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Article

Transport accessibility for disabled people in the European Union

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Abstract: Over the last few decades, we have experienced a remarkable evolution of technologies, with a consequent impact on the modes of transport used. These developments have made all modes of transport more accessible. This study examines the evolution of transport in the European Union. To this end, we analysed the international framework, followed by the general legal framework and the type of transport sector at the European level. Furthermore, we examined areas where improvements could be made, facilitating a subsequent review of other key aspects of transport. This enabled us to identify a series of future actions to improve accessible transport in Europe.

Keywords: accessibility; transport; regulations; European Union

1. Introduction

Accessibility to transport is an essential element in building a society in which all individuals can develop their full potential, regardless of whether they have disability-related problems. In this context, the concept of disability is also relevant. Disability affects various aspects of people's lives, especially in the area of transport.

And figures can confirm to us this reality: according to the World Health Organisation, approximately one billion people live with some form of disability, equating to 15% of the world's population (World Health Organisation, 2018).

In the European Union (EU), one in six people (approximately 80 million citizens) has a disability, which often results in accessibility challenges, particularly in the transport sector (European Commission, 2015).

Moreover, several studies have projected that by 2050, countries in the EU will have 70% more people over the age of 65 and 170% more people over 80 years of age, with a consequent increase in accessibility and disability problems arising from the ageing population (ONCE, 2017, pp. 24–25).

In this sense, international legal frameworks acknowledge the importance of mobility. The Universal Declaration of Human Rights enshrines the right to mobility, specifying in Article 13.1 that every citizen has the right to move and reside freely within the borders of each state and in Article 13.2 that every citizen has the right to enter and leave any country, including their own (United Nations, 1948).

Following the adoption of the World Programme of Action Concerning Disabled Persons in 1982, the United Nations (UN) published the Standard Rules on the Equality of Persons with Disabilities (WHO, 2016; UN, n.d.). These rules set out the need for states to raise awareness of the rights and needs of persons with disabilities (Article 1), the need for effective medical care (Article 2), the need for rehabilitation services (Article 3), the need for support services, including assistive devices and technologies (Article 4), and appropriate training of personnel caring for

persons with disabilities (Article 19).

Subsequently, in 1994, the UN adopted a General Assembly resolution on the Standard Rules on the Equalization of Opportunities for Persons with Disabilities (UN, 1994). The UN directed action in the field of disability from a human rights perspective through these norms, which are considered the basic international legal standards relating to disability. In this paper, we discuss standards that, while not having the binding nature of a convention, represent states' moral and political commitment to achieving equal opportunities for people with disabilities (A. Palacios, 2008, pp. 221–222).

After a multi-year process, the International Convention on the Rights of Persons with Disabilities was adopted in December 2006. This involved various actors, including UN member states, human rights institutions, and non-governmental organisations, especially disability organisations (A. Palacios, 2008, pp. 235–236).

This instrument marked a significant step forward in providing greater visibility to this group within the UN human rights protection system.

The convention has a preamble and 50 articles. Article 1 defines the convention's purpose and who are considered persons with disabilities. Article 2 outlines certain terms related to communication, language, or discrimination based on disability. Article 3 defines the general principles for interpretation and application. Article 4 outlines the general obligations to which the States Parties commit themselves. Articles 6 and 7 describe situations pertaining to women and children with disabilities (A. Palacios, 2008, pp. 272–274).

Article 9.1 states that, to enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take measures to provide equal access for persons with disabilities to transportation, buildings, public streets and transport, and all other social environments (UN, n.d., p. 10).

This approach implies a paradigm shift because the state authorities, not the individual, must adapt to the environment so that the individual can live independently (C. Palacios and Bariffi, 2007).

We can see how the issues of mobility and disabilities have been taken into account in several key international texts, as stated in **Table 1**.

Table 1. International texts on mobility and disabilities (note: own source).

Main international texts concerning mobility and disabilities
Universal declaration of human rights: article 13 right to mobility
UN standard rules on the equality of persons with disabilities
Standard rules on the equalization of opportunities for persons with disabilities
International convention on the rights of persons with disabilities

Simultaneously, the concept of accessibility has evolved remarkably in recent years. It has transitioned from a vision focused on eliminating architectural barriers to a more comprehensive vision that encompasses all types of barriers, including both architectural and cognitive, which are also framed in a context that aims to transform existing environments for everyone, including those of transport (Alonso López, 2016). This concept has also been enlarged with the development of the information

and communication technologies and its irruption in several areas, including transport. To that end, the Accessibility Act (European Union, 2019) has been the major regulation at the EU level in order to deal with this matter.

