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Barcelona Societat

Journal on social Knowledge and analysis



Ajuntament
de Barcelona

February 2024

Key words: Special transportation, reduced mobility, door-to-door, disability, accessibility

Special Transportation for People with Reduced Mobility in Barcelona

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This article outlines the special transportation service currently available in the city of Barcelona and explains some of the key considerations for a future proposal regarding transportation for individuals with reduced mobility and special transport needs in Barcelona.

Introduction

The removal of barriers in the environment is a fundamental element in ensuring mobility for all individuals. In the context of the 1980s, when public transportation was not accessible for people with reduced mobility, and they only had the option of private transport for commuting, the Barcelona City Council developed the special transportation service as a specific initiative to facilitate the mobility of individuals with disabilities and reduced mobility, preventing their exclusion. Since then, special transportation has been carried out using buses that combine regular seating with spaces adapted for wheelchairs, as well as both adapted and non-adapted taxi vehicles.

Currently, in Barcelona, over 300,000 trips are made annually using this type of transportation. While accessible public transport alternatives exist today, the number of services has exponentially grown since the 1980s. The demand for the service is real and increasing. To understand the growth in demand, it is necessary to analyze elements of both supply and demand. From the supply perspective, the concept of an accessible route focuses on accessible stops, disregarding the accessibility of exchanges and connections between different modes and lines of the public transportation network. From the demand perspective, an inclusive mobility concept is needed, considering the individual's time-saving needs (e.g., when using a wheelchair or requiring a respirator) or other factors such as the need for assistance (e.g., in collective transport to access social services centers).

In a way, the special transportation model has shifted its focus away from the city's accessibility level; it has ceased to be part of the mobility imagination and has turned towards the realm of social care. The rationale behind this shift lies in the funding of special transportation within the portfolio of social services, separate from Catalonia's major public transportation operators.

This is not a trivial matter, considering, for example, that collective vehicle services have 100% public financing coverage and 90% for taxi journeys—subsidization percentages distinct from other public transportation services.

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According to the Mobility Observatory of Catalonia¹, the operating cost of public transportation in the metropolitan area of Barcelona was €1,944 million in 2019, excluding investment. In the same year, the special transportation service cost around €6 million, meaning it represents a small part of the economic data but is crucial for the inclusion and participation of people with disabilities in the community, accessing various services, or entering the job market, among other examples.

The taxi sector plays a significant role in the special transportation service. Despite the undeniable quality of adapted taxi services, the supply is clearly insufficient. The Royal Decree 1544/2007, regulating the basic conditions of accessibility and non-discrimination for the access and use of transportation modes for people with disabilities, stipulates that municipalities will encourage at least 5% of taxi licenses to be for adapted vehicles. Currently, the offer of adapted taxis in the metropolitan area stands at 3% of the total, still below this goal.

Beyond these policy origins and contextualization elements, the following lines explain the origins of special transportation and describe how the service functions today, concluding with a series of recommendations for organizing transportation for people with reduced mobility in a metropolitan context. Adapting to modern times, organizing accessible transportation, and ensuring fairness in service provision are key elements to keep in mind in the proposed reading.

1.The Beginnings of Special Transportation: A Service for People with Disabilities in a Barcelona Without Accessibility Measures

The commitment of the Barcelona City Council to people with disabilities has been documented since 1799 when it temporarily allocated part of the Saló de Cent as an educational classroom for deaf children, covering their operating expenses. The desire to improve living conditions and the inclusion of people with disabilities has been reflected over time in the adaptation of spaces and services suitable for everyone, as well as in the creation of specialized services to meet the specific needs of people with disabilities. Over the years, through various participation mechanisms, the City Council has driven initiatives to make Barcelona an international benchmark in terms of accessibility and effective work for the inclusion of people with functional diversity.

During the early years of democracy, the disability sector initiated a significant associative movement advocating for their rights and demanding services. The removal of architectural barriers in public spaces was the top demand for people with physical disabilities, given the glaring lack of accessibility in public thoroughfares, buildings, facilities, and transportation. Mobilizations helped bring attention to the exclusionary situation faced by people with disabilities, prompting the administration to open spaces for participation and dialogue with people with disabilities (such as the Special Commission of the Congress of Deputies for studying the problems of disabled people or the meeting of the mayor of Barcelona with representatives of the collective).

