Interreg

Co-funded by the European Union

Italy – Croatia

SUMMA

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SUMMA – Sustainable Multimodal Mobility in Adriatic Costal and Hinterland Areas

Priority Axis: sustainable maritime and multimodal transport
Specific objective: Developing and enhancing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross border mobility

D.1.1.1 Cross-border sustainable mobility Report

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PROJECT SUMMA

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EXECUTIVE SUMMARY

This document represents a first step towards building a more sustainable and integrated mobility system in the cross-border Adriatic area, laying the groundwork for the pilot actions foreseen within the SUMMA project. It provides a comprehensive overview of the current state of multimodal mobility between Italy and Croatia, with a focus on access to port areas and the integration of transport networks.

The analysis is based on four main tools: a review of relevant literature, a market analysis, interviews with field experts, and surveys targeting both residents and tourists. These sources help to outline the environmental, social and economic dynamics at play, while also identifying the technical, cultural and political challenges that may hinder the adoption of sustainable mobility solutions.

The report introduces a participatory model – built around the concept of a "mobility ecosystem" – designed to actively engage citizens, institutions, service providers and other key stakeholders. This approach aims to generate context-specific solutions through dialogue, co-design, and continuous monitoring.

Finally, a roadmap for the upcoming project steps is presented, including validation of this first draft, preparation and dissemination of surveys, and organization of expert interviews. This process will support the development of shared priorities and strategies to promote more inclusive, connected and sustainable cross-border mobility across the Adriatic region.

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1 Introduction

1.1 Objectives and Structure

The present deliverable has the purpose of providing a comprehensive analysis of the current scenario of multimodal connections and their potential for further development at the cross-border level. The analysis is a foundation for the implementation of pilot actions foreseen in WP 2, i.e., to define new sustainable solutions for the access to ports and the integration of transport networks in port towns.

The deliverable provides also the framework for SUMMA Participatory Model, which aims at allowing for an effective and timely engagement of relevant stakeholders, both at a cross-border and at a local scale, in the design and implementation of SUMMA activities, starting from the preliminary analysis.

The report is structured as follows:

- Chapter 2 covers the methodology deployed to draft the report.
- Chapter 3 provides for the analysis of the sustainable mobility scenario at a cross-border level, combining the literature review and the experts in-depth interviews.
- Chapter 4 presents the results of the sustainable mobility market analysis performed both at the national and at the cross-border level, with a specific focus on mobility apps and Mobility as a Service (MaaS).
- Chapter 5 integrates the previous analyses with the insights elaborated from the contribution of sustainable mobility end-users (both long-term residents and tourists).
- Chapter 6 presents the SUMMA Participatory Model.

1.2 Capitalising SUTRA Legacy

SUMMA project builds on the legacy of "Sustainable transport in Adriatic coastal areas and hinterland" (SUTRA), a project funded under the Interreg V-A Italy-Croatia Program in 2019, with the aim of challenging the growing carbon footprint and traffic congestion in the Adriatic urban coastal regions, especially during summer (SUTRA, 2022). The project involved 6 Italian partners and 4 Croatian partners.

SUTRA's primary objective was to enhance the accessibility of tourist destinations by integrating public mobility services and infrastructures with innovative sustainable transport

and smart transport systems, creating proper multimodal connections. It underscored the importance of reducing environmental impact of travel, making mobility itself a part of the tourist experience. By leveraging digital innovation and fostering cross-border cooperation, the project contributed to a more sustainable, inclusive and enriching tourism experience across borders.

Learning from past experiences is key to designing future actions, and SUTRA has provided insights that are directly relevant to the SUMMA project (SUTRA, 2023):

- First, bureaucratic barriers often slowed down project implementation, especially in cross-border and multimodal transport contexts, emphasizing the need for coordinated administrative processes.
- Second, infrastructural gaps in soft mobility, like fragmentated bike routes, weakened the project's effectiveness, underscoring the importance of strategic mobility planning.
- Third, local stakeholder engagement was identified as a decisive factor, since their involvement in the process could influence the success of innovative mobility solutions. For instance, the SUTRA project utilized a participatory method by conducting surveys and focus groups with over 100 stakeholders and 1,000 residents and tourists across the pilot areas to identify key mobility needs and preferences.

On the other hand, SUTRA also revealed new opportunities resulting from enhanced cross-border sustainable mobility, like improved economic sustainability, fostered synergies between participating partners, and increased integration with other EU projects in the field of mobility.

2 Methodology

The deliverable is sustained by four main research sources which have been combine to provide for a general overview on the topic at hand:

- A literature review of existing scientific, technical and political contribution to the matter of multi-scalar cross-border mobility.
- A market analysis of mobility patterns, transport markets and emerging integrated mobility solutions in Italy and Croatia, with a focus on cross-border demand, modal choices, intermodality, MaaS and digital mobility services.
- In-depth interviews to experts in the field, such as transportation analysts, mobility managers, political representatives etc., which acted as a validation of the previously drafted review.
- The administration of surveys targeting both long-term residents and tourists, so to better understand modal choices and their drivers, as well as obstacles and opportunities for the strengthening of sustainable mobility solutions.

All the tools have been applied following a multi-scalar approach, thus extracting and elaborating meaningful information for both the cross-border level and the local (Pilot Site) level, in continuity with what foreseen in D.1.1.2.

2.1 Literature Review

A non-systematic literature review was conducted to provide an overview of the existing literature on cross-border sustainable mobility solutions, as well as on the impacts related to the development of mobility systems and the role of borders and cross-border areas in the mobility framework, in order to identify the main concepts, approaches, and findings relevant to the study. Relevant publications were identified through searches of Google Scholar using combinations of keywords related to sustainable mobility, cross-border, mobility. The search was complemented by reviewing the reference section of relevant publications and by including additional sources identified through the authors' knowledge of the field. Priority was given to peer-reviewed publications that were directly relevant to the research questions and provided theoretical and empirical insights into the above mentioned fields. Given the scope of the deliverable, the selection process and the literature inquiry was not intended to be exhaustive or to follow a formal systematic-review protocol. The selected literature was organised according to the main topics of inquiry in order to be then complemented with the

insights coming from the expert in-depth interview, as a further way to validate and integrate the previous analytical work, as follows:

- Definition of cross-border sustainable mobility.
- The impact of cross-border sustainable mobility.
- The technological scenario for cross-border sustainable mobility.
- The governance scenario for cross-border sustainable mobility.
- Challenges on the path of cross-border sustainable mobility.

2.2 Market Analysis

A market analysis was conducted to provide a comparative overview of mobility patterns, transport markets and emerging integrated mobility solutions in Italy and Croatia, with a specific focus on the territorial contexts relevant to SUMMA. The analysis combined:

- Official statistical and institutional sources.
- Sectoral and industry reports.
- Project and service documentation.
- Software evaluating market intelligence data, i.e. app usage, websites visits, online search behaviour, etc.
- Internal elaborations based on multiple datasets.

Particular attention was given to modal split and travel behaviour, public and shared transport, intermodality, Mobility as a Service (MaaS) solutions and mobility applications, while selected regional and local contexts in Italy and Croatia were examined in greater detail. Digital-market indicators, including app usage, downloads and web traffic data, were also considered where relevant to assess the visibility and potential uptake of mobility services. Finally, tourism flows and the main modes used for travel between Italy and Croatia were analysed in order to frame mobility demand within the cross-border Adriatic context. The analysis was therefore intended not as an exhaustive market assessment, but as a comparative evidence base supporting the identification of existing gaps, emerging trends and opportunities for more integrated and sustainable mobility solutions.

2.3 In-Depth Interviews

In-depth interviews were conducted either in one-to-one meetings or in the form of Focus groups, i.e. involving multiple experts at a time and allowing for their interaction during the dialogue. The main topics covered were:

- Presentation of the interviewee(s)
- Validation of literature review
- Sustainable mobility State of the Art (SoTA)
- Sustainable mobility future path
- Any other business

Interviewees were:

- Ms. Ivana Prekalj Martinčević – Project and Information Manager at the Tourist Bord of the City of Poreč, Croatia (April 2025)
- Prof. Ante Klečina – Professor of Traffic Engineering at the University North, Croatia (May 2025)
- Mr. Nikola Skelin – Head of the Split Regional Unit, HŽ Passenger Transport, Croatia (May 2025)
- Dr. Claudia Marcon, Architect – Legal representative at Stradivarie Architetti Associati, Italy (October 2025)
- Prof. Stefano Munarin – Professor of Urban Planning at IUAV University, Italy (October 2025)
- Mr. Francesco Cortellessa – Responsible for the Public Transport and Rate Planning, Abruzzo Region, Italy (February 2026)
- Ms. Sara Perinetti – Aviation Marketing and Business Manager for SAGA, Italy (February 2026)
- Prof. Matteo di Venosa – Professor of Urban Planning at Pescara University, Italy (February 2026)
- Mr. Alfonso Di Fonzo – President of Polo Inoltra, Italy (February 2026)

Moreover, four actors were involved during a Focus Group held by Comunità Riviera Friuliana in September 2025, namely:

- Mr. Alessandro Lovato and Ms. Paola Bergamo – cyclotourist economic operators

- Ms. Elena Spolaore, Architect – Latisana and Riviera Friulana Community Business District Manager
- Ms. Emma Taverna, Architect – Designer of Marano Lagunare Biciplan

The main contents of the interviews are presented in Chapter 3 as an integration of each paragraph, covering for the different topics discussed in relation to cross-border sustainable mobility.

2.4 Survey Campaigns

The two surveys, targeting long-term residents and tourists, were administered both digitally and offline by SUMMA PPs respectively from April to September 2025, and from July to September 2025.

Topics covered by the long-term residents survey were:

- Demographic Characteristics
- Travel Habits – Modal Choices and Intermodality
- Satisfaction and Drivers for Modal Choices
- Assessment of Measures to Encourage Sustainable Mobility
- Perceptions of Sustainable Mobility, Public Awareness and Institutional Action
- Priority for Mobility Policies
- Willingness to Visit the Adriatic Area

Topics covered by the tourists survey were:

- Demographic Characteristics
- Vacation Characteristics
- Travel Patterns and Modal Choices
- Satisfaction With Transport Choices
- Conditions for Greater Public Transport Use
- Conditions to Encourage Cycling

Annex A contains the detailed results of the surveys targeting long-term residents and tourists.

3 Cross-Border Sustainable Mobility Literature and Experts Analysis

3.1 Definition of Cross-Border Sustainable Mobility

3.1.1 Cross-Border Mobility

Broadly speaking, cross-border mobility comprehends a wide range of travel types, including migration, commuter travel for work, business-related mobility, and tourism. In the context of European Integration, freedom of movement is recognised as a fundamental right by the Article 21 of the Treaty on the functioning of the European Union and Article 45 of the EU Charter of Fundamental Rights, establishing the goal to eliminate any existing obstacle to such freedom. Still today, cross-border mobility is an important tool to foster cooperation between regions separated by national borders.

Historically, borders have acted as barriers to movement and development, often isolating regions (Więckowski, 2021). However, as De Sousa (2012) notes, borders are dynamic elements and can evolve with shifts in territorial jurisdictions. The Schengen Agreement and the creation of the European single market have significantly increased cross-border flows, although recent events like the COVID-19 pandemic, as well as security issues posed by international terrorist threats, temporarily reversed this trend, underscoring the fragility and fluidity of these borders (European Commission, DG HOME, s.d.).

Besides jurisdictional shifts in the strict sense, other trends might play a contribution in shaping cross-border dynamics. Transport infrastructure, for instance, plays a significant role in enabling cross-border mobility. According to Więckowski (2021), transport facilitates key economic activities such as tourism, trade, and transit. Rationalizing public services, by eliminate both visible and invisible barriers to mobility, can strengthen cultural, linguistic, and economic ties, further promoting European integration.

3.1.2 Environmental, Social, and Economic Sustainability

The United Nations Brundtland Report (The World Commission on Environment and Development, 1987, p. 16) first defined sustainability as the ability to "*meet the needs of the present without compromising the ability of future generations to meet their own needs*". Yet, sustainability is a complex and multi-dimensional concept, which makes in turn complex to

assess what sustainable mobility is, due to the interconnected nature of its components (Więckowski, 2021).

In the context of mobility, sustainability concept initially focused primarily on environmental impacts, but later expanded to include social and economic dimensions, adding key factors such as accessibility and distribution (Holden et al., 2019). This evolution led to the consolidation of the "triple bottom line" model, where sustainability is achievable only when environmental, social and economic factors are equally balanced (Więckowski, 2021). In this framework, key metrics include CO2 emissions, energy consumption, noise, and land use, indicating how mobility choices influence sustainability across these aspects.

Nevertheless, the "triple bottom line" model faced criticism for its breadth. If sustainability concept becomes too comprehensive and complex, it is no longer useful in guiding policy making. This led some scholars to advocate for a return to a narrower and more ecologically focused definition of sustainability, in line with the Brundtland Report. This model centres on long-term ecological endurance, intragenerational and intergenerational equity, while satisfying basic human needs (Holden et al., 2014). In other words, it minimizes the role of economic factors as separate drivers.

In both models, reaching a balance between environmental, social and economic sustainability presents inherent challenges, particularly as specific trade-offs emerge. An alternative proposes establishing specific thresholds for each dimension, ensuring none is compromised for another. However, the question on how to meet one threshold value without simultaneously reducing the possibility of meeting another one persists and raises the need for a holistic approach to be solved. Sustainability, by nature, requires ongoing efforts to balance priorities in pursuit of a better equilibrium.

3.1.3 Insights from the In-Depth Interviews

According to the information collected through the in-depth interviews and the Focus Goup, cross-border mobility sustainability can be defined as the development and implementation of transport systems that enable the movement of people and goods across national borders in an efficient, low-environmental-impact, and socially responsible way, while ensuring access for all user groups and safeguarding resources for future generations. Operationally, this means reducing CO_2 emissions, promoting the use of public transport, encouraging cycling and walking, improving accessibility and integration among different transport modes, as well as

optimising logistics chains and adopting innovative technologies capable of contributing to greenhouse-gas reductions.

A particular stress has been posed to the social dimension of sustainability in mobility: this is particularly relevant in project involving border areas or marginal territories. In these contexts, mobility systems can foster territorial inclusion by facilitating people's daily movements and contributing to the development of local communities. According to this perspective, sustainable mobility cannot simply be reduced to the connection between two points or the physical movement of people. Rather, it represents a territorial policy that makes services, resources and opportunities within a territory accessible. In this view, mobility becomes a true common good, capable of strengthening quality of life and citizens' sense of belonging. It is therefore not just about transport infrastructure, but about a relational system that contributes to making cities more democratic, open and inclusive.

Within this frame, a first operational priority is clear: reduce the dominance of private cars, whatever their powertrain. Cars generate externalities both in motion and at rest, consuming scarce public space in border towns and gateways. Shifting the baseline therefore requires sustained investment in public and collective transport (trains and buses) and, above all, in intermodality.

While multimodality refers merely to the contemporary and contextually presence of different means of transport, intermodality implies the ability to integrate these modes and make them operate in a coordinated way. Intermodality must be designed, not presumed: boarding and alighting with a bicycle should be simple and enjoyable; access points should work for people with luggage and for elderly people; wayfinding should be intuitive rather than an obstacle course.

This intermodal lens refines a key distinction already evident in many borderlands: local systems and long-distance systems are different. They can be coordinated but not mixed. Intercity high-speed trains are ill-suited to local commuting needs; conversely, local services cannot shoulder long-distance demand. Sustainable cross-border mobility must orchestrate these scales aligning roles and coordinating timetables and connections so that, for example, a bike-train trip between nearby cities is competitive rather than cumbersome. With better organization, links such as Venice–Trieste–Ljubljana could become genuinely attractive, powering sustainable tourism and everyday active mobility for people who experience cities on foot and by bicycle.

Within this general framework, border regions have specific features that require targeted choices. In many contexts, cross-border spaces are experienced "as if borders did not exist": examples include Salzburg (Austria–Germany) and the Bratislava–Vienna axis, where daily cross-border mobility supports local economies and educational pathways. The local dimension commuting, school trips, and everyday movements can in fact be more significant than long-distance travel from an economic-impact perspective.

The availability and affordability of transport for all population groups, the sustainability of service financing, and the role of digital connectivity and passenger information as factors that strengthen system efficiency and user acceptance. Within this framework lies the economic sustainability of solutions: what matters is their long-term financial viability, not just their launch. Technological infrastructure and digitalization can increase efficiency and improve the user experience, but they require financial investments and adaptation processes by users to new technologies.

However, in practice, certain issues hinder sustainable use. In some regional contexts there is a proliferation of cycling networks and variants and dispersed signage, coupled with the absence of a unified mapping system. This forces visitors to reconstruct routes from fragmentary and often incoherent maps, generating confusion and disorientation; concrete difficulties have been reported during the focus group held by Riviera Friulana Community, for instance, in reaching Lignano. In this regard, a lack of a widespread culture of hospitality among some operators and facilities has also been highlighted.

There are also positive references pointing the way forward. The Mozart Radweg, for instance, is cited by Riviera Friulana Community as an example of a simple, well-signposted, and clearly communicated itinerary, showing how the quality of wayfinding and communication can significantly improve the experience. In the same spirit, the Grado–Monfalcone section is always mentioned by Riviera Friulana Community as a virtuous model of clear signage, confirming that coherence and essentiality in signage are decisive components for making mobility truly sustainable.

Considering these problems, sustainability understood as clarity, efficiency, and social responsibility requires a change of course: shifting from fragmentation to an integrated and legible set-up. In practice, this means reducing the proliferation of routes and variants, adopting sober, functional, and consistent signage, and establishing a unified mapping system that allows users to orient themselves without effort and without having to fill information gaps.

This path entails a shared strategy at two levels: micro (local scale) and macro (wider-area scale), capable of "trimming back" and rationalising existing networks, avoiding redundancies and overlaps.

3.2 The Impact of Cross-Border Sustainable Mobility

3.2.1 Environmental Impact

The *EU Green Paper on Impact of Transport on the Environment* identified transport as one of the human activities which represent the major contribution to energy and environmental problems, since the mobility sector is one of the main consumers of fossil fuels and it is responsible for considerable nuisance and damage to the environment (Holden et al., 2019). Shifting towards sustainable mobility could reduce these negative effects. In cross-border areas, which are often sparsely populated and rich in natural landscapes, public transport is preferable to individual transport for preserving these regions' natural attractiveness (Więckowski, 2021). Increased use of private vehicles, on the other hand, leads to traffic jams, CO2 emissions, noise, and environmental damage. Public transport, therefore, offers a more environmentally friendly alternative.

However, as shown by the Polish-Czech borderlands, the mere provision of cross-border sustainable mobility options is not inherently more sustainable (Kołodziejczyk, 2020).

First and foremost, sustainability in cross-border regions requires the development of public transport that extends beyond state boundaries. In areas of high tourist activity, intra-national solutions alone are insufficient, and comprehensive cross-border systems are essential to mitigate environmental impacts.

Secondly, coordination issues between different authorities in the organization of services and timetables, or a mismatch between end-users' needs and infrastructure design (e.g., construction of crossing points far from areas of interest), can discourage public transport use and might result in continued reliance on private vehicles, exacerbating environmental issues. This highlights the importance of well-planned transport infrastructure in these regions, in order to achieve a positive impact.

3.2.2 Security and Public Health Impact

Shifting from a mobility system cantered on private vehicles to one that emphasizes walkability, bikeability, and integrated public transport has numerous benefits for both security and public

health. Such a change reduces traffic accidents, improving road safety, while also promoting mental and physical health through increased activity, cleaner air, and reduced noise pollution (Rišová, 2020; Więckowski, 2021).

In terms of air quality, reduced reliance on private transport could significantly cut emissions. According to the EEA report on the "Sustainability of Europe's mobility systems" (European Environmental Agency, 2024), over the past decades, transport-related emissions in the EU have dropped by between 90.4% and 46.1%, depending on the compound, thanks to policy measures and technological developments. Nevertheless, transport sector still has a huge impact in this field, especially in urban areas, as they are densely populated, and emissions take place close to the ground. Promoting shift towards collective transport modes has been identified as a key strategy for mitigating its impact.

Noise pollution is another serious health concern. The same EEA report notes that over 20% of the EU-27 population lives in areas where transport noise can cause adverse health effects, and this values rapidly raises in cities. As the main source of this noise is road traffic, a reduction in the use of private cars and a shift towards public transport could alleviate the problem. Nevertheless, projected growth in population and transport activity could complicate these efforts, making the situation more nuanced.

3.2.3 Social Equity Considerations

The implementation of sustainable mobility is also important for fostering social equity. Shifting to alternatives such as walking routes, cycling paths, and public transport, allows all individuals, regardless of their access to private vehicles, to travel across borders (Kołodziejczyk, 2020; Rišová, 2020; Więckowski, 2021). This inclusive approach makes cross-border travel opportunities more accessible across socio-economic divides.

However, disparities between urban and rural areas can increase when public transport development solely focuses on cities or densely populated areas. The Territorial Agenda 2030 (TA 2030, 2020) addresses this issue by promoting interventions bases on the concept of functional regions. By shaping cooperation between cities, towns and their surrounding rural areas in the same functional region – which often breaks with existing administrative delineations – might lead towards a more balanced and sustainable regional development. This kind of interventions requires multilevel governance, involving local authorities and stakeholders, and the development of smart and safe forms of transport. Improving secondary

and local transport networks alongside the main trans-European networks (TEN-T) is vital to ensuring inclusive, sustainable mobility across both urban and rural areas.

3.2.4 Insights from the In-Depth Interviews

Sustainable cross-border mobility is not limited to environment, safety/public health, and equity: a decisive area is connectivity. When cross-border links are reduced, negative demographic and economic effects follow. This is the case in some regions of Croatia which, before independence, were well connected with Slovenia or Bosnia: the decrease in links has led to depopulation and economic decline. This shows how the quality and continuity of cross-border transport relations directly affect the vitality of territories.

Historically, the Adriatic-Ionian Region has been a space characterised by cultural, social and economic relations between the two shores of the sea. In the past, this basin constituted a relatively homogeneous region in terms of relationships and interactions among territories. However, over time, this area has progressively lost centrality in European development processes. According to prof. Di Venosa, sustainable mobility could help rebuild and strengthen these relationships, reconnecting territories and enhancing the cultural and landscape heritage that characterises the Adriatic coasts. In this sense, the Adriatic Sea should once again be considered a sort of common space, not only geographically but also politically, institutionally and culturally.

Alongside connectivity, strictly economic impacts must be considered: equity warrants specific consideration. In Italy, the total cost of car ownership (purchase and operating expenses). During his interview, prof. Munarin estimated at €7-8,000 per person per year the total cost of car ownership, including purchase and operating expenses, with a significant impact on household budgets. A growing trend among young couples or families is to reduce private vehicle ownership from two cars to one, with substantial savings. To make this choice genuinely feasible, it is necessary to facilitate the combined use of public transport and bicycles, ensuring usability for all user groups. However, an information gap persists: targeted communication measures are needed to explain how to integrate the different modes in practice.

Interviews held in Pescara highlighted the strong link between sustainable mobility and tourism development. In particular, participants referred to the Costa dei Trabocchi, an area of the Abruzzo coast where a former railway line has been converted into a green cycling and pedestrian path, now widely used by cyclists and visitors. As this case study shows, efficient

and integrated mobility can help enhance these territorial resources, making it easier for visitors to reach and move within tourist destinations.

Beyond environmental impacts, safety, health, and equity, the quality of the lived environment must be considered. Active mobility (walking and cycling) changes how people perceive and interpret territories, landscapes, and cities, prompting a reassessment of elements often taken for granted. In other words, a sustainable mobility system, primarily based on walking, cycling, and the use of trains and buses presupposes high-quality cities and landscapes. This form of tourism and urban experience is not attractive in contexts where walking is difficult. With reference to territories potentially involved in INTERREG programmes (e.g., Slovenia and, plausibly, Croatia), attractiveness for cycle-tourism users depends on the availability of secure bicycle parking and a pleasant urban environment. Where settings are noisy, chaotic, or polluted, the propensity to return decreases. It follows that developing a sustainable mobility system implies a direct impact on the overall setting of territorial and urban projects, that are pushed to be oriented towards enhancing, protecting, and improving local heritage, landscape, and the quality and liveability of public spaces.

Safety goes along with security issues. As reported by mr. Di Fonzo, in recent years several measures have been introduced to improve the safety of operators and passengers, such as the installation of protective driver cabins on buses and the use of onboard surveillance cameras. However, according to Di Fonzo, beyond technical interventions, a cultural shift is also necessary. Many conflicts during public transport operations arise from the fact that some users attempt to use services without paying for a ticket, creating tension with inspectors and drivers.

3.3 The Technological Scenario for Cross-Border Sustainable Mobility

As previously discussed, technological advancements have played a pivotal role in reducing transport-related emissions over the last decades and are expected to continue driving this transition. The European Environmental Agency (EEA), in its 2022 “Transport and Environment” report, identified digitalisation as a determinant element in this mobility evolution. However, the benefits of these progresses are not always linear. Although digital technologies brought efficiency improvements, the growing demand for mobility services has often overcome these environmental gains. Other possible challenges include high electricity consumption, limited digital literacy in some EU countries, and concerns over data privacy and cybersecurity.

3.3.1 Hardware and Software Innovations

The 2022 EEA report highlights the importance of monitoring mobility systems to support policy development and transport planning. Digitalisation, combining the use of sensors, data transmission and data processing algorithms, could enhance the potential of environmental monitoring solutions. Such systems are increasingly more targeted, operate in real time and in real-use conditions, making them necessary support tools for the policymaking process. In addition, they can also be instrumental in transport planning, due to their ability to collect extensive, detailed data, particularly when considering urban mobility and allocation of the transport infrastructure.

3.3.2 Smart Mobility Solutions

The literature on smart mobility presents several solutions aimed at improving public transportation and user experience, with Mobility as a Service (MaaS) being a central concept. MaaS integrates different types of transport services into a single, on-demand platform, simplifying booking, payment and ticketing to final users (Maas, 2022). Closely related to MaaS is the concept of Multimodal Digital Mobility Services (MDMS), which can be defined as "*a system providing information about, inter alia, the location of transport facilities, schedules, availability and fares, of more than one transport provider, with or without facilities to make reservations, payments or issue tickets*" (European Environmental Agency, 2022, p. 62).

According to the 2022 EEA report, these systems have the potential to reduce energy consumption from transport, especially in urban areas, by encouraging a shift from private mobility to public transport. Dynamic pricing or facilitated access to environmental information can foster environmental awareness among users. However, the lack of extensive trials limits the understating of their full societal or environmental impact. Additionally, integrated platforms are complementary to existing public transport services and do not create per se additional transport options, making them effective only in combination with policies that aim to internalise transport externalities and strengthen public transport.

3.3.3 Insights from the In-Depth Interviews

According to the collected interviews, the technological landscape today offers concrete opportunities but also well-defined challenges for cross-border sustainable mobility. From a historical perspective, many technical issues have already been solved: multi-system trains have existed at least since the 1950s, capable of operating on networks with different

standards. This shifts attention to non-technological obstacles, particularly legal, regulatory, and organizational ones: coordination between authorities is often the real bottleneck, even more than technological innovation itself.

As for current advancements in the field of public transport, rolling stock is being modernized, with the introduction of low-floor, more energy-efficient trains, alongside the digitalization of services: passenger information systems, e-ticketing, and dedicated applications. Complementary technological pathways include the electrification of vehicles and infrastructure, the development of intelligent transport systems (ITS), the digitalization and optimization of flows using artificial intelligence, and the adoption of sustainable fuels such as hydrogen. These innovations offer opportunities to reduce emissions and improve overall transport efficiency, as well as better accessibility, greater service accuracy, and increased user satisfaction.

Alongside these opportunities, several recurring challenges are evident. First, high upfront costs and the need for infrastructure upgrades pose barriers to large-scale adoption. In addition, the implementation of standardised solutions requires intergovernmental coordination, without which the spread of common, interoperable technologies is slowed. From a management standpoint, the financial sustainability of services and users' ability to adapt to new technologies remain critical elements to oversee. Also, some technological or organisational innovations may generate new forms of social inequality, making services accessible only to part of the population. For this reason, it is essential that sustainable mobility continues to be conceived as a common good, accessible to all and capable of reducing social, territorial and gender inequalities.

In the field of bicycle mobility for touristic purposes in recent years cycling navigation apps such as Komoot have introduced a decisive shift: they enable the planning of customised itineraries by leveraging cycle paths, secondary roads, and existing tracks, effectively making borders "transparent" and facilitating cross-border exploration. Users still rely on long-distance backbones as the framework for trips, but with the freedom to create variants and make discoveries along the way, supported by the online sharing of GPX tracks and practical information. In parallel, European programmes such as INTERREG, similarly to SUMMA, have fostered synergies among municipalities and the development of useful solutions bike sharing, mobile stations, and information apps. The critical issue, however, emerges in the subsequent phase: resources and governance for continuous updating are often lacking, with the risk that

unmaintained tools produce a “boomerang effect” on innovation. To prevent this, it is necessary to plan from the outset a clear post-management strategy with defined roles, resources, timelines, and update standards.

One specific area of innovation concerns navigation and wayfinding. A project is being developed that integrates itineraries, towns, and people through an app based on beacon technology (Bluetooth Low Energy), capable of transmitting signals to nearby mobile devices. This system allows cyclists to receive real-time, geolocated information, gather virtually with other users, and compare the routes they have taken. The idea envisages an app dedicated to the Riviera Friulana, able to provide information on local events, services, and offers for example, a welcome aperitivo at a hotel helping to enhance the user experience and the area’s attractiveness.

Mobility as a Service has been particularly deepened during interviews held by the Municipality of Pescara. The change introduced by MaaS, based on a digital platform that integrates various transport services, both public and private, allowing users to plan and purchase a journey through a single application, is described as a true paradigm shift in the way mobility is conceived. In the past, transport systems were organised around vehicles and infrastructure, whereas in the MaaS model, the citizen becomes the centre of the system. The digital platform builds a set of possible travel solutions around the user, adapting to their needs and offering different mobility alternatives. Thanks to the TrabocchiMOB project, for instance, the Abruzzo Region developed an app that serves as a digital container for several mobility services. The objective is not merely to sell public transport tickets, but to build a broader system that integrates mobility, tourism and territorial services. At present, it mainly includes public bus transport, but it is designed to also integrate bicycle hire, parking reservations, beach services, restaurant bookings, and other activities related to tourism and leisure. Some pilot initiatives have already been carried out, such as the possibility of purchasing combined bus-and-bicycle packages on the Costa dei Trabocchi. In the past, the booking of beach umbrellas at seaside establishments was also tested directly through the platform, allowing users to organise their entire day at the beach through the same digital system.

A decisive factor in the success of the system is the involvement of local operators, who need to perceive the platform as a useful tool for promoting their activities. In this sense, the platform can become a genuine digital showcase for the territory, similar to those used in the tourism sector, such as hotel booking portals.