To analyse the global situation of accessibility in transport, it is necessary to identify the key elements. Juncá indicated the following elements that must be considered if we are to guarantee accessibility throughout the entire mobility chain (Juncà Ubierna, n.d.):

1) Fixed transport infrastructures or facilities. These infrastructures (airports, interchanges, railways, and metro or bus stations) must be constructed following the accessibility requirements for buildings or guidelines established for the urban environment. The infrastructure must be designed as a rational space that allows for the movement of all passengers while also guaranteeing accessible itineraries, reducing the distances to be covered, ensuring the stay of users in this space with the necessary facilities for people with disabilities, such as furniture, and providing this space with information, signaling, and communication systems suitable for all types of passengers.
2) The rolling stock or transport vehicle used (trains, buses, trams, planes, and boats). In this case, there must be reserved and adapted seats for these users. Similarly, vehicles must have adequate access and be in good condition for temporary occupation of seats during the journey, which implies special characteristics in the case of people with disabilities. During long journeys, new needs and services, such as toilets or cafeterias/restaurants, will be required due to the prolonged stay, as would adaptations for people with disabilities. Adequate information, signposting, and communication systems are also required.
3) The boundary or link. This is the point at which the user switches from infrastructure to rolling stock. This is an important aspect because it often causes accessibility issues. The most important thing is to promote communication between infrastructure and vehicle, which can be accomplished either through an initial design that provides for it, as is done in the most modern trains and stations, or through specific levels or lifting mechanisms that can be adapted to various situations to overcome significant differences in level. These lifting mechanisms must also be supported by specialised personnel and information and signalling systems to facilitate passenger boarding and alighting.
4) Provision of services, i.e., human assistance to people with disabilities in these environments. This aspect is vital, and for this, the personnel involved must be fully trained, both in the operation of the systems and in treating persons with disabilities. This assistance must be continuous and comprehensive, depending on the mode of transport and the difficulties encountered in getting around and using the means of transport. Humane treatment is vital, especially when not all accessibility measures are available. Such a service must be coordinated with signage and information and communication systems to achieve the ultimate goal of accessibility.
5) Digital and physical information systems must be adapted to ensure accessibility for all. This is a vital and horizontal aspect that influences all other elements. It is crucial to have accurate signage that reaches all users, is easy to understand,

and is interactive.

In this sense, Juncà considers it crucial that these five elements are collectively worked on in order to achieve full accessibility of transport.

Within this theoretical and international framework, the EU has been working hard over the last few years to create a legal framework in this field.

2. Hypothesis and methodology

Taking into account the global accessibility in the transport sector and the importance for the European Union to respect the rights of persons with disabilities we could ask ourselves the following:

- Is the European Union at the forefront of the protection of persons with disabilities in the transport area?
- What can be improved to ensure a better protection of the rights of persons with disabilities in the transport area?

In order to reply to those hypotheses of research, we will try to make a qualitative analysis (Fulton Library, 2023) based on the selection of two kinds of documents:

- The legislation made at the EU level in the areas related to transport.
- The research and analysis in the areas of transport and disabilities made by several experts in the field.

To study those documents, we will use the document analysis (Lumivero, 2023) in order to analyse the main aspects of the legislation and the research papers with regards to the accessibility of transport for disabled people and the comparative methodology (Kaluza, 2023) to see the evolution concerning different sectors. In the use of this comparative methodology, we will use a systematic approach that will help us to better cathegorise and evaluate the data that we will analyse (Salehijam, 2018).

3. Legal framework for accessibility and transport in the European Union

At the European level, this legislation has evolved significantly, both in its general and sectoral scopes. In this section, we analyse the existing general and sectoral regulations in this area, as well as areas where we believe there is room for improvement to achieve greater accessibility. As we can clearly see, all the areas are analysing the 5 aspects of the entire mobility chain highlighted by Juncà, coming from the regulation in the infrastructure, to the regulation of the transport, the connectivity or link, as well as the services or the digital systems that are in place.