At this time, Barcelona implemented new accessibility practices, such as the first pedestrian crossing or the first ramp in a municipal building. However, in the realm of transportation, the elimination of architectural barriers was still considered a long-term project. To address the mobility needs of people with reduced mobility, in 1978, the City Council promoted the "door-to-door service," the first special transportation service for people with reduced mobility in the country. This involved the purchase and operation of a small fleet of five minibuses with a budget of 9,625,000 pesetas. Thus, the Special Transportation Service (STE) was created, which would be under the jurisdiction of the Metropolitan Transport Entity (EMT, one of the entities that integrated the Metropolitan Area of Barcelona at the time of its creation). The goal of the special transportation service was to facilitate access to public transportation for people with reduced mobility while the regular public transportation network became accessible to all. Accessibility reached the city's transportation modes: in 1991 with the first accessible taxi and in 1992 with the setup for the Paralympic Games (including four adapted shuttle bus lines, two circular routes, and the door-to-door service) and the first regular bus lines with low-floor and ramp-equipped vehicles. The first fully adapted metro line (Line 2) was inaugurated in 1995.

1. Further information may be accessed at: www.omc.cat

The commitment to improving accessibility in the city of Barcelona permeated major city projects. In 1992, Barcelona became an international reference by hosting the Olympic Games and the Paralympic Games in the same city and facilities, thanks to having an Olympic Village without barriers and an adapted public transportation system.

Also in 1992, the Special Public Transportation Service was reorganized, with a management model that would last, with some variations, for more than two decades: the Municipal Institute for People with Disabilities (IMPD) transferred the mobile equipment to the EMT, which took over the service, with a financing agreement split equally between the EMT and the Barcelona City Council. The accreditation of service users and the development of service usage regulations were delegated to the IMPD. The company that already operated an accessible line to the airport (aerobus) began operating the special transportation service, expanding its fleet with the acquisition of ten new vehicles.

Over the years, the transportation service has adapted to the needs and regulations of each administration. Regarding the transportation purpose, it is worth noting that in 1993, the Government of Catalonia took over special transportation to school centers and facilities owned by the Department of Social Welfare. Regarding the types of trips, regulations for the STE were developed, defining two types of services: fixed and sporadic trips, which also considered measures to promote the use of regular adapted public transportation.

In the financing chapter, in the year 1999, there was a proposal to include the Special Transportation Service (STE) in the general budget of the Metropolitan Transport Authority (ATM) and to expand the service to the entire metropolitan area. Service improvements were realized in 2005 with the extension of operating hours and territorial coverage to five municipalities (Badalona, Esplugues de Llobregat, L'Hospitalet de Llobregat, Sant Adrià de Besòs, and Santa Coloma de Gramenet). Additionally, the fleet of "minibuses" was renewed and expanded from 10 to 19 units, along with a reduction in the waiting time for passengers on fixed-route minibuses. The Government of Catalonia started contributing to the STE budget in 2002, as part of the framework agreement for social services between the Department of Welfare and Family and the City Council. The financing structure of the service changed again in 2003 when the EMT began contributing 78% of the service cost, and the IMD covered the remaining 22%, following the Program Contract between the Metropolitan Transport Authority and the General Administration of the State (ATM-AGE). This marked the first inclusion of a budget specifically designated for special transportation for people with reduced mobility.

The evolution of the STE aimed to address the needs of people with disabilities, advocating for the adaptation of regular transportation and public spaces. Initially, the goal of adapting the city seemed distant; however, the IMPD chose to promote a model of regular accessible public transportation for the enjoyment of the entire population, complemented by special transportation services for people with reduced mobility. Investment continued between 1995 and 2006 through the Accessibility Plan, and improvements in the city's accessibility became a reality. As a result of the Accessibility Plan, the surface public transportation network achieved 100% accessibility with low-floor buses equipped with ramps, and new tram lines were also 100% accessible. This accessibility extended to neighborhood buses, tourist buses, the funicular, and the Montjuïc cable car. Improvements in the metro network also progressed, addressing both physical accessibility (installation of elevators between the street and the platform, reduction of space between the platform and the metro) and communicative accessibility.