3.4 The Governance Scenario for Cross-Border Sustainable Mobility

3.4.1 Governance Structure and Frameworks

As Pucher et al. (2017, p. 29) maintain, "*easing legal and administrative obstacles within the border regions is a task for multi-level governance*". Hence, governance structure and frameworks need to take into consideration European, national, and regional/local levels.

On the European Level, Medeiros (2018) and Metzel (2014) explain that European Territorial Cooperation (ETC) is key. Despite having been part of Cohesion Policy since 1990, it only became one of its major goals by 2007. ETC/Interreg program consists of four components:

- Cross-border cooperation (Interreg A)
- Transnational cooperation (Interreg B)
- International cooperation (Interreg C)
- Cooperation in the outermost regions (Interreg D).

Notwithstanding, land and maritime cross-border cooperation makes up to 72.2% of the around 8 billion euros allocated for the current program period (2021-2027) (European Parliament, 2024). More specifically, Interreg V A Italy-Croatia is focused on supporting cooperation across the Adriatic Sea, increasing prosperity and multimodal transport services in the area, while also securing environmental sustainability (European Commission, s.d.).

Many cooperation platforms and planning instruments shall also be considered. As an example, the EU Covenant of Mayors for Climate & Energy connects the European and local levels in pursuing sustainability (*Covenant of Mayors - Europe*). It consists of an initiative supported by the European Commission, in collaboration with thousands of local governments committed to implementing EU climate and energy objectives. First launched in 2008, its peculiarity is the bottom-up approach to energy and climate action, with the aim of reducing CO2 emissions through energy efficiency and clean transport. This is steered by a Political Board composed of mayors and local leaders, who actively discuss with EU institutions leaders on how to advance local energy and climate actions. The Covenant of Mayors promote both the implementation of local action plans and the sharing of best practices from across Europe. This is a good example of the multilevel governance approach supported by the Territorial Agenda 2030 (2020).

3.4.2 Policy Mechanisms to Incentive Sustainable Mobility

Several policy tools can serve to promote sustainable mobility. Based on the Czech-Polish border experience, Kołodziejczyk (2020) emphasizes the importance of aligning public services with end-users' needs, increasing service frequency, especially during weekends and peak seasons, to incentivize public transport usage. Stepanova (2019) highlights that integrating transport systems with enhanced tourism infrastructure also promotes regular use, making public transport more attractive than private vehicles.

Another key instrument is economic incentives. Isetti et al. (2020) proved that, when promoting the adoption of Electric Vehicles (EVs), financial considerations, such as subsidies, are critical. However, these monetary incentives can have mixed effects, especially for individuals already motivated to adopt them. In some cases, extrinsic rewards can obscure intrinsic motivations, especially where environmental or image-based reasons are at play. Policymakers must carefully design monetary incentives to avoid undermining existing motivations towards sustainable mobility.

3.4.3 Insights from the In-Depth Interviews

The interviews highlighted that social acceptance of sustainable mobility grows when services are regular and reliable, ticket purchasing is simple and digital, fares include concessions for specific groups (students, pensioners), and communication highlights environmental and community benefits. Targeted campaigns that spell out concrete user advantages (time, cost, comfort), the use of positive examples from other cities, and community involvement in pilots further increase buy-in. The experiences quoted by prof. Klečina in Šibenik (bus network redesign with strong communications and a fivefold ridership increase) and Varaždin (line and timetable reorganization plus a schematic map, 160% increase in public transport rides) show that when systems work, people adopt them.

Operationally, actions are reported to be underway in Croatia to make public transport more attractive: renewing rolling stock, aligning timetables with local needs, promotional fares for certain categories, and cooperation among operators to better harmonize schedules. In Poreč, for instance, cycling and walking are being strengthened through new infrastructure, route maps, educational activities, and projects focused on safety and accessibility; the tourism dimension emphasizes outdoor products, with bike-friendly nodes at stations and parking areas and integrated information provided in collaboration with hotels and campsites.

Social acceptance is decisive: people adopt sustainable options only if they perceive them as reliable, practical, and safe. Habits change with time and systematic education; preference for the car persists due to its flexibility and comfort. Where systems are convenient, integrated, and understandable, uptake grows; conversely, weak planning and scarce information (e.g., brochures that don't explain how to use public transport to tourists) keep car dependence high. A relevant aspect also concerns the level of social acceptance of technological innovations. Ms. Cortessa observes that younger generations are generally more inclined to use digital tools and applications to organise their travel, while for older people the use of these technologies can be more complex. This generational difference represents a challenge for the implementation of systems such as MaaS, which require a certain familiarity with digital tools.

Also in Pescara the main competitor of integrated mobility remains the private car, which is perceived as more flexible and immediate for everyday travel. For this reason, several communication and promotional initiatives have been implemented to support the MaaS system, including awareness campaigns and user incentives. In some cases, free access to beach establishments or complimentary tickets for events and cultural activities have been offered, with the aim of making the service more attractive and encouraging people to experiment with alternative forms of mobility.

Another fundamental element is the involvement of stakeholders, including citizens, public administrations, transport operators and environmental organisations. In this context, system governance plays a central role, namely the set of political and organisational decisions required to coordinate technological platforms, define incentive strategies and foster cooperation among the different actors involved.

As highlighted by prof. Di Venosa, a central element in the development of sustainable mobility policies is the role of local communities. The interviewee underlines how communities can represent both a resource and a potential critical issue. On the one hand, they preserve fundamental identity and territorial values; on the other, they may sometimes show a degree of scepticism towards projects operating on very large territorial scales, which may appear distant from local realities. In this context, the university plays an important role not only in the production of knowledge but also in mediating between research, institutions and society. Work with students clearly shows how younger generations display a different sensitivity towards sustainability issues. Students demonstrate greater awareness of the importance of sustainable resource use and are more inclined to imagine innovative forms of mobility and

territorial organisation. At the same time, university teaching on these topics is not based on the simple transmission of predefined knowledge, but on the shared construction of learning processes. Complex issues such as sustainable mobility require the interaction of different forms of knowledge and expertise. In this sense, teaching increasingly takes the form of an open laboratory, in which students, lecturers and territories collaborate in the creation of new knowledge. A particularly significant approach in this field is represented by *service learning*, a teaching methodology that takes the university beyond the classroom and uses the territory as a place of learning. Through this approach, students work directly on real cases, engage with communities and institutions, and contribute to the production of knowledge applied to concrete territorial problems.

3.5 Challenges on the Path of Cross-Border Sustainable Mobility

3.5.1 Complexities Related to the Cross-Border Geographical Scale

Besides general difficulties related to multi-stakeholders' initiatives, which will be explored in the following paragraph in relation to the specific context of cross-border initiatives, the cross-border physical and geographical scale introduces specific obstacles.

Sustainable mobility in these areas presents indeed peculiar logistical challenges, that complicate the situation compared to national, more homogenous settings. Kołodziejczyk (2020) finds several possible obstacles:

- Low service frequency and poor coordination between countries hinder effective mobility solutions, as schedules rarely align with end-users' demand.
- An elevate number of transport changes and incomplete cross-border routes reduce the appeal of public transport, discouraging users from adopting multimodal systems.
- The shortage of a strategic approach results in suboptimal outcomes. For instance, uncoordinated timetables and infrastructures, or absence of common ticketing systems, reduce the efficiency of multimodal systems.

Legal-administrative and linguistic differences complement these challenges. As Medeiros (2018) and Więckowski (2021) point out, administrative and linguistic barriers complicate communication and the alignment to strategic goals. These issues, alongside geographical obstacles that reduce network efficiency, present a concrete weakness of cross-border mobility infrastructure development (Christodoulou & Christidis, 2020).

Additionally, incompatibility of national transport systems, such as differing rail networks and uncoordinated domestic public transport, further impede effective cross-border solutions. Addressing these complexities requires more integrated, strategic planning and communication, ensuring cross-border cooperation is mutually beneficial and fosters shared purpose rather than competition and inefficiency (Pucher et al., 2017).

3.5.2 Policy and Financial Constraints

Scholars identify a range of policy and financial constraints that arise from the involvement of multiple entities across national borders. Kołodziejczyk (2020) notes that competing interests between neighbouring regions can hinder cooperative behaviours, as each side seeks to prioritize its own benefits. This is further complicated by administrative obstacles, such as country-internal institutional changes, asymmetric cooperation constellation which prevents that a specific cross-border problem is tackled (e.g., due to different or incompatible competences), and differing administrative cultures between countries (Pucher et al., 2017, p. 35).

A crucial issue that affects policies is accountability. As De Sousa (2012) highlights, local and national politicians are primarily accountable to their constituencies, making them less likely to support cooperation projects that might withdraw resources from their own regions to benefit cross-border services. This becomes particularly true when these projects involve financial risk, leading stakeholders to view them as a zero-sum game.

Talking about Intermunicipal Cross-Border Cooperation, several issues appear: “the personal position of the leadership may be vulnerable; political parties may be hostile to the idea; financial constraints may prevent the search for alternative approaches.” (Council of Europe et al., 2010, p. 24). Indeed, the regions’ lack of financial autonomy in integrated processes, as they are typically government-led, makes them subject to political logics (Christodoulou & Christidis, 2020; De Sousa, 2012). Information sharing practices, awareness campaigns, and intermunicipal research are suggested as solutions (Council of Europe et al., 2010). In addition, EU projects might positively affect cross-border initiatives, encouraging to overcome some of these obstacles: Interreg program, as a co-financing tool, serves both to reduce financial constraints and to promote networks across different countries, thus creating a more positive and fruitful environment for innovative solutions to emerge (European Commission, 2017; Metzler, 2014).

Additionally, sustainability itself present an inhering challenge for policymaking. The issue on how to clearly define sustainability, which indicators to consider when measuring sustainability, and even more how to deal with trade-offs between economic, social and environmental sustainability are still questions open to debate (Więckowski, 2021).

Successfully overcoming these constraints requires designing cross-border initiatives that appear beneficial to all regions involved. For instance, compensation mechanisms can help mitigate the perception of loss of autonomy, while highlighting the shared benefits of improved mobility services, thus reframing cooperation as a positive-sum game.

3.5.3 Socio-cultural Barriers and Resistance to Change

Finally, shifting towards sustainable mobility requires the informed participation of local populations, along with the already mentioned political will, to ensure consensus-building (Więckowski, 2021). However, significant socio-cultural barriers remain, particularly in modifying well-established mobility habits.

Research conducted by Isetti et al. (2020) in South Tyrol, Italy, for instance, provides valuable insights into this challenge. Their study found that, despite the clear environmental, social, and economic benefits of sustainable mobility, even individuals who self-identify as pro-environmental tend to resist adopting green transportation solutions. This highlights a key issue: ecological sentiments do not always translate into sustainable mobility behaviours. Instead, the study identified different clusters of travellers based on socio-demographic factors, showing that mobility patterns are also shaped by variables like age, income, and family structure. Established car drivers with children showed the strongest preference for cars (61% for everyday life and 83% for holidays), despite having also the highest pro-environmental self-identification scores.

These findings suggest that socially related factors, such as the presence of children in the family group, are critical in resistance to adopting sustainable mobility solutions. To overcome these barriers, it seems essential to design targeted polices that address specific socio-demographic factors and understand how they interact with ecological sentiments. By analysing these relationships, policymakers can tailor interventions to encourage a broader acceptance of sustainable mobility solutions, particularly among clusters that are resistant to change.

Further insights are provided by Wendt et al. (2021), in their analysis on transport infrastructure and political factors in the development of tourism in the Hungary-Romania-Ukraine border region. Their study emphasizes that cultural interactions between different ethnic groups and multilingualism could facilitate mobility across borders. However, they also underscore the interaction between interconnected transport systems, such as the TEN-T network, and socio-economic disparities. For instance, differences in purchasing power and tourist prices across borders can create a gap in tourist flows, making it difficult to promote uniform adoption of cross-border transport solutions.

3.5.4 Insights from the In-Depth Interviews

The cross-border dimension of sustainable mobility presents specific obstacles: regulatory and toll-system differences, unaligned traffic rules, heterogeneous technical and infrastructure standards, and administrative hurdles that require coordination and international agreements have been frequently quoted by several interviewees. At the same time, it offers opportunities for common solutions: integration of public transport across countries, joint infrastructure projects, and the exchange of best practices, as well as the driver constituted by European policies and continental transport networks that can progressively help overcome such barriers, promoting a more integrated vision of mobility.

Among the concrete challenges are legal and spatial constraints when developing new infrastructure especially in protected areas of cultural-historical or natural value; entrenched cultural habits centered on private-car use; and logistical issues such as public-transport schedules that are not synchronized with tourist flows, fare inconsistencies, different technical standards, and the need to coordinate multiple stakeholders (municipal services, the tourism sector, utilities). In various contexts, this translates into broken travel chains and a public-transport offer that struggles to compete with the car.

Within this general framework, border regions have specific features that require targeted choices. In many contexts, cross-border spaces are experienced “as if borders did not exist”: examples include Salzburg (Austria–Germany) and the Bratislava–Vienna axis, where daily cross-border mobility supports local economies and educational pathways. The local dimension commuting, school trips, and everyday movements can in fact be more significant than long-distance travel from an economic-impact perspective.

The political framework and institutional cooperation between countries also play a significant role, as they can influence the speed of implementation of sustainable mobility solutions. The

presence (or absence) of clear political frameworks and collaboration among institutions affects the timelines with which measures are adopted and made operational in cross-border contexts.

The reference is to the intervention implemented between Gorizia and Nova Gorica for the creation of approximately 17 km of cycle routes connected to local public transport stops both Italian and Slovenian as well as to railway stations. The experience highlights three interrelated areas of criticality. On the administrative–institutional level, there is a need to harmonise regulations and align operational tools, as current technical standards (materials, dimensions, design criteria) differ between Italy and Slovenia. This misalignment hampers the construction of a homogeneous network and, in turn, weakens territorial cohesion objectives.

In parallel, a cultural–landscape and communication issue emerges: the tendency of individual territories to promote only their own "segment" generates overlapping information and fragmented messaging. This results in user confusion and reduces the overall value of the area, whereas a systemic integration of resources capable of building a unified identity would help extend visitors' length of stay across a wider perimeter.

On the managerial–economic front of public transport, ticketing and subscription systems are not aligned between the two countries and timetables are not coordinated. Targeted adjustments to fare products and time bands would constitute concrete steps toward genuine integration of sustainable mobility at the cross-border scale, improving accessibility, efficiency, and the overall attractiveness of the system. In discussing integrated and cross-border mobility, ms. Perinetti emphasises the importance of simplifying the travel experience, particularly for foreign tourists arriving in the area. According to her experience, a single ticketing system would represent a major advantage, as it would allow travellers to organise their journeys in a simple and immediate way, without having to use numerous different applications or platforms. Simplicity, in fact, is considered a key factor in encouraging the use of mobility services and improving territorial accessibility.

In some cross-border territories similar issues are reported in relation to the cycle-network: overlaps and non-uniform signage, the absence of unified cartography, and weak intermodality (train, bus, bike, boat), with limited rail services in small towns, especially at weekends. On the tourism side, uneven hospitality standards (e.g., bike-friendly services) reduce perceived quality. Operational opportunities include digital solutions (territory apps, geolocated

information systems) and coastal intermodal proposals; the potential grows when information, timetables, and fares are coherent and integrated along the entire journey.

From an operational perspective, one of the main difficulties in a cross-border coordination perspective concerns the management and integration of data flows, which must be constantly updated and shared across different administrative levels. Different systems require coordination between regional and national levels in order to make different platforms interoperable and ensure service integration on a broader scale.

3.6 Insights on Next Steps from In-Depth Interviews

According to the available data as quoted by several interviewed, the car remains dominant (in Croatia about 85% modal share; in Split over 80% of trips by car), while rail and public transport are underused, though they grow during peak hours and the tourist season. In Lower Friuli, public transport is weak on weekends and stops are limited; among tourists, arrivals are mainly by car (then bus and plane) and, on site, preferences lean toward cycling and walking; they call for extended PT hours/routes, better integrated connections, and, where possible, single ticketing.

From the perspective of Riviera Friulana, multimodality is recognized as crucial but is still developing: there is no single ticket or app, timetable harmonization agreements are local rather than systemic, and user information is often insufficient. Where the offer is clearer and more coordinated (e.g., bike–tourist train combinations, bike parking at key nodes), visitors appreciate it; residents, however, remain more car-dependent, especially off-season.

Strengths of current strategies include growing awareness of the need to integrate PT, modernization of infrastructure and trains, and the involvement of multiple actors (authorities, operators, districts). Key challenges include fragmentation among carriers, slow administrative processes, limited information integration, and across several contexts planning approaches that are still too car-centric.

In the interview conducted with Nikola Skelin the Head of the Split Regional Unit within HŽ Putnički prijevoz, it emerged that the next steps include: an app with real-time information and modernized ticketing; better timetable connections between rail and local bus lines; refreshed promotional campaigns; intermodal train–bus–taxi hubs (Split, Kaštela, Knin); park-and-ride pilots at stations; single ticketing and a unified digital platform; expanding cycling networks; and stronger educational and promotional activities for both tourists and residents. In cycle

tourism, proposals include a multimodal coastal system (train, bike, land–boat) and genuinely bike-friendly hospitality standards (security, technical services, specialized laundry), integrating environmental and cultural themes (biotopes, *casoni*, Stella River) and unifying wayfinding via maps and a single app. The role of airports (e.g., Trieste Airport) is also highlighted as potential hubs, provided access networks are efficient.

Also in the case of Pescara, single ticketing systems have been highlighted as both desirable and difficult to be achieved. In particular, it has ben noted that the possibility of introducing a single ticketing system has been discussed for many years, yet its realisation remains complex. One of the main critical issues concerns the fragmentation of applications and digital services, which may discourage users. In this process, users themselves may represent one of the most critical actors, particularly because they are often discouraged by the presence of too many different applications and systems. A more integrated and simplified system could instead promote wider adoption of these tools and increase users' awareness of digital mobility services.

Looking ahead, the priority is digital and institutional integration across all modes (information, timetables, payment), delivered by the ministry, local authorities, HŽPP, bus operators, and tech partners, alongside civic education about the benefits of PT.

As experts note, acceptance is not a major obstacle: convenient, coherent, and understandable networks drive use; what is needed is competent planning, actor coordination, and the will to execute.

4 Cross-Border Sustainable Mobility Market Analysis

4.1 Mobility in Italy

4.1.1 The State of Mobility in Italy[1]

The mobility market in Italy is highly significant and has a direct impact on people's daily lives, as well as on the organization of cities and transport services. In 2025, approximately 36.7 million Italians travel every day, accounting for 71.8% of the reference population. On average, each person makes 2.48 trips per day, resulting in a total of around 91 million daily trips across the country. Mobility is more intense on weekdays, when work, education, and productive activities drive both the frequency and volume of travel. The most notable insight concerns travel distances: over 68% of users travel less than 50 km per day. This highlights a predominantly local mobility demand, largely concentrated in urban and short-range movements.

Looking at travel motivations:

- Work remains the primary driver of mobility in Italy.
- Family-related needs also continue to play a significant role, showing growth compared to the pre-pandemic period.
- After declining, leisure-related mobility returned to growth in 2024.

The most relevant signal comes from 2025: in the first half of the year, mobility for work purposes reaches 33.6%, while mobility for education accounts for 5.4%, highlighting a strengthening of systematic travel patterns.

[1] The analysis contained in this paragraph is based upon the following publication: *22° Rapporto sulla mobilità degli italiani. Eppur si muove. ISFORT, 2025.* Available at: https://www.isfort.it/wp-content/uploads/2025/11/22-RapportoMobilita_Sintesi.pdf

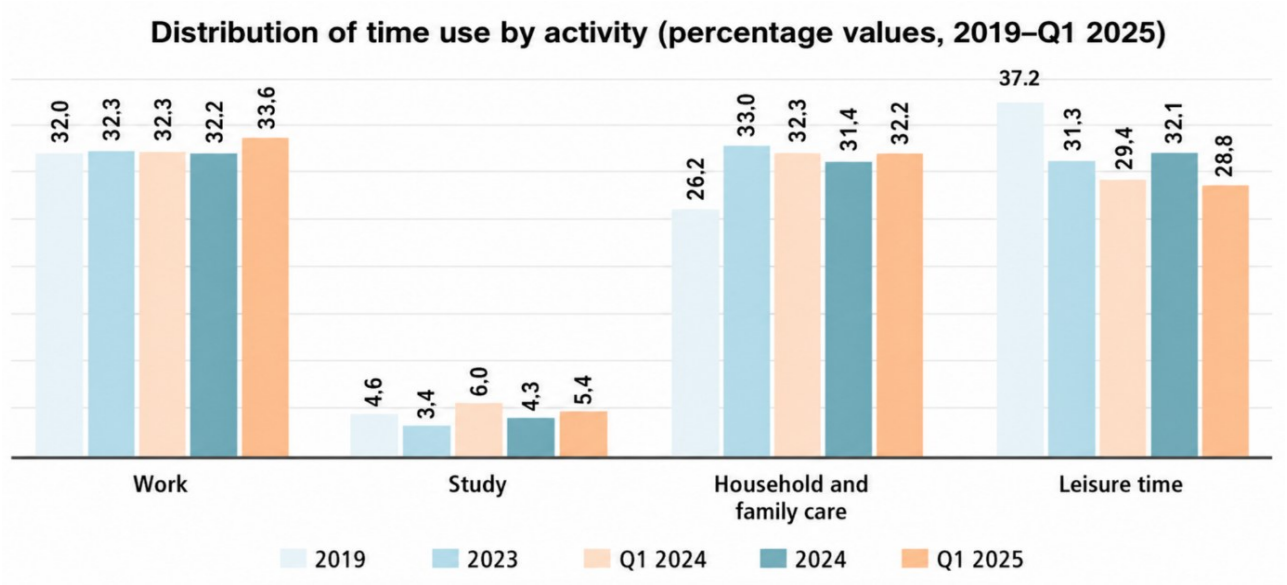


Figure 1: Distribution of trips by purpose (%, 2019–H1 2025)

Looking at the modes of transport used, a gradual shift is emerging in Italy's mobility model toward more sustainable, lower-impact solutions.

In the first half of 2025, cars remain the dominant mode, accounting for 60.8% of trips. Motorcycle usage is increasing, reaching 4.5%, exceeding previous levels. In parallel, sustainable mobility is growing: walking accounts for 20.6% of trips, while cycling and micromobility show the most significant growth. Bicycle usage rises to 5.2%, surpassing the 5% threshold for the first time. Public transport also shows signs of recovery, reaching 8.9% in the first half of 2025, up from 2024. The most recent data indicate that by the end of 2025, local public transport accounts for around 10% of urban trips nationwide.

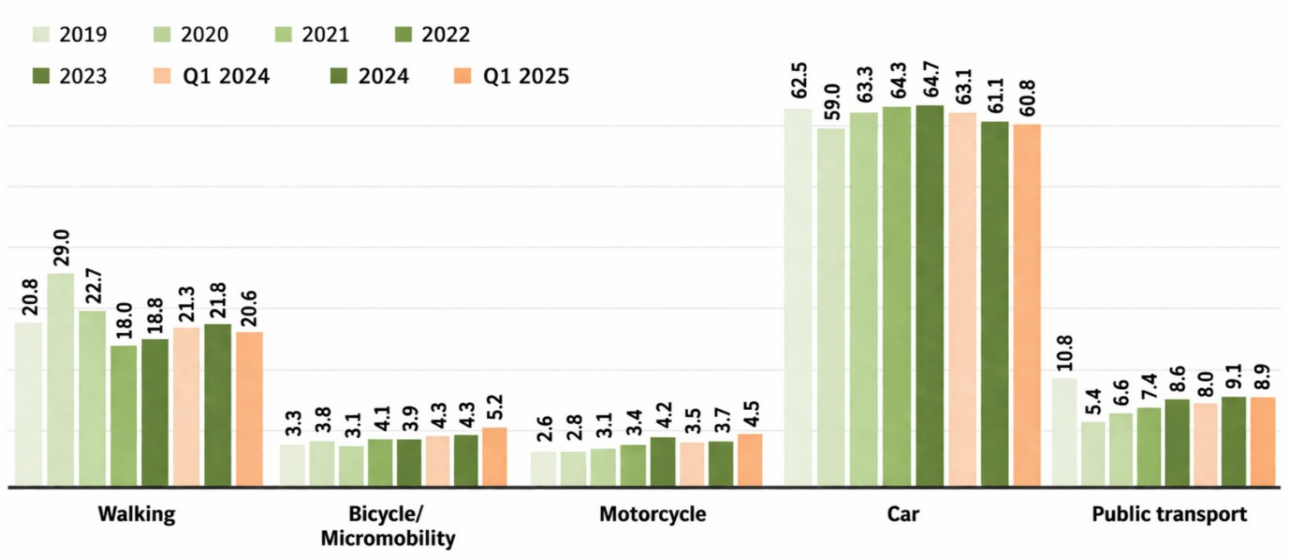


Figure 2: Distribution of trips by mode of transport used (%, 2019–H1 2025)

4.1.2 The Evolution of Sustainable Mobility in Italy[2]

The evolution of sustainable mobility in Italy shows a gradual return to pre-pandemic levels. The indicator includes trips made by public transport, walking, cycling, and micromobility.

After the fluctuations experienced during the pandemic years, sustainable mobility reached 34.7% in the first half of 2025, up from 33.4% in the same period of 2024.

This figure is now very close to the 2019 level of 35%, suggesting a tangible recovery in lower-impact transport modes and a gradual normalization of mobility habits.

[2] The analysis contained in this paragraph is based upon the following publication: *22° Rapporto sulla mobilità degli italiani. Eppur si muove. ISFORT, 2025.* Available at: https://www.isfort.it/wp-content/uploads/2025/11/22-RapportoMobilita_Sintesi.pdf

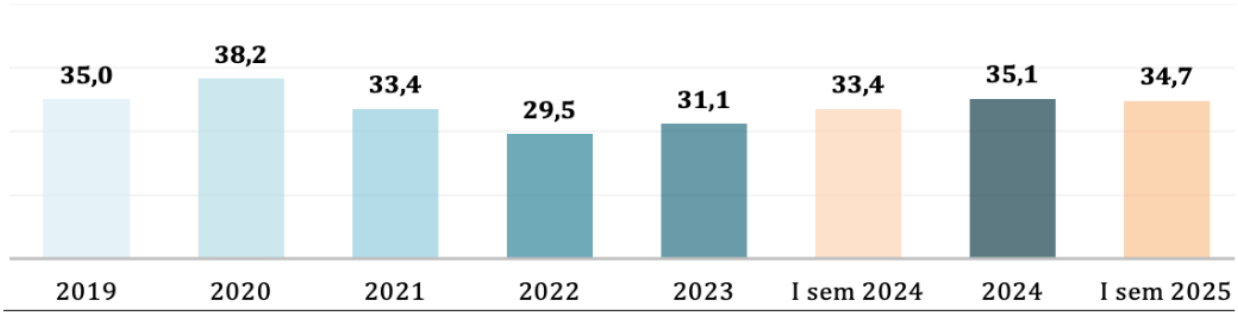


Figure 3: Trend of the sustainable mobility rate (% of trips made by public transport, walking, and cycling/micromobility)

The evolution of shared mobility in Italy shows a market that has largely stabilized, while also displaying new signs of acceleration.

- 2024 closed with just over 50 million rentals, broadly in line with the previous two years.
- The most interesting signal comes from the first four months of 2025, which recorded a 17% increase compared to the same period of the previous year.

If this pace continues, the market could exceed 60 million rentals by year-end, reaching the highest level in the entire historical series.

Growth is mainly driven by e-scooters, which account for almost half of total rentals, and bike sharing, which represents around one third. Car sharing and scooter sharing, on the other hand, continue to show a more stable trend.

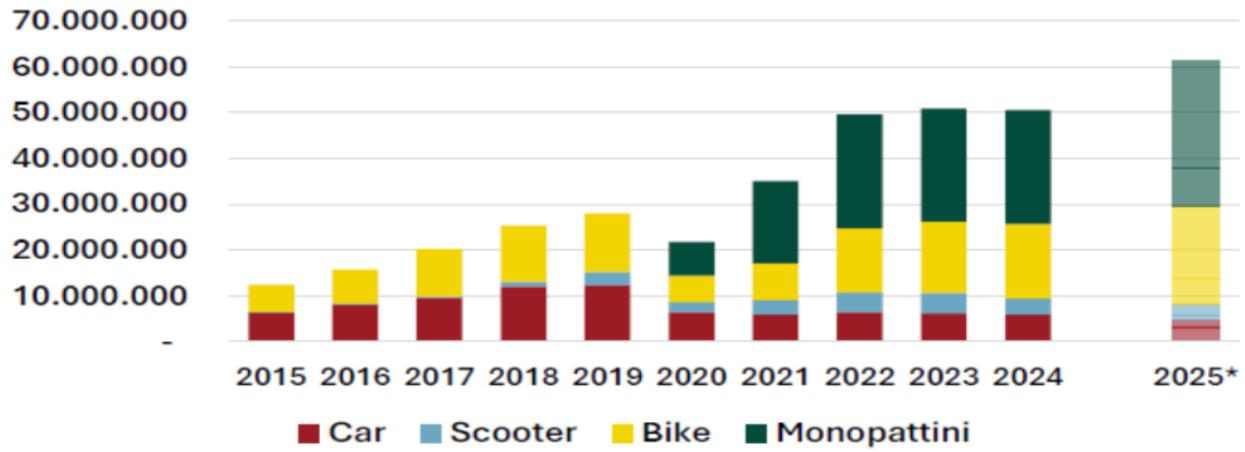


Figure 4: Trend of shared mobility rentals (2015–2025, millions)

4.1.3 Public Transport Trends in Italy[3]

Taking a closer look at public transport, Italy ranks among the leading European markets: with a value of around €12 billion, the local public transport sector (TPL) is the fourth largest in Europe.

However, the gap with top players remains substantial. Countries such as Germany, France and United Kingdom report market volumes that are more than double, highlighting significant growth potential for Italy.

The use of public transport in Italy shows a strong territorial gap, influenced by both city size and geographic location:

- In large urban areas (over 250,000 inhabitants), public transport accounts for around 14-18% of trips, making it a viable and competitive alternative to private cars.
- In medium-sized cities and small towns, this share drops to between 4% and 10%, where public transport is still perceived as a more marginal option.

Geography also plays a key role: in Southern Italy and the Islands, public transport usage stands at around 4-5%, while in the North-West it exceeds 10%.

[3] The analysis contained in this paragraph is based upon the following publication: *Prossima fermata: Mobilità Integrata. Atlante della trasformazione digitale della PA, February 2022*. Available at: https://designers.italia.it/files/resources/atlante/prossima-fermata.pdf

The gap is particularly clear when comparing major cities such as Milan or Rome, where public transport is an integral part of daily mobility, with smaller towns, where car usage remains dominant.

This imbalance becomes even more significant considering that only about 15% of Italians live in large urban areas: for the majority of the population, collective mobility is still not widely adopted.

In fact, looking at user behaviour, a clear gap emerges between regular and occasional use of public transport.

