



INCLUSION Project

Deliverable D1.3

Identification and assessment of mobility needs of 'vulnerable to exclusion' users and population groups

Version: 1.2

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Abstract	The deliverable D1.3, <i>Identification and assessment of mobility needs of 'vulnerable to exclusion' users and population groups</i> , presents the results of the workshop held in Ghent with the INCLUSION Stakeholders' Forum members and the outcomes of the structured interviews conducted with target mobility stakeholders, including user group associations, academic researchers, consultancy groups and transport operators and authorities. We align these findings in order to finally assess and consolidate the previous activities carried out by the Consortium, producing the final results of the WP1. With the D1.3, and in general with the WP1, we establish a common approach for the INCLUSION project, as well as a common understanding of target user group and their needs and the mobility challenges facing prioritised areas.		
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0 Executive summary

In tasks 1.1 and 1.2 of WP1, the Consortium set the context of INCLUSION by defining the conceptual and terminological background of the project and analysing the characteristics of prioritised areas, their target user groups and their needs. As per the project proposal, WP1 Task 1.3 aimed to assess and consolidate the findings from the previous tasks by means of validation exercises conducted with a group of selected mobility stakeholders and users' representatives. As the final product of WP1, Deliverable D 1.3 (Identification and assessment of mobility needs of "vulnerable to exclusion" users and population groups) aims to illustrate the main outcomes of this validation exercise and to report the final results of WP1.

The methodology used in Task 1.3 is presented in detail in section 3; first, the consortium organised a dedicated workshop in Ghent (Belgium) with participation from members of the Stakeholders' Forum and representatives from all members of the INCLUSION Consortium, to allow an open discussion of WP1 outcomes; secondly, the Consortium conducted structured interviews with target mobility stakeholders, including user group associations, academic researchers, consultancy groups and transport operators and authorities.

The aim of the workshop was to obtain feedback and to validate the outcomes of the work carried out in WP1, especially considering the concepts and findings elaborated in task T1.2. Members attending the Workshop were asked to comment on the designed identification of user groups, to verify the accuracy between the structure provided for cross-referencing the main characteristics of vulnerable user groups categories and the matrix concerning the prioritised areas, and to validate the major user needs for targeted user groups. Findings from the workshop have been reported in section 4.

Regarding the interviews, it was decided to develop three separate semi-structured survey instruments addressing similar questions but targeted towards the three main categories of stakeholders involved (transport operators/authorities, user representatives, and academic/consultant researchers). The key findings from the interviews, reported in section 5, are related to challenges in the provision of inclusive mobility (and mobility options), major trends affecting transport and mobility, and barriers (and drivers) that impact on mobility. Copies of the interview questionnaires are included as annexes A, B, and C.

Finally, in section 6 the overall findings and outcomes of this validation exercise are presented:

- A new definition of prioritised areas has been elaborated, to better describe the target of INCLUSION;
- The 15 candidate prioritised areas have been reviewed; four of the fifteen have been removed due to a lack of particular challenges in serving vulnerable populations. In addition, the challenges in serving vulnerable populations in rural, peri-urban and urban areas have been described through a more effective representation;
- A new 3-D matrix has been defined to describe the characteristics of vulnerable users in a more comprehensive way; and
- A final assessment of the major trends affecting the mobility of vulnerable user groups, as well as an assessment of the major user needs and unsatisfied mobility requirements of said groups, has been carried out.

With T1.3, and in general with WP1, a common approach for the INCLUSION project has been established, as well as a common understanding of target user groups and their needs and the mobility challenges facing prioritised areas.

1 Introduction

1.1 Description of Task 1.3

INCLUSION Task 1.3 aims to perform a critical assessment of the main outcomes of the previous tasks of WP1. Within task 1.3, the findings from tasks 1.1 (Identification and classification of specific areas and targeted user groups) and 1.2 (Identification of challenges and comprehensive user needs analysis) have been assessed and consolidated by means of validation with mobility stakeholders, users' representatives and public transport (PT) operators, to produce the final results of WP1.

First, a dedicated workshop has been held (March 2018) involving the INCLUSION Stakeholders Forum to allow an open discussion and co-participative evaluation of WP1 outcomes. The event has helped to validate and consolidate the main conclusions in an EU-wide perspective, as well as strengthening the EU level consistency and relevance of WP1 results. Findings are reported in Chapter 4.

Secondly, the main outcomes and conclusions to be validated have been organised in a series of structured interview instruments designed to elicit opinions on accessibility, inclusivity and equity in terms of mobility, transport infrastructure and service provision, and highlight mobility challenges, gaps in provision, and drivers and barriers to equitable provision. The interviews were conducted in April and May of 2018 with a targeted set of stakeholders reached via the project partners – particularly user groups, operators / service providers, consultancy groups, academic researchers, networking organisations and other experts. Members of the project Stakeholders' Forum were also included. Findings are reported in Chapter 5.

1.2 Task 1.3 in the context of INCLUSION and of WP1

INCLUSION is a 3-year European project that aims to address a number of challenges related to the accessibility of public transport in prioritised areas. In a fast-changing transport environment, where individuals' mobility requirements have become more complex and the role of new types of mobility services is increasing, public transport continues to be a key requirement for people with specific mobility needs. In settings ranging from deprived urban neighbourhoods to remote rural areas across Europe, an efficient and inclusive public transport system can provide greater access to jobs and educational and social opportunities.

In the first period of the project, WP1 has set the contextual background through a thorough investigation of the characteristics of prioritised areas and their target user segments (through Task 1.1) and of the challenges and elements affecting transport accessibility, inclusivity and equity in terms of mobility for targeted user groups and their mobility needs and requirements (Task 1.2). The first two tasks were undertaken by investigating selected experiences and initiatives identified through a review of the literature and documents obtained from relevant stakeholders with empirical research experience with users and stakeholders. The results of this activity have been reported in Deliverable D1.2 (Review and classification of prioritised area types and user groups and identification of challenges and gaps). Part A (Review and classification of prioritised area types and user groups) of D1.2 aims to identify social, economic, and geographic considerations that may contribute to characterisations of 'vulnerable' users and areas. Challenges and opportunities associated with providing adequate and efficient transport services for these populations and areas have been described with reference to: area types; user segments; mobility options; transport infrastructure and service provision; key societal trends affecting mobility and accessibility, inclusivity and equity, and the impacts (potential or experienced) of such trends on vulnerable users. Part B (Identification of challenges and needs of different user segments and area types) aims to illustrate the main issues and challenges in providing an integrated transport supply, identifying the gaps in transport infrastructure and

service provision that are commonly found in transport systems. Moreover, an identification of the major user needs and unsatisfied mobility requirements for the target groups identified in Part A has been carried out, as well as a description of the specific user needs related to the six Pilot Labs that are involved in INCLUSION.

Findings from these two tasks have resulted in a structured view linking the various characteristics of prioritised areas and user segments with the main issues and factors that affect mobility and inclusiveness, as well as in the identification and understanding of a comprehensive and organised set of needs and requirements that must be met by novel transport solutions in order to ensure adequate levels of accessibility for all citizens and residents in the reference areas.

1.3 Deliverable aim

The aim of D1.3 is to present the main outcomes of the Stakeholder Workshop and structured interviews, which form the assessment and validation of the user needs analysis.

2 Overview of relevant findings from D1.1 and D1.2

2.1 Key area of interest identified in D1.1

In D1.1 ('Definition of Terms'), key concepts relevant to INCLUSION were defined and framed by task partners following review of the project's aims and objectives. Of particular interest were terms related to the following topics: Users, Geography, Project, Mobility, Business models, Modes, Social Innovation, Information and Communication Technology (ICT), Implementation, Evaluation, and Partners.

These definitions provided a common framework which were then explored more deeply in D1.2, 'Review and classification of prioritised area types and user groups and identification of challenges and gaps'.

2.2 Key findings from D1.2

D1.2 utilised the definitions proposed in D1.1 to more explicitly define and describe prioritised areas and populations of consideration for the INCLUSION project by first identifying social, economic, and geographic factors that may contribute to characterisations of 'vulnerable' users and areas. These were then further developed through identification of challenges and opportunities they may bring in the context of provision of adequate and efficient transport services. Other contributing factors to the multi-dimensional analysis included area types; user segments; mobility options; transport infrastructure and service provision; digital connectivity; and key societal trends affecting mobility and accessibility, inclusivity and equity, and the potential and/or expected impacts of such trends on vulnerable users.

The research undertaken to compile D1.2 was a synthesised review of existing literature, including both academic research and experience from other relevant projects. While we aimed to associate underlying themes that emerged with information obtained from the INCLUSION Pilot Lab sites, the review provided clear evidence that a multitude of factors may introduce challenges and opportunities to the provision of transport services. In order to gain a better understanding of these, in this Deliverable we aim to validate our findings with evidence obtained from a variety of experts representing user groups, academia, consulting, and transport operations. The main findings and outputs from D1.2 that this Deliverable aims to address are briefly presented below.

Key findings relating to prioritised areas

From the beginning, the consortium has worked to identify the main characteristics of prioritised areas. Within the INCLUSION project, 'prioritised areas' were understood to encompass spatial, demographic, and socio-economic characteristics that may impact negatively upon mobility equality. The literature review undertaken to clarify and elaborate upon these broad categories was based upon criteria that considered a range of site characteristics that may impact upon mobility and acknowledged characteristics of the INCLUSION Pilot Sites. Table 2.1 presents the 'prioritised area' framework, derived from the review, which reflects the geographic, economic, and topographic characteristics of areas, rather than the more specific characteristics of the persons being served. Table 2.1 also provides a mapping of the Pilot Labs within this 'prioritised area' framework.

			Topography				Economic vitality				Economic & Population trends					
			Hilly	Mixed	Flat	Island	Deprived	Affluent	Mixed		Growing	Declining	Stable			
Geographic area	Urban	Very large urban area			Budapest Florence				Budapest Florence	Budapest			Florence			
		Large urban area														
		Other urban area		Barcelona												
	Peri-urban	Suburban area			Flanders (Region)	<i>Various Pilot Labs include targeted areas of deprivation within a wider mixed environment; thus, deprivation should be considered within all geographies.</i>			Barcelona	Flanders (region)	Flanders (region)	Barcelona	<i>Several pilot labs have areas of decline contained within a larger growing or stable area; thus, we should consider areas of decline within all geographies.</i>			
		Accessible small town														
	Rural/ Remote	Remote small towns	Cairngorms National Park		Rhein- Sieg (District)					Rhein- Sieg (District)				Rhein- Sieg (District)		
		Very remote small town														
		Accessible rural									Cairngorms National Park					
		Remote rural														
		Very remote rural														

* Shaded areas indicate overlap between characteristics of related sites.