3.1. General regulations

Regarding general regulations in this area, we note the following:

The White Paper ‘Towards a single European transport area’ mentions the need to improve the accessibility of transport for people with disabilities within the initiatives that had to be carried out, such as the adoption of the connecting Europe facility (CEF) regulation, the legislation on passenger rights and the trans-European transport network (TEN-T) (European Union, 2011b).

The communication on European passenger rights in all modes of transport (EU,

2011a), which includes non-discrimination of passenger access and the right to compensation (Bekiaris et al., 2018, p. 43).

Regulation (EU) No. 1315/2013 of the European Parliament and of the Council of 11 December 2013 on guidelines of the Union for the development of the TEN-T, which includes, within its transport development objectives, the improvement of accessibility for older persons, persons with disabilities, and persons with reduced mobility (EU, 2011c).

This regulation was updated after the agreement reached at the Council on 19 December 2023 for the revision of the regulation regarding EU guidelines for the development of the trans-European transport network (TEN-T) (Council of the EU, 2023). The agreement is willing to advance for the core network by 2030, the extended core by 2040 and the comprehensive network by 2050. And to do so, the new regulation creates nine European transport corridors (Council of the EU, 2023). This will have an impact on rail, road and air transport, as well as on the urban nodes and the connectivity between them. And this will also have a positive impact on the transportation for persons with disabilities.

Regulation (EU) No. 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the CEF, which includes, within its transport development objectives, the improvement of accessibility for older persons, persons with disabilities, and persons with reduced mobility (EU, 2013).

The general European regulation on transport is presented in **Table 2**.

Table 2. General European regulation on transport (note: own source).

General European regulation on transport	
EU regulation	**Area and subject regulated**
White Paper "Towards a single European transport area"	Accessibility, connecting Europe facility (CEF), passenger rights, trans-European transport network (TEN-T)
Communication on European passenger rights in all modes of transport	Passenger rights
Regulation (EU) No. 1315/2013 on the development of the TEN-T and agreement updated in December 2023	TEN-T, accessibility for older persons, persons with disabilities and reduced mobility
Regulation (EU) No. 1316/2013 establishing the CEF	Regulation of the CEF, including the improvement of accessibility for older persons, persons with disabilities and persons with reduced mobility
European disability card and European parking card	Harmonization of the disability card and the parking card in Europe

We should also take into account the introduction of the new proposal by the European Commission concerning the European disability card and the European parking card for persons with disabilities (European Union, 2023). This proposal was introduced on 6 September 2023). The European card aims to serve as a proof of disability status across all the EU countries. This will enable cardholders to have equal access to special conditions and preferential treatments anywhere in the EU. The European parking card aims to guaranty the use of parking spaces and facilities reserved for persons with disabilities in all EU countries and will replace the national

parking cards. Once the legal act will be passed, EU governments will have 2.5 years to implement them. These two cards will help the mobility of disabled people all over Europe and will constitute a very important step forward to achieve better mobility for disabled people.

3.2. Sectoral regulations

Regarding sectoral regulations, we observe the following developments per sector:

3.2.1. Air transport

For air transport, it is crucial to mention regulation (EC) No. 1107/2006 of the European Parliament and of the Council of 5 July 2006 concerning the rights of disabled persons and persons with reduced mobility when travelling by air (European Union, 2006).

This regulation introduced the right to travel by air without any discrimination, preventing any airline from grounding a person for reasons of mobility or disability. It also introduced assistance to such persons to enable them to use air transport.

However, although this regulation has been hailed as a major step forward for access to air transport, its implementation has revealed certain shortcomings in practice.

While Article 3 of this regulation prevents airlines from denying boarding on the grounds of disability or reduced mobility in case of a valid reservation and ticket, Article 4 provides for exceptions and special conditions for airlines if boarding poses a security risk or the disabled passenger is physically (electric wheelchair) unable to access the aircraft (Bekiaris et al., 2018, p. 45).

Finally, it is necessary to highlight two other key international players in the aviation sector who impact at the community level:

- The International Civil Aviation Organisation (ICAO, n.d.), which is charged with developing unique regulations and standards for the development of global civil aviation.
- The International Air Transport Association (IATA) (IATA, n.d.), which is responsible for the development of harmonising rules for airline activities relating to ticketing, baggage, or reservations.