- Only about 13% of residents identify collective transport (train, tram, metro, bus) as their main mode of travel.
- However, this figure rises to 18.5% when considering people aged 14 and over who use buses, trams, or trolleybuses at least once a month within their municipality.

This highlights a key point: public transport is not yet the "default" mobility choice. Private cars remain the primary reference, meaning that any MaaS solution or app must position itself as a real and competitive alternative to everyday car use, not just as a complementary option.

4.1.4 The Rise of Integrated and Intermodal Mobility[4]

In Italy, integrated mobility is still a fragmented system, with very different levels of integration across regions and local areas.

The first forms of integration emerged in the railway sector, through passes allowing users to travel on multiple trains or regional routes. Over time, the model expanded to include other modes of transport, such as buses, bicycles, and ferries.

Today, the landscape remains highly uneven: in some regions, integration is already supported by digital services; in others, it still relies on paper tickets or passes; while in some cases, it is managed through smartcards that can store different types of travel tickets on a single physical medium.

[4] The analysis contained in this paragraph is based upon the following publications: *Prossima fermata: Mobilità Integrata. Atlante della trasformazione digitale della PA, February 2022.* Available at: https://designers.italia.it/files/resources/atlante/prossima-fermata.pdf and *22° Rapporto sulla mobilità degli italiani. Eppur si muove. ISFORT, 2025.* Available at: https://www.isfort.it/wp-content/uploads/2025/11/22-RapportoMobilita_Sintesi.pdf

The analysis of intermodal trips (those combining multiple motorized transport modes) shows that their adoption in Italy is still limited.

In recent years, no significant changes have been observed: in the first half of 2025, intermodality accounts for 2.8% of trips, down from 3.2% in 2024 (-12.5%) and far below the 6.5% recorded in 2019 (-57%).

Overall, intermodality remains a marginal practice and has not yet returned to pre-pandemic levels, highlighting the need to further strengthen integration across different transport systems.

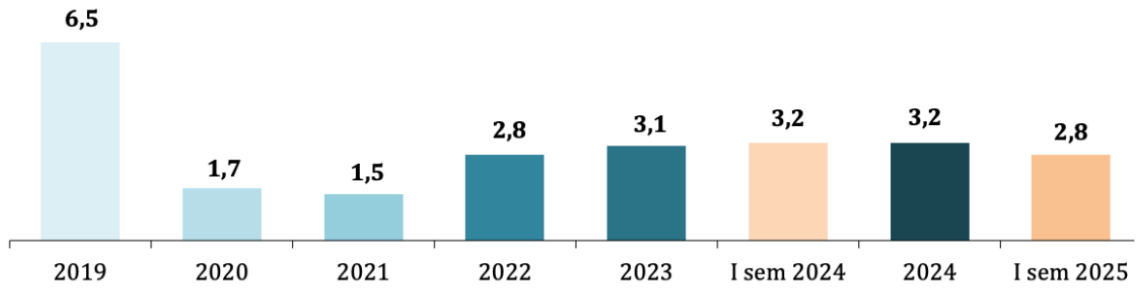


Figure 5: Trend of intermodal trips in Italy (share of trips combining multiple transport modes out of total motorized trips, 2019–2025)

4.2 Mobility in Croatia

4.2.1 The State of Mobility in Croatia[5]

In the period from January to December 2025, the total number of passengers transported in Croatia amounted to 88.2 million, 5% more than in 2024, confirming a solid rebound of public transport demand after the pandemic phase.

Growth is broad-based across modes:

- Road line transport increased by 5.3%.
- Railway transport by 7.3%.

[5] The analysis contained in this paragraph is based upon the following publication: *Volume of road traffic of national vehicles, 2022*. Croatian Bureau of Statistics. Available at: https://podaci.dzs.hr/media/10fkj3s5/tran-2026-1-3-volume-of-road-traffic-of-national-vehicles-2024.pdf

- Seawater and coastal transport also posted a positive change, albeit more moderate at 0.6%.

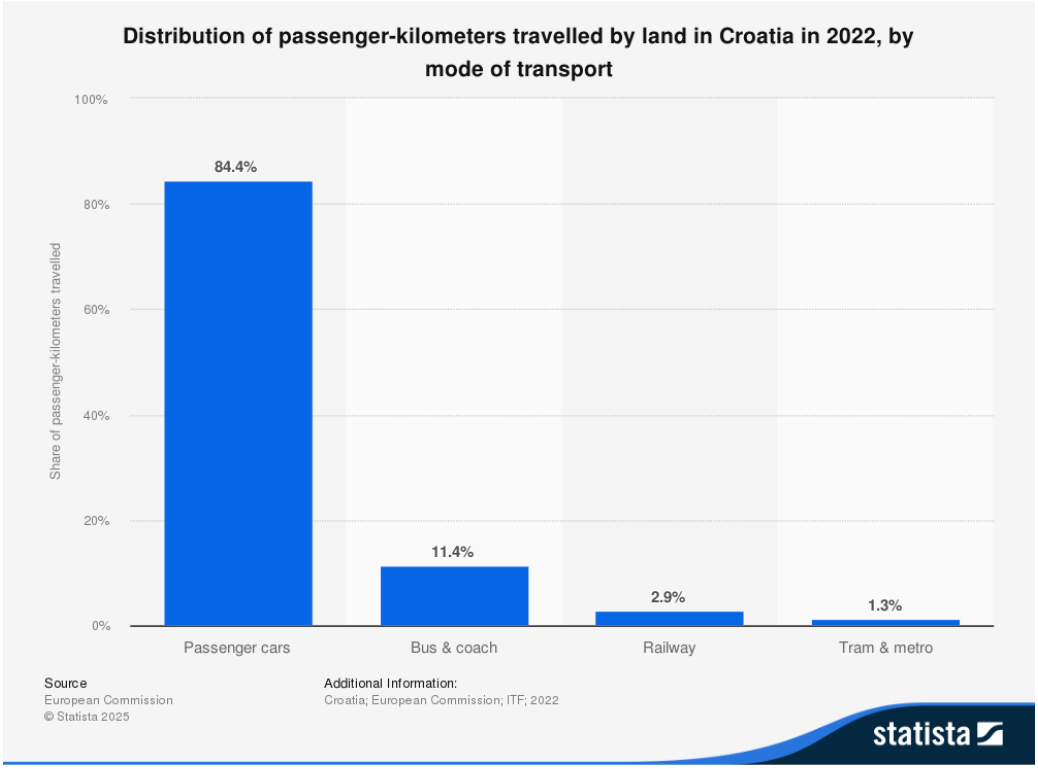


Figure 6: Distribution of passenger-kilometers travelled by land in Croatia in 2022, by mode of transport. Source: Statista statista.com/statistics/449401/croatia-modal-split-of-passenger-transport-on-land/

Looking at the longer-term perspective, data for 2022 show that bus and coach transport volumes (in passenger-kilometres) were already on a recovery path after the 2020–2021 collapse, but still below the pre-2019 peak. The numbers of 2025 on passenger-kilometres for road line transport suggest that, while the number of passengers is growing, average distances per trip are slightly shortening, indicating more regional and local movements rather than long-haul coach journeys.

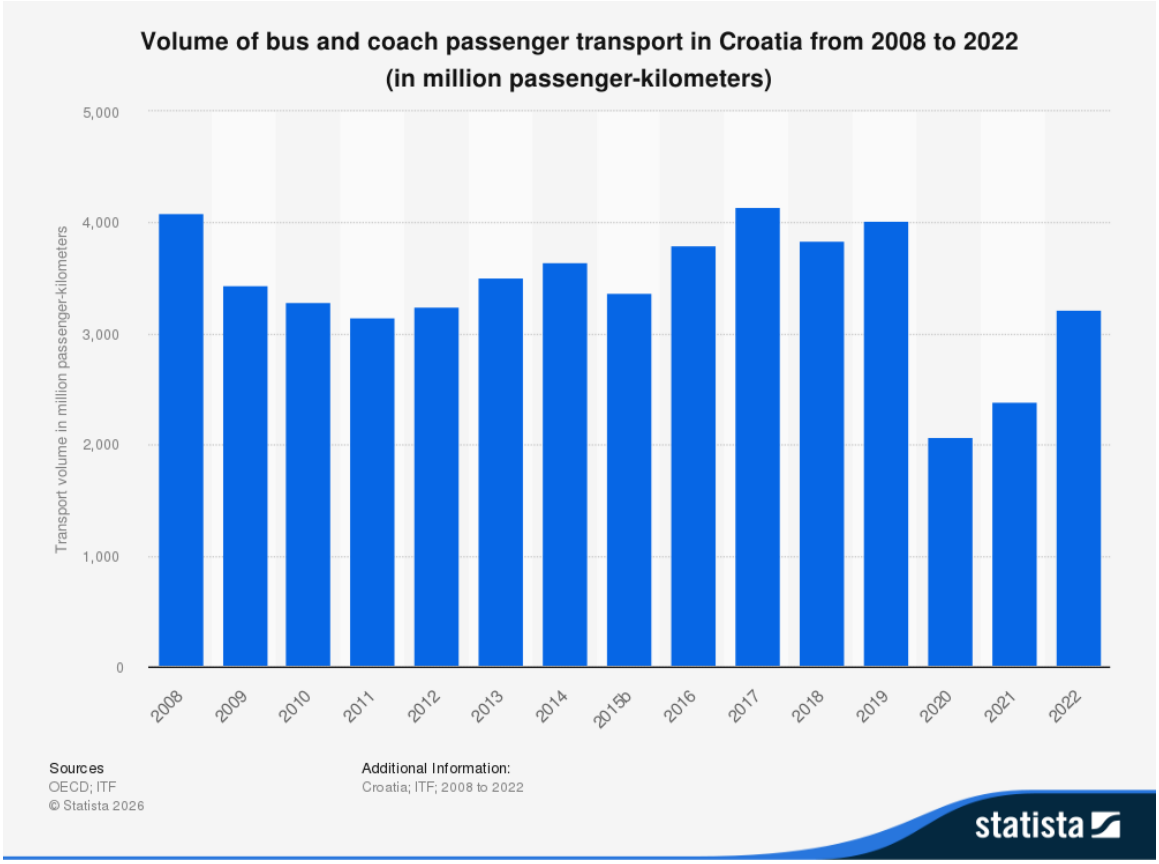


Figure 7: Volume of bus and coach passenger transport in Croatia from 2008 to 2022. Source Statista. statista.com/statistics/449401/croatia-modal-split-of-passenger-transport-on-land/

At the same time, the overall road system remains the backbone of mobility in Croatia. In 2024, vehicles registered in the country travelled 32.905 million vehicle-kilometres, 4.8% more than in 2023, signalling an expansion in road traffic both for private and collective mobility. Passenger cars alone accounted for 77.9% of all vehicle-kilometres travelled, underlining the dominant role of the private car in everyday mobility patterns, while buses and coaches cover a smaller but strategically important share.

In 2024, approximately 54% of Croatians took at least one trip for personal/leisure reasons, while only 8.5% traveled for work/business reasons. This confirms that residents' tourist mobility is strongly driven by leisure, with business travel remaining much more limited.

4.2.2 The Evolution of Sustainable Mobility in Croatia[6]

Between 2024 and 2025, Croatia's public transport system will grow fairly steadily. Total passengers will increase from approximately 84 to 88 million, indicating that more and more people are using public transport to get around.

- Rail transport will increase from 24.6 to 26.4 million passengers.
- Extra-urban buses from 41.1 to 43.3 million.
- Maritime transport from 15.4 to approximately 15.5 million.

The urban area is expanding rapidly:

- Urban buses will increase from 130.3 to 141.7 million passengers.
- Trams from 121.7 to 139.7 million.

This means that, in cities, demand for public transport will grow at a faster rate than in the rest of the system. In terms of "heads transported," therefore, the situation is clear: all means of transport are seeing more passengers, with a particular boom in urban transport and a positive trend for rail and extra-urban buses.

When looking at passenger kilometers (kilometers traveled by passengers), interesting differences emerge.

- Rail travel increased from 1,150 to 1,234 million passenger kilometers: the growth is aligned with that of passengers, a sign that train journeys are increasing without shortening. In practice, train travel is gaining importance even over medium- and long-distance routes, not just as a suburban service.
- Road line transport (extra-urban coaches) decreased from 3,751 to 3,643 million passenger kilometers, despite having more passengers. This means that coaches are making more trips, but over shorter distances: the role of buses is strengthening on regional and local routes, while they are slightly less important on long-distance routes.

[6] The analysis contained in this paragraph is based upon the following publication: *Volume of road traffic of national vehicles, 2022*. Croatian Bureau of Statistics. Available at: https://podaci.dzs.hr/media/10fkj3s5/tran-2026-1-3-volume-of-road-traffic-of-national-vehicles-2024.pdf and on *Transport, fourth quarter of 2025*. Croatian Bureau of Statistics. Available at: https://podaci.dzs.hr/2025/en/97464

- Maritime transport remains stable at around 748 million passenger-km: given the growth in passengers, this indicates that it moves mainly on short coast-island connections, increasing the number of trips but not lengthening the average distances.

In conclusion:

- Rail: more passengers and more passenger-km, with almost identical growth. This shows a rail system strengthening as a backbone for medium- to long-distance travel, ideal for modal shift policies away from cars.
- Extraurban buses (road line): more passengers but fewer overall kilometers. Coaches are increasingly becoming a means of regional distribution and feeder services to urban/railway hubs, less of a "road highway" for long journeys.
- Sea (seawater & coastal): increasing passengers, stable kilometers. This confirms that the sea is the proximity network for islands and the coast: numerous trips, relatively short routes, strongly connected to tourism and local mobility.
- Urban public transport (buses and trams): explosion in passengers and increase in vehicle kilometers (kilometers traveled by vehicles). Croatian cities are recentralizing public transport in everyday life: more lines, more frequencies, more use, with enormous potential for sustainable mobility policies (electrification, preferential lanes).

Table 1: Number of passengers carried along different transportation means, 2024-2025. Source: Croatian Bureau of Statistics, DZS

	Unit of measure	2024	2025
Passengers carried	‘000	83.961	88.170
Railway transport	‘000	24.597	26.384
Road line transport	‘000	41.111	43.280
Seawater and coastal transport	‘000	15.394	15.483
Urban bus	‘000	130.303	141.721
Urban trams	‘000	121.733	139.745
Passenger-kilometres	Mln	9.027	9.154
Railway transport	Mln	1.150	1.234

Road line transport	Mln	3.751	3.643
Seawater and coastal transport	Mln	748	748
Urban bus	Mln	65.294	69.019
Urban trams	Mln	10.606	11.722

4.2.3 The Role of Private Transportation and Sustainability Efforts

The fact that cars account for nearly 80% of road kilometers traveled indicates that, even as public transportation grows, Croatians' mobility needs are primarily met by cars. Public transport captures a growing share of passengers, but the bulk of kilometers traveled remains in private cars.

Adding 2.56 million passenger cars and 32.9 billion vehicle-kilometers suggests that each car, on average, is used extensively. The car is the dominant means of transport for work, study, errands, and leisure.

On the front of cars that "do not emit at the tailpipe" (BEVs and fuel-cell vehicles), Croatia starts from a very low base. In 2023, according to Eurostat data on new registrations, only 2.6% of newly registered passenger cars in the country were zero-emission vehicles, one of the lowest shares in the entire EU.

At EU level, the average is around 14–15%, with Nordic countries exceeding 30–40%, which immediately shows the size of the gap. In practice, most new cars sold in Croatia are still petrol or diesel, with a non-negligible share of hybrids, but truly "full electric" cars remain a niche segment.

Croatia is progressively aligning its transport system with EU sustainability objectives.

The national Transport Development Strategy 2017–2030 and the energy strategy set clear targets: the share of renewable energy in transport is expected to reach 24.6% by 2030, up from only around 2.4% in 2022, while approximately EUR 6 billion are earmarked for modernising the rail sector over the next decade[7].

[7] See also *Dove investire (Croazia)*. Osservatorio Economico infoMercatiEsteri, available at: https://www.infomercatiesteri.it/dove_investire.php?id_paesi=64

Overall, these initiatives indicate that, while Croatia's mobility is still strongly car-dependent, there is a consistent policy and investment shift towards rail, public transport and cycling as the backbone of a future low-carbon, intermodal mobility system.

The Croatian National Cycling Development Plan 2023–2027 allocates EUR 166.7 million to building more than 850 km of new cycling infrastructure and to promoting cycling as a daily mode of transport, with the aim of raising the national cycling modal share from 6% to 8%[8].

The plan includes the roll-out of public bike-sharing and cargo-bike schemes, improvements in cycling infrastructure and road safety education.

At city level, bike-sharing systems are already operating in several urban areas:

- In Split a 300-bike system (100 e-bikes and 200 conventional bikes) has recorded almost 95,000 registered users, more than 1.3 million rentals and over 6 million cycling kilometres since its launch in 2019, demonstrating a significant appetite for shared cycling solutions[9].
- In Rijeka, the 'RiCikleta' public e-bike sharing system currently offers 28 electric bicycles distributed across four docking stations and operates year-round, from 7 a.m. to 11 p.m., co-funded by the Croatian Ministry of Tourism with 195.000 kuna to promote sustainable urban mobility[10].
- In Poreč, the 'Poreč Bike Share' scheme, described as the most advanced hotel bike-sharing system in Croatia, targets both residents and tourists and is fully integrated into the city's cycling tourism offer, enabling visitors to connect urban movements with coastal and inland cycling routes without using a car[11].

[8] More information at *La Croazia adotta una strategia nazionale per promuovere l'uso della bicicletta*. Fit Consulting, 2024, available at: https://www.fitconsulting.it/la-croazia-adotta-una-strategia-nazionale-per-promuovere-luso-della-bicicletta/
[9] Information on Split bike sharing system is available at: https://split.hr/clanak/najvece-sirenje-sustava-javnih-bicikli-u-splitu-do-sada-300-novih-krece-u-rad
[10] Information on Rijeka bike sharing system is available at: https://ricikleta.rijeka.hr/en/user-guide.php
[11] Information on Poreč bike sharing system is available at: https://www.porecbikeshare.com/it/

4.2.3.1 Projects Related to Sustainable Mobility

CYROS (Adriatic Ionian Cycle Route for Sustainable Tourism)[12] is a cross-border project to develop the Adriatic-Ionian cycle route and intermodal bike+train, bike+bus, and bike+boat solutions along the Italian-Croatian coast. Therefore, it is an enabling initiative for sustainable mobility and slow tourism, not a digital service already marketed to the public.

Cyros is funded by the Interreg VI-A Italy-Croatia 2021-2027 program. The project is led by the Friuli Venezia Giulia Region, with partners from various Italian and Croatian regions.

The goal is to define and enhance a cycling route along the Adriatic coast between Italy and Croatia, connecting it to the hinterland and to public and maritime transport services. In practice, it aims to simplify the journey for cycle tourists by combining cycling with other means of transport.

The reference area is the Adriatic-Ionian axis, therefore the Italian and Croatian coasts, with a strong focus on internal connections to the hinterland. Geographically, it therefore also includes Croatia, but not as a single city or region: it is a macro-regional corridor.

The project launched in 2024 and will continue in 2025-2026, with interventions and coordination among partners already in the implementation phase.

Key actions include:

- Comprehensive GIS mapping of existing and planned cycling routes.
- The identification of 'missing links', and pilot initiatives to make transport hubs more bike-friendly.

MIMOSA (MarItime and MultimOdal Sustainable passenger transport solutions and services)[13] is a strategic project of the Interreg V-A Italy–Croatia 2014–2020 program, active from January 1, 2020, to June 30, 2023. It operates in a cross-border area of approximately 85,500 km^2 and over 12.4 million inhabitants, with the aim of improving the quality, environmental

[12] Information on CYROS Project is available at: https://www.regione.fvg.it/rafvg/cms/RAFVG/infrastrutture-lavori-pubblici/infrastrutture-logistica-trasporti/FOGLIA39/

[13] Information on MIMOSA Project is available at: https://programming14-20.italy-croatia.eu/web/mimosa

sustainability, and accessibility of passenger transport along the Italy–Croatia Adriatic corridor.

The main objectives are:

- To develop and test sustainable maritime and multimodal transport solutions (sea-land connections, combined bus/train/ship services).
- To promote intermodality and low-carbon mobility, integrating bicycles, public transport, and maritime services at key hubs (ports, airports, stations).
- To create digital tools and traffic models to support planning, flow monitoring, and intelligent service management.
- To strengthen cooperation between Italian and Croatian operators and territories, sharing best practices and guidelines for bike-friendly intermodal hubs and multimodal passenger services.

The Lika Drive pilot, developed under MIMOSA in Croatia's Lika-Senj County, is a dual mobile-app system (one for passengers, one for drivers) that enables on-demand transport from sparsely populated rural areas to the county capital Gospić, improving digital access to essential health and social services where conventional public transport is weak or non-existent[14].

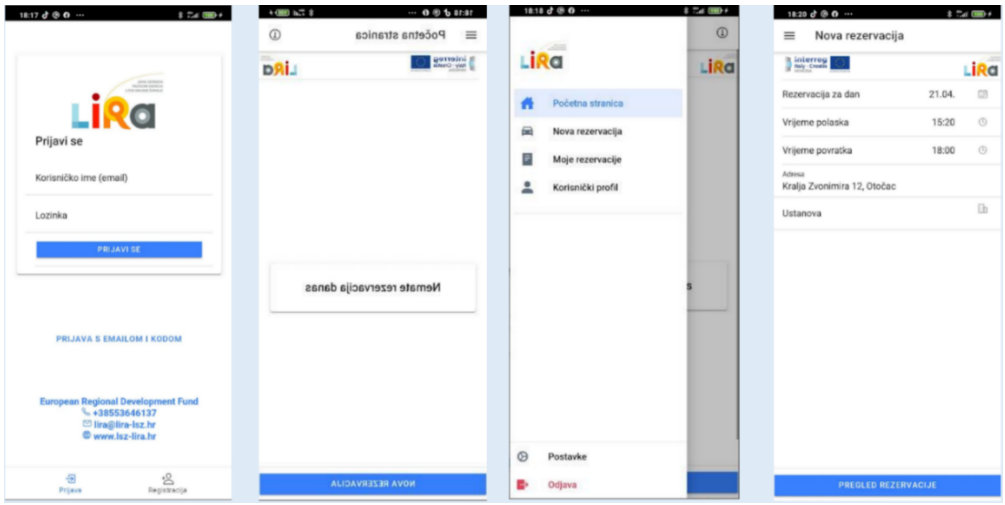


Figure 8: Lira app layout

[14] Information on Lika drive pilot is availabe at: https://programming14-20.italy-croatia.eu/documents/2143550/3794182/D.5.1.11+Lika+drive.pdf/

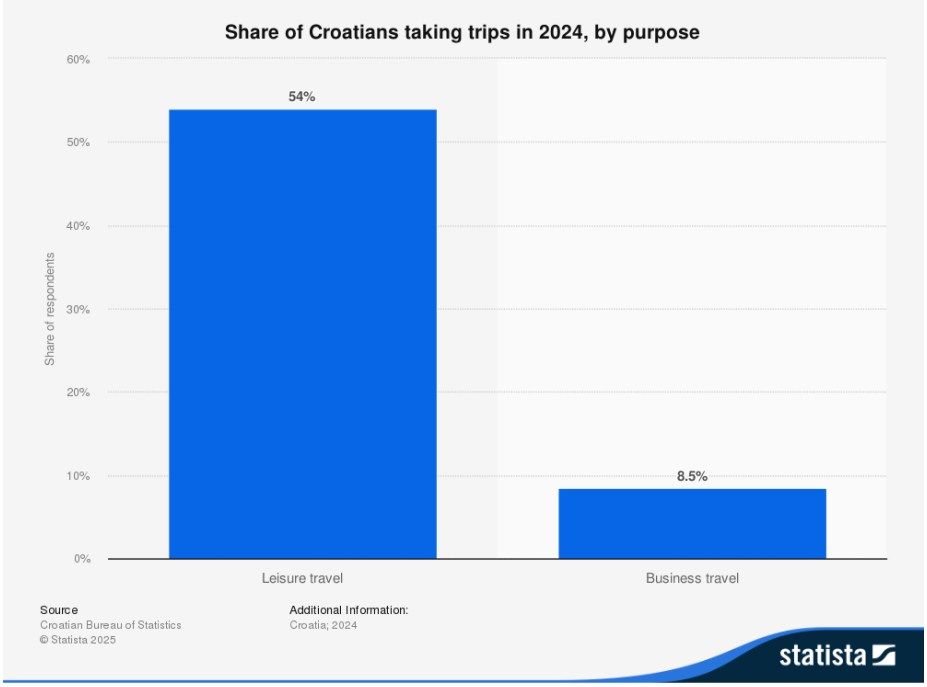


Figure 9: Share of Croatians taking trips in 2024, by purpose. Source: Statista 2024 https://www.statista.com/statistics/1620303/croatia-going-on-trips-by-purpose/

4.2.3.2 Size and Growth of the Rent-a-Car Market[15]

The Croatia Vehicle Rental Market (covering cars and other vehicle types) is expanding rapidly, with revenues expected to grow at a CAGR of 6.8% between 2025 and 2031.

[15] The analysis contained in this paragraph is based upon the following publication: *Croatia Vehicle Rental Market revenue is projected to grow at a CAGR of 6.8% during 2025-2031*. 6WResearch, 2025. Available at https://www.6wresearch.com/press-release/croatia-vehicle-rental-market-revenue-is-projected-to-grow-at-a-cagr-of-68-during-2025-2031

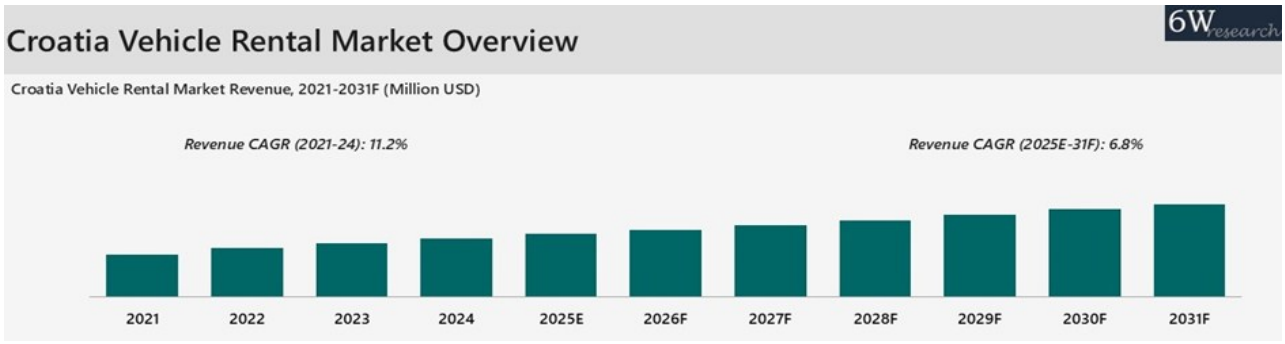


Figure 10: Croatia Vehicle Rental Market Overview, 2021-2031F

Growth is closely tied to tourism: in 2024, leisure travel was the application segment generating the largest share of rental revenues, as many tourists opt for rental cars to explore coastal areas, islands and inland destinations that are not well served by public.

In other words, rent-a-car is a relatively small but very dynamic market, tracking international tourism trends and benefiting from season extension, with strong growth also in shoulder months.

In 2024, the passenger car segment generated the highest share of revenues in Croatia's rental market, driven by tourist demand for "standard" cars used for self-drive trips along the coast and through national parks. By 2031 SUVs are expected to be the fastest-growing segment and to become the dominant vehicle type in rentals, as they offer space, comfort and versatility for families and groups travelling between cities, beaches and rural areas.



Figure 11: Croatia Vehicle Rental Market Revenue Share

The leisure travel segment is set to dominate both growth and revenue, while business and "other" uses are projected to remain much smaller.

4.3 Mobility Apps and MaaS

4.3.1 Europe: MaaS and Integrated Mobility Systems[16]

Integrated mobility refers to an urban system designed to reduce the environmental, economic, and social impacts associated with private car use. It achieves this by combining efficient public transport, advanced digital infrastructure, and smart technologies into a seamless and coordinated mobility network.

The concept of integrated mobility is broad and multifaceted, as it encompasses key elements of both sustainable mobility and Mobility as a Service (MaaS).

The European Mobility as a Service (MaaS) market is experiencing strong growth. In 2024, it was valued at $228.6 billion and is expected to grow at a CAGR of 10.3% between 2025 and 2034, surpassing $580 billion by 2034.

This expansion is closely linked to the evolution of cities, which increasingly require well-coordinated and efficient mobility systems. MaaS is designed to address this need by integrating private transport, public transport, bike sharing, and multimodal travel into a single, cohesive ecosystem.

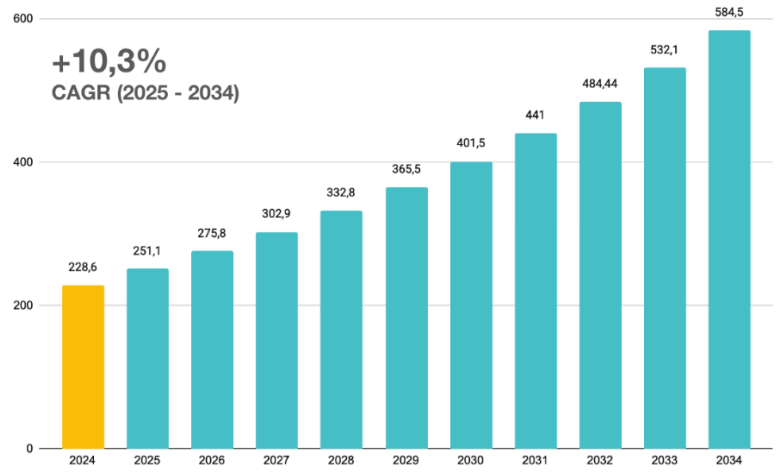


Figure 12: Mobility as a Service Market Size, 2024–2034 (USD billion)

[16] The analysis contained in this paragraph is based upon the following publication: *Europe Mobility-as-a-Service Market 2025 – 2034*. Global Market Insights, June 2025. Available at: https://www.gminsights.com/industry-analysis/europe-mobility-as-a-service-market

MaaS was originally conceived as a "super app" designed to integrate all mobility services - public transport, shared mobility, taxis, parking, and complementary services - into a single interface. Today, however, the landscape is more complex: over 80% of European public transport operators already have their own digital ticketing systems, and the market remains highly fragmented, with thousands of providers across sharing, taxis, parking, and micromobility. As a result, the model is evolving: rather than a single centralized app, the trend is toward multiple access points, where mobility services are increasingly integrated but distributed across different platforms.

4.3.2 Italy: MaaS and Integrated Mobility Systems[17]

In this context, MaaS for Italy is a national initiative funded by the PNRR, designed to build a unified digital ecosystem for sustainable mobility (MaaS for Italy).