At this point, the "Barcelona Special Transportation Model" involved redirecting special transportation requests to regular public transportation when accessible alternatives existed in the regular transport network. The STE was defined as a complementary transportation option to serve individuals with a disability certificate, reduced mobility assessment, and registered in Barcelona (holders of the white card) when the requested journey couldn't be fulfilled by regular public transportation. In other words:

- a) When regular bus, tram, or metro transportation was not available, or when the route was not accessible (referring to public thoroughfares).

b) If the distance the person had to travel to the bus, tram, or metro stop to start the journey, and the distance from the stop to the destination, exceeded 450 meters (for wheelchair users) and 200 meters (for individuals with canes or crutches).

c) When the journey involved more than one transfer.

Thus, when a person requested special transportation, the service's trip allocation and coordination center would proceed to real-time consultation of cartographic information. If the origin and destination points were accessible and there was adapted regular public transportation available, the special transportation service would be denied, and the individual would be informed of the available option of regular public transportation. When TMB's bus fleet became 100% accessible, the number of requests redirected to regular transportation increased significantly, leading to complaints and protests from service users. In response, the IMPD halted the redirection of special transportation requests to regular transportation and initiated a reflection on the complementary nature of the special public transportation service concerning the regular transportation network, use cases, and the service's scope. The analysis was documented in the *Special Transportation Service Study: Functionalities, Trends, and Forecasts of 2009*².

2. The regulations for the special transportation service in Barcelona

The IMPD Board of Directors approved the Service Usage Regulations in 2009, which are still in force. These regulations compile the elements mentioned earlier and introduce some adjustments. The complementary nature of special transportation compared to regular transportation is maintained, while the definition of a non-adapted journey on regular public transportation is expanded. This expansion is due to the regulations considering that the distances for a journey to be considered "non-adapted" are now smaller: a distance exceeding 400 meters between the public transport stop and the point of origin or destination for individuals using manual wheelchairs (previously the distance was 450 meters), and exceeding 100 meters for individuals with severe mobility limitations who do not use wheelchairs (previously 200 meters according to the previous regulations).

It is worth noting that the regulations state that special transportation will be granted when the journey is not accessible according to the previous definition and, exceptionally, when the journey is accessible but the person expresses the inability to use it, subject to evaluation by specialized personnel. Although the usage regulations initially foresaw limitations in access to the service based on the mentioned distances and the exceptionality of the limitation based on the individual assessment of cases, it is important to highlight that currently neither of these provisions is applied. Therefore, the accessibility of the transportation network or the accessibility of the streets in Barcelona is not a reason for denying special transportation services.

In fact, these regulations provide the possibility of denying special transportation services for four reasons, but in practice, services are only denied for two of the possible reasons: when a person fails to prove that they are a user of the White Card and in situations of a lack of available vehicles, especially in the case of trips that must be made in an adapted taxi. Thus, the two other envisaged reasons for denying services—availability of an accessible travel option in adapted regular transportation and the commission of infractions in service usage—are not considered.

On the other hand, the usage regulations do not bring about changes regarding the individuals served (individuals with disabilities and reduced mobility criteria, registered in Barcelona, holding a user card for the service (White Card), and needing to make a trip that cannot be done on regular adapted transportation. The territorial scope of the service also remains unchanged, covering trips between the municipalities of Barcelona, Badalona, Esplugues de Llobregat, L'Hospitalet de Llobregat, Sant Adrià de Besòs, and Santa Coloma de Gramenet.

2. It may be accessed at:

<https://ajuntament.barcelona.cat/dretssocials/sites/default/files/arxiu-documents/Estudi%20del%20Servei%20de%20transport%20especial.pdf>.

