondents: the crowd, the rain or breakdown of the electric wheelchair.

Through interviews we can see that the difficulties mentioned by people when walking or using wheelchairs, are strongly linked with obstacles (trash can, badly parked cars ...) and configuration of streets and sidewalks (slopes, holes, bumps, lack of contrast ...). Indeed, feeling safe is an important point for mobility of people with impairment (Carreno and Stradling, 2007). The implementation of a new law should reduce the barriers faced by these people (in France, since February 2005 we had the law on equal opportunities, participation and citizenship of people with disabilities). However, its application, which applies only to new roads or upgrading roads, may be long. And a part of learning and civility of the whole population is needed to overcome some obstacles, such as vehicles parked on sidewalks or pedestrian crossings.

2- CAR, SYNONYMOUS WITH FREEDOM

According to NTS in 2007, while 83 % of the French population aged 18 or over have a driver's license it is the case for only 59 % of people reporting difficulties in their mobility.

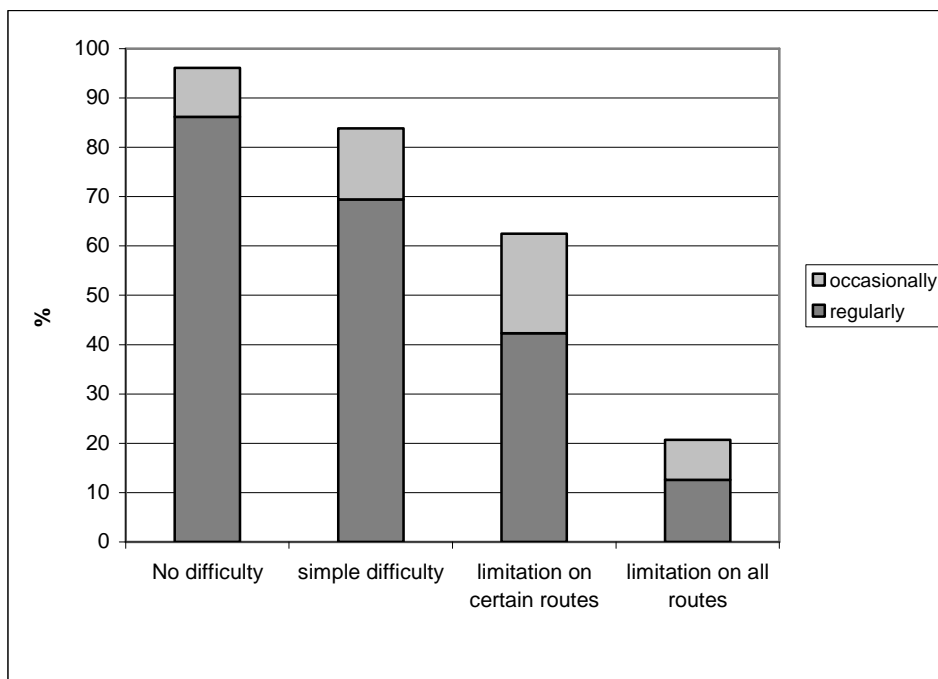
Several hypotheses can then be formulated:

- People who declare difficulties when they are making trips may have severe impairments; their health does not allow them to pass the driving license. This hypothesis is confirmed through qualitative interviews, where people do not have the driver's license have often cited the inability to pass as a reason for non-possession.

- We know that age has an influence on the discomfort, we might wonder if the share of ownership of the driving license is also influenced by a generational effect, to the extent previously, the shares of each generation to get the license was lower especially for women.
- Finally, we can also think that do not own a driving license is a source of embarrassment: Driving a car allows go where you want, when you want. The car is often perceived as a facilitator in terms of mobility. Do not own and therefore do not drive a car can lead to the feeling of embarrassment. This hypothesis has been validated through the speech of people. The car seems to bring freedom, autonomy and ease mobility. Indeed, the loss of freedom and autonomy in the case of stop of driving is mainly cited during the interviews (Espinasse, 2006),.

If we look only to the owners of driving license, we find that the most limited during their mobility drive less than those reporting a level of discomfort lower (Graph 1). While about 96% of people do not declare themselves embarrassed when driving a car (regularly or occasionally), it is the case for only 62 % of people restricted to certain routes and 21 % of those unable to travel alone.

Graph 1: Driving according to the level of reported difficulties



Sources: INSEE - NTS 2007-08

It seems that the reasons for stopping driving a car are therefore more related to a choice among those reporting no discomfort during their mobility. These people, because they do not like to drive, prefer to use another mode of transport but probably not feel penalized in their mobility. Conversely, those forced to stop to drive because they can no longer, could feel a restriction in their mobility.

Whether you use a car as a driver or a passenger, the main problem mentioned in the interviews are the parking spaces reserved for people with disabilities, as Christian explains :

"it is the reserved parking taken by others, it is the lack of parking spaces, these reserved spaces that are not well built or not properly indicated or are unknown".

Apart from the parking spaces, few difficulties concerning the use of the car were cited during the interviews. Thus, people who can not drive or own a car may report some discomfort for their mobility, since a car can be seen as a facilitator of mobility.

3- URBAN TRANSPORT

According to the NTS, in France, during the last 12 months, 42% of people without difficulty used public transport for travels of less than 100km around the home, against only 27% of people with difficulties. According to the same survey, while 67% of people without difficulty do not use public transport because they do not need, this reason is mentioned by less than half of those with difficulties (Table 2). We note then that nearly one quarter of these people to cite their health problem as a reason for not using public transit. Thus it seems that people can not use public transport because of a disparity between their disability in terms of mobility and the accessibility of public transport.