Through digital intermediation platforms, the project integrates different transport solutions, from public transport and car sharing to bike sharing and taxis, allowing users to plan, book, and pay for multiple services in a simple and coordinated way.

After an initial phase, the project expanded to several regions, including Abruzzo, Campania, Emilia-Romagna, Piemonte, Puglia, Veneto, and the Autonomous Province of Bolzano.

The model is built around three key steps:

- Selecting MaaS Operators through calls for expressions of interest. Today, several apps operate as MaaS Operators, including MooneyGo, Urbi, ACI Sara GO, and some local platforms.
- Creating a national technological layer for data exchange and interoperability.
- Activating financial incentives for a limited number of registered trial users.

The goal is to turn different mobility options into a single intermodal travel experience that is more seamless, accessible, and tailored to users' needs.

In this context, mobility apps are becoming increasingly central to the travel experience. These include all applications that support transportation, even indirectly, from local public transport

[17] The analysis contained in this paragraph is based upon the CMI internal elaboration based on the integrated analysis of multiple industry reports. See also *Mobility as a Service for Italy*. Dipartimento per la trasformazione digitale. Available at: https://innovazione.gov.it/progetti/mobility-as-a-service-for-italy/

and MaaS apps to platforms such as Google Maps for journey planning, as well as railway apps, urban ticketing tools, and sharing or ride-hailing services.

In Italy, around 55–65% of the adult population uses at least one mobility app, even if only occasionally. However, adoption remains uneven, strongly influenced by age and urban context.

The comparison (at global level) between mobility apps confirms the clear dominance of Google Maps, which reaches 1.05 billion monthly active users, 672.66 million weekly users, and 271.45 million daily users. These figures are far above the other apps analysed, reinforcing its role as the global reference platform for navigation and mobility.

Among apps specialized in public transport, Moovit has the largest user base, with 23.13 million MAU, 11.88 million WAU, and 3.76 million DAU. However, its Daily Stickiness stands at 16.27%, lower than Google Maps and other transit apps.

Transit and Citymapper have smaller audiences, with 8.73 million and 8.21 million monthly users respectively, but show stronger daily usage intensity: Transit records a stickiness of 24.3%, while Citymapper reaches 23.78%.

Unified App Beta	MAU	WAU	DAU	Daily Stickiness
Google Maps Google 2 apps in this group	1.05B	672.66M	271.45M	25.86%
Moovit: Bus & Transit... Moovit App Global LTD 2 apps in this group	23.13M	11.88M	3.76M	16.27%
Transit • Subway & B... Transit App, Inc. 2 apps in this group	8.73M	5.52M	2.12M	24.3%
Citymapper: All Live ... Citymapper Limited 2 apps in this group	8.21M	5.2M	1.95M	23.78%

Figure 13: Figures related to main mobility apps. Source: App usage data were analysed using Similarweb, referring either to the February 2025–January 2026 period, at global level. To properly interpret the metrics, four key indicators are considered: MAU, or monthly active users; WAU, or weekly activ

Unified App Beta	MAU	WAU	DAU	Daily Stickiness	Unified App Beta	Store Downloads
MooneyGo (myCicero) Pluservice.net 2 apps in this group	762.67K	372.5K	88.22K	11.64%		44.13K ↑8.77%
TABNET – Mobilità in... Servizi In Rete 2001 2 apps in this group	88.67K	41.48K	9.61K	10.7%		9.38K ↓9.98%
Wetaxi - All in one WeTechnology Srl 2 apps in this group	73.23K	27.85K	5.79K	7.74%		4.86K ↓3.59%
URBI - your mobility ... URBANnext S.A. 2 apps in this group	28.1K	14.82K	3.49K	11.03%		1.83K ↓26.66%

Figure 14: Figures related to main mobility apps – 2. Source: App usage data were analysed using Similarweb, referring either to the February 2025–January 2026 period, at global level. To properly interpret the metrics, four key indicators are considered: MAU, or monthly active users; WAU, or weekly activ

Looking more closely at MaaS Operator app downloads and usage (worldwide):

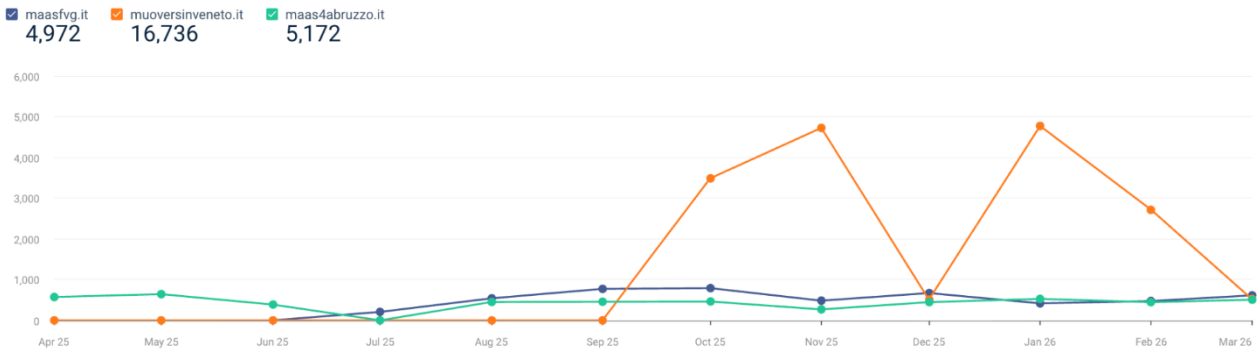
- MooneyGo confirms its position as the strongest digital player among the apps analysed. It recorded 44.1K monthly downloads, up 8.77%, while all other operators declined: Wetaxi reached 9.38K downloads (-9.98%), TABNET 4.86K (-3.59%), and URBI 1.83K (-26.66%).
- The gap is even more evident in active users. With 762.7K MAU, MooneyGo has a monthly active user base 8–10 times larger than TABNET (88.7K MAU) and Wetaxi (73.2K MAU), and more than 25 times larger than URBI (28.1K MAU). Daily usage also confirms its leadership, with 88.2K DAU.
- In terms of usage frequency, MooneyGo records a Daily Stickiness of 11.64%, in line with URBI (11.03%) and slightly above TABNET (10.7%). This suggests that, once acquired, users of smaller apps also tend to engage with the service fairly regularly. Wetaxi shows the lowest stickiness (7.74%), indicating a weaker ability to convert monthly users into daily users.

4.3.2.1 MaaS in Friuli Venezia Giulia, Veneto and Abruzzo

Friuli Venezia Giulia, Veneto, and Abruzzo are among the Italian regions that have launched concrete Mobility as a Service development and testing initiatives, with the aim of making mobility more integrated, digital, and accessible.

To support this analysis, we consider the web traffic to the regional MaaS project websites. This data helps assess not only the formal existence and progress of the initiatives, but also their ability to generate online visibility, interest, and awareness.

Web traffic can therefore be interpreted as an indirect indicator of adoption potential, showing how effectively each project is able to reach users, inform the public, and guide them toward the use of new digital mobility services.



Metric	maasfvg.it	muoversinveneto.it	maas4abruzzo.it
Monthly visits	552	**2,789**	470
Monthly unique visitors	267	**884**	224
Visits / Unique visitors	2.07	**3.15**	2.10
Deduplicated audience	230	**805**	195
Visit duration	00:01:01	00:01:34	**00:01:34**
Pages per visit	2.06	1.61	**2.23**
Bounce rate	**40.07%**	61.18%	42.82%

Figure 15: Source: Similarweb, referring either to the April 2025 - March 2026 period, at global level. Monthly Visits: shows the total number of visits generated on the website in a month. Unique Visitors: represents the number of distinct users visiting the site over a given period. Deduplicated Audience: measures the actual number of users by removing duplicates across devices or multiple accesses. Visit Duration: indicates the average time a user spends on the site during a visit. Pages per Visit: represents the average number of pages viewed per session. Bounce Rate: measures the percentage of users who leave the site after viewing only one page.

Overall, the websites of the analysed MaaS projects show relatively low traffic volumes, indicating limited digital visibility. This suggests that awareness of these services is still not widespread and remains confined to a relatively small portion of the potential audience.

Among the three websites analysed, muoversinveneto.it shows the highest online visibility, with 2,789 monthly visits and 884 unique users, well above maasfvg.it (552 visits) and maas4abruzzo.it (470 visits). The visits-to-users ratio is also higher for Veneto (3.15), indicating more frequent return visits.

However, higher traffic does not translate into deeper navigation: the Veneto website records the highest bounce rate (61.18%) and the lowest number of pages per visit (1.61), suggesting a faster and less exploratory browsing experience.

By contrast, maas4abruzzo.it shows the strongest engagement signals, with the highest average visit duration (1 minute and 34 seconds) and the highest pages per visit (2.23). maasfvg.it, on the other hand, records the lowest bounce rate (40.07%), indicating a good ability to retain users.

In Friuli Venezia Giulia Region[18], about 58.6% of the population (including workers and students) are regular commuters, traveling consistently for work or study. Since 2022 demand of public transport has steadily recovered, showing a gradual return to public transport usage. In 2024, local public transport in Friuli Venezia Giulia carried approximately 114.8 million passengers, confirming its role as a key mobility infrastructure for residents, workers, students, and tourists.

TPL FVG is the leading public transport operator in the region and represents a key reference point for the daily mobility of residents, commuters, and tourists. On average, each resident of Friuli Venezia Giulia makes around 95 public transport trips per year, a figure higher than that recorded in most Italian regions. Around 35% of trips are made by public transport or sustainable modes, such as buses, trains, walking, or cycling. The remaining 65% are still made by private vehicles, confirming the continued dominance of cars in regional mobility. Within the integrated mobility landscape, Friuli Venezia Giulia stands out as one of the most advanced regions, thanks to its high level of service integration and a structured approach to mobility development.

In line with emerging digital mobility trends, the Friuli Venezia Giulia Region has launched the MaaS FVG project[19], one of Italy's first initiatives aimed at building an integrated mobility ecosystem. At the core of the project is the new Glimble FVG app[20], designed to simplify access to transport services and make travel more connected, flexible, and sustainable.

[18] The analysis on Friuli Venezia Giulia is the result of CMI internal elaboration based on the integrated analysis of multiple industry reports from Trieste Trasporti (https://www.triestetrasporti.it/it/comunicati-stampa) and TPL FVG (https://tplfvg.it/en/mobility-information/notices-events-news/), MaaS FVG project (https://www.maasfvg.it/), Glimble FVG app (https://glimble.it/).
[19] See the website https://www.maasfvg.it/
[20] See the website https://glimble.it/

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- Glimble FVG integrates the main regional mobility services into a single platform: TPL FVG urban and interurban buses, Trenitalia regional trains, local ferry services, Trieste bike sharing, Trieste Airport parking, and cross-border connections with Nova Gorica.
- The app allows users to purchase tickets, view nearby stops and services in real time, plan intermodal routes, and pay for the entire journey in one single transaction. One of its most innovative features is Swipe, which enables users to travel without purchasing an individual ticket in advance.

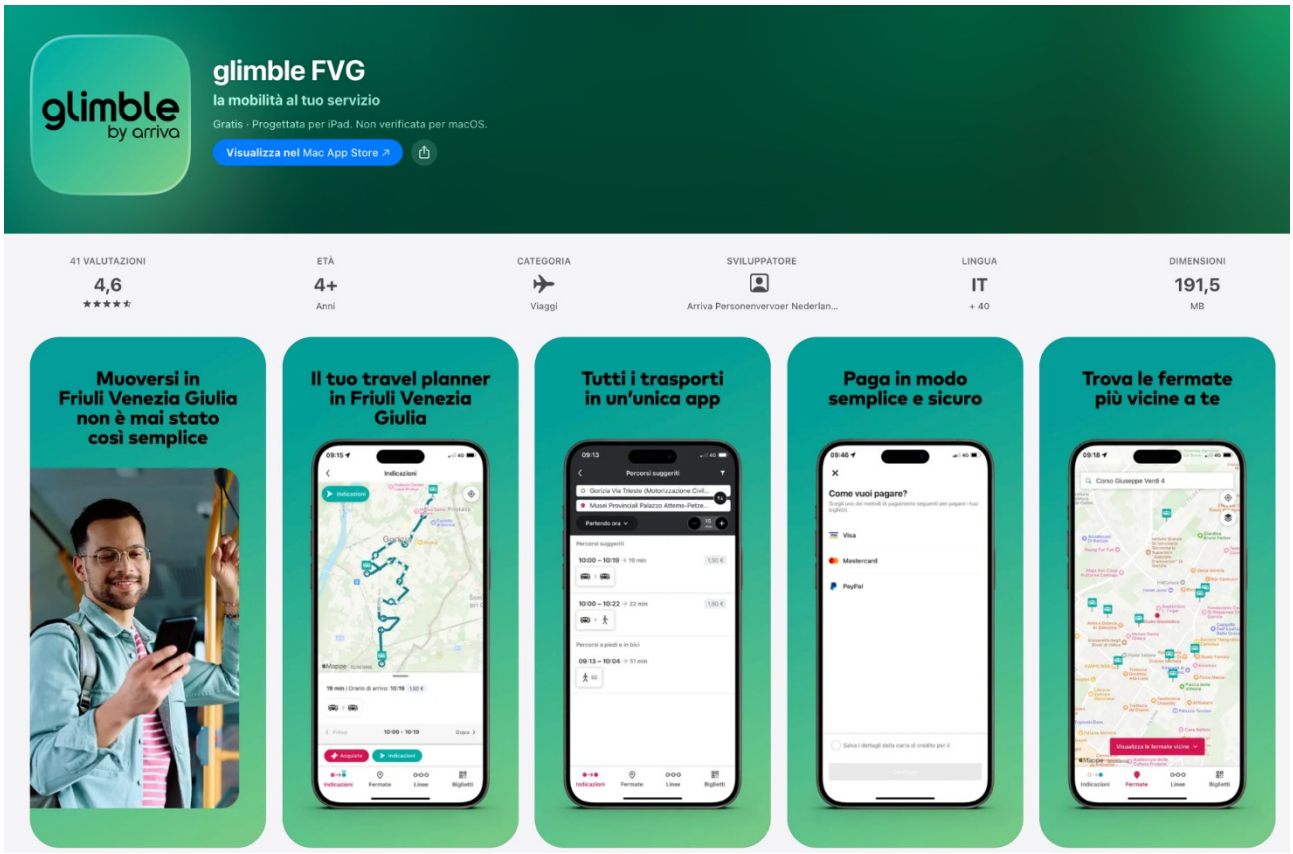


Figure 16: Glimble FVG layout

In Veneto Region[21], daily mobility involves around 81% of the population aged 14 to 84, travelling every day for work, study, family needs, or leisure. Looking at transport modes in

[21] The analysis on Veneto is the result of CMI internal elaboration based on the integrated analysis of multiple industry reports from ISTAT (https://www.istat.it/wp-content/uploads/2025/01/ISTAT-PSCL-2024_Sede-del-Veneto-redatto-da-Anna-Maria-Cecchini.pdf), Regione Veneto (https://www.regione.veneto.it/documents/10805/27149/Statistiche+Flash+Settembre+2025.pdf/),

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Veneto, private cars has a dominant role: 47% of residents use them every day, while 41% use them at least a few times a week. Cycling also shows a solid level of adoption: 9% of residents use a bicycle daily, 24% a few times a week, and another 28% at least a few days per month. The use of motorcycles, mopeds, and scooters is much lower. Public transport remains mainly occasional: urban buses and trams are used at least a few times per month by 43% of Veneto residents, while coaches and interurban buses reach 28%. Although Veneto ranks among the leading Italian regions in terms of total public transport journeys, the service offer still appears weak compared to demand, especially in suburban and interurban areas. This points to a system that is widely used in absolute terms, but still has significant room for improvement in terms of capacity, integration, and service quality.

In line with emerging digital mobility trends, MaaS Veneto is the app developed to support the regional integrated mobility trial as part of the Veneto Region's MaaS project. The services included are ATV Verona, AVM/Actv Venezia, Trenitalia regional and fast regional trains, and Verona Bike bike sharing. The trial focuses on the Verona–Venice corridor, where users can purchase integrated passes such as Mestre Daily Pass, Venezia Daily Pass, Verona Daily Pass, and the Mestre–Verona and Venezia–Verona daily passes. Through an integrated Trip Planner, the app allows users to plan their journey, purchase combined travel tickets with a single click, and validate digital tickets directly from their smartphone.

MaaS Veneto (https://openmove.com/soluzioni/), and Veneto Region's MaaS project (https://www.regione.veneto.it/article-detail?articleGroupId=10733&articleId=11935274).

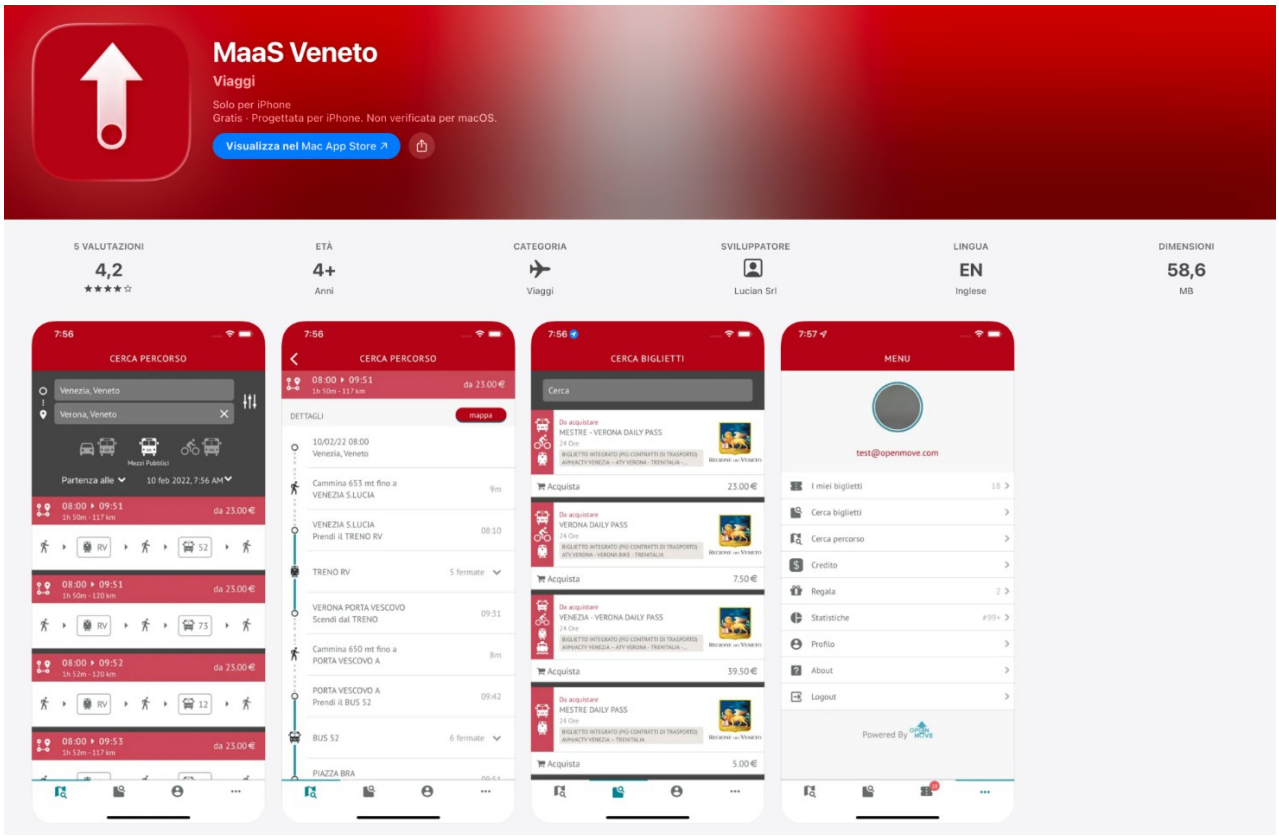


Figure 17: MaaS Veneto app layout

In Abruzzo Region[22], daily mobility remains strongly dependent on private cars, used both as drivers and passengers for trips to school and work. This pattern also reflects the region's high motorization rate. Public transport plays a more limited role: urban and interurban buses, trams, and trains account for a smaller share of trips compared to cars. Regional rail transport is an exception, showing relatively stable flows, with around 4.2 million passengers per year estimated on the local network (in 2023). Overall, sustainable mobility in Abruzzo accounts for around 20–25% of trips, below the national average. The remaining share is still mainly covered by private vehicles.

In line with emerging digital mobility trends, MIA (MaaS Integration Application) is the MaaS app developed for the MaaS4Abruzzo project, focused on integrated mobility in Abruzzo. The app

[22] The analysis on Abruzzo is the result of CMI internal elaboration based on the integrated analysis of multiple industry reports from ISTAT (https://www.istat.it/it/files//2020/05/13_Abruzzo_Scheda.pdf) and MIA (https://www.tuabruzzo.it/maas4abruzzo/124.html).

allows users to plan trips across the Pescara–Chieti–Costa dei Trabocchi area, purchase multimodal travel tickets, and use MaaS incentives or vouchers through a single account and one payment system. MIA integrates the services of the MaaS Operator TUA Abruzzo and the other providers involved in the regional trial, making access to multiple transport solutions simpler and more seamless. Through the app, users can check timetables, plan trips, purchase and use tickets and passes directly from their smartphone. It also allows payments by credit card or digital wallet, as well as quick parking payment and extension without using parking meters.

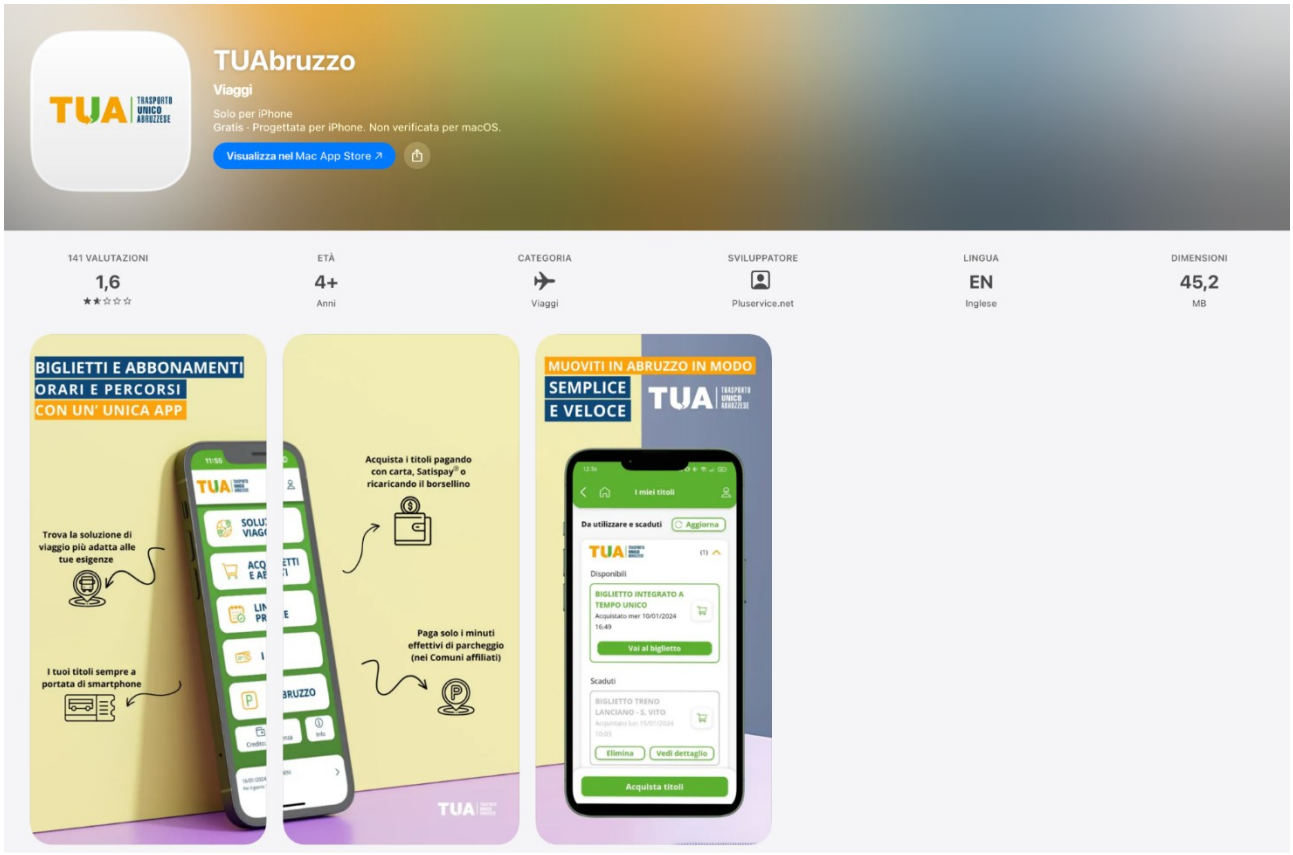


Figure 18: TUAbruzzo app layout

4.3.3 Croatia: Early Stages of MaaS Market

In Croatia, based on the sources analysed, there does not currently appear to be a single national Mobility as a Service platform capable of fully bringing together buses, trains, taxis, bike sharing, parking, electric charging and tolls within one digital ecosystem. The current

picture instead appears more fragmented: there are several apps dedicated to mobility, but each responds to specific needs and tends to cover a single service area, rather than offering a truly integrated and cross-functional experience.

The most relevant solutions mainly concern bus transport, road infomobility, motorway tolls, parking, electric vehicle charging and, in some cases, trip planning with public transport. However, there is no national super-app that allows users to plan, book, pay for and use different means of transport in a genuinely integrated way.

Among the most significant applications is Arriva Croatia[23], useful for searching and booking bus rides, purchasing digital tickets directly through the app and consulting information about stops. From a strategic point of view, Arriva seems to focus above all on the digitalization of its own commercial channel. The goal is not so much to build a multi-operator platform or a national integrated mobility ecosystem, but rather to make access to the bus services of its own network simpler, more immediate and more convenient. In this sense, Arriva Croatia can be read as a sort of "operator super-app": very effective for those who use Arriva buses, but not comparable to a complete territorial MaaS platform.

A particularly interesting case is Mobility Plus[24], an application developed in the Istria context. This app allows users to view buses and trains in real time, plan journeys and purchase tickets. Precisely because of this combination of functions (information, planning and ticketing) Mobility Plus represents the case closest to the concept of Mobility as a Service among those identified. Its relevance, however, seems mainly linked to the Istrian territorial perimeter: rather than a Croatian national platform, it appears to be a local example of integration between public transport services.

Alongside these solutions linked to collective transport, there are also apps focused on road mobility. HAK - Info traffic Croatia[25], developed by the Croatian automobile association, is a useful tool for those travelling by road, as it offers information on traffic, road conditions and useful updates for journey planning. LiveTrafficHR[26] falls within the same area, designed for Croatian motorways and oriented towards safety and route management through real-time data.

[23] See the website https://www.arriva.com.hr/it-it/home
[24] Available at https://play.google.com/store/apps/details?id=mobility.plus.app&hl=it&pli=1
[25] See the website https://www.hak.hr/info/stanje-na-cestama?lang=en
[26] See the website https://www.hac.hr/en/traffic-and-security/live-traffic-hr

Another relevant area is parking and electric mobility. Bmove[27] focuses on parking and EV charging and is available in several Croatian locations. Here too, it is a useful service that is consistent with the evolution of urban and interurban mobility, but it remains a vertical solution, specialized in specific needs of motorists.

Overall, therefore, Croatia shows a digital mobility ecosystem that is already active but still partial and fragmented. There are valid apps for specific functions, some of them also advanced, but a single national access point capable of combining different means and services in a fully integrated logic has not yet emerged.

Among the solutions identified, Mobility Plus is the one that comes closest to the idea of MaaS, because it combines public transport, real-time data, planning and ticket purchase. However, its scope appears mainly local, while at national level the Croatian market remains characterized by a multiplicity of separate tools.

Mobility Plus is, in fact, one of the most interesting integrated mobility initiatives currently present in Croatia. However, its scope remains local or regional rather than national: the app was launched for the area of Pula and the surrounding territory, with the aim of facilitating travel within a specific area of Istria.

The application was developed by the Istrian Development Agency, IDA, together with Pulapromet, as part of the European SUSTANCE project[28]. This project, funded by Interreg Central Europe, aims to improve public transport connectivity in peripheral and remote areas by developing user-centred sustainable mobility solutions. These solutions also include micromobility apps and MaaS platforms, meaning Mobility as a Service. In this context, Mobility Plus was therefore created as a digital tool designed to simplify travel in the territory of Pula and its surroundings, bringing together public transport information and some operational functions within a single application[29].

[27] Availabe at: https://play.google.com/store/apps/details?id=hr.infoart.epk&hl=it
[28] See the website https://www.interreg-central.eu/projects/sustance/
[29] https://www.interreg-central.eu/news/new-mobility-app-in-croatia/

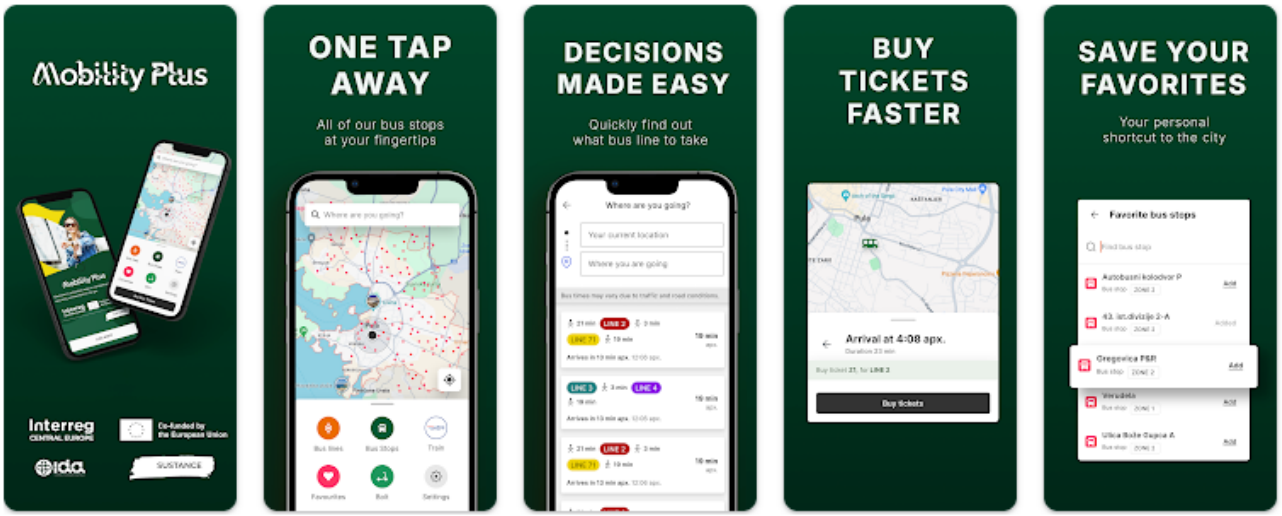


Figure 19: Mobility Pluss app layout

The main functions that Mobility Plus aims to implement concern timetable consultation, trip planning, mobile ticket purchase and real-time bus tracking.