Table 2.1 Spatial and economic characteristics of prioritised areas in relation to the INCLUSION Pilot Labs

The review also investigated the major trends affecting transport and mobility, with those most relevant to 'prioritised areas' being identified as:

- Distribution of wealth and labour market developments
- Urbanisation
- Environmental protection: climate change, pollution and resource and energy efficiency
- Changing governance models
- Ageing societies
- Increased migration to urban regions
- Smart technologies and related business models

A key consideration in defining prioritised areas was the various overlapping characteristics that may exacerbate the mobility difficulties encountered by all persons. Combining the basic geographic, economic, and topographic characteristics of areas with these major trends, to reflect the multi-dimensional nature of transport considerations, led to the identification of the following list of **15 different candidate 'prioritised area' types as presented in Table 2.2.**

General area type	Prioritised area description
Rural / remote area	Deprived, hilly area in economic decline with an ageing population
	Geographically isolated area with a seasonal economy and declining population
	Flat area with an increasing population and mixed or improving economy
	Accessible rural town with a growing young population and changing economy
Peri-urban area	Traditionally deprived area in economic growth, with an increasing population
	Declining suburban area with ageing population
	Accessible small town located in a hilly area with a stable population & mixed economy
	Suburban area with increasing young population and stable economy
Urban area	Declining urban area with decreasing employment and population loss
	Stable urban area with mixed employment
	Growing urban area with increasing population and employment opportunities
	Urban area with declining population, stable employment, and growing peri-urban areas
	Very large urban area with stable employment and a growing population
	Large flat urban area with declining employment and population
	Urban area located in hilly area with stable employment and population

Table 2.2 List of 15 different prioritised area types

While it is acknowledged that this list is not exhaustive, and there are other area types with differing characteristics, based on the review and assessment of INCLUSION Pilot Lab characteristics, the above list provides a candidate **typology for key prioritised areas for the INCLUSION project**. These are intended to serve as draft or exemplar cases from which more specific or targeted locations or characteristics can be developed. Importantly they cover characteristics found at each of the INCLUSION pilot labs.

Key findings relating to target user groups

A classification and categorisation of target user groups was carried out in order to identify the user and social groups most exposed to transport accessibility issues and inequality in the different type of areas. After a comprehensive literature review, the consortium classified the user groups in terms of:

- The demographic characteristics of users (age, gender, family status, residency status)
- The socio-economic characteristics of users (income levels, employment status)
- Mobility status

The characteristics identified above impact upon the travel choices available to and utilised by different segments of the population. Table 2.3 presents the 'vulnerable user characteristics' framework derived from this review, and provides a mapping of the Pilot Labs within this 'vulnerable user characteristics' framework.

		Age					
		Children	Teens	Young adults	Adults	Older adults	Elderly
Sex	Male		Barcelona	Barcelona			
	Female		Barcelona	Barcelona			
Disability	No disability		Barcelona	Barcelona			
	Some physical or cognitive disability	Budapest	Budapest	Budapest	Budapest, Flanders	Budapest, Flanders	Budapest, Flanders
	Mobility-restricting physical or cognitive disability	Budapest	Budapest	Budapest	Budapest, Flanders	Budapest, Flanders	Budapest, Flanders
Residency	Native		Barcelona	Barcelona			
	Migrant	Florence	Florence	Florence	Florence	Florence	Florence
	Tourist	Budapest	Budapest	Budapest	Budapest	Budapest	Budapest
Student	Student		Barcelona	Barcelona			
	Non-student		Barcelona	Barcelona			
Family status	Single						
	Adult(s) + Children/Dependent adult(s)	Cairngorms NP, Rhein-Sieg	Cairngorms NP, Rhein-Sieg	Cairngorms NP, Rhein-Sieg	Cairngorms NP, Rhein-Sieg	Cairngorms NP, Rhein-Sieg	Cairngorms NP, Rhein-Sieg
Income level	High						
	Medium		Barcelona	Barcelona			
	Low	Cairngorms NP, Florence, Barcelona	Cairngorms NP, Florence, Barcelona	Cairngorms NP, Florence, Barcelona	Cairngorms NP, Florence, Flanders	Cairngorms NP, Florence, Flanders	Cairngorms NP, Florence, Flanders
Employment	Employed	Florence	Florence	Florence			
	Unemployed, looking for work						
	Unemployed, not looking for work						
	Retired						

Table 2.3 Summary of vulnerable user characteristics by Pilot Lab

Challenges and needs faced by vulnerable users in prioritised areas

D1.2 presented the main challenges to the provision of transport services to vulnerable users from the perspective of transport authorities and operators, and identified the gaps in transport infrastructures and service provision that are commonly found in transport systems (see Section 3 of D1.2 for detailed analysis). The summary findings from this are presented in Table 2.4, which highlights the major user needs and unsatisfied mobility requirements that relate to certain vulnerable user groups.

It was acknowledged in D1.2 that challenges to the provision of transport services and infrastructure, while affecting different users to different extents, are also often related to the geography and economic characteristics of an area and so have different prominence in different prioritised areas. It was concluded that a socio-spatial schema of social inclusion/exclusion that included both geographic variables and personal mobility measures would be suitable for this project. This resulted in Table 2.5, which presents an overview of the magnitude of challenges of serving vulnerable populations based on age in each of the 15 defined prioritised areas. Similarly, Table 2.6 presents an overview of the magnitude of challenges of serving vulnerable populations based on disability, income and gender in each of the 15 prioritised areas.

Finally, a summary of the potential suitability of different forms of transport service provision to meet user needs and overcome unsatisfied mobility requirements (identified in Table 2.4) for each of the 15 prioritised areas (Table 2.2) is presented in Table 2.7. Figure 2.1 gives a general schema of the different types of transport service provision listed in Table 2.7 (more detailed descriptions for these types of service are provided in Section 2.4 of D1.2).

		Socio-economic characteristics								
		Age				Sex	Disability	Migrant status	Income level	Employment
		Children	Students/ early workers	Working age	Mature working age and elderly	Women	People with disability	Immigrants	People with low income	Jobseekers
Accessibility	Accessible vehicles and infrastructures (access ramps to trains, low floor buses, etc.)			✓*	✓	✓**	✓			
	Possibility of having a reserved seat			✓*	✓	✓**	✓			
	Parking for bicycles and private vehicles next to rail station		✓	✓						
	Place convenient to sit and wait near bus stops or in the rail stations				✓	✓**				
	Bus stops in close proximity to a station and away from busy roads		✓	✓	✓				✓	✓
	Good conditions in the pedestrian environment	✓				✓	✓	✓	✓	✓
Safety	Waiting environment that is safe and secure	✓			✓	✓	✓	✓		
Ticketing and payment system	Flexible tariff		✓	✓		✓		✓	✓	✓
	Free passes			✓			✓		✓	✓
	Integrated ticketing		✓	✓					✓	✓
User information	Real time travel information		✓	✓						
	Information provision in user's own language				✓			✓		
	Comprehensive information regarding intermodal/trip chains		✓	✓		✓			✓	✓
Service	Coverage of nightly hours		✓					✓	✓	
	Flexible PT offer (in terms of time travel and origin/destinations covered)		✓	✓	✓	✓				
	Reliable and on time services		✓	✓						✓
Other	Facilities (e.g. toilet at intermodal change points)				✓			✓		
	Staff assistance				✓		✓	✓		

Table 2.4 Major user needs and unsatisfied mobility requirements for target user groups

* For families with young children in strollers; ** Pregnant women

		Age				
		Children	Students/ early workers	Working age	Mature working age	Elderly
Rural/remote area	Deprived, hilly area in economic decline with an ageing population	Low	Medium	High	High	High
	Geographically isolated area with a seasonal economy and declining population	Medium	Medium	High	High	High
	Flat area with an increasing population and mixed or improving economy	Low	High	High	High	Medium
	Accessible rural town with a growing young population and changing economy	High	High	High	High	Medium
Peri-urban area	Traditionally deprived area in economic growth, with an increasing population	High	High	High	High	High
	Declining suburban area with ageing population	Medium	Medium	High	High	High
	Accessible small town located in a hilly area with a stable population and mixed economy	Low	Low	Medium	Medium	Medium
	Suburban area with increasing young population and stable economy	High	High	High	High	Medium
Urban area	Declining urban area with decreasing employment and population loss	High	High	High	Medium	Medium
	Stable urban area with mixed employment	Medium	Medium	Medium	Low	Low
	Growing urban area with increasing population and employment opportunities	Medium	Medium	High	High	Low
	Urban area with declining population, stable employment, and growing peri-urban areas	High	High	High	Medium	Medium
	Very large urban area with stable employment and a growing population	High	Medium	High	High	Medium
	Large flat urban area with declining employment and population	Low	Medium	Medium	High	Medium
	Urban area located in hilly area with stable employment and population	Medium	Medium	Medium	Medium	High

Table 2.5 Potential challenges of serving vulnerable populations (Age)

		Disability		Income			Sex	
		Yes	No	Low	Medium	High	Female	Male
Rural/remote area	Deprived, hilly area in economic decline with an ageing population	High	Low	High	Medium	Low	High	Medium
	Geographically isolated area with a seasonal economy and declining population	High	Low	High	Medium	Low	High	Low
	Flat area with an increasing population and mixed or improving economy	Medium	Low	Medium	Low	Low	Medium	Low
	Accessible rural town with a growing young population and changing economy	Medium	Low	Medium	Low	Low	Medium	Low
Peri-urban area	Traditionally deprived area in economic growth, with an increasing population	Medium	Low	High	High	Medium	Medium	Low
	Declining suburban area with ageing population	High	Medium	High	High	Low	High	Medium
	Accessible small town located in a hilly area with a stable population and mixed economy	High	Low	Medium	Low	Low	Medium	Low
	Suburban area with increasing young population and stable economy	Medium	Low	Medium	Low	Low	Medium	Low
Urban area	Declining urban area with decreasing employment and population loss	High	Medium	High	High	Medium	High	Medium
	Stable urban area with mixed employment	Medium	Low	Medium	Low	Low	Medium	Low
	Growing urban area with increasing population and employment opportunities	Medium	Low	Medium	Low	Low	Low	Low
	Urban area with declining population, stable employment, and growing peri-urban areas	High	Low	High	Medium	Low	Medium	Low
	Very large urban area with stable employment and a growing population	Medium	Low	Medium	Low	Low	Medium	Low
	Large flat urban area with declining employment and population	High	Medium	High	High	Medium	High	Low
	Urban area located in hilly area with stable employment and population	High	Low	Medium	Low	Low	Low	Low

Table 2.6 Potential challenges of serving vulnerable populations (Disability, Income, and Sex)

		Fixed route			Flexible transport services	
		Longer distance routes	Regional routes	Local fixed routes	Flexible bus routes	Demand Responsive Transport
Rural/remote area	Deprived, hilly area in economic decline with an ageing population	Medium	High	Medium	High	High
	Geographically isolated area with a seasonal economy and declining population	Medium	High	Low	High	High
	Flat area with an increasing population and mixed or improving economy	Medium	Medium	Medium	High	High
	Accessible rural town with a growing young population and changing economy	Low	Medium	High	Medium	Medium
Peri-urban area	Traditionally deprived area in economic growth, with an increasing population	Medium	Medium	High	Medium	High
	Declining suburban area with ageing population	Medium	Medium	Medium	Medium	Low
	Accessible small town located in a hilly area with a stable population and mixed economy	Low	Medium	High	Medium	Medium
	Suburban area with increasing young population and stable economy	Low	High	High	Medium	High
Urban area	Declining urban area with decreasing employment and population loss	Low	Medium	High	Low	Low
	Stable urban area with mixed employment	Low	Medium	High	Low	Low
	Growing urban area with increasing population and employment opportunities	Low	Medium	High	Low	Low
	Urban area with declining population, stable employment, and growing peri-urban areas	Low	Low	High	Medium	Medium
	Very large urban area with stable employment and a growing population	Low	Low	High	Medium	Medium
	Large flat urban area with declining employment and population	Low	Low	High	Low	Low
	Urban area located in hilly area with stable employment and population	Low	Medium	High	High	Low