The Usage Regulations also outline the types of services provided (fixed trips, sporadic trips), the schedule and hours when the service is available (from 7 am to midnight, from Monday to Thursday and Sundays, and from 7 am to 2 am on Fridays, Saturdays, and holiday eves), the types of vehicles used (minibuses, adapted taxis, and non-adapted taxis), and the fares for users when transportation is carried out by taxi (the same price as a single ticket in the Barcelona Metropolitan Area)³. Service users can bring a companion at no additional cost as long as they have the Metropolitan Companion Pass.

3. The current status of special transportation services

In recent years, the activity of the special transportation service has increased to such an extent that it is necessary to initiate a reflection on what the objectives of special transportation in the city of Barcelona should be and to assess how these objectives can be achieved. The reasons for reaching this point of collapse are diverse and go beyond the partial implementation of the Usage Regulations, as outlined in the previous section. It is essential to consider other phenomena, which we explain below:

- Growth of the target population for the service: The potential users of the Special Transportation Service are individuals who meet the requirements to obtain the white card. These include being registered in the city of Barcelona, possessing a disability certificate, and having a recognized mobility reduction score. In the year the usage regulations were approved (2009), there were 24,595 individuals meeting the criteria to be considered "potential users" of the service, a figure that has increased by 79%, reaching 43,931 individuals in the year 2022⁴.
- Approximately half of the potential users hold the white card, granting access to the special transportation service. However, the actual number of people using the service is much lower, with 3,115 individuals in the year 2009 and 5,434 individuals in the year 2022. This represents a 74% increase between these two dates. Furthermore, it is an aging population sector, with an average age of 59.7 years (although lower than the average age of white cardholders, which is 74.5 years).
- Aging is a significant factor for three reasons when considering the dimension of the special transportation service. Firstly, due to the increasing prevalence of disability in these age groups in Barcelona, meaning there is a growing population with recognized disabilities in the city (9.7% of the population, with 158,948 individuals in the year 2022). Secondly, because the older adults' collective has gained weight in recent years within the total population with disabilities (56,776 individuals in the year 2022). Finally, it is also necessary to consider that the Social Services Portfolio of the Generalitat de Catalunya, approved in 2011, extends the target population of special transportation for people with disabilities to those in a dependent situation, increasing the potential number of users.
- Available fleet of adapted vehicles: The availability of accessible taxis in the Metropolitan Area of Barcelona (318 vehicles out of 10,521 licenses, i.e., 3% in October 2023) has not yet reached the minimum of 5% established by the regulations. The limitation in the supply of adapted taxis in the city has a detrimental effect on the provision of the Special Transportation Service (STE). On the one hand, the limited competition in the service can have inflationary effects on its price. An example of this is the regulation of the public price by the Metropolitan Taxi Institute, with a public price that sets a minimum threshold but not a maximum limit. Additionally, the fact that there has been no price reduction in the tender for the STE by any operator. On the other hand, the lack of adapted taxis affects the availability of STE services in different time slots: the possibilities of providing sporadic services in adapted vehicles are limited by the use of the same vehicles for fixed trips, especially during peak hours.

3. In the case of bus transport, the Regulations provide that "the price of the journey is the same as that of the rest of urban transport", with the possibility of using individual or multi-trip cards, although this possibility has not been established never in practice, because it is assumed that the people using the service are holders of the Pink Card.

4. Data available at: https://dretssocials.gencat.cat/ca/ambits_tematicos/persones_amb_discapacitat/estadistiquesdiscapacitat/

- Management model: The current service management is carried out through two contracts: one for bus transportation, mainly used for fixed trips, covering 61 daily routes (via 21 IMPD-owned vehicles and rental vehicles, all adapted to the needs of each route and the individuals traveling in them, with wheelchair anchors, for example); and a contract for services provided in taxis, averaging 900 daily trips, between regular taxis and adapted taxis.