The app also allows users to view nearby stops, Pula bus lines, stations along the route and some train-related information on the map. In this sense, the platform is not limited to providing static information, but seeks to support users throughout the different stages of their journey: from initial route planning, to checking the available options, through to ticket purchase and real-time vehicle monitoring.

A relevant element is that, based on the available sources, no download price or subscription fee emerges for using the app. The available listings present it as an app that can be downloaded without any indication of cost, with ticketing features and in-app payments. Mobility Plus is also already available on the main digital stores, both on Google Play Store and App Store, confirming that it is not just a theoretical pilot project, but a tool already accessible to users.

Within the Istrian context, Mobility Plus is also connected to a broader attempt to integrate different modes of transport, particularly public transport, bicycles and trains.

According to the available information, in Istria a dedicated application integrating bicycle and train transport recorded over 3,000 downloads. At the same time, the Croatian Railways website expanded its online services by introducing a new section dedicated to combined bicycle-train transport. The platform now provides publicly accessible information on public

transport options, cycling routes, official EuroVelo itineraries, services for cyclists, cyclist-friendly accommodation facilities and recommended local attractions[30].

verall, Mobility Plus can therefore be seen as an advanced initiative aligned with the evolution of sustainable mobility in Europe. Its main value lies in its ability to bring together within a single app functions that usually remain separate: timetable consultation, trip planning, mobile ticketing, real-time data and information on different transport options. At the same time, its current limitation is its geographical scope: rather than representing a national MaaS platform for the whole of Croatia, Mobility Plus currently appears to be a local or regional solution, centred on Istria and in particular on the Pula area. Precisely for this reason, it can be considered a relevant pilot case: not yet a national super-app, but a concrete example of how integrated mobility can be developed starting from a specific territory.

4.4 Cross-Border Italy-Croatia Mobility

4.4.1 Tourism in Croatia in 2025: General Overview[31]

In 2025, tourism in Croatia continued to grow, albeit at a moderate pace. Commercial accommodation establishments recorded 20.7 million tourist arrivals and 94.8 million overnight stays, representing an increase of +2.2% and +1.2% respectively compared to 2024.

The overall average length of stay was 4.6 nights per arrival.

International tourism continues to represent the dominant component of the sector: foreign tourists generated 17.6 million arrivals and 85.6 million overnight stays, accounting for 85.1% of total arrivals and 90.3% of total overnight stays. The average length of stay among foreign tourists was 4.9 nights per arrival, higher than that of domestic tourists, which stood at 3.0 nights.

In 2025, Germany confirmed its position as the main foreign market for Croatia, with 3.0 million arrivals and 21.0 million overnight stays, accounting for 24.6% of foreign overnight stays.

After Germany, Slovenia, Austria, Poland, the Czech Republic and the United Kingdom, Italy ranks among Croatia's main foreign markets: Italian tourists accounted for 4.3% of total foreign

[30] See INTERREG project SUSTANCE website: https://www.interreg-central.eu/projects/sustance/
[31] The content of this paragraph is based upon the following publication: *Tourist Arrivals and Nights in Commercial Accommodation, 2025*. Croatian Bureau of Statistics. Available at: https://podaci.dzs.hr/2025/en/97094

overnight stays. In absolute terms, this corresponds to around 3.7 million overnight stays generated by Italian tourists in 2025, calculated on the basis of the 85.6 million total foreign overnight stays.

Therefore, although it is not among the very top markets such as Germany or Slovenia, Italy maintains a relevant role in Croatian tourism, ranking as the seventh foreign market by overnight stays.

Italy's role becomes even more significant when looking at the County of Istria, one of the Croatian areas closest and most accessible to the Italian market. In Istria as well, Germany remains the leading foreign market, with 10 million overnight stays, equal to 36.9% of foreign overnight stays in the county. It is followed by Austria, Slovenia and then Italy.

Italian tourists generated 5.9% of foreign overnight stays in Istria, a higher share than the national figure of 4.3%. In estimated values, this corresponds to around 1.6 million Italian overnight stays in Istria. Moreover, compared to 2024, overnight stays by Italian tourists in Istria increased by +0.8%, confirming a positive, albeit moderate, trend.

In terms of geographical distribution, tourist flows in Croatia are strongly concentrated in a few coastal counties, with the County of Istria clearly confirming its leading position. In 2025, Istria recorded 5.0 million tourist arrivals and 28.3 million overnight stays, accounting for 24.1% of total arrivals and almost one third of all tourist nights in Croatia, with a share of 29.9%. Compared to 2024, the county registered a further increase of +2.4% in arrivals and +1.5% in overnight stays.

The County of Split-Dalmatia ranked second, with 3.9 million arrivals and 18.4 million overnight stays, equal to around 19.4% of total tourist nights in Croatia. This area also showed a positive trend compared to 2024, with +2.5% in arrivals and +0.9% in overnight stays.

The County of Primorje-Gorski Kotar followed in third place, with 3.2 million arrivals and 15.5 million overnight stays, corresponding to approximately 16.4% of total tourist nights. Compared to the previous year, the county recorded +2.5% in arrivals and +0.5% in overnight stays (dzs.hr, 2025).

Overall, these three counties alone generated around 62.2 million overnight stays, representing approximately two thirds of total tourist nights in Croatia. This confirms the strong attractiveness of Croatia's coastal destinations, with Istria standing out as the country's main tourism hub.

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Looking specifically at Italian tourists, the available data highlights the particularly strong role of Istria. In 2025, Italian tourists accounted for 5.9% of total foreign overnight stays in the County of Istria, placing Italy as the fourth foreign market in the county, after Germany, Austria and Slovenia (dzs.hr, 2025).

This share is higher than Italy's weight at national level, where Italian tourists represented 4.3% of total foreign overnight stays. This confirms that Istria has a stronger-than-average appeal for Italian travellers compared to Croatia as a whole. In estimated terms, Italian tourists generated around 1.6 million overnight stays in Istria. The figure is particularly relevant considering the geographical proximity, accessibility and historical familiarity between Italy and the Istrian area (dzs.hr, 2025).

Moreover, compared to 2024, overnight stays by Italian tourists in Istria increased by +0.8%, showing a positive, although moderate, trend. This suggests that Istria continues to be one of the most attractive Croatian destinations for Italian visitors, consolidating its role as a key area for Italy–Croatia tourism flows.

To sum up, in 2025 Italy confirmed itself as an important market for Croatian tourism, especially from a territorial perspective. At national level, it accounted for 4.3% of foreign overnight stays, equal TO around 3.7 million nights, while in Istria its weight rose to 5.9%, with around 1.6 million overnight stays.

This indicates that Italian tourism towards Croatia is strongly concentrated geographically in Istria, an area where Italy represents the fourth foreign market by overnight stays, after Germany, Austria and Slovenia. The +0.8% growth in Istria compared to 2024 also signals the positive resilience of the Italian market, in a Croatian tourism context that is already mature and characterised by overall limited growth.

From a destination perspective, Croatia's tourism flows remain highly concentrated in its main coastal counties. Istria, Split-Dalmatia and Primorje-Gorski Kotar together account for around two thirds of total tourist nights, confirming the centrality of the Adriatic coastline in the country's tourism appeal. Within this landscape, Istria stands out as the leading Croatian destination overall, accounting for almost one third of total tourist nights in 2025. Its strong performance, combined with the above-average weight of Italian tourists, confirms its strategic relevance as the main gateway and preferred Croatian destination for the Italian market.

	Arrivals			Nights				
							2025	
	2024	2025	Indices 2025/2024	2024	2025	Indices 2025/2024	Structure of nights (%)	Average number of nights per arrival
Total	20 246 060	20 698 963	102,2	93 683 814	94 820 989	101,2	100,0	4,6
Domestic tourists	2 867 339	3 084 947	107,6	8 719 930	9 208 885	105,6	9,7	3,0
Foreign tourists	17 378 721	17 614 016	101,4	84 963 884	85 612 104	100,8	90,3	4,9
Of the total, according to the selected countries of residence								
Austria	1 509 652	1 533 528	101,6	7 520 947	7 520 808	100,0	8,8	4,9
Czech Republic	729 356	724 572	99,3	4 632 254	4 462 274	96,3	5,2	6,2
Italy	911 059	920 006	101,0	3 682 278	3 666 287	99,6	4,3	4,0
Hungary	758 621	755 099	99,5	3 608 041	3 507 657	97,2	4,1	4,6
Netherlands	516 010	490 619	95,1	2 921 014	2 779 274	95,1	3,2	5,7
Germany	3 071 567	3 040 654	99,0	21 101 453	21 030 521	99,7	24,6	6,9
Poland	1 127 508	1 200 933	106,5	6 787 380	7 024 750	103,5	8,2	5,8
Slovakia	500 225	500 843	100,1	3 074 695	3 012 518	98,0	3,5	6,0
Slovenia	1 570 749	1 607 781	102,4	7 934 845	8 024 918	101,1	9,4	5,0
United Kingdom	799 341	802 098	100,3	3 764 978	3 849 989	102,3	4,5	4,8

Figura 1: Tourist Arrivals and Nights in Croatia, 2024 – 2025. Source: dzs.hr

4.4.2 Tourism in Italy in 2025: General Overview[32]

In 2023, the latest official data available, Italy confirmed itself as a relevant destination for Croatian tourism, although it represented a numerically limited market within the total foreign flows to our country. In that year, Italy was the third preferred tourist destination for Croatian citizens: just over 921,000 Croatians visited our country, with a 5% increase compared to the previous year.

However, the figure takes on a more articulated meaning when read together with the statistics published by DZS, the Croatian Bureau of Statistics, quoted in the previous paragraphs. According to these data, Italy ranks first among the destinations for trips organized by Croatian travel agencies and tour operators, with over 70,000 travelers, ahead of Bosnia, Austria and Germany. This element highlights how Italy is not only a destination chosen individually for

[32] The content of this paragraph is based upon the following publication: *Flussi turistici: Croazia verso l'Italia*. Osservatorio Economico infoMercatiEsteri. Available at: https://www.infomercatiesteri.it/turismo_out.php?id_paesi=64

short trips or proximity travel, but also a destination strongly present in the structured offer of Croatian tourism operators.

Geographical proximity represents one of the main factors behind this attractiveness. For Croatian citizens, Italy is an easily accessible destination, suitable both for short stays and for day trips without overnight stays. For this very reason, many trips are linked to practical and recreational motivations, such as shopping, cultural visits or days on the snow in the nearby Italian Alps. Proximity therefore encourages frequent mobility, often concentrated in Northern Italy and particularly in the most easily reachable regions, such as Friuli Venezia Giulia, Veneto, Trentino-Alto Adige and Lombardy.

Despite this dynamism, the weight of the Croatian market within total foreign tourism in Italy remains limited. In 2023, in fact, Croatians accounted for approximately 0.54% of foreign arrivals and approximately 0.39% of foreign overnight stays, considering that the total for foreign countries was equal to 67.9 million arrivals and 234.2 million overnight stays.

This means that Croatia is not among the main international markets in terms of overall volumes, but it stands out for certain specific characteristics: strong geographical proximity, high incidence of short trips, relevance of shopping and mountain tourism, cultural and food-and-wine interest, and a good presence in organized travel circuits.

From the point of view of travel motivations, Croatian tourists show a strong interest in culture. Cities of art are in fact one of the main destinations for those choosing Italy, thanks to the richness of the country's historical, artistic and architectural heritage. Alongside cultural tourism, mountain resorts and parks also play a significant role, especially during the winter season, when the ski offer in Northern Italy intercepts a Croatian demand that is particularly sensitive to proximity and the quality of infrastructure.

In recent years, interest in food-and-wine tourism has also strengthened. Routes linked to the discovery of the territories where Italian specialties are produced represent an increasingly attractive element, because they make it possible to combine cultural experience, local authenticity and the enhancement of Made in Italy excellence. In parallel, there has also been growth in trips linked to religious tourism, with destinations such as Rome, Padua, Assisi and Locorotondo intercepting a specific and growing demand.

The offer of Croatian tour operators reflects these trends: on the one hand, it remains concentrated on cultural holidays, with the main Italian cities of art as central destinations; on

the other hand, especially in the winter period, it is oriented towards the ski areas of Trentino-Alto Adige, Veneto and Friuli Venezia Giulia. Added to this is a gradual expansion of air connection possibilities between Croatia and Italy. The growth of the offer by low-cost airlines such as Ryanair, easyJet and Wizz Air has made not only Northern and Central Italy more accessible, but also, increasingly, Southern Italy, thus broadening the range of destinations potentially reachable by the Croatian market.

In summary, Croatian tourism towards Italy appears to be a niche but dynamic market, more relevant in terms of frequency, accessibility and specialization of demand than in absolute quantitative weight. The combination of proximity, the variety of the Italian offer and the growing availability of air connections helps to keep Italy a competitive and recognizable destination for Croatian travelers.

4.4.3 The Most Common Ways to Travel Between Italy and Croatia[33]

Cars and tires remain central to the Italy–Croatia relationship, especially for Northern Italy, Friuli Venezia Giulia, Veneto, Slovenia/Istria, and family or outdoor tourism. At the broader Italian level, in 2023 road-border transit was the leading channel for inbound tourist flows, accounting for 49.4%, followed by air travel at 47.0%. Italians also continue to prefer travelling by car for their own trips, with a share of 69.5%.

Air travel: this is growing mainly for city breaks, Southern Italy/southern Croatia, Dubrovnik, Split, Zagreb, and short trips. In 2025, the Italian Ministry reported a +9.3% increase in airport flows from the main Balkan countries to Italy in the first half of the year, confirming air travel as an expanding mode for Adriatic-Ionian flows.

Ferry: this remains a strategic channel, though more seasonal and linked to specific Adriatic routes. The main Italy-Croatia routes include connections such as Ancona-Split, Ancona-Zadar, Bari-Dubrovnik, and Bari-Split, with vehicle transport available on conventional routes. This makes ferries particularly relevant for travelers with cars, motorcycles, or camper vans, although they are not necessarily the dominant channel in terms of overall volumes.

[33] The content of this paragraph is based upon the following publication: Tourist Flows by Mode of Transport. ISPRA, 2026. Available at: https://indicatoriambientali.isprambiente.it/en/tourism/tourist-flows-mode-transport

5 Insights from End-Users (Long-Term Residents and Tourists)

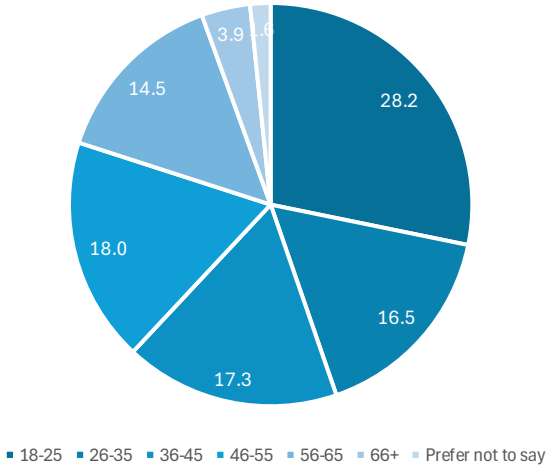
5.1 Long-Term Residents

5.1.1 Sample Characteristics

842 valid answers were collected through the SUMMA Long-Term Residents Survey.

Composition of the sample

Age group (n=794)



Gender (n=797)

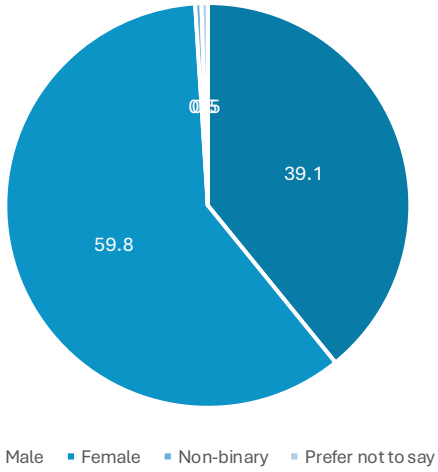
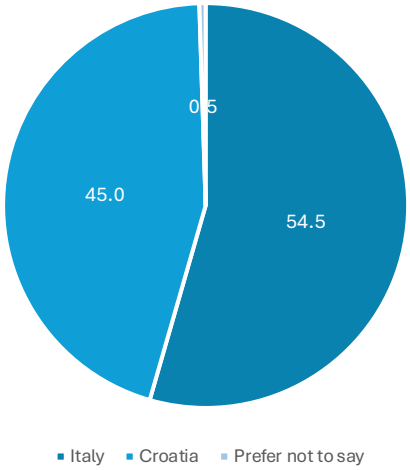


Figure 20: Long-term residents survey Composition of the Sample - Age and Gender

The long-term resident sample covers all age groups, although younger respondents are comparatively more represented. People aged 18-25 account for 28.2% of the valid age responses, followed by the 46-55 group (18.0%), the 36-45 group (17.3%), the 26-35 group (16.5%) and the 56-65 group (14.5%). Respondents aged 66 or over represent 3.9%, while 1.6% preferred not to report their age. The gender profile is somewhat unbalanced, with women representing 59.8% and men 39.1% of the sample; non-binary and non-disclosed responses are marginal.

Composition of the sample

Country of residence (n=797)



Pilot Area (n=842)

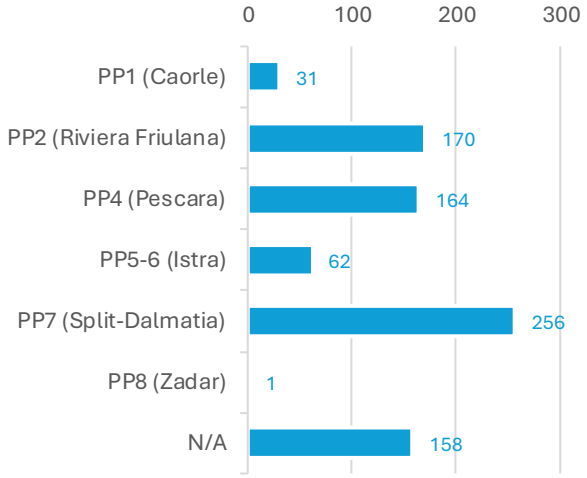
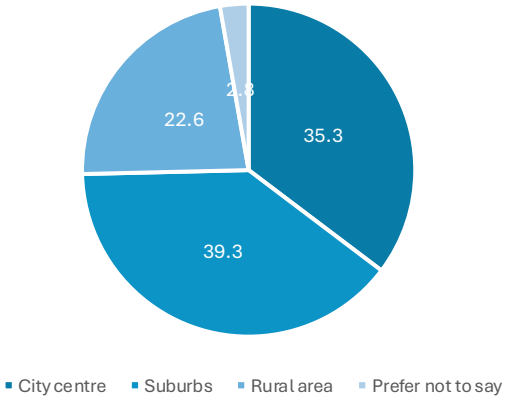


Figure 21: Long-term residents survey Composition of the Sample – Country of residence and Pilot Area

Composition of the sample

Typology of residence area (n=796)



Education level (n=797)

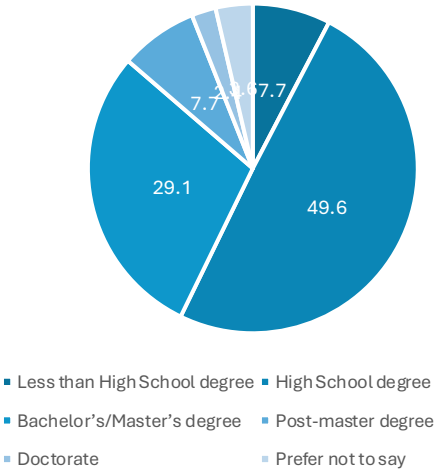


Figure 22: Long-term residents survey Composition of the Sample – Typology of residence area and education

By country of residence, the sample is well balanced between Italy (54.5%) and Croatia (45.0%), with only 0.5% not reporting a country. The distribution across pilot areas is uneven.

PP7 - Split-Dalmatia records the largest number of respondents (256), followed by PP2 - Riviera Friulana (170) and PP4 - Pescara (164); a substantial group (158) is classified as N/A.

In terms of residential context, 39.3% live in suburban areas, 35.3% in city centres and 22.6% in rural areas, while 2.8% preferred not to answer. Educational attainment is relatively high: 49.6% report a high-school degree and 29.1% a bachelor's or master's degree, while 7.7% have less than a high-school qualification, 7.7% a post-master qualification and 2.4% a doctorate; 3.6% did not report their level.

Composition of the sample

Employment status (n=797)

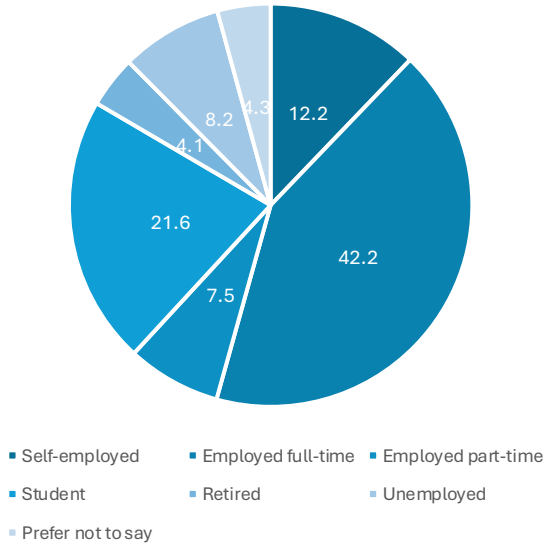


Figure 23: Long-term residents survey Composition of the Sample – Employment status

Employment is also varied: 42.2% are employed full-time, 21.6% are students, 12.2% are self-employed, 8.2% are unemployed, 7.5% are employed part-time and 4.1% are retired; 4.3% preferred not to answer.

5.1.2 Travel Habits – Modal Choices and Intermodality

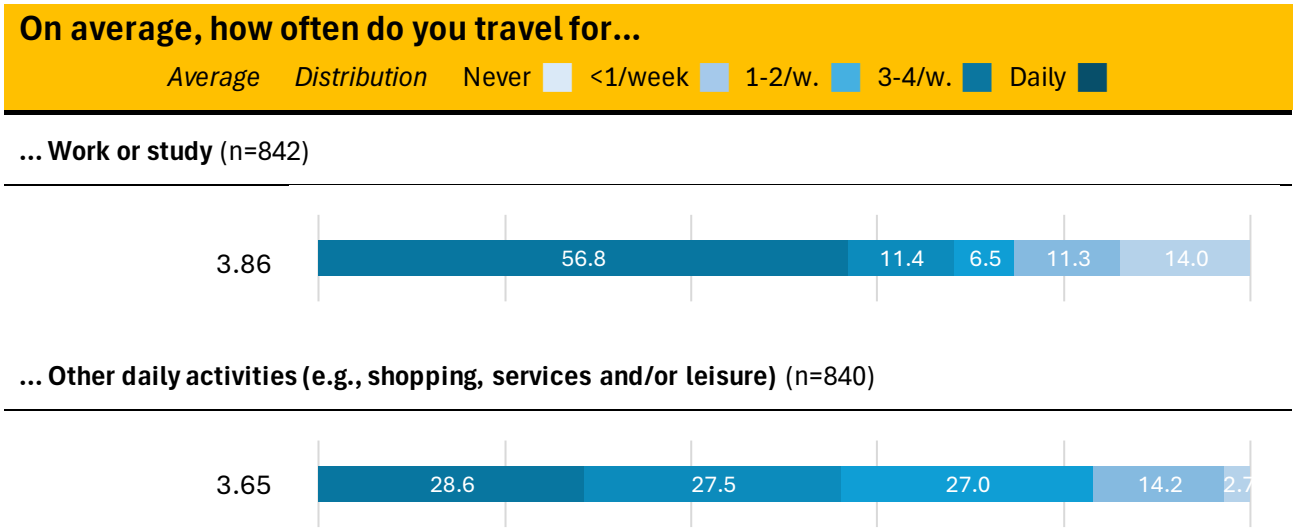


Figure 24: Long-term residents survey – Travel frequency

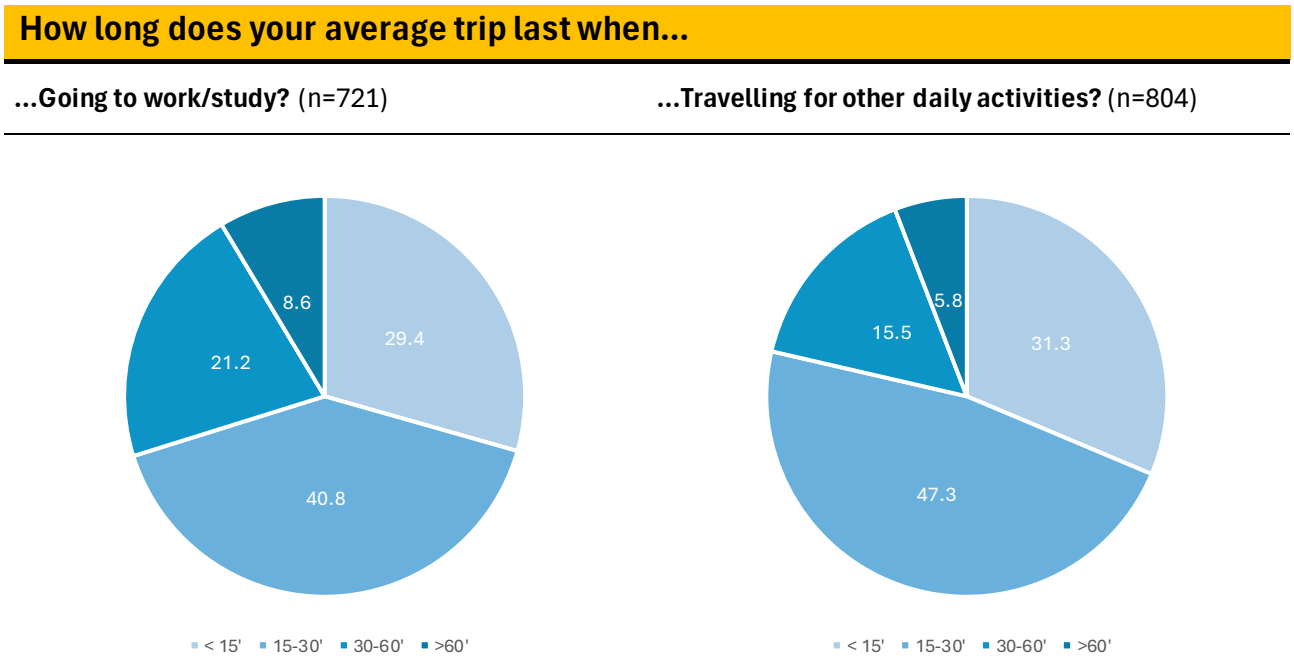


Figure 25: Long-term residents survey – Travel time

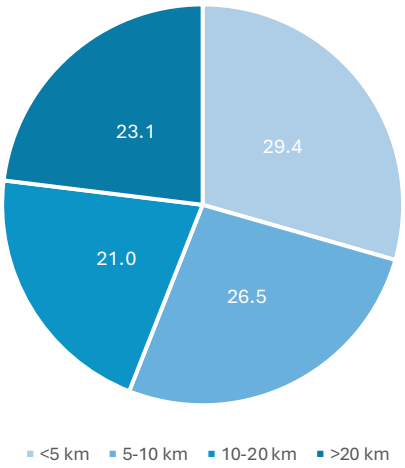
Daily mobility is substantial. For work or study, 56.8% of respondents report travelling every day, while another 11.4% travel three to four times a week. For other daily activities such as shopping, services and leisure, 28.6% travel every day and 27.5% three to four times a week;

thus, 56.1% make these trips at least three to four times a week, rather than only around one quarter of the sample.

Work/study trips most commonly last 15-30 minutes (40.8%), followed by less than 15 minutes (29.4%), 30-60 minutes (21.2%) and more than one hour (8.6%). Trips for other daily activities are generally shorter: 47.3% last 15-30 minutes, 31.3% less than 15 minutes, 15.5% 30-60 minutes and 5.8% more than one hour.

What is the average distance of your trips when...

...Going to work/study? (n=720)



...Travelling for other daily activities? (n=804)

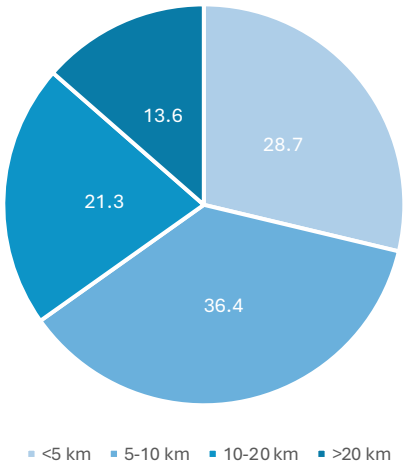
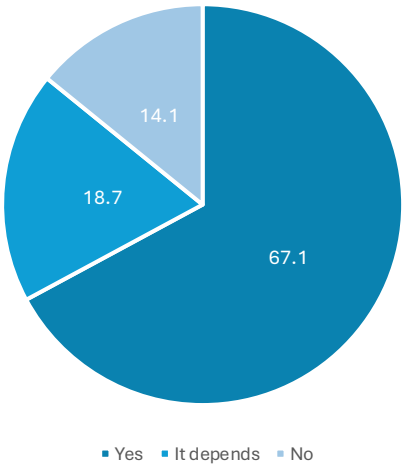


Figure 26: Long-term residents survey – Travel distance

The distance profile is similarly concentrated in short and medium ranges. For work/study, 29.4% of trips are below 5 km, 26.5% are 5-10 km, 21.0% are 10-20 km and 23.1% exceed 20 km. For other daily activities, the corresponding shares are 28.7%, 36.4%, 21.3% and 13.6%.

Do you usually travel alone when...

...Going to work/study? (n=721)



...Travelling for other daily activities? (n=802)

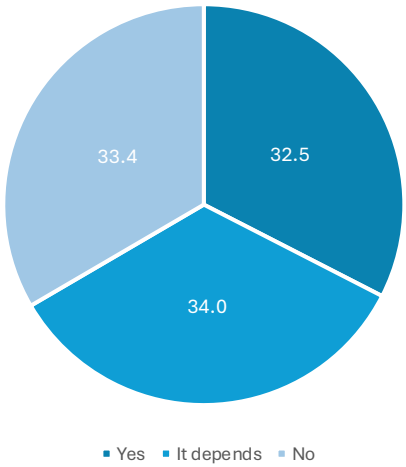


Figure 27: Long-term residents survey – Travelling alone

Solo travel is especially common for work/study: 67.1% usually travel alone, 18.7% say that it depends and 14.1% do not. For other daily activities, the pattern is much more balanced, with 32.5% usually travelling alone, 34.0% depending on the situation and 33.4% usually travelling with others.

When you travel, how frequently do you use the following modes of transport?