Table 2.7 Potential suitability of transport service provision

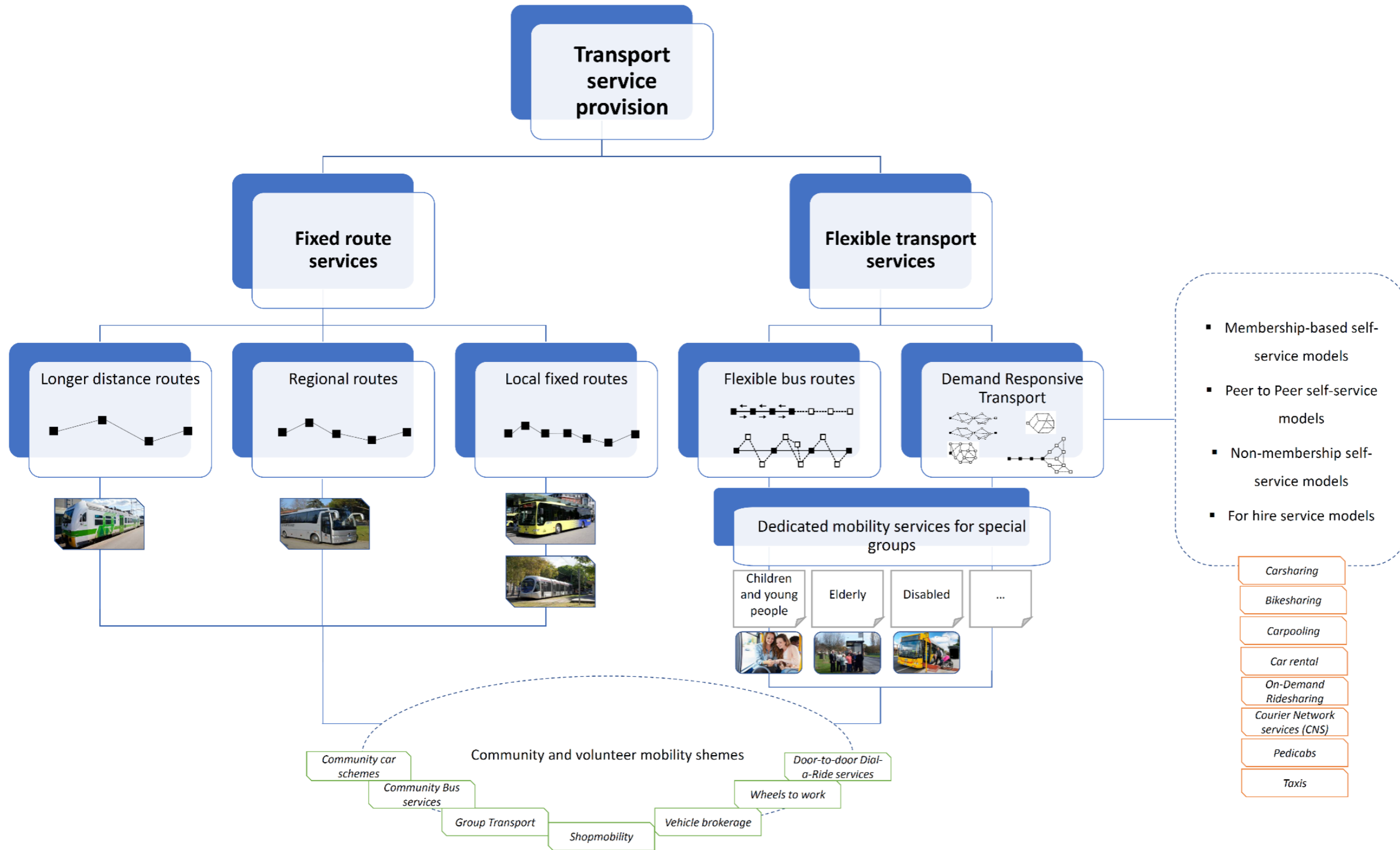


Figure 2.1 Transport service provision: general scheme

3 Methodology

The methodology followed for validating the mobility needs of 'vulnerable to exclusion' users and population groups was twofold:

- First, the consortium undertook a dedicated workshop with members of the Stakeholders' Forum to allow an open discussion and co-participative evaluation of WP1 outcomes.
- Secondly, structured interviews, based on the outcomes and conclusion of Task 1.1 and Task 1.2, were conducted with a targeted set of stakeholders which included user groups, operators / service providers, consultancy groups, academic researchers, networking organisations and other experts.

3.1 Stakeholder workshop

In order to facilitate open discussion and co-participative evaluation of WP1 outcomes and, in particular, of the results emerging from D1.2, a dedicated workshop with the INCLUSION Stakeholders' Forum members was organised in tandem with the Consortium meeting that took place in Ghent in March 2018. From the beginning, discussion emerged among the Consortium partners regarding the modality (physical or virtual) in which the workshop should take place. Although a virtual meeting would potentially have meant a higher number of participants, the Consortium decided to opt for a "physical" meeting in order to more effectively engage members of the Stakeholders Forum, as well as to take advantage of the presence of a large number of Consortium members. The face-to-face meeting (for which a specific budget item was available to cover travel costs) also proved useful in illustrating the key findings emerging from D1.2.

The workshop was held on the second day of the Consortium meeting. In early March, all the members of the Stakeholders' Forum (SF) were invited by the project Coordinator to join the workshop, and were provided with an "accompanying document" that presented the topics to be discussed. At that stage of the project, unfortunately, only a few candidate experts had formally confirmed their interest in joining the Forum and eventually only three members of the SF confirmed their participation in the INCLUSION workshop. Nevertheless, the workshop was used for a full internal discussion of D1.2 with the added value of three external experts.

As D1.2 sets the baseline for the overall project, the workshop provided a fruitful mechanism to ensure that all consortium members fully understand the underlying considerations of provision of transport and mobility services to vulnerable users. It also provided scope for further discussion of emerging questions and concerns, and how these may be addressed within the project. The active participation of the three Stakeholders' Forum members also proved to be a very valuable contribution.

3.2 Survey development, sampling strategy and distribution

In order to develop an appropriate set of questions to further validate findings from D1.2, project staff first reviewed the Deliverable to identify key challenges and opportunities faced in the provision of equitable, inclusive transport and mobility services, as well as drivers and barriers to meeting these. Identified contributors to these challenges and opportunities were then reviewed in order to develop a structured questionnaire with the aim of validating findings from the Deliverable.

The original document that emerged, however, suffered from a number of issues, with partners feeling that it was: *overly broad, too prescriptive, and too repetitive*. As it was originally intended to serve as a unified questionnaire to be distributed online to all potential stakeholders, question topics needed to be phrased

and ordered so as to account for structured responses from a wide variety of actors, including researchers, transport service providers, and user representatives. The resulting instrument covered a wide variety of topics but was felt to be overly long and the prescriptive nature of response options too limiting. Additionally, due to the range of questions needing to be asked (dealing with challenges, opportunities, drivers and barriers to the provision of inclusive mobility), a number of questions were worded in similar manners, and project team members were concerned that some of the questions asked would elicit repetitive responses due to a misunderstanding of the questions.

In response to these concerns, and following discussion with involved partners, two significant changes were made to the plan for survey distribution: first, it was decided to develop three separate survey instruments addressing similar questions but targeted towards the three main categories of stakeholders to be solicited for information (transport service providers, user representatives, and academic/consultant researchers). Second, it was decided to address a more targeted set of respondents by utilising an interview or self-completion format, rather than a broad-spectrum online survey. In this way, it was felt that more in-depth information would be able to be gathered, while avoiding larger issues of limited or non-response. In response to these decisions, and in an iterative process involving project stakeholders, three separate survey instruments were developed and formatted for distribution. The instruments were designed to elicit opinions on accessibility, inclusivity and equity in terms of mobility, transport infrastructure and service provision, and to highlight any mobility challenges faced, gaps in provision, drivers and barriers. The resulting instruments (included here as Annexes A, B and C) were then distributed to stakeholders identified by project partners either as self-completion surveys or in the form of semi-structured interviews.

In the survey distribution, attempts were made to recruit participants across a variety of interests identified as relevant to the INCLUSION project. Interviews were designed to last from three-quarters to one hour, and respondents were allowed to review the resulting completed survey to ensure that their views had been correctly recorded. All responses are kept confidential within the report, with respondents identified only by type of organisation. Response transcripts are saved on individual partner computers, and as a set on a password-protected computer at the University of Aberdeen.

4 Stakeholder workshop report

4.1 About the Stakeholder Forum

The INCLUSION Stakeholder Forum is a platform where stakeholders can express their views, visions, ideas and concerns related to current and future mobility solutions. In particular, the INCLUSION Stakeholder Forum aims to gather individuals and organisations from the mobility sector and recognized experts from the research domain in order to get valuable input, feedback and resources to validate the project's results.

The INCLUSION Stakeholder Forum is intended to further enhance networking activities, project presentations and discussions. It is a platform where the project can receive valuable feedback on its activities through the involvement of experts and organisations. Members of the Forum will take part in selected project workshops to validate and enhance the project results and will enable further distribution of project information and achievements via their own networks. One of the Forum's main activities is to contribute to the identification of business concepts and solutions for the promotion of accessible and inclusive mobility in prioritised areas.

4.2 Stakeholder Forum Workshop Ghent – 23 March 2018

On March 23rd 2018 a workshop was held in Ghent (Belgium) involving the Stakeholders Forum members. The purpose of the workshop was to allow an open discussion and a co-participative evaluation of the outcomes produced within WP1 to date. Stakeholder Forum participants at the workshop included:

Mr. Rob Van der Bijl – Urban planning consultant and researcher from the Netherlands and Visiting Professor at Ghent University,

Ms. Jacquie Bridgman – Social Scientist and PhD candidate with Societal Travel CIC in alliance with Northampton University,

Mr. Sergio Fernandez – Expert with local transport operator EMT Madrid, who joined the meeting remotely.

The aim of this workshop was to obtain feedback and validate the outcomes of the work carried out in WP1, especially considering the concepts and findings elaborated in task T.1.2. These findings, brought together by the task leader UNIABDN together with MemEx as contributor, concern the identification of prioritised areas and vulnerable user groups and could be considered as the theoretical basis for the project's future activities.

Members attending the Stakeholder Forum workshop were asked to comment on the designed identification of user groups provided by the task leader. The purpose was to evaluate the structure provided in Deliverable 1.2 of the project ('Review and classification of prioritised area types and user groups and identification of challenges and gaps'). In particular, input was needed in order to verify the accuracy between the structure provided for cross-referencing the main characteristics of vulnerable user groups categories (See Table 2.3) and the matrix concerning the prioritised areas identified (See Table 2.1). The comments were to feed the validation of the outcomes of the desk research on the interplay between various properties of these user group categories and their physical, geographic and socio-economic living conditions. The validation exercise explored the accuracy of the designed classifications of different transport environments (area types) in relation to the provision of transport infrastructure and services.

The Stakeholder Forum members were asked to comment on the categorisation of targeted (and particularly of vulnerable) user groups regarding the identification of demographic and socio-economic characteristics of the various user segments.

The Stakeholder Forum members commented on the categorisation of targeted user groups, targeted area types and the diagrams that were drawn up to link those two dimensions, allowing the connection between vulnerable groups and their geographical and socio-economic situation.