Through these two contracts, the service is provided in the form of fixed services and sporadic services. Fixed services can be programmed based on an annual request, prioritizing assistance to specialized social service centers for people with disabilities from the Social Services Portfolio and funded by the Generalitat de Catalunya under the Program Contract. Sporadic services cannot be programmed, and therefore, reservations are made within a shorter time frame, as they must be booked a maximum of 48 hours in advance, and the reason for the trip is not inquired. The current management model is based on the type of vehicles. This change in the model compared to the previous situation has added additional tension to contract management. With the increase in fixed services assumed in 2022, the limit of activity for vehicles and the budgetary availability envisaged for the bus contract have been reached. It is noteworthy that bus trips are preferable to taxis in terms of cost to the Administration and in cases where the user regularly requires an accompanying person, a role that is usually present in routes directed to Social Services Portfolio centers. Additionally, the limitation of adapted taxis in certain time slots also impacts the service's activity.

The activity of the two types of trips for the period 2018-2022 is presented below. Despite the decrease in mobility in the years 2020 and 2021 caused by mobility restrictions during the pandemic months, there is an observed increase in activity in the last year of the series.

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Table 1. Special Transportation Service. Evolution 2018-2022

Trips	2018	2019	2020	2021	2022
Fixes services					
Bus	69,260	67,922	32,175	59,410	75,976
Taxi	110,394	110,995	51,162	82,403	109,617
Sporadic services					
Bus	425	734	151	644	737
Taxi	149,517	151,494	95,105	118,408	135,215

4. Challenges of the special transport service

Given what has been explained so far, from the perspective of service management, it is considered necessary to initiate a reflection on what type of Special Transport the city of Barcelona needs and how it should be provided to achieve its objectives, adapting to the needs and possibilities of the current context, in the most equitable and sustainable way possible.

The reformulation of the STE should take into account the following aspects:

Adaptation of the Usage Regulations to the current situation.

To address the current demand situation for the service, a possible development would be to limit the number of services or trips made per person. In the analysis of service provision data, it is observed that a small number of individuals concentrate a lot of activity in journeys: almost 40% of sporadic services are concentrated among 3.5% of users.

Table 2. Typology of users of the Special Transportation Service

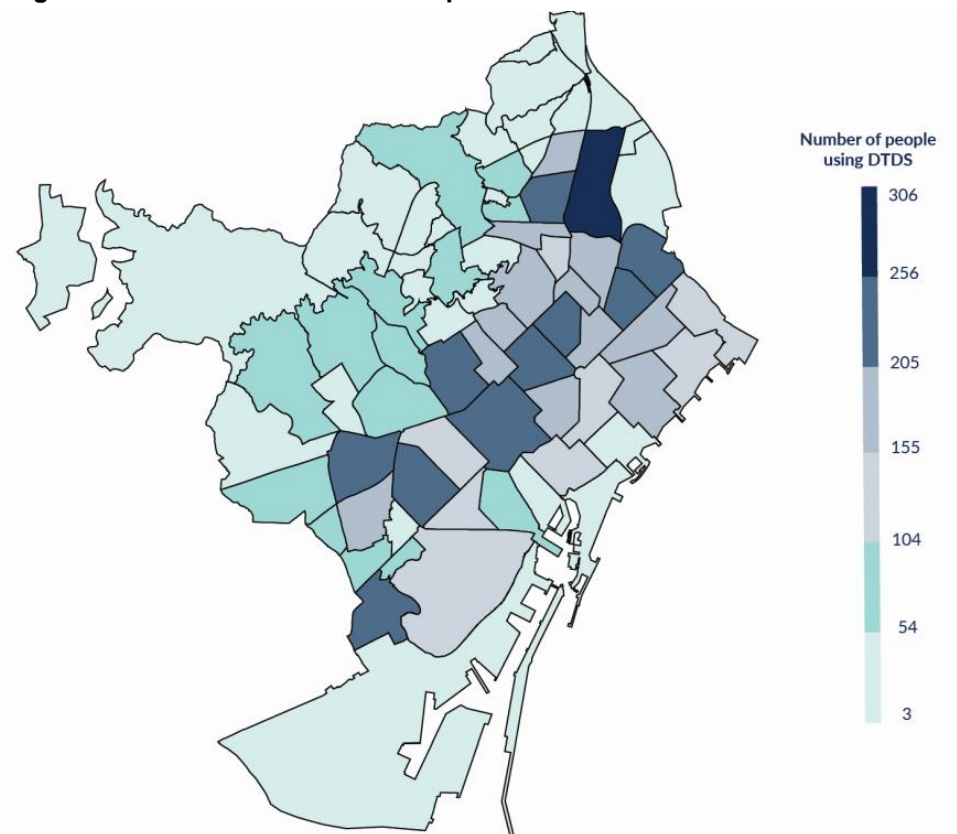
Type of users	Number	Persons (%)	Trips (%)
Punctuals	4,520	68.58	12.97
Frecuents	1,839	27.90	49.50
Actives	232	3.52	37.53