Distribution Always Often Sometimes Rarely Never

... For work/study (n=842)

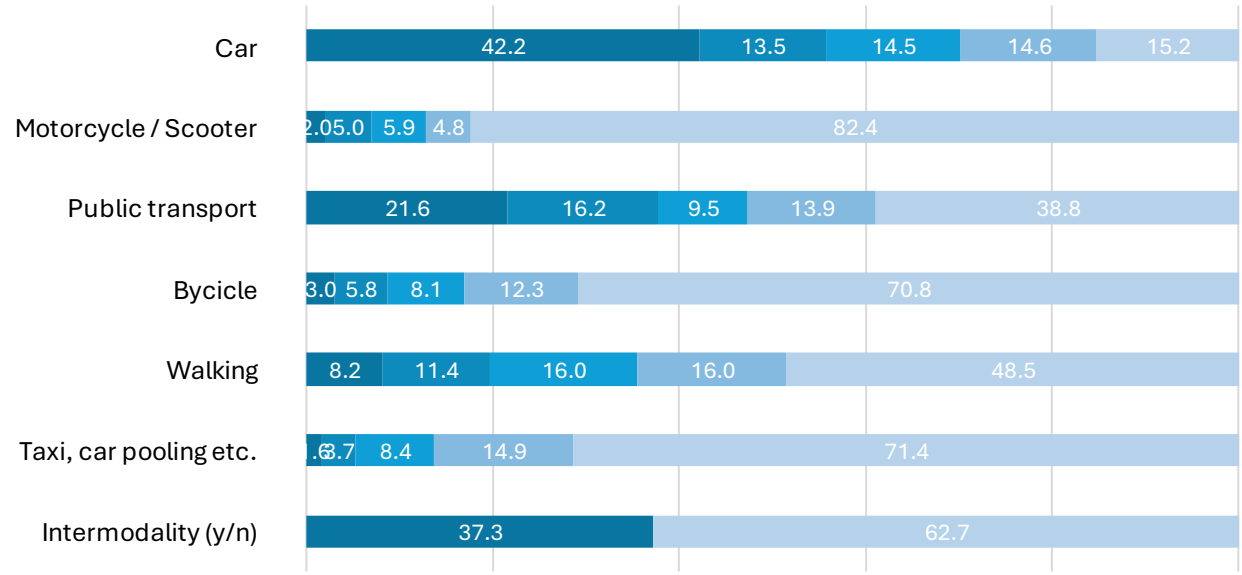


Figure 28: Long-term residents survey – Modes of transport when travelling for work/study

The private car is the dominant mode for work/study. It is used always or often by 55.7% of respondents, compared with 37.8% for public transport, 19.6% for walking and 8.8% for cycling. Public transport nevertheless represents a meaningful component of commuting, although 38.8% say they never use it. Cycling is much less established, with 70.8% never using a bicycle for work/study. Car use rises with distance: the share using it always or often increases from 48.4% for trips below 5 km to 64.0% for trips above 20 km. Public transport performs best on 5-10 km work/study trips, where 44.8% use it always or often. Intermodality is reported by 37.4% overall and peaks at 45.0% for 5-10 km trips, before declining on longer journeys.

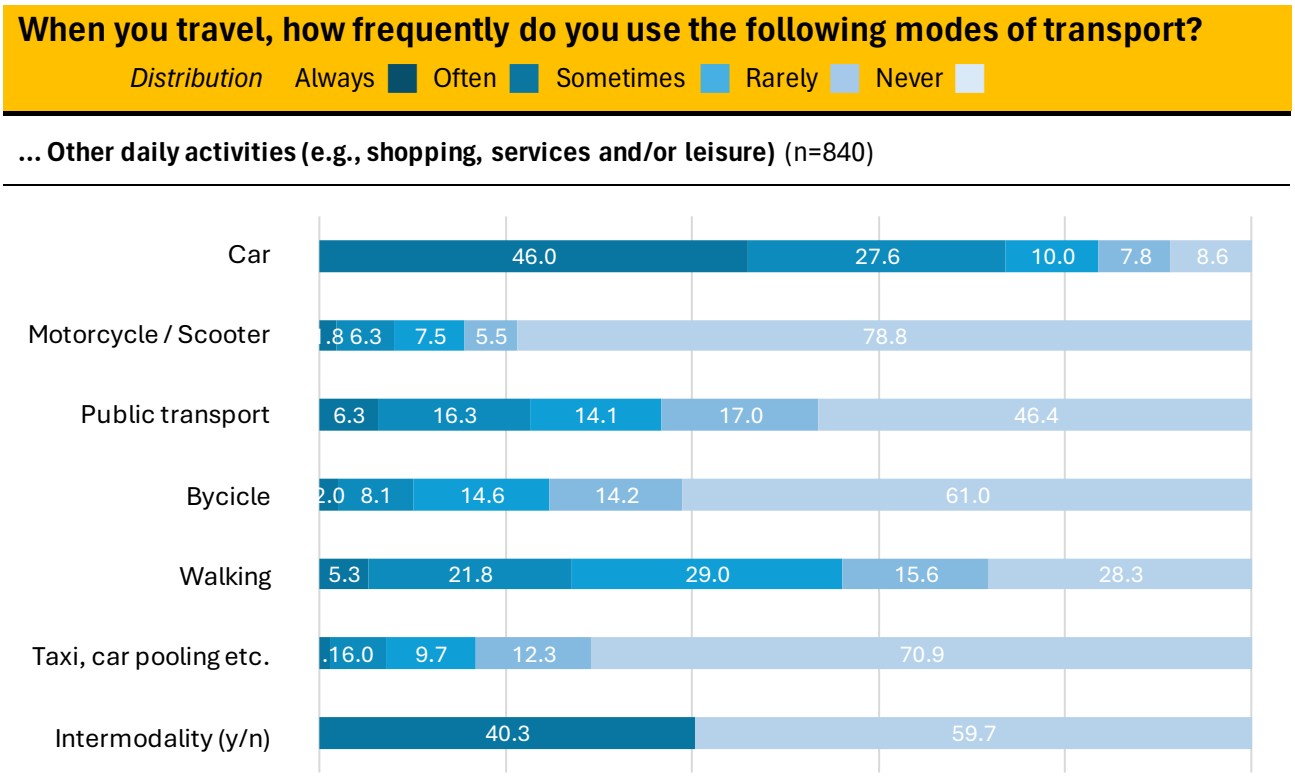


Figure 29: Long-term residents survey – Modes of transport when travelling for other daily activities

For other daily activities, reliance on the car is even stronger: 46.0% use it always and 27.6% often, for a combined 73.6%. Public transport is used always or often by 22.6%, while 46.4% never use it. Bicycle use remains limited (10.1% always or often; 61.0% never), whereas walking has a larger role: 27.1% walk always or often and a further 29.0% sometimes. Car dependence is strongest in the 10-20 km range, where 80.4% use it always or often. Intermodality is somewhat more common than for commuting, at 40.3% overall, but is concentrated on shorter and medium trips (44.1% below 5 km and 45.0% at 5-10 km) and decreases to 30.3% above 20 km.

5.1.3 Satisfaction and Drivers for Modal Choices

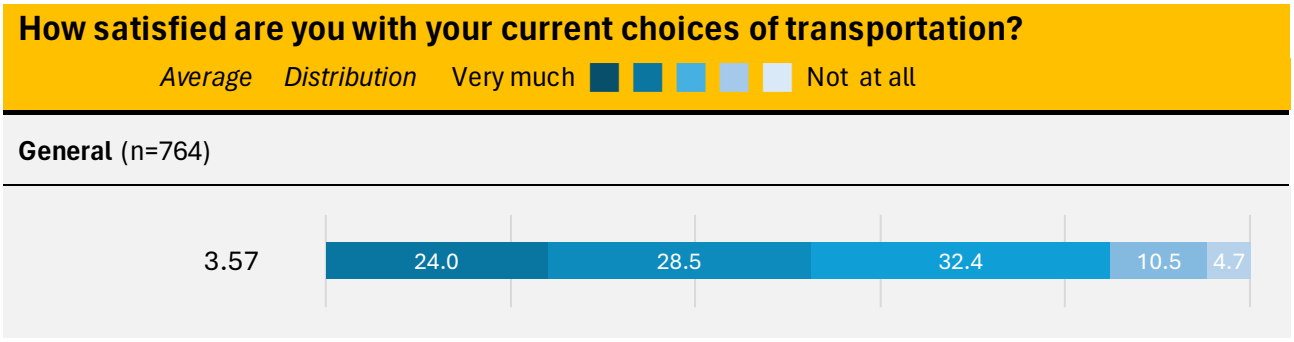


Figure 30: Long-term residents survey – Satisfaction for modal choice

Overall satisfaction with current transport choices is moderate rather than high. The average is 3.57 out of 5: 24.0% select the highest category and 28.5% the second-highest, while 15.2% select one of the two lowest categories.

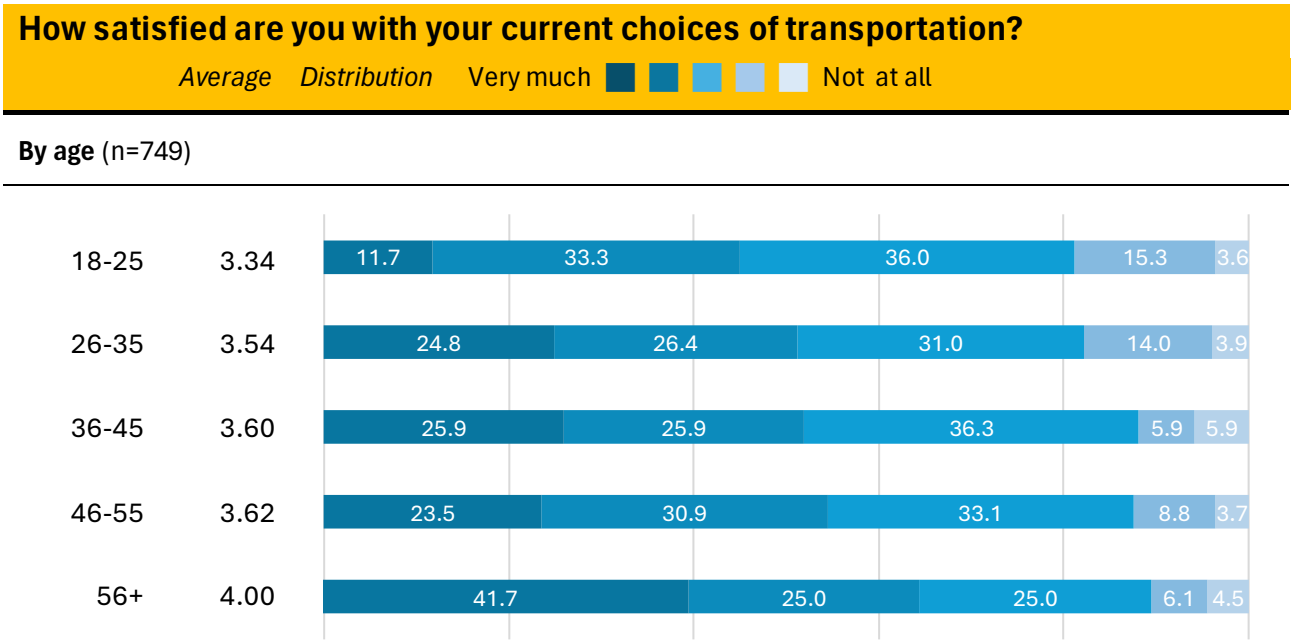


Figure 31: Long-term residents survey – Satisfaction for modal choice according to age

Satisfaction varies more clearly with age, residential context and travel time than with gender or country. Respondents aged 18-25 report an average of 3.34, compared with 4.00 among those aged 56 or over.

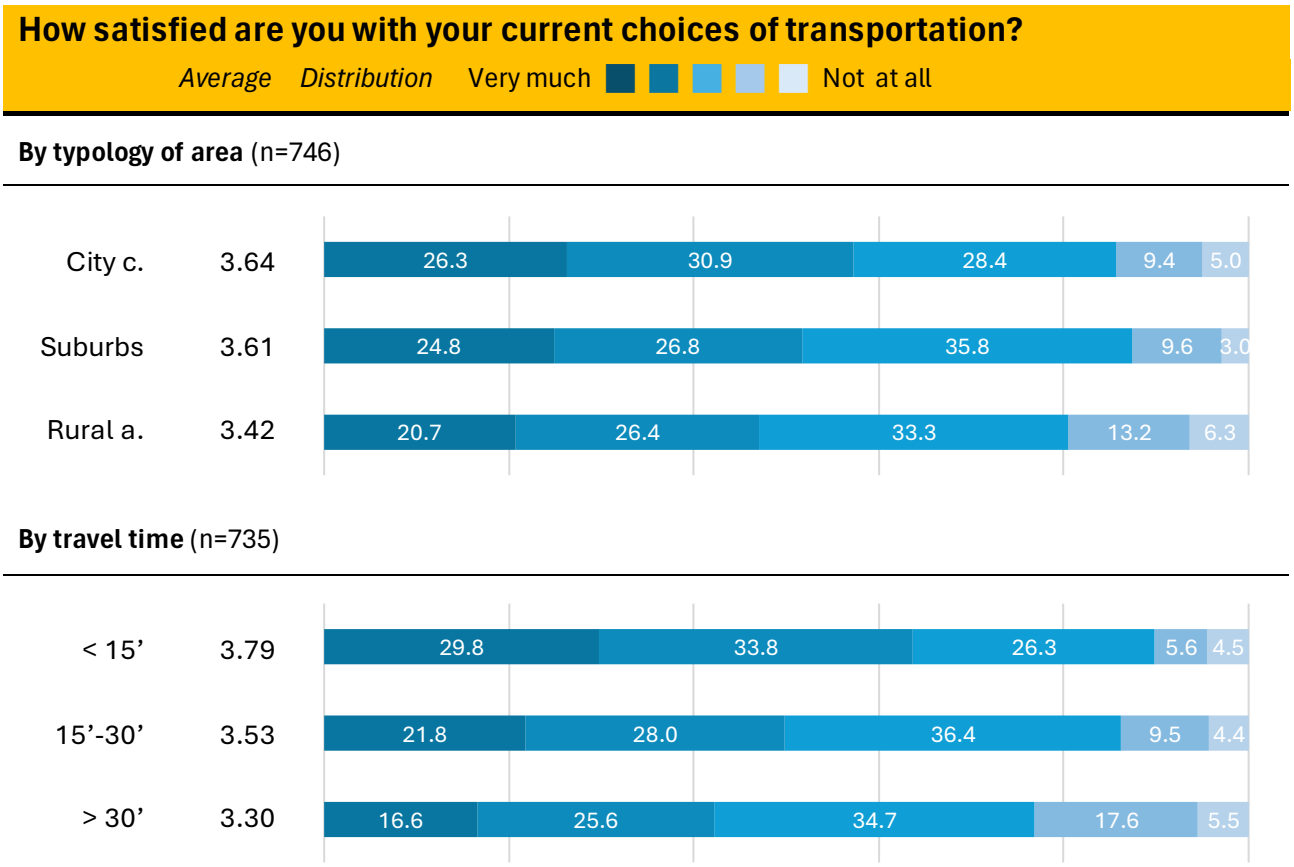


Figure 32: : Long-term residents survey – Satisfaction for modal choice according to typology of area and travel time

Residents of rural areas are less satisfied (3.42) than those in city centres (3.64), and satisfaction falls from 3.79 for trips under 15 minutes to 3.30 for trips above 30 minutes.

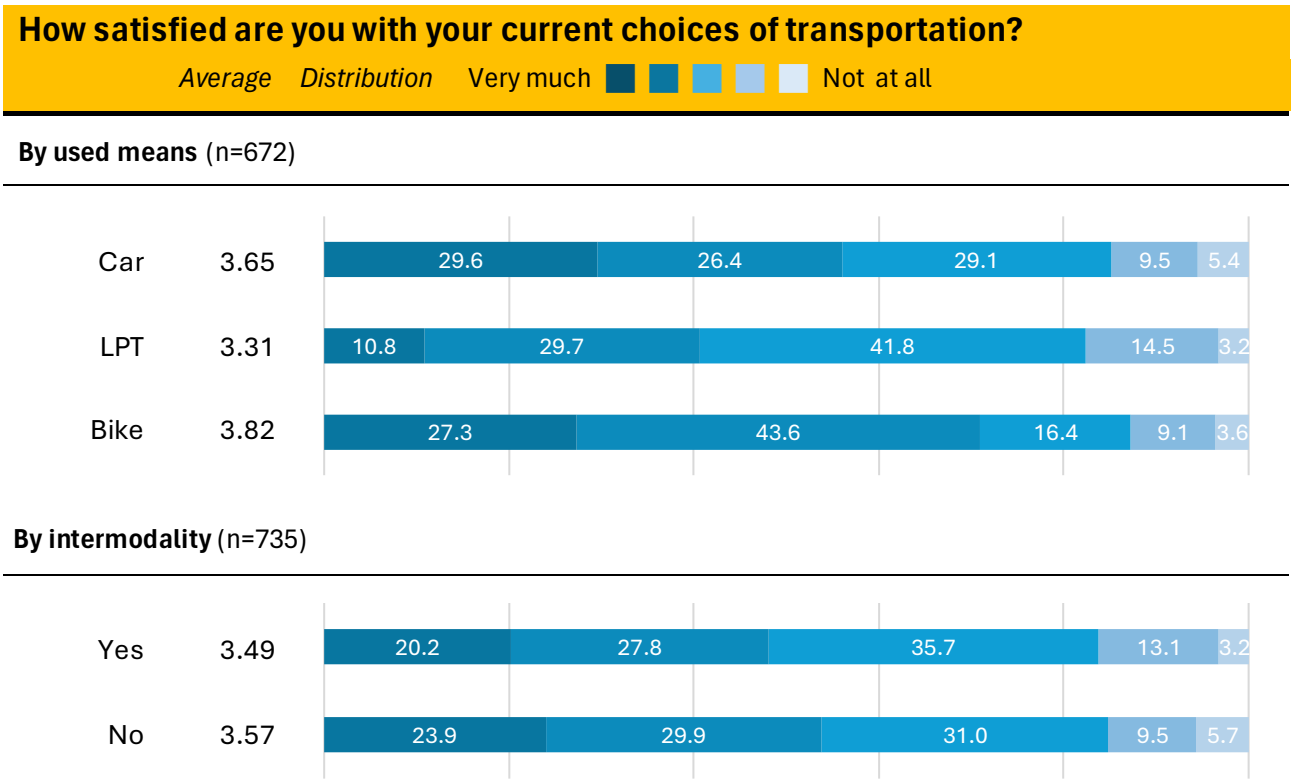


Figure 33: Long-term residents survey – Satisfaction for modal choice according to used means and intermodality

Additional differences emerge when satisfaction is considered in relation to intermodality and the means used. Respondents who report intermodal travel have a slightly lower average satisfaction score than non-intermodal travellers (3.49 versus 3.57); 48.0% of intermodal users select one of the two most positive categories, compared with 53.8% among non-intermodal users. By used means, bicycle users report the highest average satisfaction (3.82), followed by car users (3.65), while local public transport (LPT) users record the lowest value (3.31). The distribution reinforces this pattern: 70.9% of bicycle users and 56.0% of car users select one of the two most positive categories, compared with 40.5% of LPT users. These results suggest that the public-transport experience is associated with a lower level of satisfaction than car or bicycle use within this sample, while intermodality itself does not correspond to higher satisfaction.

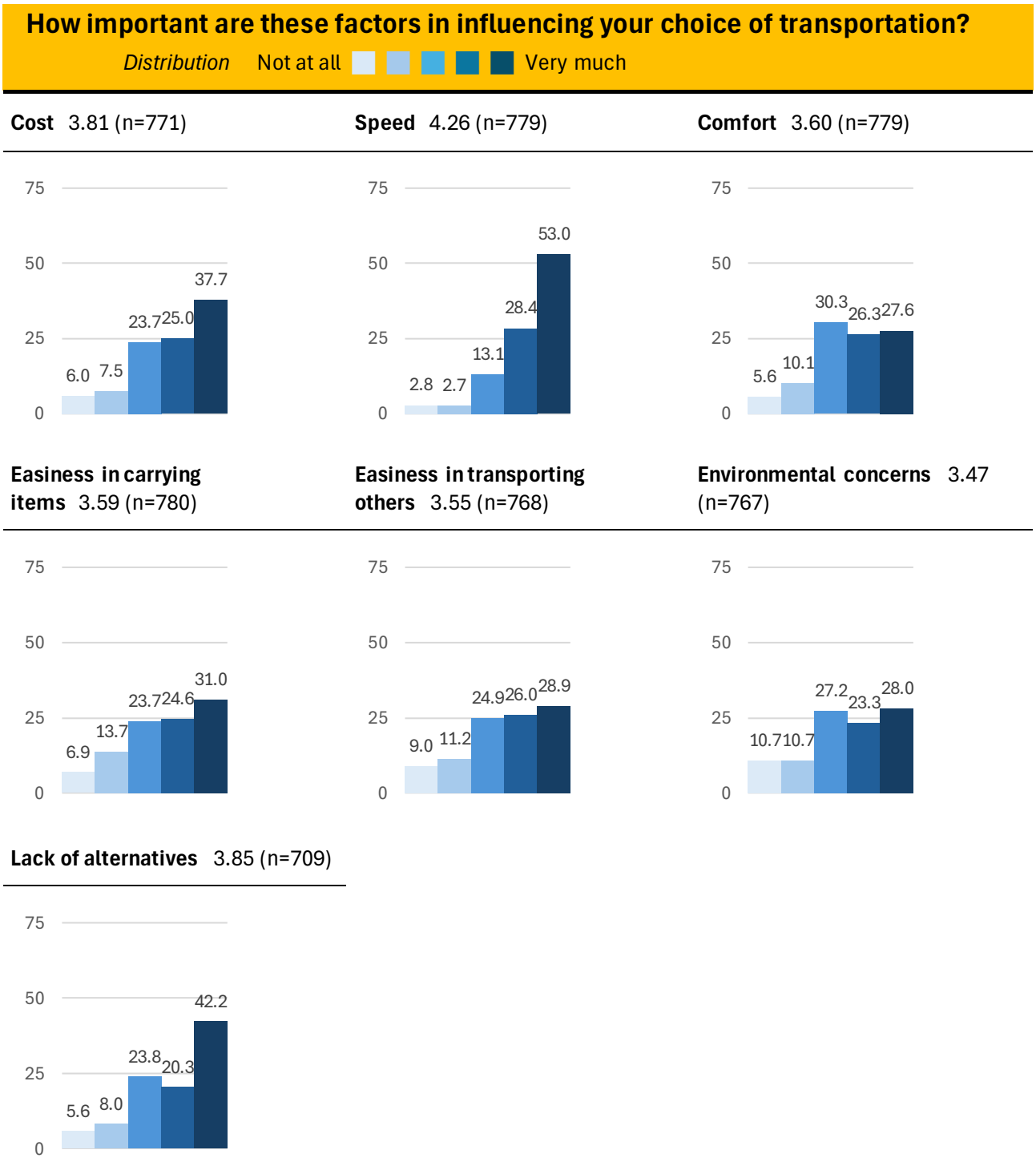


Figure 34: Long-term residents survey – Modal choice drivers

SUMMA

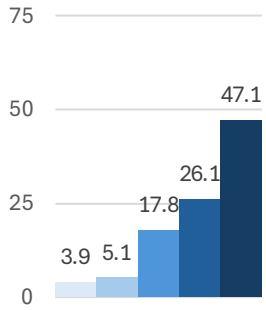
Speed is the most important factor shaping transport choices, with an average score of 4.26. It is followed by lack of alternatives (3.85) and cost (3.81). Comfort (3.60), ease of carrying items (3.59) and transporting other people (3.55) also matter, while environmental concern has the lowest average among the listed drivers (3.47), although it still lies above the midpoint of the scale. These results suggest that practical and system-related constraints dominate day-to-day modal decisions. Environmental concern is nevertheless stronger among respondents aged 56 or over (3.99), bicycle users (3.98) and Italian residents (3.76 versus 3.15 in Croatia). Lack of alternatives is particularly relevant in rural areas (4.05), among car users (4.05) and bicycle users (4.08), and among respondents who do not use intermodal combinations (3.93 versus 3.74 among intermodal users).

5.1.4 Assessment of Measures to Encourage Sustainable Mobility

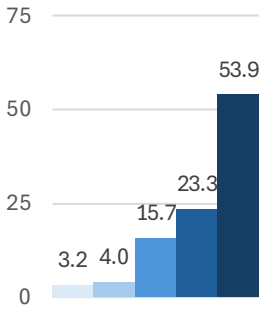
How important would be these measures in encouraging you to shift to sustainable mobility?

Distribution Not at all Very much

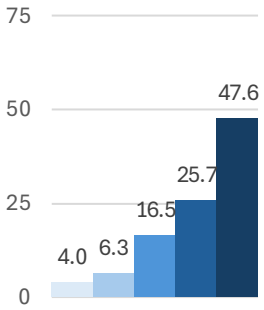
Improved infrastructures 4.07 (n=779)



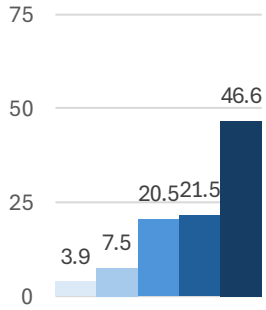
Extended PT routes/ operating hours 4.21 (n=778)



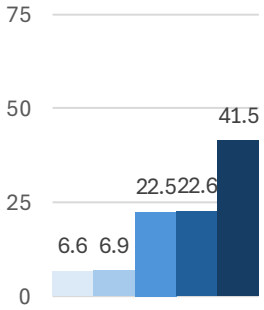
Higher PT reliability 4.07 (n=759)



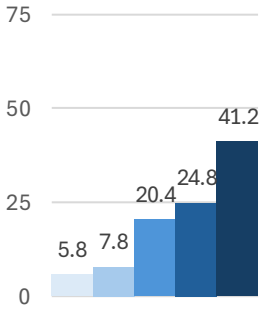
More affordable PT costs 4.00 (n=776)



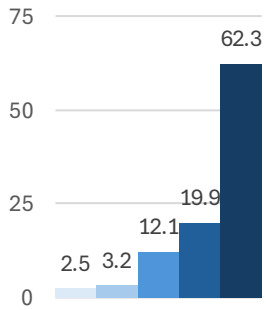
Integrated ticketing system 3.85 (n=757)



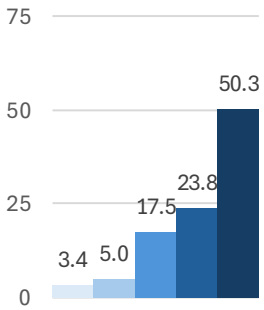
Clearer and accessible information 3.88 (n=758)



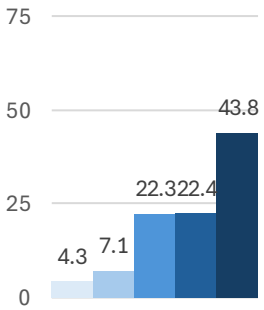
Higher PT frequency 4.36 (n=775)



Higher PT commercial speed 4.13 (n=776)



Increased safety 3.94 (n=771)



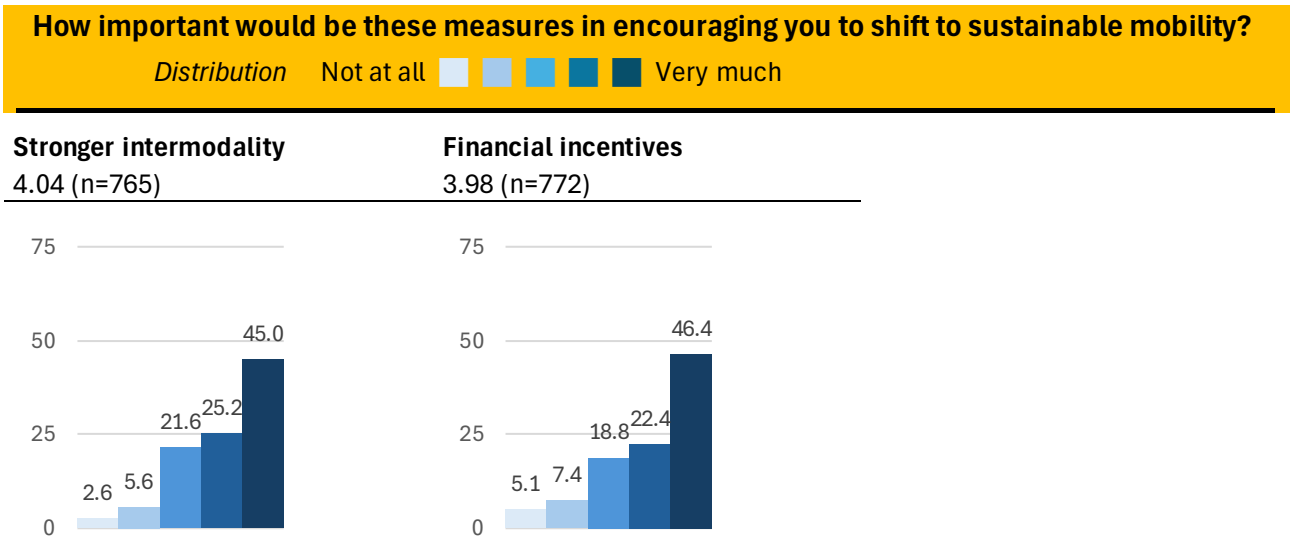


Figure 35: Long-term residents survey – Assessment of measures to encourage modal diversion

All of the proposed measures receive relatively high scores as potential incentives to shift towards sustainable mobility. The highest-rated measure is higher public transport frequency (4.36), followed by extended routes and operating hours (4.21) and higher commercial speed (4.13). Improved infrastructure and higher public transport reliability both score 4.07, stronger intermodality 4.04, more affordable public transport 4.00, financial incentives 3.98, increased safety 3.94, clearer and more accessible information 3.88 and integrated ticketing 3.85. The ranking therefore shows that service availability, frequency and travel time are the strongest levers, but infrastructure, integration, affordability and information also form an important part of the package.

Several subgroup patterns are noteworthy. Women systematically assign higher importance than men to most of the proposed measures, with particularly visible gaps for frequency (4.52 versus 4.15), commercial speed (4.30 versus 3.89), increased safety (4.15 versus 3.64) and financial incentives (4.17 versus 3.71). Rural residents place especially strong emphasis on extending routes and operating hours (4.51), higher frequency (4.47) and stronger intermodality (4.20). Country differences are also selective rather than uniform: Italian respondents give more weight to improved infrastructure (4.22 versus 3.92), integrated ticketing (4.02 versus 3.67) and stronger intermodality (4.15 versus 3.93), while Croatian respondents give more weight to higher frequency (4.46 versus 4.30) and commercial speed (4.35 versus 3.97). Part-time workers frequently appear among the most responsive groups, especially for affordable

public transport (4.42), integrated ticketing (4.27), clearer information (4.26), safety (4.36), stronger intermodality (4.46) and financial incentives (4.46).