3.2.2. Rail transport

For rail transport, several regulations deal with accessibility. Regulation (EC) No. 1371/2007 of the European Parliament and of the Council of 23 October 2007 on rail passengers' rights and obligations establishes rules for assistance at stations, in transport or in furniture, as well as passengers' rights in case of delay or cancellation (European Union, 2007).

However, while significant progress has been made, we can see that, although Article 24 of this regulation defines 48 h as the period for booking assistance for persons with disabilities, in practice, booking change periods are much shorter (direct change in Spain, 1 h for the change in the Netherlands, 3 h in Belgium, and 12 h in Austria or Denmark) (Bekiaris et al., 2018, p. 48).

Additionally, accessibility services are usually available during working hours (9 a.m.–5 p.m.), whereas rail services are typically available for substantially longer

periods (Bekiaris et al., 2018, p. 48).

On the other hand, Commission Regulation (EU) No. 1300/2014 of 18 November 2014 on the technical specification of interoperability relating to the accessibility of the Union rail system for disabled persons and persons with reduced mobility (EU, 2014) regulates the technical specifications relating to infrastructure and stations, including the use of wheelchairs with a seat attached to accompanying persons, as well as lifts, stairs, ramps, signalling, visibility systems, lights, contrast, or auditory information systems (EU, 2014).

Similarly, Commission Regulation (EU) No. 454/2011 of 5 May 2011 concerning the technical specification for interoperability relating to the subsystem 'telematics applications for passenger services' of the trans-European rail system defines requirements for telematics applications, although it does not cover the accessibility of such applications for persons with disabilities, only for those with hearing and visual impairments.

Furthermore, directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the EU, which defines the conditions for the implementation of European rail system interoperability, states that all member states are obliged to apply the rules set out in Regulation (EU) No. 1300/2014 to all renovated railway stations (European Union, 2016). In this regard, we can observe the need for several railway stations, as well as old trains, to be upgraded, particularly in terms of accessibility and signage, so that people with disabilities may use them adequately (Bekiaris et al., 2018, p. 51).

3.2.3. Maritime transport

For maritime transport, Regulation (EU) No. 1177/2010 of the European Parliament and of the Council of 24 November 2010 concerning the rights of passengers when travelling by sea and inland waterway covers aspects relating to the right of transport for persons with disabilities, as well as their right to accessible information, assistance services, and assistance in cases of delay or cancellation in maritime and inland waterway traffic (European Union, 2010).

However, this regulation does not include technical specifications, resulting in cases where there is a lack of accessibility, particularly on small tourist vessels or, in some cases, on cruises between several member states, which may not have all the necessary access for wheelchair users. In rare cases, passengers in wheelchairs are refused entry or charged extra, and there is a lack of equipment to meet the special needs of people with disabilities (Bekiaris et al., 2018, p. 53).

3.2.4. Road transport

For road transport, Regulation (EU) No. 181/2011 of the European Parliament and of the Council of 16 February 2011 on the rights of passengers in bus and coach transport defines in Article 16 the need for road transport to organise training for staff on how to deal with persons with accessibility difficulties, and in Article 12 stipulates that terminals that are accessible for persons with reduced mobility and accessibility issues should be established (European Union, 2011d).

However, we note some shortcomings in the implementation of the legislation. For example, this regulation applies to services having mileage more than or equal to 250, excluding most regional or urban bus services. There was no standard training

programme on these issues in the countries. We also observed large disparities between member states, with some having many terminals and adapted vehicles and others having significantly fewer (Bekiaris et al., 2018, pp. 55–56).

3.2.5. Multimodal transport

Regarding multimodal transport, no legislation covers it comprehensively, although directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010, laying down the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport, establishes the need for information to be accessible to all citizens, including those with accessibility difficulties or reduced mobility.

In **Table 3**, we can see how the sectorial European regulation on transport is developed according to the different content.

Table 3. Sectorial European regulation on transport (note: own source).