Source: Portell, Morera, and Ramalhinho (2022).

Analysis of seat allocation in specialized social service centers with territorial criteria

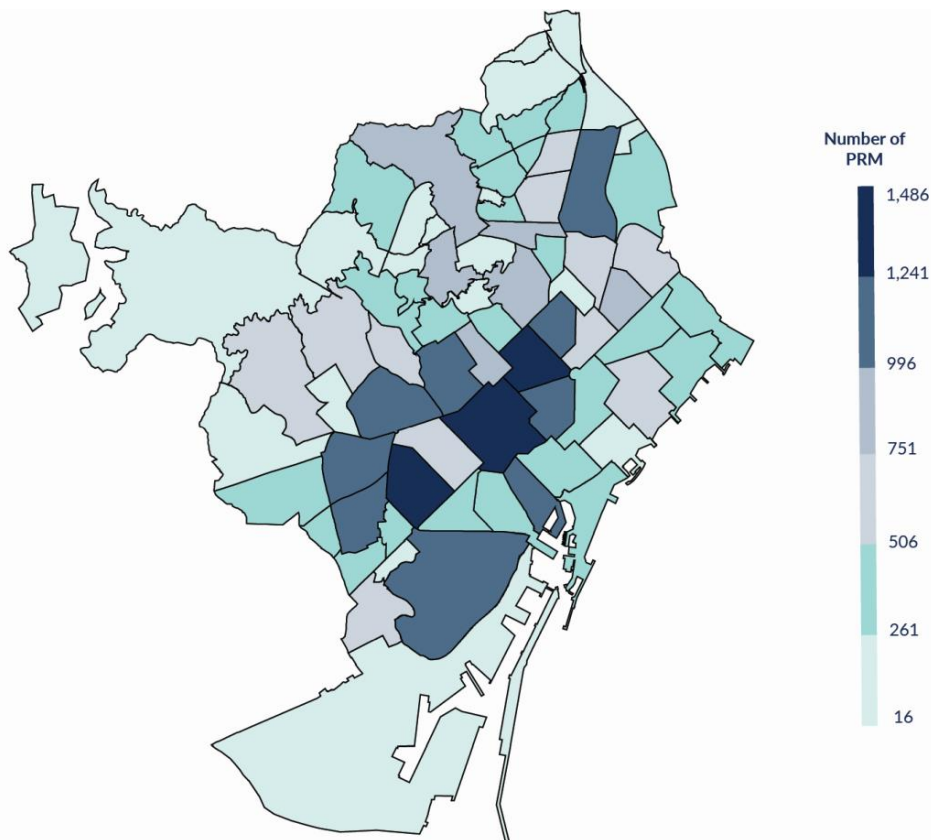
Although the territorial distribution of white card users, which grants access to the service, is diverse, users are concentrated in certain areas that do not necessarily respond to terrain topography criteria. The location of centers in the service portfolio is crucial when requesting special transportation, as seats in these centers are not assigned based on territorial criteria, as is the case with health centers or the scoring system in the school system. Specialized resources for people with disabilities are not territorialized. In other words, a person's place of residence is not a determining factor when assigning a place in a center, so the system does not prioritize proximity between the person's residence and the center, assuming that transportation will be done either publicly or privately. In the case of sporadic services, the location of leisure centers, health facilities, and the availability of public transportation also influence the demand for STE by users.