5.1.5 Perceptions of Sustainable Mobility, Public Awareness and Institutional Action

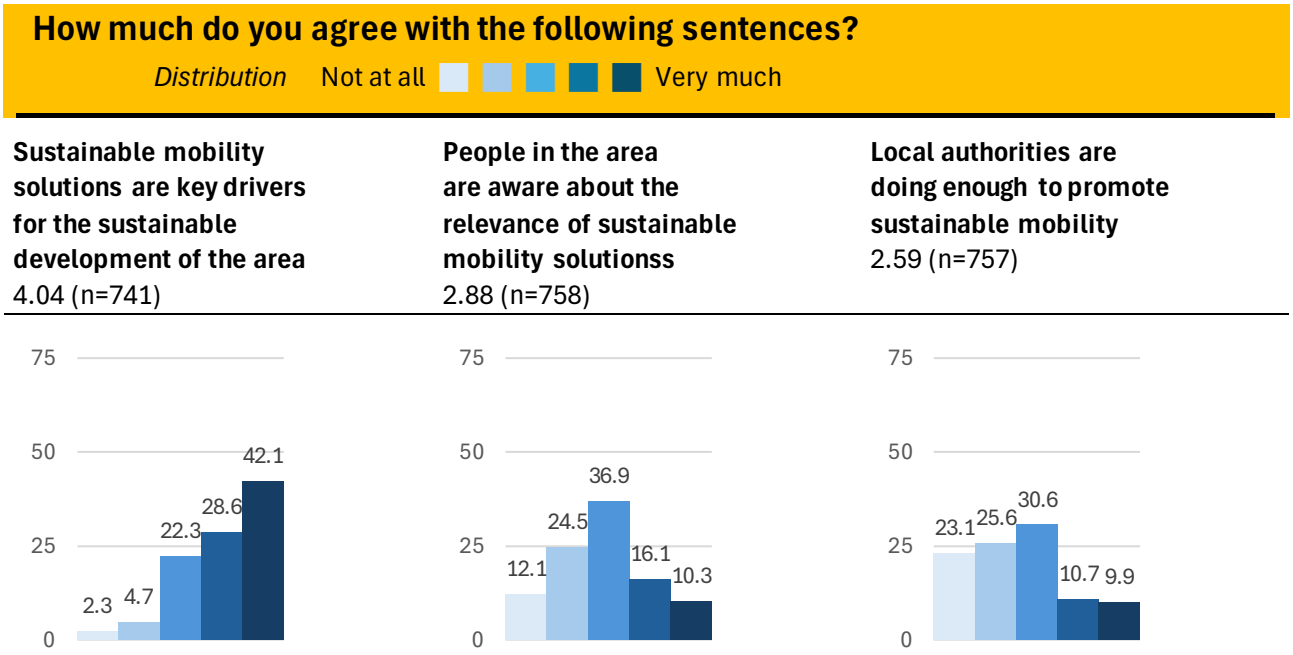


Figure 36: Long-term residents survey – Levels of agreement on sustainable mobility statements

The attitudinal section reveals a clear contrast between support for sustainable mobility as a principle and perceptions of its current social and institutional embedding. Agreement that sustainable mobility solutions are key drivers of sustainable development is high, with an average of 4.04 out of 5: 42.1% select the highest category and 28.6% the second-highest. By contrast, perceived public awareness is much weaker, with an average of 2.88, and the assessment of local authorities is lower still, at 2.59. For awareness, 36.6% select one of the two lowest categories, compared with 26.4% selecting one of the two highest; for local authorities, 48.7% select one of the two lowest categories and only 20.6% one of the two highest.

Support for the developmental role of sustainable mobility is broad, but it is strongest among respondents aged 56 or over (4.20), women (4.17 versus 3.86 among men) and Italian residents (4.11 versus 3.96 in Croatia). The country pattern is reversed for perceived awareness and

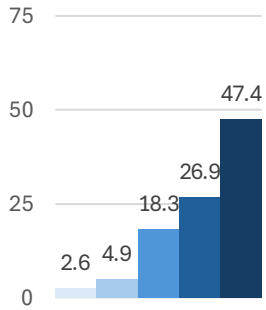
institutional performance: Croatian residents rate public awareness at 3.02 compared with 2.76 in Italy, and local-authority action at 2.78 compared with 2.43 in Italy. Territorial differences are also visible: perceived awareness falls from 3.03 in city centres to 2.74 in rural areas, while the rating of local-authority action falls from 2.76 to 2.37. Taken together, the data indicate substantial normative support for sustainable mobility but a perceived implementation and awareness gap at local level.

5.1.6 Priority for Mobility Policies

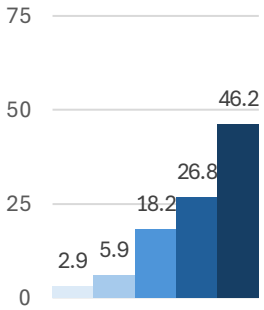
To what extent do you believe the following mesaures should be prioritised?

Distribution Not at all Very much

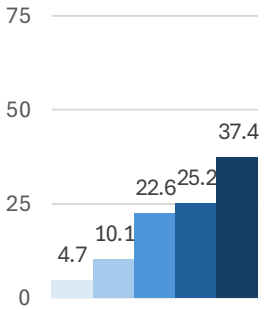
Expanding existing PT networks 4.12 (n=782)



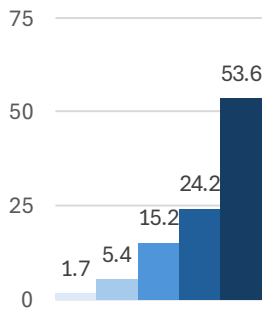
Expanding existing cycling and walking paths 4.07 (n=780)



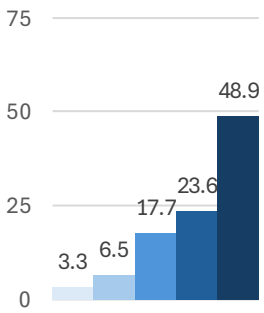
Offering new transportation solutions 3.81 (n=770)



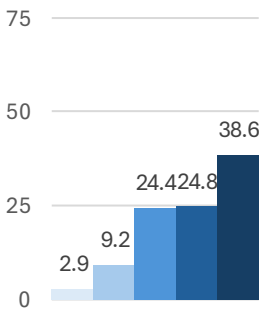
Improving road safety 4.23 (n=785)



Lowering transportation fares 4.08 (n=781)



Comm. campaigns on ST solutions 3.87 (n=769)



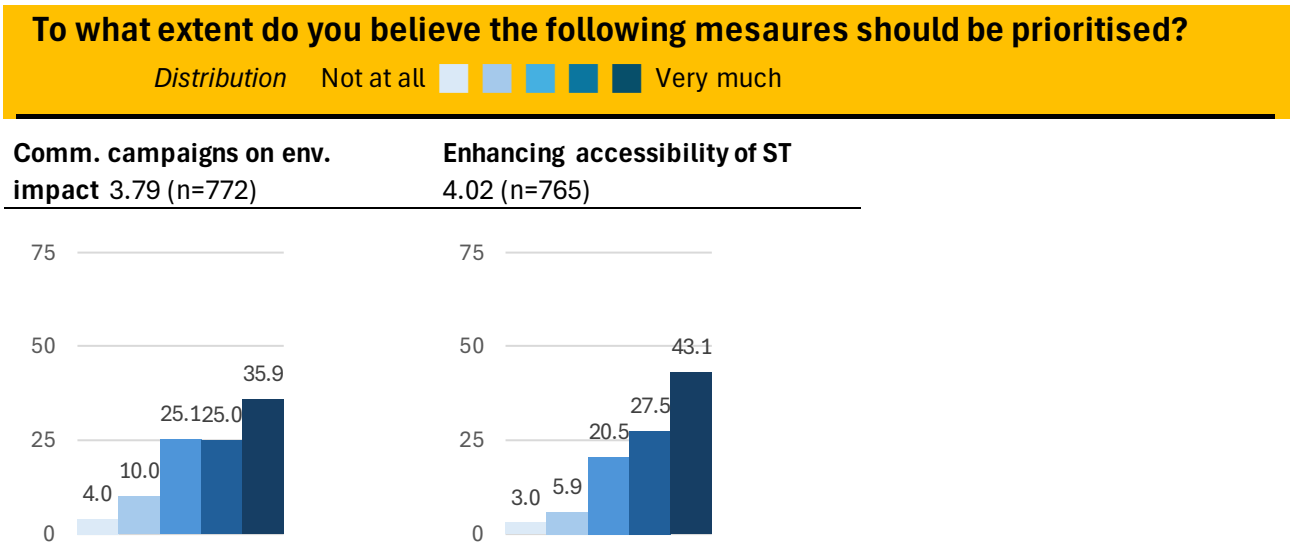


Figure 37: Long-term residents survey – Prioritisation of sustainable mobility measures

When respondents are asked which measures should be prioritised, improving road safety ranks first (4.23), followed by expanding existing public transport networks (4.12), lowering transport fares (4.08), expanding cycling and walking paths (4.07) and enhancing the accessibility of sustainable transport (4.02). Communication campaigns on sustainable transport solutions (3.87), offering new transport solutions (3.81) and communication campaigns on the environmental impact of transport (3.79) also receive positive scores, but are less prominent than concrete improvements to safety, networks, fares and accessibility.

Some disaggregated results reinforce the general picture. Women attach greater priority than men to expanding public transport networks (4.28 versus 3.91) and lowering fares (4.21 versus 3.90). Rural residents place particularly high priority on expanding public transport networks (4.28), while respondents aged 56 or over give especially high scores to road safety (4.41) and accessibility (4.32). These priorities are consistent with the earlier findings: respondents appear to favour tangible improvements to the availability, affordability and safety of sustainable alternatives, alongside better conditions for walking and cycling.

5.1.7 Willingness to Visit the Adriatic Area

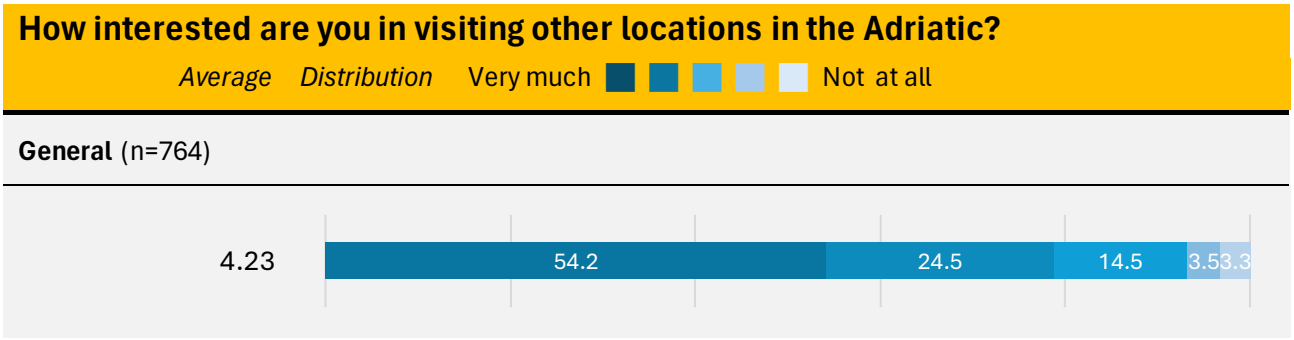


Figure 38 Long-term residents survey – Willingness to visit the Adriatic area

Interest in visiting other locations in the Adriatic is high. The overall average is 4.23 out of 5: 54.2% selected the highest response category and a further 24.5% selected the second-highest category, while only 6.8% selected one of the two lowest categories. This interest is therefore not confined to a small subgroup but is broadly shared across the sample. Some differences nevertheless emerge: women report a higher average than men (4.39 versus 4.00), Croatian residents score slightly higher than Italian residents (4.33 versus 4.16), and respondents with university education report particularly high interest (4.40), compared with 3.58 among those with less than a high-school qualification.

5.1.8 Final Comment

Overall, the resident survey describes a mobility system in which the private car remains structurally dominant, particularly as distance increases, while public transport and intermodality already play a non-negligible but uneven role and cycling remains comparatively marginal. Respondents express strong interest in wider Adriatic mobility and strong support for sustainable mobility as a development objective, but they are less convinced that public awareness and local institutional action are currently adequate. The clearest pathway towards behavioural change combines more frequent and extensive public transport, shorter and more reliable journeys, affordability, safer and more accessible infrastructure, and better integration across modes.

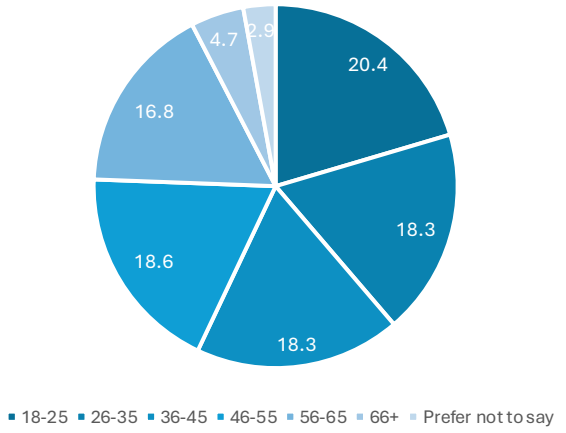
5.2 Tourists

5.2.1 Sample and Vacation Characteristics

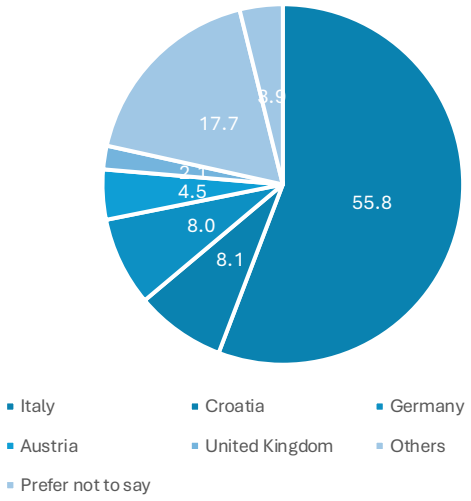
803 valid answers were collected through the SUMMA Tourists Survey.

Composition of the sample

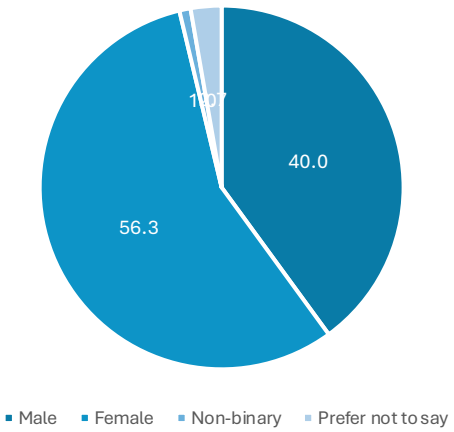
Age group (n=798)



Country of residence (n=772)



Gender (n=794)



Vacation Area (n=803)

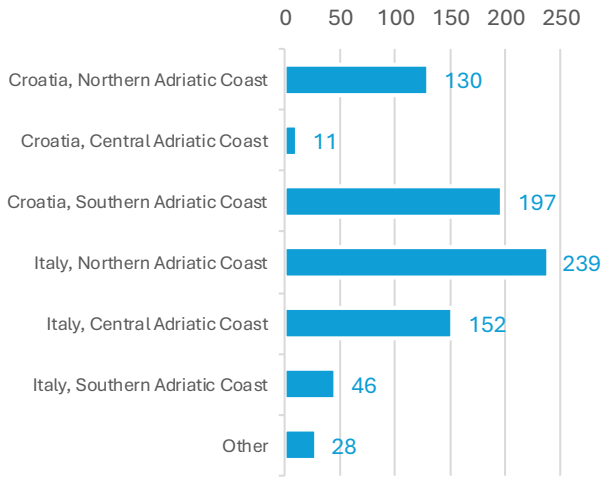


Figure 39: Tourists survey Composition of the sample

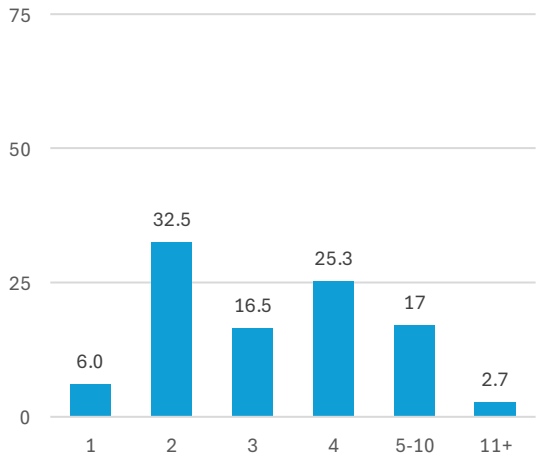
The tourist sample is broadly distributed across age groups. Respondents aged 18-25 represent 20.4%, those aged 26-35 and 36-45 each 18.3%, the 46-55 group 18.6% and the 56-

65 group 16.8%; 4.7% are aged 66 or over and 2.9% preferred not to state their age. Women represent 56.3% of the sample and men 40.0%, with 1.0% identifying as non-binary and 2.7% preferring not to answer. The country-of-residence profile is internationally diverse: Italy accounts for 55.8%, Croatia 8.1%, Germany 8.0%, Austria 4.5%, the United Kingdom 2.1%, other countries 17.7% and non-disclosed responses 3.9%.

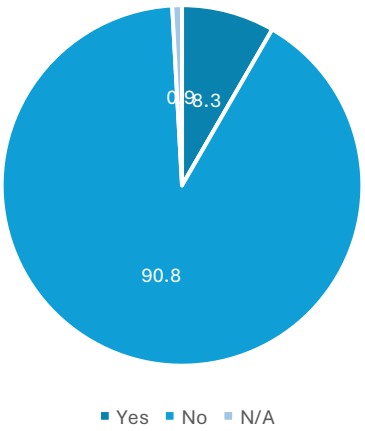
Vacation areas are unevenly represented. The largest groups are located on the Northern Adriatic Coast of Italy (239 respondents) and the Southern Adriatic Coast of Croatia (197), followed by the Central Adriatic Coast of Italy (152), and the Northern Adriatic Coast of Croatia (130).

Characteristics of the vacation

How many people (n=801)

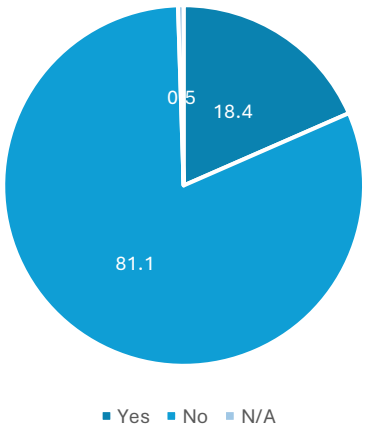


Persons with disabilities (n=803)



Characteristics of the vacation

Animals (n=803)



Duration of the vacation (n=800)

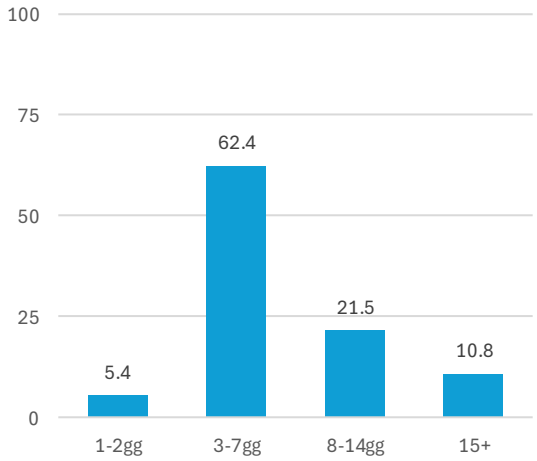


Figure 40: Tourists survey – Characteristics of the vacation

Most tourists travel in small or medium-sized groups: two-person groups are the most common (32.5%), followed by groups of four (25.3%), groups of 5-10 people (17.0%), groups of three (16.5%), solo travellers (6.0%) and groups of 11 or more (2.7%). In 8.3% of cases the group includes a person with disabilities, while 18.4% travel with animals. The typical stay lasts 3-7 days (62.4%); 21.5% stay 8-14 days, 10.8% 15 days or more and 5.4% only 1-2 days.

5.2.2 Travel Patterns and Modal Choices

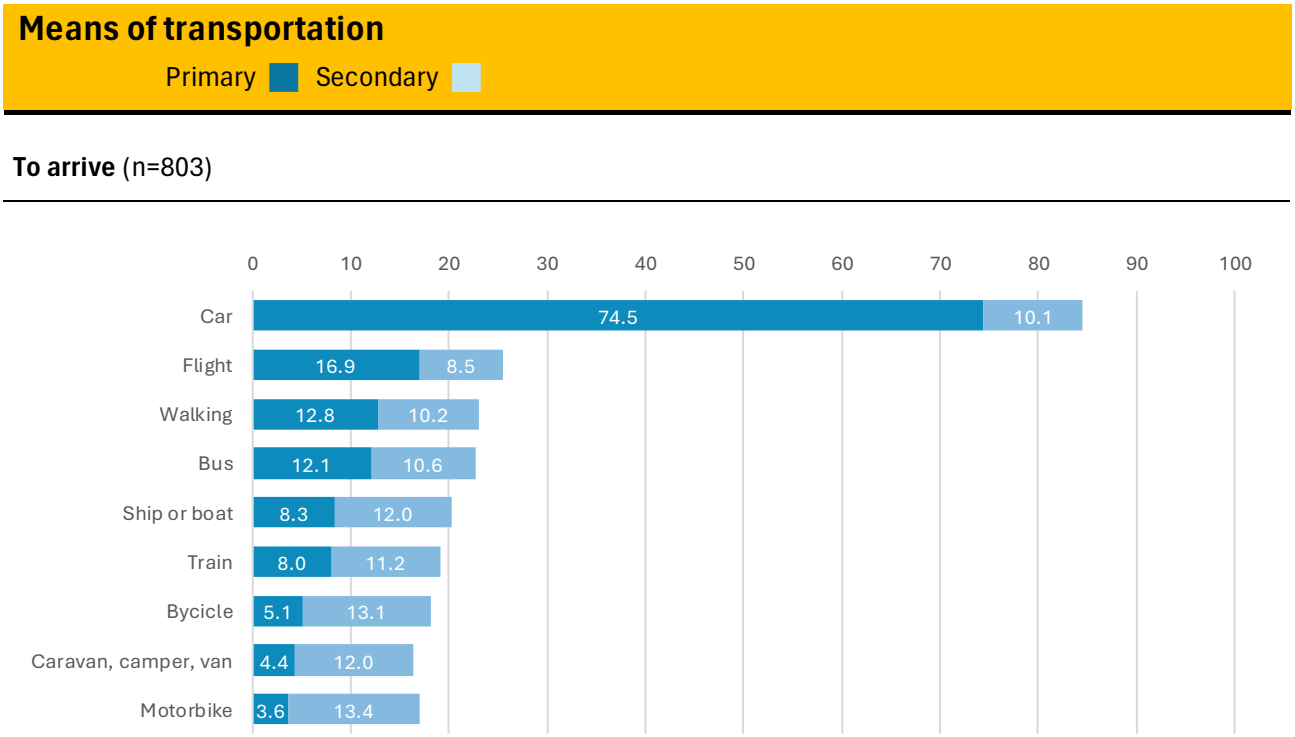


Figure 41: Tourists survey – Modal choices to reach the area

The car is by far the most frequently indicated primary mode for reaching the vacation area, selected by 74.5% of respondents. Other modes are much less prominent as primary options: flight is indicated by 16.9%, walking by 12.8%, bus by 12.1%, ship or boat by 8.3%, train by 8.0%, bicycle by 5.1%, caravan/camper/van by 4.4% and motorbike by 3.6%. Secondary-mode use is more evenly distributed, ranging from 8.5% for flights to 13.4% for motorbikes; bicycles (13.1%), ships/boats (12.0%), caravans/campers/vans (12.0%) and trains (11.2%) all appear more often as secondary than as primary modes. Because respondents could report primary and secondary modes across several transport options, these percentages describe modal use rather than mutually exclusive shares of a single total.

Means of transportation

Primary Secondary

To move around (n=803)

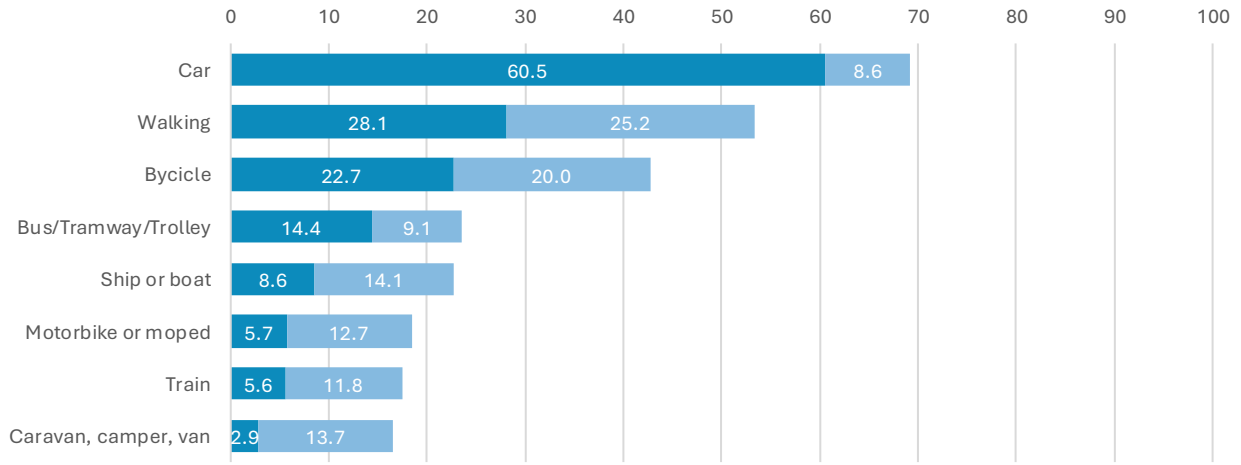


Figure 42: Tourists survey – Modal choices to move around in the area

Once tourists are in the destination area, mobility becomes more diversified. The car remains the leading primary mode at 60.5%, but walking is indicated as a primary mode by 28.1%, bicycle by 22.7% and bus/tram/trolley by 14.4%. Ship or boat accounts for 8.6%, motorbike or moped 5.7%, train 5.6% and caravan/camper/van 2.9%. Secondary use is particularly relevant for walking (25.2%) and cycling (20.0%), but also for ships/boats (14.1%), caravans/campers/vans (13.7%), motorbikes/mopeds (12.7%) and trains (11.8%). The contrast between arrival and in-destination mobility is therefore important: car dependence remains high, but tourists display a broader multimodal repertoire after reaching the destination, with active modes playing a substantially larger role.

5.2.3 Satisfaction With Transport Choices

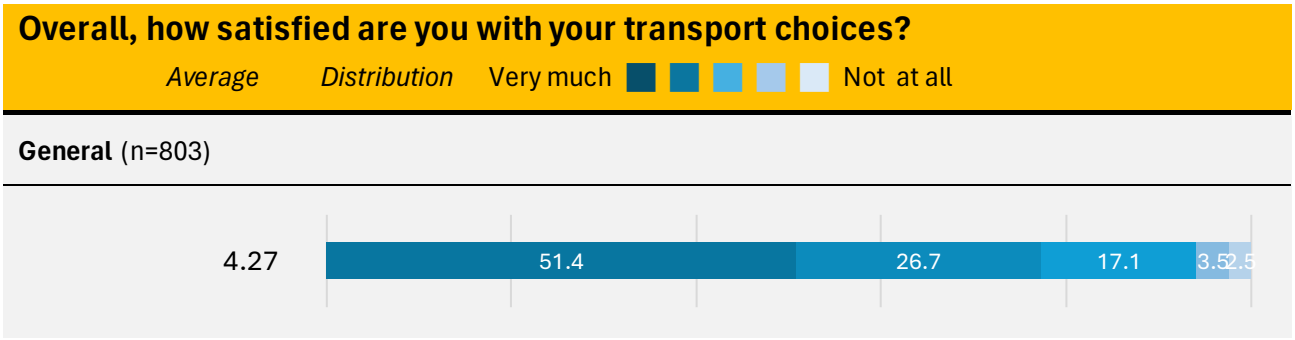


Figure 43: : Tourists survey – Satisfaction with the modal choice

Tourists report a high overall level of satisfaction with their transport choices. The average is 4.27 out of 5: 51.4% select the highest category and 26.7% the second-highest, meaning that 78.1% fall in the top two categories. Only 6.0% select one of the two lowest categories. Satisfaction also varies according to the modes used, although these figures should be read as the satisfaction of respondents who used each mode rather than as a direct rating of the mode itself.

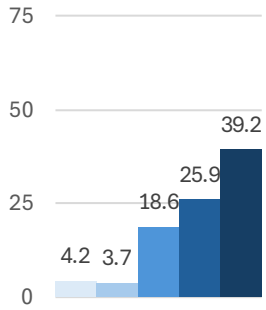
Among tourists using different modes to reach the area, the highest averages are observed for car users (4.30), motorbike users (4.29) and caravan/camper/van users (4.21), while bicycle users score 4.10 and flight users 4.03. Lower averages are observed among ship/ferry users (3.91), bus users (3.76), train users (3.75) and those who walked (3.72). For movement within the destination, bicycle users record the highest average (4.34), followed by motorbike/moped users (4.31), walkers (4.19) and car users (4.14). The lowest average is among bus/tram/trolley users (3.62), with train (3.77), ship/ferry (3.79) and caravan/camper/van (3.82) users also below the sample average. This pattern suggests that, while tourists are generally satisfied, the public-transport experience offers the clearest room for improvement.

5.2.4 Conditions for Greater Public Transport Use

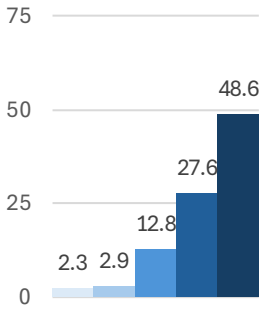
To encourage you to use public transport more extensively to explore the area, how important would the following measures be?