Sectorial European regulation on transport	
Air transport	**Content regulated**
Regulation (EC) No. 1107/2006	Rights of disabled persons and persons with reduced mobility when travelling by air
Rail transport	**Content regulated**
Regulation (EC) No. 1471/2007	Rail passengers' rights and obligations: rules for assistance at stations and transport as well as in case of delay or cancellation
Regulation (EU) No. 1300/2014	Technical specification of interoperability relating to accessibility of disabled people
Regulation (EU) No. 454/2011	Technical specification for interoperability on the telematics applications for passenger services
Directive (EU) 2016/797	Interoperability of the rail system
Maritime transport	**Content regulated**
Regulation (EU) No. 1177/2010	Rights of passengers when travelling by sea and inland waterways
Road transport	**Content regulated**
Regulation No. 181/2011	Rights of passengers in bus and coach transport

4. Development of other key issues related to transport and accessibility in Europe

Along with the development of the European legal framework, other aspects, such as those mentioned above by Juncà, have a significant impact on achieving accessible transport for all. Among them, we highlight the following:

4.1. Passenger rights

Passenger law is rooted in Articles 91(1) and 100(2) of the treaty on the functioning of the EU and aims to provide all passengers in the EU with a harmonised minimum level of protection, regardless of the mode of public transport used. The following regulations apply depending on the mode of transport used (Colto et al., 2020):

- EC Regulations 261/2004 and 1107/2006 for air transport.
- Regulation 1371/2007 for rail transport.

- Regulation 1177/2010 for transport by ship by sea or inland waterways.

These regulations stipulate that each member state is obliged to nominate or create a national authority responsible for the protection of passengers' rights. However, a 2018 survey by the European Parliament of national authorities responsible for 17 European countries (Belgium, Croatia, Cyprus, Czech Republic, Denmark, France, Greece, Iceland, Norway, Poland, Romania, Slovakia, Slovenia, Sweden and United Kingdom) revealed a remarkable number of complaints from passengers, with an annual average of 736 complaints from air transport, 26 from maritime transport, 421 from rail transport, and 201 from road transport (Bekiaris et al., 2018, p. 83). However, it is encouraging that only 1% of these complaints came from people with access difficulties or reduced mobility. Although 85% of respondents did not consider it necessary to empower the authorities responsible for their rights to improve the situation or impose sanctions, it is concerning that most respondents did not know who the responsible authority was to whom they could claim their rights (Bekiaris et al., 2018, p. 83).

In addition, the European Commission has published a wider study on the social dimension of the future EU transport system regarding users and passengers (Kouris, 2022).

During the study an extensive analysis is carried out about a lot of initiatives carried inside the European union taking into account the social dimension of transport and the issue of accessibility. In this regard, the study highlights that "persons with disabilities and reduced mobility might have accessibility and safety issues, difficulties with adapting to change, and affordability barriers as they may require more expensive transport services (Kouris, 2022, p. 21).

The study also points out the difficulty to frame the issue of accessibility and disabilities since it is a wide topic that must be extended to several areas such as understanding any visual or sound- based information, the need to overcome accessibility barriers and gaps, understanding how to use the transport system associated with cognitive disabilities, having an easy access to good information online, the age of the passenger that plays a relevant role concerning physical and cognitive capabilities or the issue of safety as well as the potential amplification of all those challenges during multimodal journeys due to the potential poor accessibility or infrastructure at interchanges between modes of transport (Kouris, 2022, p. 22).

By highlighting the heterogeneity of the different accessibilities, the study calls for the need of developing a sectorial legislation to regulate all those aspects. During the analysis of the information of the different projects at the EU level we can also see how rural areas, people with low incomes and areas that do not have a good transport infrastructure are conditions that severely affect more to persons with disabilities.

In addition to the current regulation, the European Commission has launched a new proposal to ensure stronger passenger rights (European Union, 2023a). The proposal is under negotiations but aims to introduce rules for air passengers who booked their flights via an intermediary and pays special attention to multimodal journeys, with special regards to passenger with disabilities or reduced mobility who switch from one transport to another. The proposal aims to assist those passengers at connecting points between the modes of transport, including the accompanied person

(European Commission, 2023a). This is a very important step forward to increase the protection of disabled passengers. Together with this, the revision of delegated regulation on EU-wide multimodal travel information service (MMTIS) and the creation of a common European mobility data space will make easier for passengers to find real-time information on different transport modes (European Commission, 2023a). This information will include new types of information, such as if bikes can be taken into the train or if the transport mode includes the required conditions for passengers with disabilities or reduced mobility.

4.2. Transport accessibility

As Juncà rightly pointed out (Juncà Ubierna, n.d.), one of the key aspects where access to transport encounters the greatest difficulties is the border or link between the infrastructure (station) and the vehicle (bus, train). In recent years, technological advancements and urbanisation of cities have considerably improved accessibility in urban areas compared with rural areas or the outskirts of cities, with a consequent impact on people with accessibility difficulties (Bekiaris et al., 2018, p. 90).