4.3 Discussion of Insights and Outcomes from the Stakeholder Forum Workshop

The University of Aberdeen (WP1 leader) presented the outcomes of prioritised areas and target user groups identified in D1.2. In particular, the discussion focused on the multi-dimensional Table defined in T1.2 (see Table 2.3). Table 2.3 identifies the characteristics of certain (potentially vulnerable) user groups within the context of the six designated INCLUSION Pilot Labs to highlight which user group aspects will be targeted within each individual Pilot Lab site. The six Pilot Lab sites are briefly described below:

- *Barcelona: Barcelona peri-urban area and neighbouring conurbation – Spain*
- *Budapest: Budapest urban area - Hungary*
- *Cairngorms NP: Cairngorms National Park rural area – Scotland UK*
- *Flanders: Flanders region, Belgium*
- *Florence: Florence metropolitan area – Italy*
- *Rhein-Sieg: Rhein-Sieg region, Germany*

Table 2.3 utilises a multi-dimensional matrix approach to enable selection of various user group characteristics; with different 'Age' groupings occupying the horizontal axis, and 'Sex', 'Disability', 'Residency status', 'Student status', 'Family status;', 'Income level', and 'Employment' being placed along the vertical axis. Discussion took place around whether these categories encompassed all possible permutations of classification across the different groupings. A comment was made about whether the horizontal axis could be used more effectively, since it currently only contains one category ('Age').

The point was made that the categories might present as being too broad and the need for sub-categories was raised. This culminated in a suggestion being made to develop Table 2.3 into a more comprehensive multi-dimensional Table, whereby user groups could be classified in terms of primary categories (such as: age, sex, education) and cross-cutting categories (for instance: health, income). Social and cultural factors (for example, language) should also be considered. Within the various categories, sub-sets could be introduced in order to enable more options to be taken into consideration; thereby providing the option of choosing, for example, 'migrant' + 'women' + 'with children' + 'low income'. A comment was made of the omission of the potential vulnerable user category of 'Sexuality', in terms of LGBT (lesbian, gay, bisexual, and transgender) individuals, which could be considered as an additional category. A cautionary note was made to the extent that, by attempting to include all potential permutations of user categories, this might result in a Table that comprised multiple sub-sets and hence would become too complex to be applied effectively. As a means of reducing the number of required sub-sets, and, hence, the complexity of the Table, it would be helpful if the INCLUSION Pilot Labs could provide feedback on their experience of working with vulnerable users.

Following the discussion of user characteristics, project partner MEMEX presented a matrix with the 15 prioritised areas (see Table 2.2) on the rows and the target user characteristics (as identified in table 2.3) on

the columns. All project partners and Stakeholder Forum participants were invited to fill in the matrix by answering the question:

What are the challenges in the 15 prioritised areas (Table 2.2) in serving such categories of users?

All participants were invited to quantify the risk of exclusion to individuals in each of the draft suggested prioritised areas by ranking each area as being of High, Medium, or Low priority. This provided a validation of the main findings from D1.2 presented in Table 2.5 and Table 2.6 of this Deliverable.

The ranking from the stakeholder forum generally agrees with the ranking presented in D1.2 and reproduced in Tables 2.5 and 2.6, although some consistent differences have emerged.

First, from the matrix filled in by the members attending the Stakeholder Forum workshop it follows that in all four categories of rural/remote areas it is very difficult to satisfy the mobility requirements of young people and students. This could be reasonably linked to the lack of private car (for legal/regulatory reasons) and the presence of fixed route transport services that are “weak” in terms of area coverage and frequencies or that don’t meet the needs of these target groups. According to the workshop participants, however, in “Stable urban area with mixed employment” and in “Growing urban area with increasing population and employment opportunities”, it is not difficult to serve these two target groups. In general, participants indicated that there are no particular difficulties in serving “working age” and “mature working age” populations, which spans people from 25 to 65 years old. This is partially in contrast to Table 2.5, where it is indicated that in rural and peri-urban areas there are high challenges to providing adequate and affordable services. The magnitude of challenges experienced in serving the elderly in each of the 15 prioritised areas emerging from the workshop reflected the findings presented in Table 2.5.

Finally, according to participants’ input, the main challenges in serving persons with disabilities and people with low income affect all categories of rural areas, including ‘traditionally deprived areas in economic growth with increasing populations’ and ‘declining suburban areas with ageing populations’. No particular mobility challenges were identified in urban areas; however, Table 2.5 indicates that in “Urban areas with declining population, stable employment and growing peri-urban areas” there are high challenges in serving these two target groups.

Following the ranking of the risk of exclusion in the draft prioritised areas for each user characteristic, a discussion took place that described how the draft types of prioritised areas were comprised of a variety of geographical characteristics and variations in population density (rural, suburban, urban) and demographics. It was discussed how individuals within different user groups might be exposed to multiple vulnerabilities that may result in exclusion from accessing transport and other services and thus be an important contributing factor to isolation. An example of this could be an elderly person who lives alone in a remote rural area that has limited or no access to public transport services and who requires ongoing healthcare on a frequent basis.

There are additional issues encompassed within the 15-type classifications of prioritised areas that may not have been immediately apparent on first consideration, but which also affect the ability of individuals to access transport and, hence, to reach essential services and facilities. A significant issue is the coverage and access to digital technology that would enable users to access transport service information online or to book and pay for tickets. In rural areas, particularly those that are extremely remote and rural, information technology may be lacking or sporadic in connectivity. Limitations in comprehension of how to use digital technology arising from cognitive or linguistic difficulties might be an additional challenge for certain individuals, not limited to those who live in remote areas. Similar to this issue are the potential difficulties that could be experienced by specific types of vulnerable users in understanding how to access public transport information (both in an offline format, as well as online). Difficulties in accessing information and in understanding how to travel by public transport may well become more frequent as multi-modal journeys

increase, as several stages of a trip will need to be linked, and the timings, bookings and payment of the various stages can prove difficult for some vulnerable users.

Another relevant issue that is, arguably, more typical in urban locations relates to physical limitations such as severance within communities caused by physical barriers that prevent individuals' ease of access to transport and other services. Discussion took place considering the usefulness of developing two classification systems – one for urban locations focusing on urban planning, severance, and infrastructure; and one for rural classifications with different characteristics. Ultimately, it was felt that one categorisation system should enable sufficient classifications to be made.

The draft prioritised areas focus on very specific factors of user groups and prioritised areas (for instance: 'flat' and 'deprived' and 'semi-urban' and 'disabled' and 'low-income' and 'teenage' and so on). This approach allows for detailed descriptions of exact area ecosystems and provides the ability to recommend highly tailored measures; however, it may only be useful in highly specified settings. The disadvantage in this approach, therefore, is that most area situations will vary to some degree from those specified in the draft list, meaning that the 15-fold classification of prioritised areas might be too restrictive. Participants thought of several examples that do not directly fit into any of the specified categories, and which may therefore be excluded. This shortcoming may have arisen due to the defined categories not being linked to a real context since, as highlighted earlier, they comprise draft suggestions of prioritised areas.

Although the classifications might be considered too restrictive, the number of categories of prioritised areas and user groups could possibly be thought of as being too high, which may create difficulties within the project in identifying the key significant issues that lead to transport poverty and possible measures that may be used to overcome such issues. Thus, instead of initially commencing with identifying user groups, it could be more pertinent to analyse societal, psychological and financial barriers of various users. The discussion additionally highlighted that the exercise was difficult to complete, since it was hard to know from the classification categories whether people have access to transport or not, which is a critical factor in identifying potential risk of exclusion.

The discussion of user needs examined the requirements for meeting essential ('basic') transport system needs, which could include: accessibility; safety; affordability; reliability; and connectivity. These essential elements could be considered in addition to more specific needs relating to certain categories of users. Finally, elements that could be considered not as essential but as 'nice to have' ('added value needs') might be useful to include.

The discussion moved on to examine public transport design aspects, which resulted in the following five key criteria being suggested: equity (social inclusion); environment (ecology); economy (i.e. affordability); efficiency (of urban space); and effectiveness (of transport).

The most significant objectives to assess if a public transport network is effectively fulfilling the user interests are suggested as being accessibility and connectivity. For instance, a regional train connection may not be well used if destinations are inaccessible at the local level by walking, bus, bicycle, or other modes. Excellent examples of public transport that could be examined in terms of connectivity and accessibility are Vienna in Europe and Hong Kong in Asia.

The Workshop concluded with a discussion of whether the focus of the project should also include long-distance journeys; for example, visiting friends or family, or whether the priority was to focus on shorter, localised trips. It was decided to focus on trips that are connected to four basic needs; these being access to: employment; education; medical services; and food (shops/supermarkets).

5 Interview report

5.1 Overview of interview findings

Twenty-seven interviews were completed, with respondents including academic or consultancy researchers (9), user representatives (5), and transport operators or their trade associations (13) from locations across Europe. A key finding that emerged from across the spectrum of these interviews is that the provision of inclusive, equitable mobility (and mobility options) is a complex goal, with myriad interrelated concerns and competing needs. For example, as one respondent said: *'If public transport is [to] be a suitable alternative for every one of these user groups, then we obviously need to consider all their needs. There may, however, simply be better and more efficient ways to serve certain user groups, which might make it "okay" to exclude them from the public transport goals, while obviously making sure that their needs are being taken care of [Researcher interview 1].'* There are, however, a number of factors that emerged as serving as key **barriers** and **challenges** to inclusive transport provision in general, including cost/affordability, service integration and connectivity, information provision, and access to services. These barriers emerged from a range of respondents, regardless of their position or their particular users of interest. Despite these barriers, however, there were also a number of factors that were reported to impact **positively** upon transport and mobility access for vulnerable users, including concession cards for reduced-fare or free travel, some integration across service partners, and support from local government. From the responses received, it is clear that there are numerous gaps in transport provision for vulnerable users, and across geographic areas. In the following section, we provide a more detailed analysis of interview responses, with attention to key concepts identified in D1.2 and reinforced by participants.

5.2 Detailed interview analysis

5.2.1 Interviews with user representatives

Five representatives of organisations who represent specific user or operator groups were interviewed. These included:

- Representative of an organisation that works primarily with job-seekers and persons reintegrating into the workforce;
- Representative of an organisation that primarily works with young people;
- Representative of a non-profit organisation concerned with public transport passenger rights;
- Representative of a non-profit organisation that primarily works with young people though also with persons who are unemployed, refugees, and persons with disabilities; and
- Representative of an organisation that primarily works with persons with disabilities and the elderly.

All five interviewees' organisations were active across a range of scales, with each being involved to some extent at a national or supra-national level. Their members, in turn, are located across a wide spectrum of geographic areas, ranging from rural islands to large urban areas. Several respondents noted the challenges inherent in serving large areas with differing requirements; for example, one interviewee stated:

'___ is experiencing a general economic crisis, due to the decline of the previous industrial system...In the other sites of our organisation...the situation is different and more alive: the territory economy is growing again, there are more job opportunities, and the level of unemployment is decreasing'

[Interview UR2]

The population trends identified by user representatives also indicated the scale of diversity, with the following being indicated:

- Ageing population
- Less disposable income for the elderly, young people and persons with disabilities;
- Later retirement ages leading to a lack in voluntarism;
- Increasing numbers of international migrants;
- Lack of adequate services in rural areas;
- Unevenness in digital engagement;
- Distributed population with few transport options beyond the car;
- Urbanisation; and
- Household transformations

These trends, in turn, often impact upon the types of services needed for users, or on their ability to take advantage of existing services. For example, one respondent noted:

'In rural areas...due to centralisation, SME's, local shops, services...are drawing away to cities, so people in rural areas need to make longer trips in order to find a shop, restaurant...Definitely for those people that are not that mobile anymore, this can trigger mobility poverty problems'

[Interview UR1]

As noted in D1.2, and validated here, the presence of more than one contributing mobility vulnerability (in this case, rural and mobility limited) can place additional demands on the transport user.