Table 2 Reasons for not using public transport for people reporting difficulties during their mobility and without any difficulty.

Reasons not to use public transport	People reporting any difficulty (%)	People reporting difficulties (%)	Whole population (%)
There is none, can not go where you want to	28.5	20.3	27.5
very infrequent	5.3	3.2	5.0
Too far	5.7	6.2	5.8
Too slow or too uncomfortable	2.3	3.1	2.4
Too expensive	2.7	3.1	2.7
No usefulness	66.9	49.3	64.7
Others, including	5.2	31.5	8.4
<i>health issues</i>	0.3	23.4	3.2

Sources: INSEE - NTS 2007-08
 Several possible answers

The interviews allowed us to go further in the analysis and to detect the problems and barriers that were encountered by them in public transport. The difficulties can be revealed to several sequences of a trip (Nicollet, 1997):

- at the level of information required, whether before the trip, to prepare the trip, or during the trip to find its location, delays ...
- at the level of booking tickets.
- at the level of access to stations and vehicles, for example, the get on or the get off the vehicle, security inside ...

The transport situations involve 3 types of abilities: ambulation, prehension and communication (Dejeammes et al., 1989 et 1988). The disabilities of people being strongly

differentiated by type of impairment; it is the same for necessary adaptation to the transport system.

Difficulties of people with visual impairments:

The difficulties cited by people with visual impairments are related to the access to information at stations or in vehicles and the use of booking systems, purchasing tickets. Whether the numbers of bus or tram, the names of stops, schedules and platforms, or signs indicating the direction to take when changing mode, people with impaired vision can not read properly. According to these people, these signs are written either too small or too high or too far away from them or with a colour that do not allow optimal contrast. Paul who is myopic since birth said: "I see the bus number just at the bus stop, I can not read before. And what is annoying, is where there are several lines, I never know the bus which arrive". People, especially the blind also cite the lack of voice announcement.

Another difficulty in the speeches of respondents is the booking and ticket sales, in particular due to the development of ATMs. This difficulty could be offset by the help of staff, but a lack of training and of knowledge seems to limit this help, as Jerome explain to us: he wanted to buy a ticket and the staff said "no, sir we do not no longer issued ticket, you must go to the ATMs"; and when he said that he was visually impaired, the staff of Transportation asked him "to go to the next station".

Difficulties of people with motor impairments:

The main problems cited by people with motor disabilities in public transport concern access to stations and vehicles, and particularly for people in wheelchairs.

The problems identified the access to vehicles are:

- the failure of lifts and pallet systems
- the lack of knowledge of these systems by drivers

Difficulties of people with hearing impairment

People with hearing impairment reported few difficulties in transportation. However, they wanted more visual signs, especially in case of problems (breakdowns, strikes, the need for evacuation ...). As Marie explain to us, deaf after an illness, "In the subway actually there are problems when there are strikes or accidents because I can't hear any message, so I must ask people to explain to me: what is going on."

The interviews have shown that the difficulties experienced in public transport depend greatly on the type of impairment and disability. Beyond accessibility, knowledge and attitudes of the staff of transport services is important (Morris and Watson, 1996).

4- SPECIALIZED TRANSPORT

Specialized transport is a door to door service on demand, for people who have difficulty for their displacement. It is reserved for people holding a disability card (but not all

regions in France have this service). A large proportion of people affected by a function of locomotion used this transportation system (Dejeammes et al., 1988)

During our interviews, the most often complexity mentioned on the special transport services for people with difficulties for their trip, is the booking system. Indeed, the principle of this system is based on the fact that people wishing to go out book their transport by phone a few days before. But the demand seems to be high, this booking period can reach one or several weeks. So people can not decide when they want to go out, there is no spontaneity, everything must be planned well in advance.

for example with "PAM³", you need to plan your trip at least a week in advance. If you want to go to the museum today, it is impossible, you have to wait a week" (according to Julien)

The second difficulty cited by people for the use of specialized transport is the time constraints: for example, it seems to be given priority at certain hours for people going to work. This service manages all trips and the desired schedules are not always possible and may not always be respected, sometimes resulting in some delays or advances. Moreover, it is not always easy for anyone to predict the time at which the activity will end (for example, for a medical appointment). A lack of autonomy may then be again felt : Frédérique who regularly use the service said "the constraint is the time to return back, that's clear. Because having an appointment is easy, but to know at what time it will ends is much more complicated".

In conclusion, the lack of freedom seems to be the greatest difficulty for people who use specialized transport: firstly it is necessary to book several days before we need it, spontaneity is then not being allowed, and secondly according to the purpose of the trips it is very difficult or impossible to get this service at certain periods of the day.

5- CONCLUSION

Quantitative surveys are worthy methodology to have good pictures of the population with difficulties to travel, for instance to have the figures of the share of the population with and without difficulties to travel, etc... The last French National Travel Survey shows that people with difficulties travel less and use different modes of transport than those without difficulty. However, this survey do not give the reason why the mobility is lower for people with difficulties and therefore do not help to understand the difficulties encountered by these people.

With the qualitative approach we have seen: the difficulties encountered are different by modes of transport and depending impairments. During walking and in wheelchair trips people report more difficulties of inaccessibility of pavements, stops, vehicles... While by car and specialized transport, the lack of freedom and autonomy are mentioned.

In this paper we have studied the difficulties in different transport modes, but we should not forgot that access to home, to work or for others activities the social environment plays an important role in the formation or not of a handicap

³ PAM : Paris Accompagnement Mobilité is the specialized transport service in Ile de France

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