According to a survey of people with disabilities conducted as part of a European Parliament study (Bekiaris et al., 2018, p. 91), most respondents believe that the accessibility of their national transport system is unsatisfactory.

The respondents highlighted the following points where they encountered difficulties regarding accessibility for each mode of transport (Bekiaris et al., 2018, p. 100):

For air transport, those related to wheelchair transfers. We observe difficulties related to the very limited space inside aircraft and the difficulty of making structural changes to this mode of transport, as well as a scarcity of toilets adapted to this group and a lack of flexible elements that sometimes help the operation of the staff, who must check in their wheelchairs beforehand (Díaz Velázquez and García García-Castro, n.d.; ONCE, 2017).

For bus transport, the small number of accessible vehicles and the lack of stairs without ramps. In this mode of transport, the most accessible vehicle would be a low-floor bus, but this is uncommon. However, intercity buses typically solve the difficulties of entry by using ramps, although they must also guarantee access on public roads, necessitating the adaptation of stops and bus shelters to facilitate access to the vehicle. In the case of medium- and long-distance buses, many technical difficulties arise from the use of steps for access, for which a platform lift is usually the alternative. However, the interior of the vehicle must be equipped with anti-trapping systems for the doors, folding armrests, spaces reserved for wheelchair users, and a correct and adequate signage system (Díaz Velázquez and García García-Castro, n.d.).

For rail transport, those related to accessibility, which is not optimal at all stations, those related to staff assistance, and those related to situations arising from changes in itinerary or emergency actions. It is critical to highlight the difficulties resulting from the unevenness that usually exists between the car and the platform, as well as the need to have spaces for wheelchairs indicated with the International Symbol of Accessibility, the presence of doors with user-friendly operating devices,

tactile markers of row numbers and seats within reach of passengers, or the provision of space for the storage of wheelchairs, among others (Díaz Velázquez and García García-Castro, n.d.).

For metro transport, the connection between the vehicle and the platform must be solved, as well as the need for stations to be fully accessible from the street to the platform. Furthermore, the doors must have contrasting operating devices and anti-trap systems, spaces reserved for wheelchair users, and visual information on the next stop and connections (Díaz Velázquez and García García-Castro, n.d.).

For boat transport, those related to access to the outside area. In this case, the presence of multiple vessels adds to the complexity of this transport, especially considering that such adaptation is often costly. Ideally, the quay and ship should be on the same level, although boarding can also be facilitated using fingers or telescopic gangways. Similarly, cabins and toilets must be adapted if the vessel is of this type. Doors, corridors, stairs, and handrails must also be wide enough to allow these passengers access and maneuverability (Díaz Velázquez and García García-Castro, n.d.).

Furthermore, in the same survey, respondents confirmed an infrequent use of public transport (Díaz Velázquez and García García-Castro, n.d. p. 93): 83.3% do not use the ferry, 80.6% do not use coaches, 75% do not use the metro, 69.4% do not use the tram, 66.7% do not use the train, and 26% do not use buses. However, 41.7% of respondents use a private car between three and five times a week.

The main reason survey participants do not use public transport is related to accessibility, with 75% reporting at least one accessibility problem when travelling by public transport. Despite this, 88.9% of respondents who experienced an accessibility problem did not file a complaint (Díaz Velázquez and García García-Castro, n.d. p. 94). This demonstrates the need to improve the accessibility of urban transport.

This situation can also be observed in long-distance transport, where 47.2% of respondents consider accessibility unsatisfactory and 41.7% claim to have experienced accessibility-related incidents on long-distance journeys, with the highest number (60%) of passengers experiencing denied boarding incidents due to passenger safety concerns (Díaz Velázquez and García García-Castro, n.d. p. 99).

In another survey carried in the four quarter of 2021 in four European Countries (Cyprus, Greece, Poland and Portugal) concerning accessibility in Tourism, we can see that people with disabilities are particularly subject to specific barriers and obstacles when travelling. Only 6.1% of the correspondents declared not to encounter any problem when travelling (Zaluska et al., 2022, p. 4–5). The difficulties can be very different, with the most important being financial resources (50.4%) and a lack of information dedicated to people with disabilities (47.3%). Differences vary between sex for women and men. In this case, the health issues are more important for women and the lack of attractions and lack of knowledge of foreign languages is for men. The same happens concerning the nationality. For Greeks and Poles, insufficient financial resources are the biggest problem, while for Cypriots and Portuguese is the lack of adequate information about attractions (Zaluska et al., 2022, p. 5).