While user representatives identified that a range of services are available to their constituencies, they also indicate that these may be scattered or not fully realised. The following were identified as transport services that are currently available to users in the areas served by interviewees:

- Fixed-route buses;
- Demand responsive services
- Trams
- Rail
- Motorbike
- Bike
- Car

- Local bus services
- Inter-city/long distance coaches

The degree to which the services fully serve the needs of the general population (inclusive of vulnerable persons) is a different issue. One interviewee noted, for example, that the limited off-peak public transport services available in many rural areas creates an ‘achievement gap’, as young people are unable to take advantage of opportunities such as after-school clubs and extra-curricular activities due to limited transport options. Another interviewee noted that while public transport services are available to local users, they are not all accessible to persons with mobility limitations, thus hampering their effectiveness. Finally, cost was again noted as a limitation, as train and bus passes are expensive for some families.

Mobility issues may also contribute to financial difficulties, with one interviewee stating:

‘At the national level...2.5 points of [the] unemployment rate might be due or linked to mobility problems’
[Interview UR5]

The interconnectedness of opportunity and access to mobility is a key consideration when looking to improve the overall equitability of transport offerings, particularly when the lack of mobility limits opportunities for key segments of the population. Such limitations, in turn, are indicative of ‘gaps’ in the provision of transport services.

Identified gaps clearly relate to the challenges identified above, with particular mention made of limitations in terms of off-peak services, transport to medical appointments, accessible and understandable information, and integrated/multi-modal services. One interviewee noted:

‘I think the biggest challenge is that more and more services are digitalised, and people that aren’t connected to the Internet will have more and more problems to receive adequate info and mobility solutions. I fear they will drop out’
[Interview UR1]

Another noted that:

‘[T]he lack of knowledge toward the current offer (of PT but also of alternative modes of transport such as carpooling, car sharing, etc.) remains the first problem, together with bad habits such as...one person, one car’
[Interview UR5]

Some interviewees noted that overcoming such barriers will require financial support for targeted transport services, but some also highlighted the need for more effective communication between transport providers and users. As one respondent stated:

‘...understanding user needs is the most important factor’
[Interview UR3]

5.2.2 Interview with researchers from academia or consultancies

While user representatives tended to take a focused view on the transport needs of their direct constituents, adding robustness to the concerns of particular user groups, academic and consulting researchers tended to look to broader trends informed by both research and project experience. Both perspectives offer valuable insight for framing the findings detailed in D1.2, with more direct attention to how these concerns play out in practice.

Interviewees represented a broad range of interests, including University researchers from different countries, representatives from consulting firms focused on transport, and persons involved in government-facing work related to access and mobility. Due to the nature of the work undertaken by these representatives, they have indicated that they often work across multiple geographic scales (including local, regional, national, and international), and with attention to multiple vulnerable user groups. According to one consultant:

'My main interest is to be part of the design of multi-modal transport delivery and operation of services and products that can be accessible for all...Putting the customer needs first is my main priority'

[Interview RAC7]

Despite the differences in focus, however, it is notable that similar challenges and barriers to provision of inclusive and equitable mobility services emerged over the course of the interviews, including:

- Poverty
- Budget constraints
- Lack of accessibility
- Inadequate service integration
- Lack of information
- Lack of correspondence between user needs and service provision
- Illegible or incomprehensible information
- Inadequate safety measures or unsafe infrastructure
- Lack of access to or understanding of technology

From a network perspective, these barriers represent issues that may discourage both the provision of adequate services and the ability of potential users to best take advantage of those services that are offered. As one interviewee stated:

'Mobility experts often do not see this group of the population [vulnerable users] because they are not on the road and so not inside the frame that experts are looking at. Another reason this group is invisible is because people in this group hide in the sense that they drift to the edge of society and make it even more difficult to be seen'

[Interview RAC8]

Such blind spots may further complicate addressing these challenges in a cohesive, constructive manner. This is further supported in the response provided by RAC8, who stated:

'...the system is difficult to understand, information is missing, unfriendly personnel (i.e. (bus) drivers think they are driving a vehicle while they are actually providing a service), the general message communicated through the public transport [PT] system [is] that "you should be happy that there is some service at all", as evident in poorly maintained bus stops, poor information system, poor keeping of time tables, etc.'

[Interview RAC8]

It is therefore critical to look at underlying contributors to mobility challenges. Reflections on these contributors by academic and consulting researchers were, again, similar to those identified by user

representatives. Specific concerns identified included, for example, temporal coverage of services, with one interviewee stating:

'Someone with shift working hours may find him/herself very well connected when working the afternoon shift, but completely disconnected when having a late or nightshift'

[Interview RAC3]

The context of coverage, both spatial and temporal, was raised by a number of interviewees, who noted issues with first- and last-mile transport coverage, as well as off-peak travel often needed for work, education or other purposes. Compounding this issue, many respondents felt, is that while services may be available, they may not be accessible to the full range of users, with persons with mobility challenges (such as persons with mobility limitations, or those travelling with young children) being the most disadvantaged. A number of respondents noted that this issue is further exacerbated by the lack of integration between services, both in terms of integrated ticketing and the potential to have an accessible journey from origin to destination and back.

Another factor that was raised in a number of contexts is access to information. Key concerns included how information is provided (i.e. formats), understanding/legibility, and integration across services. Some interviewees noted that not all travellers are able to use mobile journey planning apps or services, which may limit their ability to obtain adequate information while travelling (for example, in the case of a disrupted journey). As noted above, this may be problematic given accessibility limitations, as well as the potential that multiple providers' services will be needed over the course of the journey. Integration of information is also problematic, as the presence of multiple service providers with varying service areas requires, from a user perspective, that coordinated information be available; however, competition between providers may limit the extent to which they are willing to develop integrated information sources. Existing services (such as Google maps) may address some of these issues, but tend to be available only in digital format, and generally do not include information on accessibility of services (such as wheelchair ramps or low-floor buses). One interviewee further noted that legibility of information may be problematic, an issue particularly of concern in areas with a high number of non-native speakers, or individuals with learning difficulties.

Together, these challenges demonstrate a number of gaps in systems and services identified by interviewees, including the following:

- System:
 - Affordable and reliable transport services;
 - Consideration of alternative models of transport provision that go beyond traditional fixed-route buses;
 - Adequate training of staff to provide assistance/information to users;
 - Integrated services and service information;
 - Safe environments for travel; and
 - Considerations of social impact between transport providers and user groups.
- Services:
 - Access to employment (particularly outside of peak hours);
 - Access to healthcare;
 - Access to education

These, again, are reflective of those concerns identified by user representatives, though perhaps somewhat broader in scope. It is clear, however, that the issue of communication was again raised as a critical component of need:

'Always put the customer first. PT [public transport] transport communities and delivery services is all about people. We still need to understand the complexity of people's needs and behaviour...Building up actors of networks and trust'

[Interviewee RAC7]

This point was further emphasised by another interviewee, who stated:

'We should move away from a demand-led approach and priority setting based on cost-benefit analysis, to transport planning based on principles of justice'

[Interview RAC8]

5.2.3 Interviews with operators and operator trade associations

The final group of interviewees represented public transport operators or their trade associations. In some ways, these interviews provided useful counterpoints to those conducted with user representatives and researchers, as they tended to address the more practical matters involved in providing public transport services. On the other hand, however, responses received demonstrate that there is a clear understanding of factors that may impact negatively on the mobility experience of both general and more vulnerable users.

The service areas covered by public transport interviewees are generally quite extensive, with a mix of urban, peri-urban and rural locations, and mixed topographies. This can be both a benefit and a challenge, with one operator stating:

'The multiplicity of places in which activities take place (living, working, studying and leisure) makes [it] difficult to have a competitive public transport network regarding travelling time. The need for transfers makes journeys longer, which sometimes cannot compete with private car, especially for trips from the periphery to the periphery'

[Interview PTO13]

Several operators indicated that their populations are ageing, while other trends indicated include rising amounts of tourism, increasing international migration, declining rural populations, and an increase in car ownership and driving. Such trends are understood to have concomitant impacts upon community transport needs, with one interviewee noting:

'Both the number and ratio of the productive population will begin to decrease in the near future. These aggregated trends put an increased burden on the current economy and affect the shaping of future processes'

[Interview PTO8]

All interviewed providers serve the general population, with one indicating:

'The service is designed for residents (housekeepers, students, and workers) and tourists. The residents are mainly elderly and regular commuters'

[Interview PTO1]

Some additionally indicated that they also provide services targeted towards vulnerable users, including paratransit and demand-responsive services, with one interviewee indicating,

'Many services are open public transport and some are targeted (closed) for particular groups such as elderly, special needs, [and] disabled'

[Interview PTO9]

In addition to providing a range of general and targeted transport services, however, one operator stated,

'As [a] public authority we must promote the conditions to guarantee the real and effective freedom and equality of each person and of the groups in which they are integrated and, also, facilitate the participation of all people in political, economic, cultural and social life'

[Interview PTO2]

While these service populations and related aims are extensive, the ability to meet the needs of such a wide variety of users often proves problematic. Services currently available in the regions covered in the interviews include the following:

- Fixed route buses
- Flexible bus services
- Express bus lines
- Rail
- Car and bike share
- Bicycling
- Private car

Though the range of general services available is extensive, interviewees indicated that there is a mix of support for services for vulnerable users, with some benefits including the following: targeted support given to elderly users and persons with low wages; discounted integrated transport tickets (covering bus and rail); and discounted tickets for single-parent and large families. One provider indicated that:

'...we are working on getting an inclusive society and accessible to allow for the full autonomy of people, avoid discrimination, and promote equal opportunities for all, especially for people with disabilities and, currently, we are expecting to improve the router named _____, including new functionalities to show users of public transport the information about accessibility'

[Interview PTO2]

Another operator indicated that they proactively work to ensure accessibility, noting:

'_____ has also an extensive accessibility plan, both for bus stops and for buses, cooperating with different associations of users with mobility and cognitive limitations, participating actively in the accessibility committee of _____'

[Interview PTO11]

This particular operator (PTO11) also commented on efforts that have been made to encourage accessibility of the public transport network by focusing on inclusive design elements, such as: effective contrast in pavement edges to increase visibility, Braille push buttons, extended spaces for wheelchair users, improved information screens, etc.

Such plans and investments are demonstrative of the considerations given to vulnerable users; however, many operators indicated that despite such efforts, they still feel that their user groups are transport disadvantaged when it comes to travel for employment or educational opportunities, social/leisure opportunities, and medical or health needs. Some particular user groups that are felt to be especially impacted include young people, the elderly, unemployed persons, persons with cognitive or physical disabilities, and persons with limited freedom of mobility due to legal or institutional requirements.

In common with both user representatives and researchers, public transport operators indicated that key issues of concern for user mobility include lack of sufficient non-driving options and a lack of adequate information. Factors that, in turn, are identified as contributing to these overarching concerns include inadequate funding for services and infrastructure, lack of cooperation and integration between modes, and insufficient integration of mobility policies and health/education policy and planning processes. In addition to these issues, however, more pragmatic concerns were also raised, such as traffic congestion and lack of adequate space for dedicated busways, which were noted as impacting negatively on transport reliability. Interconnectivity between modes was also noted as a challenge, with one interviewee stating:

'The bus services must be designed to integrate the rail services and to connect the areas that are [not covered] by the rail services'

[Interview PTO4]

These challenges and barriers are reflective of those identified by the other groups of interviewees, demonstrating that there is to some extent a common understanding of the challenges facing transport service providers. This, in turn, is reflected in some of the identified drivers for provision of services, including: an understanding of user needs; government and financing support; availability of quality data and technological systems; and a commitment to meeting customer needs. Despite these drivers, however, operators and their trade association interviewed confirmed that significant challenges remain in ensuring that they have the resources and political support necessary to achieve their aims.