Figure 1. Territorial distribution of potential service users



Source: Portell, Morera, and Ramalhinho (2022).

Figure 2. Real distribution of the services users



Source: Portell, Morera, and Ramalhinho (2022).

Addressing special transportation to health centers.

The *Report on the special transport service to health centers* (IMPD, 2022) analyzes the use of health services by users of special transport and estimates that, despite regulatory prohibition, 34% of users use the STE to access health and rehabilitation centers. In the report, to assess this percentage, an analysis of raw data by point of interest is carried out, considering any "health center" identified as the origin or destination in the transport management application. In practice, the concept includes all reference hospital centers in Barcelona and Primary Care Centers (CAP) in the city.

The profile of users of special transport who most frequently travel to health centers is that of a person with reduced mobility, over 60 years old, with a disability level exceeding 65%, residing in different neighborhoods, often in the farthest from the center, specifically Besós, Llobregat, and the mountain, and receiving medical care at Hospital del Mar, Hospital Clínic, Vall d'Hebron, or Hospital de Sant Pau.

The cases presented in the report differ from those established in Instruction 07/2017 of Catsalut on non-urgent medical transport (TSNU), which is an alternative to public transport to health centers. Since cases of non-urgent medical transport prescription among special transport users are currently unknown, it would be necessary to delve into understanding which users of the special transport service may have a prescription for TSNU to optimize the allocation of public resources. The most intense cases in the use of special transport suggest that these are people with disabilities who have a physical impossibility or other exclusively clinical and disability-related causes that prevent them from using ordinary transport to travel to receive health care at a center. Therefore, within the scope of improvements, it is considered necessary to share and compare data on special transport services and non-urgent medical transport and better understand the reasons for substituting one service for another (economic, time-saving, etc.).

Alternatively, it is advisable to review the accessibility of ordinary means of transport to health centers from certain points in the city, as well as the characteristics and mobility needs from the perspective of the situation of people with disabilities using special transport.

Figure 3. Recurrence of sporadic routes to major health centers in Barcelona (Vall d'Hebron, Hospital Clínic, Hospital del Mar)



5. Conclusions

The current special transportation service lacks sufficient public resources to meet the entire demand, particularly considering the high potential demand, limitations in the available vehicle fleet, and a low copayment level from users. The service has successfully addressed mobility issues for individuals with reduced mobility in regular commutes, funded by the Generalitat de Catalunya as specialized services within the portfolio of services. However, for sporadic mobility needs, individuals often resort to private means (own vehicles or taxis) or use the unevenly provided public special transportation service. As mentioned, a significant number of users have low service intensity, while a smaller group heavily utilizes sporadic services. The effectiveness of sporadic taxi services is considered less than that of vehicles with greater capacity.

Improving the limited availability of adapted taxis in the Metropolitan Area is an area for enhancement. Increased competition in the availability of adapted vehicles would likely limit taxi prices in the private market. Furthermore, having more vehicles would benefit public transportation services, both in individual service concessions and in shared services for two or more users, a modality to prioritize whenever possible.

In the context of limited resources, whether economic or in the fleet, and the current demand dimension, the provision of special transportation services has become exclusive. The consumption of a "trip" by one user automatically excludes the possibility of another person accessing the same resource. The challenge here is to design a service allocation process that ensures equity. Promoting responsible service use is also necessary, emphasizing the need for regulations regarding citizens' shared responsibility for the service.

There has been no incorporation of ecological criteria in the service. The aging of vehicles with more than 9 seats becomes evident when considering their future inability to circulate in Barcelona's Low Emission Zone. The limited possibility of shared taxi journeys is practically confined to fixed services, where shared trips between a wheelchair user and another individual using different mobility aids can be planned well in advance. Urgent changes are needed in contextual elements, including

infrastructure for mobility—taxis and buses—and technology in the service to make it ecologically sustainable.

Another issue to address is whether it makes sense to regulate all these elements strictly at the municipal level, allowing significant variations in service provision between neighboring municipalities. Perhaps a supra-municipal planning, regulation, and management approach would enhance the service's effectiveness and efficiency, improving the level of service for the public.

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