For respondents, the best measures to take in order to enable people with disabilities will be the offer from travel agencies for people with disabilities (58.8%), financial issues (45.8%) and better information for people with disabilities (49.6%).

All this shows the areas where there should be improvement for this (Zaluska et al., 2022, p. 7).

According to deaf people, the most important factors are the offers from travel agencies dedicated to people with disabilities (56.8%) followed by the own financial resources (48.1%) and the information and attractions for people with disabilities (48.1%) (Zaluska et al., 2022, p. 6)

In any case, the accessibility of facilities for people with disabilities was evaluated as a key issue for all correspondents, irrespective from their disability (Zaluska et al., 2022, p. 8)

For participants, location was also key, especially regarding the connection with the center, the transport available and the price (Zaluska et al., 2022, p. 8–9).

From the group discussion, we can also see that, although there are different barriers depending on the different disabilities, in this case, the lack of knowledge or the need for staff training is one of the key aspects highlighted by most of the people interviewed (Zaluska et al., 2022, p. 10).

In this line, the evaluation of the third European Disability Strategy after 10 years in November 2020 (European Union, 2020) shows that while there is still room for improvement, the strategy has had a positive impact in EU rules and policies, notably through the inclusion of disability issues in EU legislation and policies in eight areas of action (although the implementation has not been balanced in all of them, being equality the one where most problems have been identified (Amitsis and Marini, 2023, pp. 193–194)):

1) European Accessibility Act.
2) Web-accessibility directive.
3) Audiovisual media services directive.
4) European electronic communications code.
5) Waterborne and Bus and Coach Passenger Rights Regulations.
6) Revision of the Rail Passengers' Rights Regulation.
7) Revision of the Commission Regulation on the Technical Specifications for Interoperability Relating to Accessibility of the Union's Rail System.
8) Marrakesh Directive.

Another important aspect concerning accessibility is the accessibility of wheelchairs. Annex I of the European Directive 93/42/EEC on medical devices (EU, 1993) regulates wheelchairs.

This regulation stipulates that it is not necessary to hold a driver's licence or to insure the product. This lack of specificity, combined with the lack of European-level harmonisation of the wheelchair market and, in many cases, the inaccessibility of modes of transport to wheelchairs, creates a complex picture that should be the subject of a market study that could help us take future measures in this area (Bekiaris et al., 2018, p. 105).

4.3. Human assistance

Human assistance to people with accessibility difficulties is a vital aspect of avoiding differential treatment. To this end, it is critical to ensure that staff dealing with persons with accessibility difficulties are well-trained. Article 14 of Regulation

1177/2010 on passenger rights addresses this aspect (EU, 2010). Staff and senior managers of transport companies must receive relevant training on this aspect from the outset of their contractual relationship.

The European Parliament's 2018 study revealed that 60% of respondents believed there was a need to improve staff training in this area (Bekiaris et al., 2018, p. 101). Such training should include key aspects, such as asking if help is needed before offering it, removing obstacles that may hinder access for people with mobility difficulties, and always asking before touching any equipment of people with mobility difficulties (Bekiaris et al., 2018, p. 104).

4.4. Digital and physical information systems

New technologies open up new possibilities for communication, including for people with accessibility difficulties. Information systems can now be found not only physically but also in digital format that is more personalised for the user.

In 2017, Amadeus published a study (Amadeus, 2017) in which most people with accessibility difficulties preferred to book their means of transport online.

In this study, 62.5% of respondents confirmed the significant improvement in transport booking systems, while also emphasising the need for further improvements and harmonisation in this area to provide more efficient and personalised information (Amadeus, 2017).

The European Parliament's 2018 study also points to the need for improved transport technology applications that include clear, legible, and easy-to-understand information in short sentences conveyed in a timely and straightforward manner, with standard symbols and pictograms that facilitate the journey for passengers (Bekiaris et al., 2018, p. 108).

And in this area, the main piece of legislation developed at the European level is Directive 2016/2102 about accessibility of Websites and application for mobile phones. In this legislation some criteria are established for people with disabilities and the use of Websites in the European Union (2016a).