5.3 Discussion of findings

The interview findings detailed here provide a useful validation of issues raised in D1.2. It is evident, first, that mobility vulnerabilities and transport poverty are a function of interrelated issues, including socio-demographic characteristics, geographies of service, and economic drivers. Nearly all interviewees highlighted that there is no 'one size fits all' approach to providing inclusive mobility, as the methods for addressing the barriers experienced will vary depending on the context of need. It is also evident, however, that there are certain key considerations that may contribute beneficially to all stakeholders and users, including:

- Better communication with communities of need, particularly during planning processes. One interviewee highlighted that their users are often presented with plans at the end of the process, rather than being involved in their development. Taking a more inclusive, communicative approach to transport planning will allow for better, more efficient transport plans to be made that more robustly serve the needs of their most vulnerable users.
- Spatial and temporal coverage of services need to be considered for all users. While often centred on 'peak hour' needs, shifting employment patterns, changing family demographics, and more dispersed activity-based lifestyles require that better transport coverage is needed in terms of both space and time to ensure that all users have equal access to opportunities that may not fit into traditional working hours.
- Better service integration is needed. With more heavily dispersed populations, it is unlikely that a one-seat trip, provided by one operator, will adequately serve the needs of all users. Integration, however, should be a multidimensional consideration, encompassing integration of services (including non-transport services), payment, and information.
- More effective information sharing processes should be developed. In order to fully serve the needs of all users, transport information should be accurate and reliable, accessible from a variety

of platforms (including digital and paper) and in a variety of formats (including, for example, images, text, and multiple languages).

- New service models should be explored. Integrated multi-modal services, such as those included in Mobility as a Service (MaaS) style platforms and involving collaboration on the part of providers, should be more fully developed to take better advantage of existing and emerging services. This should include considerations beyond traditional bus and rail services, and incorporate walking, cycling, car-share, carpool, taxis, and other services.
- More financial and policy support is needed from local and national government. Financial concerns were regularly raised, both regarding the cost of transport for users and for the cost of providing service to vulnerable populations and areas. Cost was identified as a significant barrier for transport use, indicating that more considerations should be made for ways to offset its impact.

These findings support and enhance the concerns identified in D1.2 and provide useful scope for furthering measures that may be taken to improve accessibility and mobility for all users.

6 User needs analysis and outcomes assessment: summary and conclusion

6.1 Key findings from survey and workshop

6.1.1 Consideration on the prioritised areas

As WP1 concludes, some significant considerations need to be outlined with reference to the definition and categorisation of prioritised areas. In Deliverable 1.1 – *Definition of Terms* – the Consortium stated that “*In INCLUSION, prioritised areas are the areas where accessibility, inclusive mobility and equity challenges are greatest. Prioritised areas are defined according to spatial, demographic and socio-economic characteristics*”. After the research undertaken within Task 1.2 and the validation exercise of Task 1.3, a new definition of prioritised areas has been elaborated that may better address the target of INCLUSION. The new definition is as follows:

In the context of INCLUSION, prioritised areas are defined as those transport environments (area types) with gaps in transport infrastructure and/or service provision that significantly impact upon transport accessibility, inclusivity and equity, and where the challenges in serving target user groups and their mobility needs and requirements are greatest.

With this definition, the Consortium may define the prioritised areas in their wider context, including geography (“*transport environments*”), mobility (“*with gaps in transport infrastructure and/or service provision*”) and the people being served (“*the challenges in serving target user groups and their mobility needs and requirements*”).

Moreover, from the analysis of Table 2.5 and the matrix filled in by the members attending the Stakeholders’ Forum workshop it is possible to make some further observations about the initial candidate categories of prioritised areas identified by the Consortium (Table 2.2). First, it has been pointed out that the four categories of rural/remote areas represent those prioritised areas where transport accessibility, inclusivity and equity challenges are the greatest. In particular, “*Deprived, hilly area in economic decline with an ageing population*” and “*Geographically isolated area with a seasonal economy and declining population*” have been commonly recognised as those areas with the highest mobility challenges. In these two areas, the provision of transport services that adequately address the needs of the elderly, children and persons with disabilities or low incomes represents a significant challenge, as seen in Figure 6.1.

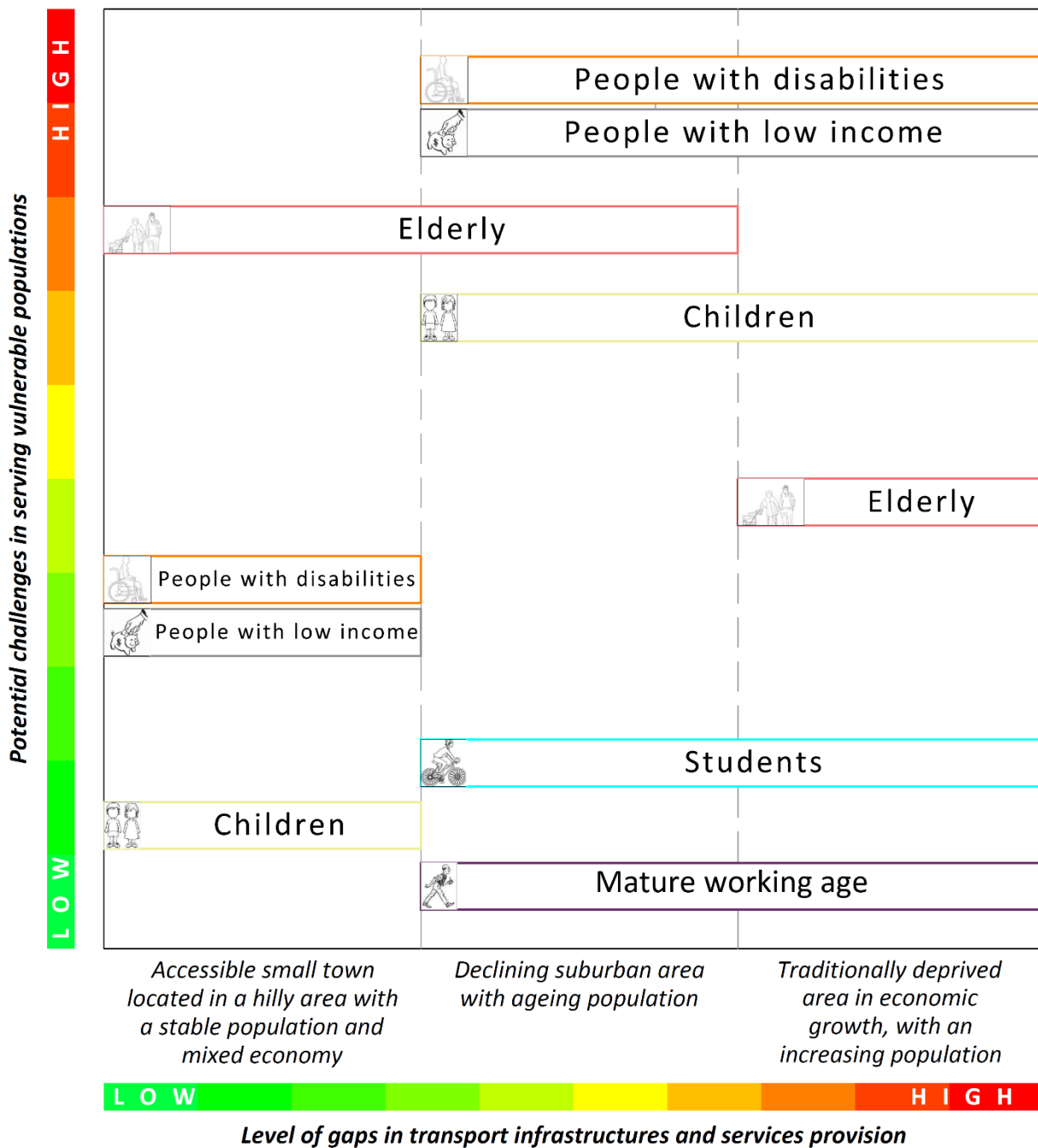


Figure 6.2 Challenges of serving vulnerable populations in peri-urban areas

Finally, concerning urban areas, it has emerged that some of the 7 identified categories should be removed, as they are not commonly associated with particular mobility challenges. The four remaining categories of urban areas are the following:

- Declining urban area with decreasing employment and population loss
- Urban area with declining population, stable employment, and growing peri-urban areas
- Large flat urban area with declining employment and population

- Urban area located in hilly area with stable employment and population

As with peri-urban areas, no particular mobility challenges are faced by people of working age and mature working age, except in declining urban areas with decreasing employment. The potential challenges of serving persons with disabilities and people with low income are lower compared to the challenges in rural and remote areas. Figure 6.3 presents the key findings for urban areas.

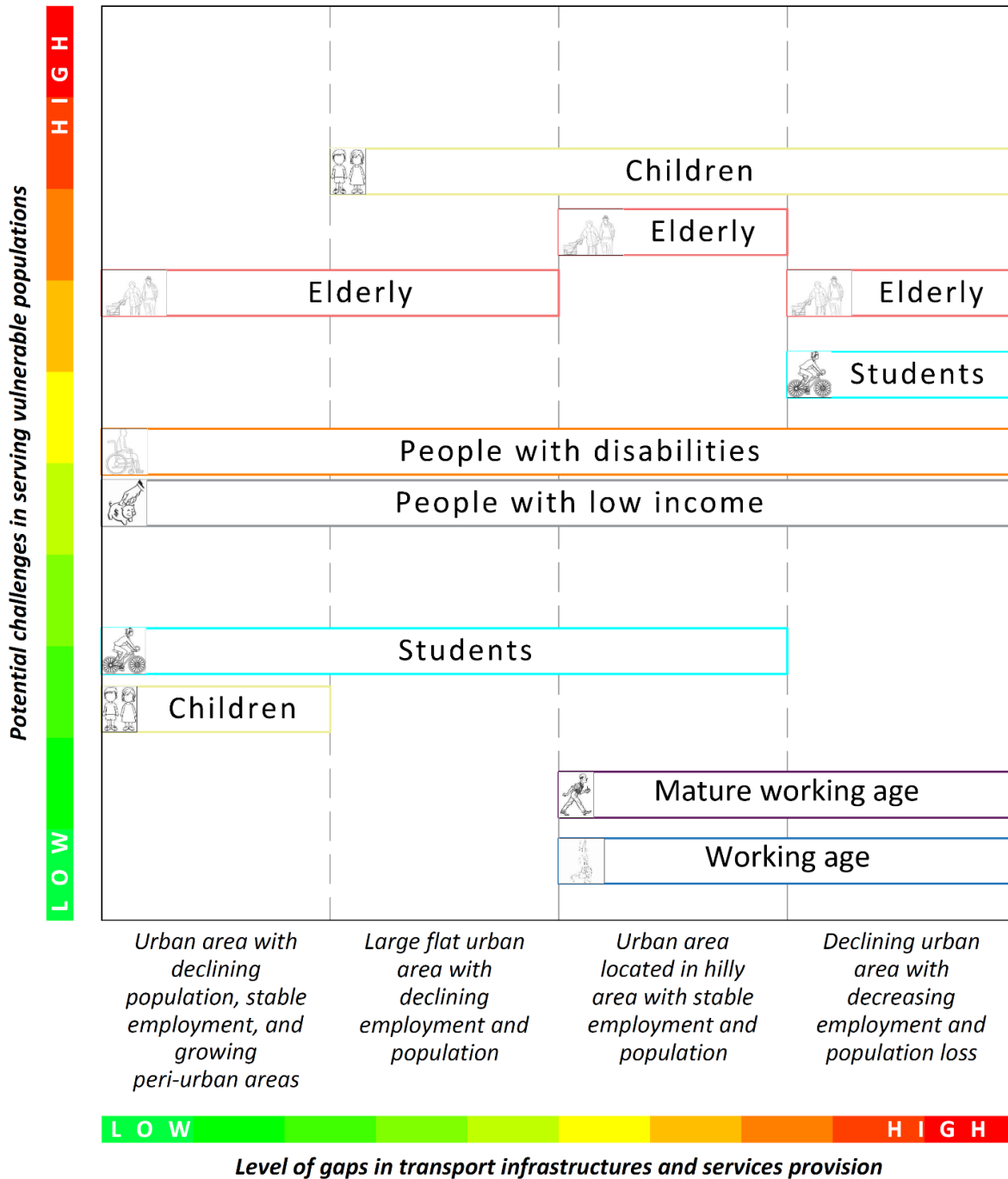


Figure 6.3 Potential challenges of serving vulnerable population in urban areas

6.1.2 Definition of a 3-D matrix

As reported in section 4, during the Ghent workshop it was highlighted that in order to describe the characteristics of vulnerable users in prioritised areas, and in particular in relation to the 6 Pilot Labs, it would be useful to develop a multi-dimensional table.

First, the Consortium has tried to define which type of table would best suit the specific scope of INCLUSION. Due to the complexity of considerations, a 3-D matrix (Figure 6.4) is suggested, rather than a simple table with subcategories under the same axes.

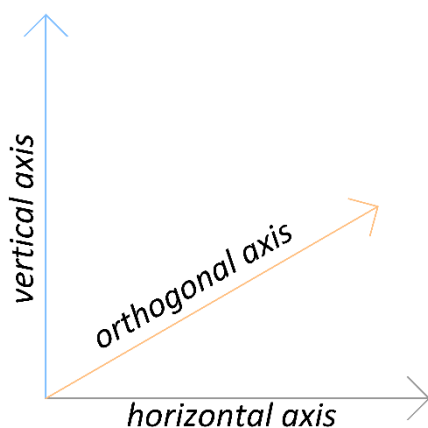


Figure 6.4 Example of a 3-D matrix

The second step is to decide which categories should be included in the horizontal and orthogonal axes. While all user characteristics identified in D1.2 are important when it comes to transport poverty, not all need to be considered as independent primary characteristics.

Regarding the horizontal axis, the consortium decided to consider the category “Age” (as reflected in D1.2 and supported by activities undertaken in T1.3) given the importance of this category to the mobility (and needs) of people. Age imposes specific limits in terms of regulation (e.g., if you are below the legal age you are not legally permitted to drive a car), access (for example, adolescents may be dependent upon their family or other carers for mobility), and ability (e.g. some elderly people may have problems moving independently).

The second category that should be included by the Consortium in the orthogonal axes could be either “income level” or “disability status”. Both categories are significant determinants of the possibility of persons to access a car or other modes of private transport. As seen in the interviews above, income levels often shape modal choice: a low-income family, for example, may only be able to afford one car despite needing two vehicles, due to employment characteristics and lack of other options. As “income level” is a category in which all users can be classified, this has been chosen as the second primary category.

The other categories that have been included in the matrix are the following:

- Sex
- Residency status
- Employment

-
- Disability
 - Student status
 - Family status

The representation of the matrix is presented in the Figure below. The intent is that it will be applied as the basis for further analysis and will act as a visual representation tool at the pilot lab level in WP4.

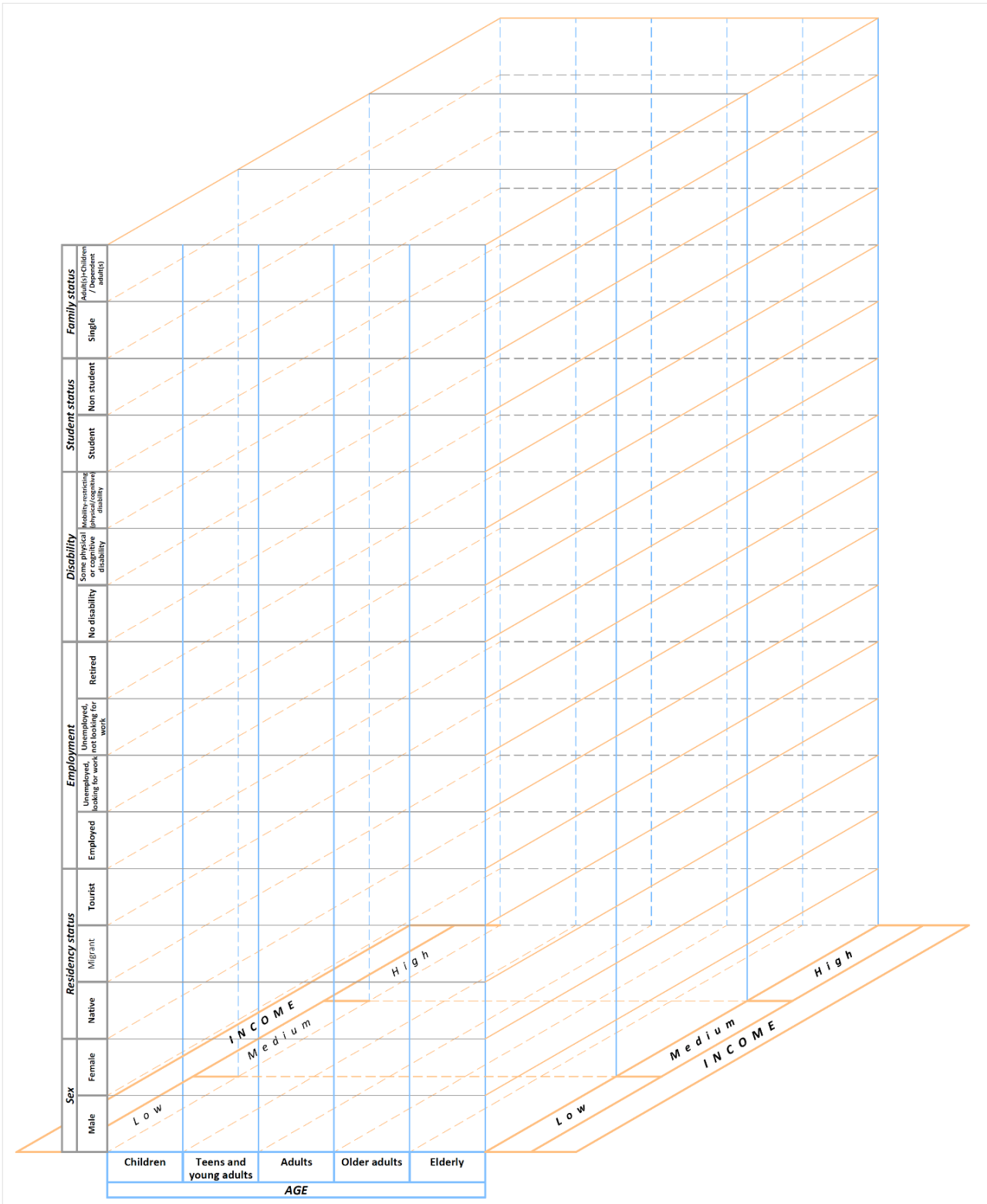


Figure 6.5 3-D Matrix describing the vulnerable users' characteristics

6.1.3 Assessment of the major trends affecting the mobility of vulnerable user groups

Interview findings reported above lend credence to the overall findings from D1.2 regarding ongoing trends that may affect the mobility of vulnerable groups. Particular concerns raised, for example, regarding patterns of migration within and around urban areas (in terms of both internal and external migration), ageing populations, and shifting activity and employment schedules were commonly raised as emerging trends that were placing additional strain on the ability of providers to effectively serve the needs of their populations. In addition, the lack of mobility (or access to information about mobility) that they imply was noted as impacting negatively on the opportunities available to vulnerable populations. While several interviewees observed that there are efforts being made to address these concerns at the local level, it was also apparent that more coordinated, integrated measures are needed to be undertaken, with participation from a variety of user groups and service operators to ensure a match between service needs and provision. It was also noted that these efforts need to take place in concert with support from government, in terms of supportive policies that more effectively align mobility needs with areas such as education and health care.

This last point supports, as well, the implication from D1.2 that vulnerable user groups may be best defined along a multi-dimensional spectrum, with different characteristics (such as age and poor health or low income levels and lack of access to a car) working together to increase transport poverty. An overarching concern that particularly speaks to this issue is that of low income populations, who may have complications associated not only with paying for transport, but also utilising inaccessible or inconvenient transport options. As noted in D1.2, and further supported here, considering these trends and characteristics in combination, rather than as individual challenges, may provide for more robust determination of the ways in which the identified trends may impact upon vulnerable groups. Providing financial support both for vulnerable travellers and for the services upon which they rely is believed to be a necessary component in addressing transport poverty.

The findings indicated above lend support to many of the candidate case studies identified, as well as the challenges presented above in Tables 2.5 – 2.7. While it is likely that these will shift to some extent based on Case Study work to be carried out in INCLUSION Work Package 3, the general schema presented is validated as appropriate, given that it both describes a multiplicity of characteristics that may impact upon mobility to varying degrees, as well as indicating the extent to which different potential models of service provision may be more or less appropriate for exploration given area and user characteristics.

6.1.4 Assessment of major user needs and unsatisfied mobility requirements of vulnerable user groups

The research activities carried out in Tasks 1.1 and 1.2 provided analysis of how user needs can vary according to demographic, socio-economic and behavioural characteristics of users in relation to different transport environments. After the validation exercise carried out within Task 1.3, it is possible to develop some further considerations of how these characteristics may impact upon further work to be carried out in INCLUSION.

Following the discussion held in Ghent, the Consortium has tried to re-classify the user needs following a new approach. Four different layers have been identified, namely:

- Layer 1: *Essential requirements*
- Layer 2: *Basic requirements*
- Layer 3: *Specific needs*
- Layer 4: *Added value needs*

Layer 1 is composed of “Essential requirements,” commonly recognised as consisting of available transport services. Layer 2 addresses “Basic requirements” that, according to the workshop, consist of accessibility, safety, affordability, reliability and connectivity. Layer 3 is about “Specific needs”, which are the specific requirements of target user groups. Finally, Layer 4 is the “Added value needs”, which are the components that constitute added values of a transport service.

The new approach is presented below.