This Directive aims to harmonise the Single European Market by making services more available for citizens in the digital area, including mobile phones, tablets, computers, televisions and mobile applications (Bekiaris et al., 2018, p. 41). The main aim of this directive is to build a social and inclusive Europe by allowing a better access to Websites to people with disabilities (European Commission, 2021c).

The directive acknowledges the current international context of digital services and accessibility and claims for a technology-neutral accessibility, based on four principles: perceivability, operability, understandability and robustness (European Commission, 2021c)

And to achieve all this, the web accessibility directive expert group plays a key role for coordination and cooperation with member states and stakeholders as well as for the preparation of delegated and implementing acts (European Commission, 2021d).

In **Table 4**, the different regulations of content in other key issues related to transport and accessibility will now be seen.

Table 4. Other key issues on transport and accessibility (note: own source).

Other key issues related to transport and accessibility	
Passenger rights	**Content regulated**
EC Regulations 261/2004 and 1107/2006	Air transport
Regulation 1371/2007	Rail transport
Regulation 1177/2010	Ship and inland waterways
Transport accessibility	**Content regulated**
European Directive 93/42/EEC	Medical devices and regulation of wheelchairs
Digital information systems	**Content regulated**
Directive 2016/2102	Accessibility of Websites

5. Conclusions and recommendations

In order to reply to the hypothesis, we have analysed throughout this article how over the last few decades, and although accessibility is more a social policy in which the EU has a subsidiarity competency, the transport accessibility has been extensively developed through an international legal framework that has undergone significant development at the European level and has covered all the 5 areas highlighted by Juncà. That is why we can conclude that the EU is at the forefront in regulation concerning accessibility.

However, although this framework has enabled significant advances throughout time, it is crucial to highlight the need to continue promoting advances in the area based on the studies conducted (Bekiaris et al., 2018, pp. 160–161).

In this sense, the establishment of a European accessibility committee or a European agency to help develop accessibility directives and standards, as well as the need to seek greater harmonisation of accessibility standards in the general area and local transport in all member states, or the harmonisation of training for workers in the area of European transport, are necessary.

It is true that accessibility committees at the regional level can contribute with good examples to accessibility in general, as we can see from the best practices book of the accessibility committee from the region of Castilla la Mancha (Junta de Castilla la Mancha, 2006), but it is also true that having such a committee at the EU level can really help to put those examples as best practices and enhance them at the EU level.

In this regard, the development of a European disability card and a parking card shows the willingness of European activities to advance in a harmonisation in this area which can end up in the development of such Accessibility Committee or European agency.

The European Commission should also come forward with a proposal for multimodal passenger rights, including accessibility at transport terminals and strengthening passenger rights in transport so that operators cannot prohibit passengers with accessibility difficulties from travelling for safety reasons. It is also crucial to provide full assistance to passengers with accessibility difficulties in case of train delays. In this regard, the new proposal just approved in this area will help a lot to contribute in this area, although some research and surveys concerning its implementation should be carried on in order to see how improvement will be

achieved.

Additionally, it is necessary to push for the accessibility of one-third of local vehicles in the EU, as well as the development of impact studies on accessibility requirements in daily life and transport at the European level.

Finally, European authorities should facilitate local, regional, and national authorities to collaborate on data collection, promotion of innovative models to increase accessibility, particularly in cities already advanced in accessibility, and the development of national plans for accessible long-distance transport.

It is critical to ensure such information gathering, as well as cooperation between local, regional, national, European, and global authorities, in order to be able to adapt changes in legislation, signage, or the use of new technologies at all administrative levels as soon as possible. The use and consolidation of good practices are of vital importance.

This is essential to be able to extend and consolidate projects in this area for all users. To this end, it is necessary to deepen the knowledge of the diversity of passengers in the various modes of transport used to identify all the difficulties and elements on which action must be taken.

In this regard, research and innovation play an important role due to the need to rectify, improve, and always achieve a transport service that is increasingly accessible to citizens. Therefore, further research into materials, technological, computerised, electronic, automatic systems, and transport mechanisms, as well as the evacuation of persons with accessibility difficulties in emergency conditions, is crucial.

And in this regard, the development and implementation of the European Accessibility Act is an important step forward since it will help advance the information provided to persons with disabilities and the accessibility of transport for all persons with disabilities.

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