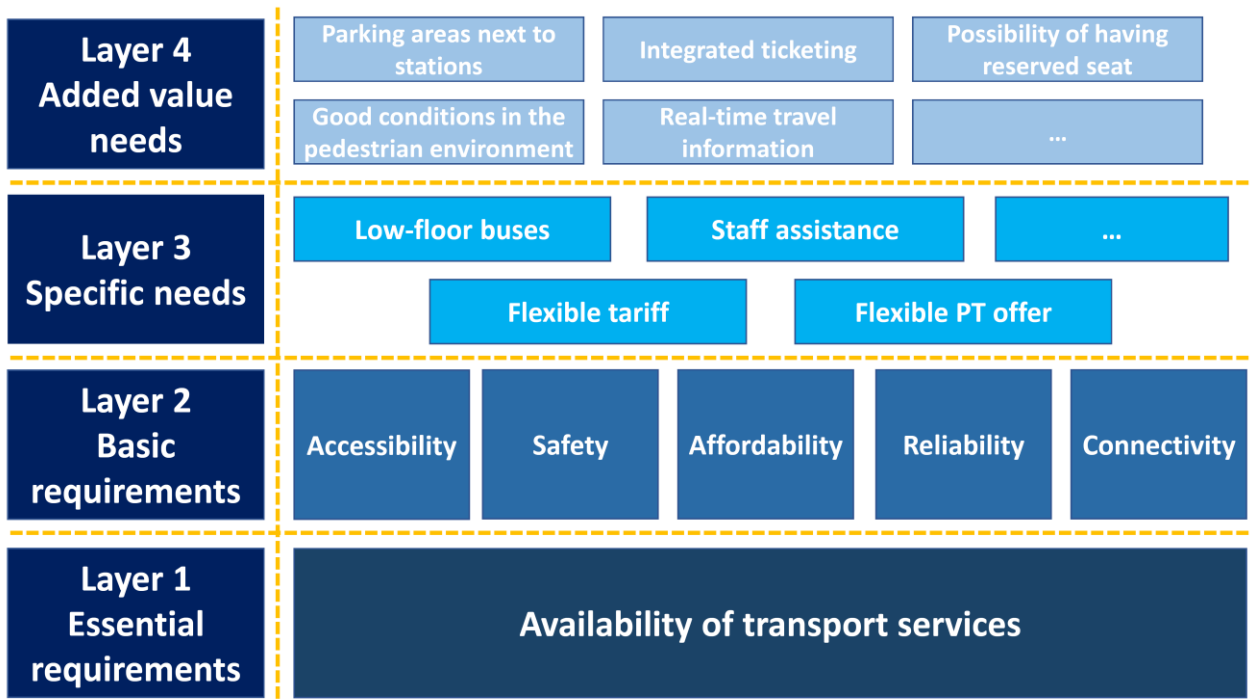


Figure 6.6 Classification of major user needs

6.2 Conclusion

A number of core gaps in transport service provision were identified in D1.2, and further supported through activities undertaken in T1.3. One key gap is associated with the temporal nature of transport service provision, which has traditionally been aligned with ‘peak hours’ – i.e. hours that reflect traditional patterns of work or education. As noted by interviewees, however, such patterns may not adequately serve the needs of persons with non-traditional working hours (such as increasingly common shift working patterns) or who need extended hours of service to take advantage of evening or other opportunities. Such gaps may significantly impede the opportunities available for vulnerable populations, whom may be more likely to have irregular travel patterns than other populations.

A related gap is associated with the spatial coverage of transport services, and the ways in which these are provided. Traditional fixed-route public transport services have been identified as not necessarily being best-suited to providing services to a dispersed or rural population, or to populations with diverse accessibility needs (for example, areas with large numbers of young children) particularly given the financial costs associated with these services. Exploration of new models of service provision (perhaps focused on smaller vehicles, demand responsive routing, or more extensive use of taxi-style services) has been identified as a key need for better serving these areas, particularly if aligned with more extensive co-design activities between service providers and target populations. This finding aligns well with Part B of D1.2, which suggested that different service models may be more appropriate in particular areas given both geographic

and demographic characteristics, and suggests that addressing this gap will require more targeted interventions that better account for specific area characteristics.

These findings also support the potential offered through models such as Mobility as a Service (MaaS), discussed more fully in D1.2, where different transport options are bundled into a competitive and efficient offer. While some interviewees noted that this model would likely be of benefit to vulnerable populations, they also indicated that the lack of integrated information and 'digital divides' routinely experienced by these populations would make their effective roll-out difficult. The key gap noted here is in access to information and the digital services that would enable such models, highlighting that transport poverty is not limited to physical infrastructure and transport offerings. Rather, as posited in D1.2, inclusive and equitable transport and mobility services must consider the spectrum of travel, including planning and undertaking a trip as well as ensuring that the return trip will be possible. To do so, as noted above, requires embedding certainty regarding service availability, financial security (i.e. that both ends of the journey will be affordable), and accessibility. Gaps in this structure may preclude effective use of those services that are currently on offer. Again, these findings support the framework identified in the Tables above, though these will likely need expansion based on temporal characteristics of service (primarily regarding peak and off-peak services), and as more fully explored in the context of the Pilot Labs.

7 INCLUSION consortium



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Annex A: Set of questions for the interview with user representatives

1. Please tell us the type of transport user you *primarily* represent. (E.g. *elderly, low income, persons with mobility limitations, young people, etc.*)
2. Please tell us if you also represent any other type of user.
3. Please tell us about the geographic area your organisation serves (e.g. *national level, regional level, local level*).
4. Please tell us which of the following types of areas are included in your users' service areas: urban, peri-urban/suburban, or rural areas.

The following questions will ask you about the geographic and socio-economic characteristics of your primary user area:

5. Please tell us if there are any specific geographic characteristics of the area you serve (such as hilly or mountainous terrain, islands, etc.).
6. Please tell us if there are any significant population trends in the area(s) in which your users are located (for example, ageing populations or decreasing populations)
7. Please tell us about the general economic status of and any emerging economic trends in the area(s) in which your users are located. (E.g. *deprived or affluent area, economic growth or decline*)

The following questions aim to provide more understanding about the current transport services available to your users.

8. Please tell us about the transport services that are *currently available* to your users (such as fixed-route buses, demand responsive services, rail, etc.).
9. Please tell us about what targeted services are *currently available* in your area of responsibility to serve mobility disadvantaged users (such as persons with low incomes, cognitive limitations, language barriers or physical mobility limitations).

The following questions will ask you to tell us more about whether transport limitations are negatively impacting upon various types of opportunities for users in your area.

10. Do you feel that the user group(s) you represent are disadvantaged with respect to any of the following due to transport limitations in your area? If so, how?
 - a. *Employment opportunities*
 - b. *Educational opportunities*
 - c. *Travel for medical or health needs*

- d. *Social/leisure opportunities*
- e. *Shopping or other maintenance activities*

The following set of questions will ask you to identify what barriers to mobility, if any, exist for your users.

11. What factors do you feel *negatively* impact upon your **users' access** to mobility? (E.g. *lack of non-driving options, expense, lack of information, etc.*)
12. What factors do you feel pose *barriers* to **providing** adequate transport services for all users in your area? (E.g. *lack of adequate funding for services, lack of adequate digital coverage, lack of integration between service providers, etc.*)

The following set of questions will ask you to identify what drivers for mobility, if any, exist for your users.

13. What factors do you feel *positively* impact upon your **users' access** to mobility? (For example, *presence of varied transport service providers, mix of transport modes, availability of financial support, etc.*)
14. What factors do you feel are *drivers* for **providing** adequate transport services for all users in your area? (For example, *good understanding of user needs, good government support, good quality and connected infrastructure, etc.*)

The following section is designed to understand more about current mobility challenges faced by your users.

15. What do you feel represent the *greatest challenges* to provision of inclusive mobility services for your users? If these challenges result in gaps in transport services, please indicate what those gaps are.
16. Is there anything else you would like to tell us about mobility services for your users?

Annex B: Set of questions for the interview with user representatives

1. Please indicate if you are an academic researcher or a researcher in a consultancy:
 - a. Academic
 - b. Consultancy

2. Please tell us your primary area of interest related to accessibility, inclusivity and equity in terms of mobility.

3. Does your work or research involve specific attention to any of the following geographies?
 - a. Urban areas
 - b. Peri-urban/suburban areas
 - c. Rural areas
 - d. None of the above

4. If you indicated yes to any of the above, please tell us a bit more about your work with respect to these geographies.

5. Does your work or research involve specific attention to any of the following user groups? (Please indicate all that apply)
 - a. Mobility limited
 - b. Elderly
 - c. Families/carers with small children
 - d. Dependent adults and carers
 - e. Migrants
 - f. Low income
 - g. Students
 - h. Young people
 - i. Cognitively disabled
 - j. Tourists
 - k. Unemployed
 - l. Commuters
 - m. Women
 - n. All users
 - o. Other (Please describe)
 - p. None of the above, specifically

6. If you indicated yes to any of the above, please tell us a bit more about your work with respect to these user groups.

7. What are the primary *barriers* to **user access** to mobility that you have observed with respect to your research or work, particularly insofar as they relate to vulnerable populations or areas?

(Barriers may include issues such as cost, distance, lack of technology or technological understanding, lack of service integration, etc.)

8. What are the primary *drivers* of **user access** to mobility that you have observed with respect to your research or work, particularly insofar as they relate to vulnerable populations or areas? *(Drivers may include issues such as good connectivity, presence of financial support, political support, attention to provision of accessible information, etc.)*

9. What do you feel are the primary *challenges* related to the **provision** of mobility to vulnerable populations or areas? *(Challenges may include issues such as lack of adequate service providers, uneven or difficult terrain, lack of accessible vehicles, etc.)*

10. What do you feel are the primary *gaps* related to the **provision** of mobility to vulnerable populations or areas?

11. Are there any other issues that you feel are necessary to consider when promoting social and economic inclusivity in the provision of transport to vulnerable users or areas?

12. Are there any other issues that you feel are necessary to consider when promoting general accessibility in the provision of transport to vulnerable users or areas?
13. Is there anything else you would like to tell us about your research with respect to mobility services?

Annex C: Set of questions for the interview with transport service operators and authorities

1. Please tell us about the geographic area in which your service operates (e.g. urban, peri-urban, rural, or mixed; flat or hilly; etc.).
2. Please tell us about the primary user type your services are designed for. (E.g. is the interviewee representing a general service operation, or a service tailored for specific users such as the elderly, mobility limited, job seekers, or other)
3. If you additionally represent or provide services for other types of users, please tell us about those populations. (E.g. is the interviewee's organisation also responsible for providing services for specified populations such as tourists, commuters, or students)
4. Please tell us about any population trends in the area you serve, such as increasing or decreasing populations, increase in migrant populations, ageing populations, etc.
5. Please tell us about the general economic status of and any emerging economic trends in the area you serve (e.g. is it primarily affluent, deprived, or mixed, and are there any trends of increasing or decreasing employment, etc.)

The following questions aim to provide more understanding about the current transport services available in your area:

6. Please tell us about what transport services are currently available in your area (e.g. fixed-route buses, flexible bus routes, rail, car share, etc.).
7. Please tell us about what services are currently available in your area to specifically serve mobility disadvantaged users (such as persons with low incomes, cognitive limitations, language barriers or physical mobility limitations) (e.g. discounted or free bus or rail passes, traveller assistance for persons with mobility limitations, demand responsive door-to-door transport services, etc.).

The following questions will ask you to tell us more about whether transport limitations are negatively impacting upon various types of opportunities for users in your area.

8. Do you feel that any particular user groups are disadvantaged with respect to any of the following due to transport limitations in your area?
 - a) Employment or education opportunities
 - b) Social/leisure opportunities or shopping or other maintenance activities

- c) Medical or health needs

The following set of questions will ask you to identify what barriers to mobility, if any, exist in your area.

9. What factors do you feel negatively impact upon user access to mobility in your area? (E.g. lack of non-driving options, expense, lack of information, etc.)
10. What factors do you feel pose barriers to providing adequate transport services for all users in your area? (E.g. lack of adequate funding for services, lack of adequate digital coverage, lack of integration between service providers, etc.)

The following set of questions will ask you to identify what drivers for mobility, if any, exist in your area.

11. What factors do you feel positively impact upon user access to mobility in your area? (For example, presence of varied transport service providers, mix of transport modes, availability of financial support, etc.)
12. What factors do you feel are drivers for providing adequate transport services for all users in your area? (For example, good understanding of user needs, good government support, good quality and connected infrastructure, etc.)

The following section is designed to understand more about current mobility challenges faced in your area.

13. What do you feel represent the greatest challenges to provision of inclusive mobility services in your area? If these challenges result in gaps in transport services, please indicate what those gaps are.
14. Is there anything else you would like to tell us about mobility services in your area?