Distribution Not at all Very much

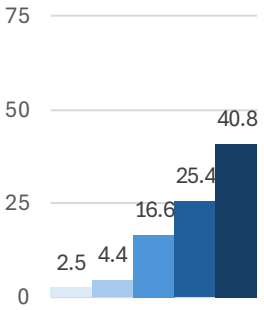
Improved float 3.67



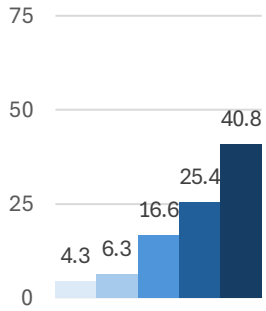
Extended PT routes and operating hours 4.00



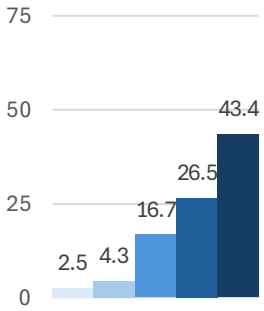
More reliability 3.67



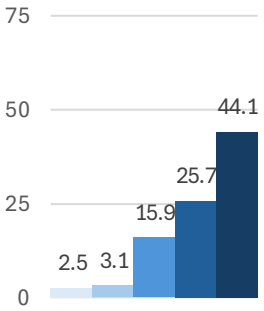
More affordable costs/ financial incentives 3.72



Integrated ticketing and network system 3.84



Clearer and more accessible information 3.80



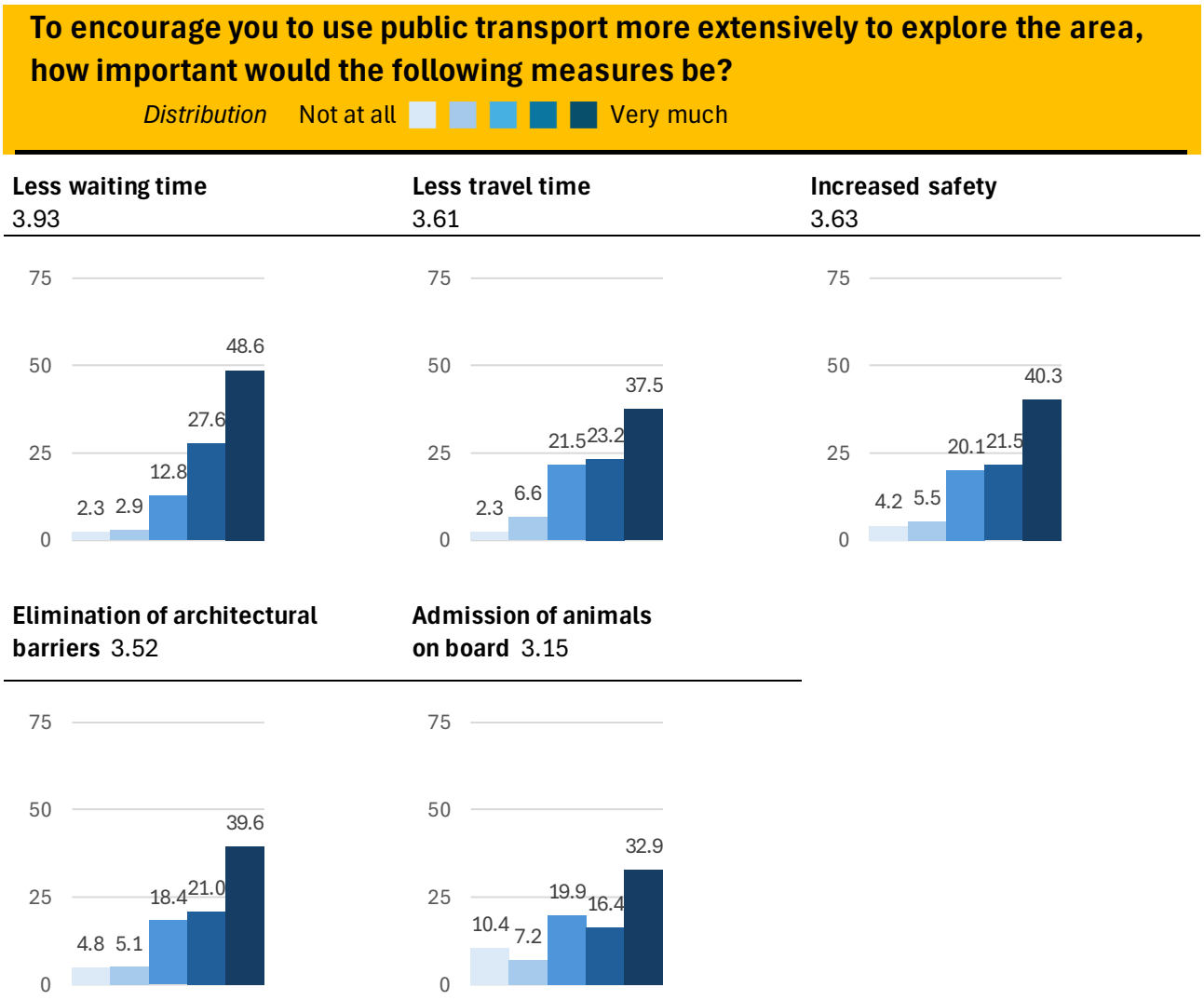


Figure 44: Tourists survey – Assessment of public transport promotion strategies

When asked what would encourage more extensive use of public transport to explore the area, tourists give the highest score to extending public transport routes and operating hours (4.00), followed by reducing waiting time through higher frequency (3.93). Integrated ticketing and network systems score 3.84 and clearer, more accessible information 3.80. More affordable costs or financial incentives score 3.72, while an improved fleet and greater reliability both score 3.67. Increased safety scores 3.63, shorter travel time 3.61, elimination of architectural barriers 3.52 and admission of animals on board 3.15. The overall ranking therefore points first

to network reach, operating hours and frequency, followed by system integration and information, rather than to a single isolated intervention.

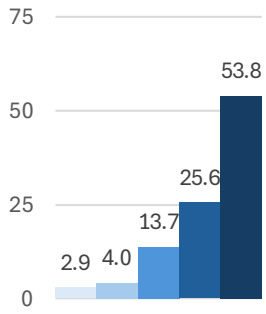
The specific results reinforce this interpretation. Among tourists who arrived by private means, extended routes and hours score 4.27 and higher frequency 4.25, while clearer information (4.16), integrated ticketing (4.13) and reliability (4.10) also receive strong support. Tourists who already use public transport to move around the area likewise rate routes/hours (4.06), frequency (4.07), information (3.99), ticket integration (3.94) and affordability (3.94) above the general-sample averages. This indicates that both potential switchers and current public-transport users identify service coverage, frequency and system legibility as central improvement areas.

5.2.5 Conditions to Encourage Cycling

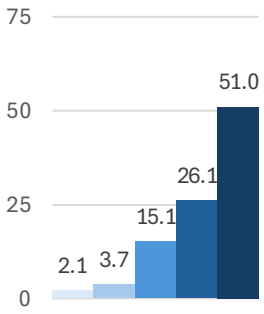
To encourage you to shift to cycling to explore the area, how important would the following measures be?

Distribution Not at all Very much

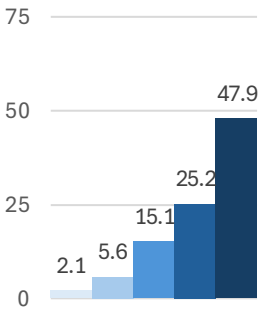
Improved infrastructure 4.23



Increased safety on the route 4.14



Increased comfort, safety and reliability when parking 3.99



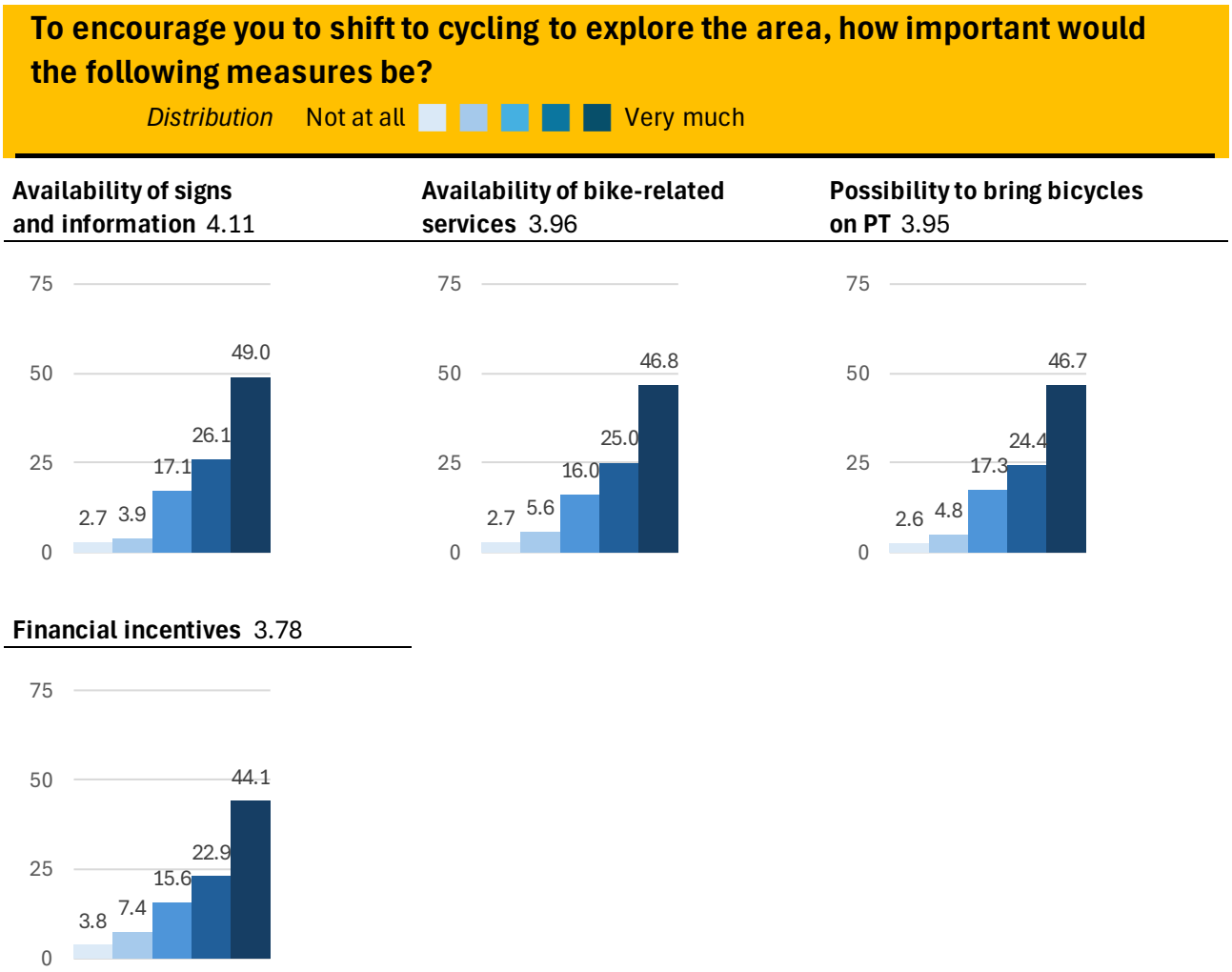


Figure 45: Tourists survey – Assessment of cycling promotion strategies

The measures proposed to encourage cycling receive even stronger scores. Improved cycling infrastructure ranks first at 4.23, followed by increased safety along the route (4.14) and better signs and information (4.11). Increased comfort, safety and reliability of bicycle parking scores 3.99, availability of bike-related services 3.96, the possibility of taking bicycles on public transport 3.95 and financial incentives 3.78. The pattern is therefore strongly infrastructure- and safety-oriented, with information, parking and integration with public transport also playing substantial supporting roles.

Among tourists who arrived by private means, route safety reaches 4.24, while improved infrastructure scores 4.23, parking 4.17 and signs/information 4.16. Among tourists already

moving around by bicycle, infrastructure is rated 4.29, bicycle parking 4.21 and the possibility of taking bicycles on public transport 4.16. These results suggest that the most promising way to expand cycling is not primarily through financial incentives, but through a coherent package of safe infrastructure, secure parking, clear wayfinding and effective integration with the wider transport network.

5.2.6 Final Comment

Overall, the tourist survey shows a two-stage mobility pattern. Access to the destination is heavily car-oriented, but mobility within the destination is more diversified and includes substantial walking and cycling. Satisfaction is high overall, yet users of buses and trains tend to report lower satisfaction than users of cars, bicycles, motorbikes or walking. The strongest opportunities for a more sustainable tourist mobility model are therefore to make public transport more extensive, frequent, integrated and easy to understand, while strengthening cycling infrastructure, route safety, parking and bicycle-public-transport integration. These measures address the practical conditions that currently shape tourists' modal choices without assuming that awareness alone will produce a shift.

6 Drafting the SUMMA Participatory Model

6.1 Overall Ambitions and Aims

As outlined in the previous chapter, cross-border mobility is a complex field in which a variety of means of transportation, users, providers, regulatory institutions and other bodies – including places, hubs and functions which "generate" the mobility demand in a given territory, such as hotels, or ports and airports – are combined and interact on different spatio-temporal scales.

Taking this perspective, social groups (users) and institutions (providers, regulatory institutions and other bodies) can be considered as stakeholders which interact in the dynamics of the matching between mobility demand and mobility offer. These dynamics present a high degree of complexity since the process of matching itself shapes the way users and institutions frame the mobility issue, i.e. perceptions and standings related to accessibility, efficiency, comfort, attractiveness, sustainability, etc. in relation both to the different means of transportation, and of the interested territories and communities.

All of this results in a reality which is characterised by a complex web of relationships among actors, interacting in different manners, expressing, implicitly or explicitly, different needs and expectations in relation to the issue of mobility, both in terms of ends – reasons why to move (or why choosing not to move) – and means – different mobility solutions.

Based on these assumptions, the following paragraphs propose an operational model able to support the integration of different instances, needs and expectations that shape up the overall mobility landscape both at a cross-border national level and at a local level.

The model moves from the conceptualisation of a Mobility Ecosystem, borrowed and adapted from the Institutional Development Framework (Ostrom, Gardner, and Walker, 1994). The adaptation allows for the visualisation of the main components of a given mobility system, and their interactions. Beyond the mere *status quo* analysis, the model – combined with the methodology proposed by the Council of Europe's *Toolkit for Civil Participation in Decision-making processes* (ISIG/CoE, 2017;2020) – allows for a three-steps drafting of engagement strategies aimed at defining and implementing sustainable mobility solutions:

- Analyse the components of the Mobility Ecosystem, in terms of:

- Overall context features (i.e., community assessment focused on context variables shaping the provision and the choice of mobility solutions, such as infrastructures development, socio-economic conditions, environmental awareness, etc.);
- Relevant stakeholders (i.e. mobility user groups, providing bodies, infrastructure managers, regulatory institutions, functions which stand as mobility attractors, economic institutions, Civil Society Organisations, etc.);

- Set up engagement strategies tailored to the specificities of the context and the stakeholders to be involved, in terms of interest and relevance toward the issues at stake;
- Develop context-based sustainable mobility strategies and advanced sustainable mobility solutions through a co-creation process involving relevant stakeholders across the whole project development span.

This three-steps approach is also supposed to:

- Support Monitoring&Evaluation effort by embedding a continuous assessment of the project implementation path thanks to the involvement of relevant stakeholders which also comprise end-users representation;
- Produce relevant spill-over effects beyond the scope and the duration of SUMMA project by increasing users' awareness and acceptance of new mobility solutions, as well as exploring paths for the long-term sustainability of implemented solutions.

6.2 Outlining the Mobility Ecosystem

In nature, an ecosystem can be interpreted as a network of interactions among organisms, and between organisms and their environment. Stemming from this consideration, we suggest adapting and apply such definition (of ecosystem) to the issue of mobility, so to better underline the key issues, networks, and overall interactions between actors and their context/environment, being it the cross-border overall area, or the single local context of implementation of SUMMA.

6.2.1 The Institutional Framework

To better depict the Mobility Ecosystem one may take into consideration the Institutional framework, which was developed by Ostrom, Gardner, and Walker (1994) to explain the

management of common-pool resources. According to the authors, the framework was composed by:

- **The Context features**, i.e., the environment in which interactions take place and the way in which the environment influences the interactions, as well as the connexion between the environment and the wider community of reference.
  Context features can be summarised as:
    - Attributes of the physical world
    - Attributes of the community
    - Rules-in-use within the local context
- **The Action arena**, i.e., the network of stakeholders that populate an ecosystem and their Action situations. Action situations, which can be understood as the opportunities for stakeholders to interact, exchange resources, share knowledge etc., are shaped by, and in turn influence, the above-mentioned Context features.
- **The Patterns of interaction**, i.e., the mutual relationships of involvement among stakeholders which result from what takes place within the Action Arena. Such patterns of interaction contribute to generate:
- **An Outcome**, i.e., a certain arrangement in terms of mobility patterns – which can, in turn
- Be monitored and evaluated throughout time by means of **Evaluative criteria**.

The following figure (Figure 1) aims to illustrate the original Institutional development framework applied to the analysis of common-pool resources management:

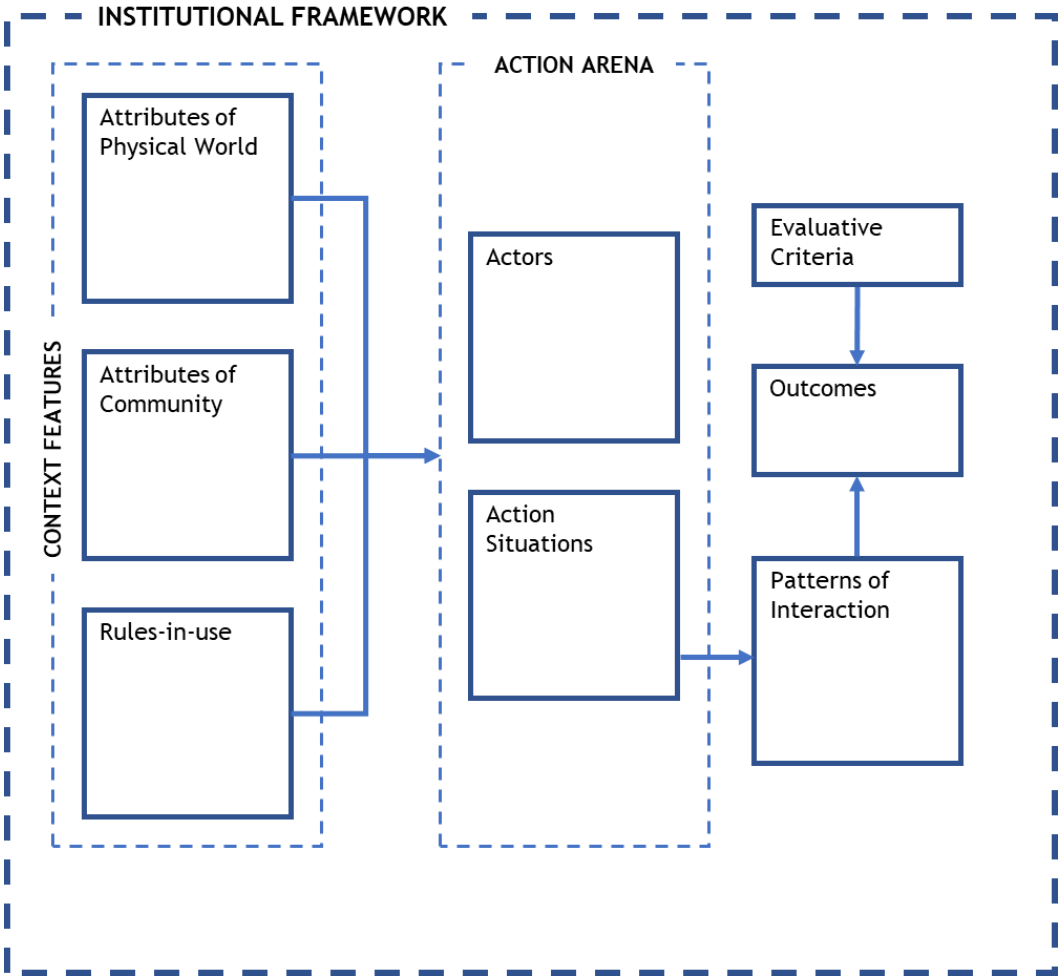


Figure 46: Institutional framework applied to the analysis of common-pool resources management (adapted from Ostrom, Gardner and Walker, 1994).

6.2.2 Adapting the Institutional Framework to the purpose of SUMMA

For the purpose of SUMMA, the elements constituting the Institutional Development Framework have been adapted as follows:

- Context features
  - **Attributes of the physical world** – The main characteristics of the area interested by mobility flows, both in terms of broad geographical features – urban and rural areas, environmental characteristics, etc. – and in terms of mobility infrastructures – connections, lines, hubs, interchange areas etc. Particular interest needs to be paid for structures and areas which – thanks to their attached functions, and/or their

symbolic meaning – generate the demand for mobility, thus prompting mobility users' actions in order to reach the destination in the best way possible according to their needs, values, expectations, and perceptions.

- **Attributes of Community** – The intangible characteristics attached to the community of reference according to the scale of analysis adopted within SUMMA project. These spring from the relationship between the social body and its inhabited environment, as well as from the overall long-lasting social relationships among different actors. All of it can be summarily described in terms of capital (social, economic, institutional, and human) available to the local community.
- **Rules-in-Use** – The set of mobility strategies, programmes, plan, and operational rules and procedures, being formal and explicit, or informal and practice-based, which are in place in a specific location.

- Action arena
  - **Actors** – Collective bodies (institutional and non-institutional, public and private, formal and informal etc.) which interact with each other. A list of actors related in different ways with the issue of sustainable mobility might include, for instance:
    - Territorial/city users (i.e., long term residents, commuters, tourists, etc.)
    - Economic actors (for instance, big companies, or touristic operators)
    - Civil society organisations (such as professional and trade unions, or environmental committees)
    - Transport operators dealing with passengers
    - Government bodies and regulatory agencies
    - Experts and research bodies (like University faculties or research centres dealing with the topics of sustainable mobility)
    - Energy providers
    - Freight and logistic operators.
  - **Action situations** – Similarly to what occurs in natural ecosystems, the Mobility Ecosystem is characterised by structural conditions – rules, information, roles etc. – that provide the context for the decision-making process of each actor, where different interests meet, participants exchange information, and undertake actions related with the fulfilling of mobility needs.
- **Patterns of interaction** – The dynamic processes and behaviours that result from actors interacting in a given Action situation over time, i.e., in the field of mobility, how users

and providers react to rules, costs, incentives, and constraints which characterise the existing mobility offer.

- **Outcomes** – The – dynamic and everchanging – balance between mobility demand and mobility offer, with its cascading effects in terms of social, economic, and environmental sustainability in the area of reference.
- **Evaluative criteria** – are the indicators and data sources which can monitor and validate outputs and outcomes related with the mobility process in a given territory.

Stemming from the above-illustrated adaptation of the Institutional development framework, the following figure (Figure 2) aims to summarise the main components of the Mobility ecosystem:

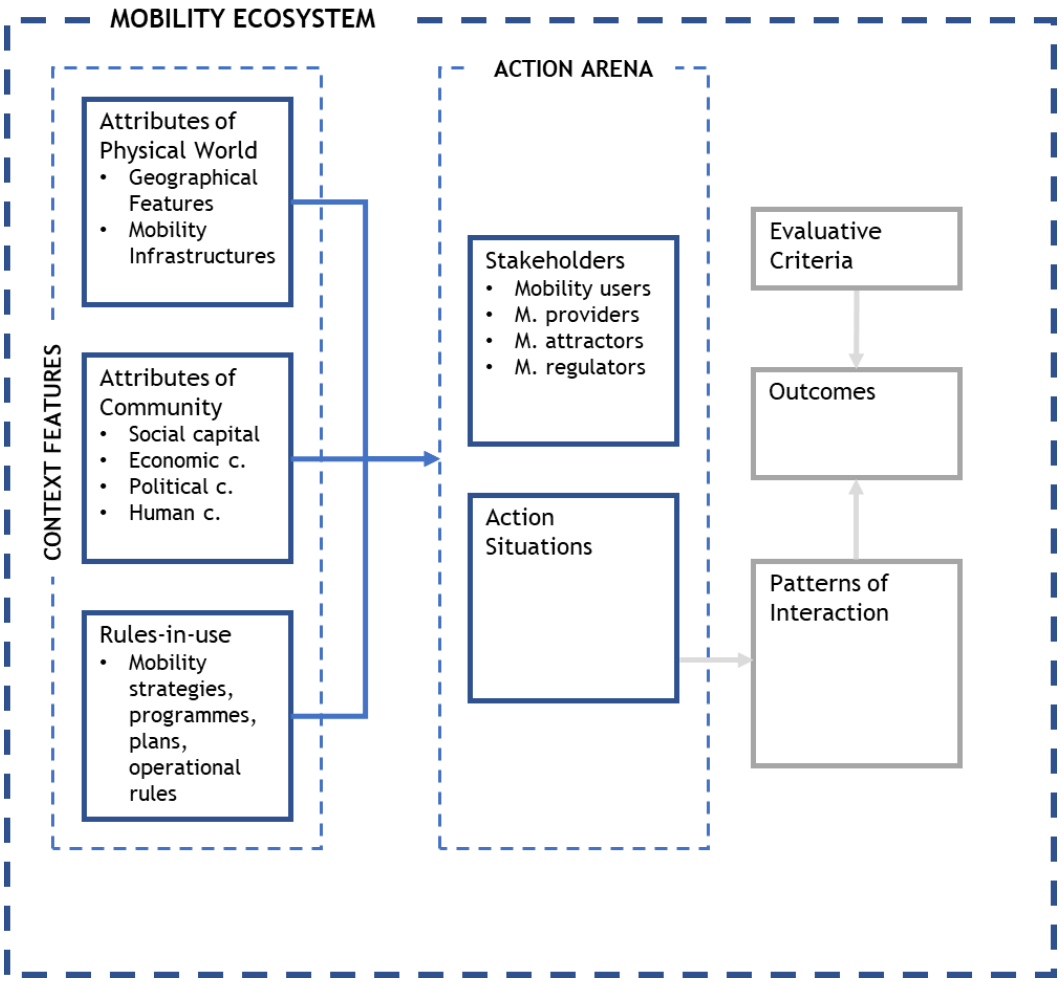


Figure 47: SUMMA Mobility Ecosystem

6.2.3 Civil Participation in the Mobility Ecosystem

As the Mobility Ecosystem model's function is not only to depict the dynamics characterising the mobility systems, but also to understand how to intervene within it so to promote sustainable mobility solutions, the present paragraph proposes to integrate the indications given by the model with the methodological approach set out by the Council of Europe with the *Civil Participation in Decision-Making* – CPT Toolkit, (2020; 2017).

The toolkit provides for a general methodology for the design and implementation of context-based strategies to increase a community's participation/engagement on a specific policy topic. Among the key assumptions around participation for decision-making that are set in the CPT Toolkit, there are:

- Efficient engagement of citizens and stakeholders on a specific policy topic/area is not a 'one time' intervention, but rather a process that follows the phases of the decision-making.
- The necessary features characterising citizens' participation are the willingness to participate, which is endogenous to the individual or group and might be affected by the level of trust and the sense of belonging to the topic at hand, and the possibility to participate, which is exogenous to the individual or group and largely determined by the decision-maker, or other promoter of the initiative (Pellizzoni, 2008, 93-116).
- Not all citizens represent, always, relevant stakeholders that should be engaged in the decision-making process at all costs. In fact, successful participation and engagement strategies require a targeted approach, in which different stakeholders are engaged with different methods and tools based on both their relevance and their willingness/possibility to participate. The relevance of a stakeholder differs as the topic at stake changes: this requires specific analysis on each stakeholder to be conducted by the decision-maker, or other promoter of the initiative.

The toolkit suggest that an effective decision-making process based on the active participation of all interested parties should be structured into three main phases:

1. **Community evaluation**, aimed at analysing the features of the context of action, which correspond to the Context Features as outlined in the Mobility Ecosystem model, according to four main dimensions (social, economic, political, and human capital).
2. **Stakeholders evaluation**, aimed at mapping and evaluating stakeholders in terms of their roles and characteristics, specifically related with interest and relevance. The

object of this evaluation corresponds to the Action Arena area as outlined in the Mobility Ecosystem model. This analysis allows to categorise stakeholders according to the level of participation which is expected to be reached during the decision-making process, ranging from information, to consultation, dialogue, and partnership.

3. **Participation strategy drafting**, which allows to outline the different activities needed to effectively involve all stakeholders according to their level of relevance and interest, ultimately affecting their relationships – categorised as Patterns of interaction in the Mobility Ecosystem model – so to produce tangible results in terms of different Outputs/Outcomes which can be monitored through Evaluative Criteria. As a preliminary step, the participation strategy might include a "sense-making" activity aimed at validating the results obtained by the application of points 1 and 2 (Community and Stakeholders Evaluation).

6.3 Operationalising the Mobility Ecosystem Analysis with the Support of the CoE Civil Participation Toolkit

6.3.1 Step 1 – Community Evaluation

The Community Evaluation can be done by reading the local context through the lenses of the elements summarised in the Mobility Ecosystem scheme (Figure 2), namely:

- Attributes of the physical world
- Attributes of Community
- Rules-in-Use

6.3.1.1 Attributes of the physical world Evaluation

The area of interest should be analysed in terms of:

- Broad geographical features: physical and environmental characteristics of the area of interest that influence mobility
  - Topographic characteristics and natural barriers
  - Land cover, population density and urbanisation
  - Administrative organisation
- Mobility infrastructures: physical and organizational systems that enable and support the movement of people
  - Road networks and parking facilities

  - Public transport networks
  - Cycling network and facilities, soft mobility structures
  - Pedestrian paths
  - Transportation hubs (airports, train stations, bus terminals, ports etc.)
  - Sharing, pooling, and micro-mobility services
  - Charging infrastructures for electric vehicles
- Mobility attractors: locations or areas that, thanks for their functions and/or symbolic meaning, affect travel demand and patterns
  - Employment hubs
  - Institutional facilities
  - Commercial areas
  - Residential areas
  - Education facilities
  - Healthcare facilities
  - Recreational areas
  - Tourist attractions
  - Temporary events venues
- Mobility flows: state of the art of the volume of movements and the modal split of flows in the area under analysis (private/public transport and chosen means).

6.3.1.2 Attributes of the Community Evaluation

The attributes of the community are the intangible characteristics attached to the community of reference. They can be understood in the light of the four main dimensions (and related variables) used to assess the participation attitude of a community proposed by the Civil Participation Toolkit, as follows:

- **Social capital** – referring to the social vitality of a community and the strength of its social fabric.
- **Economic capital** – referring to the economic health and dynamicity of a community.
- **Political capital** – referring to the political engagement within the community and the overall quality of governance processes.
- **Human capital** – referring to knowledge, skills, and capabilities of the community at large.

6.3.1.3 *Rule-in-use*

Broadly speaking, rules-in-use are the set of mobility strategies, programmes, plan, and operational rules and procedures, being formal and explicit, or informal and practice-based, which are in place in a specific location. In concrete terms, these may refer to:

- Relevant law provisions.
- Strategies, programmes and plans, which are in force at different political/administrative levels directly managing mobility issues (for instance, sustainable mobility plans, traffic plans, parking plans etc.).
- Strategies, programmes and plans, which are in force at different political/administrative levels and affect the mobility dynamics (for instance, urban development plans, energy plans, touristic plans, territorial marketing plans etc.)
- Public transportation schemes (lines, timetables, fares etc.).
- Private transportation schemes (infrastructure terms of usage, fares, rules etc.).
- Propensity to use different modes of transport, also in relation to socio-cultural factors, or permanent/temporary presence in the area of reference.

6.3.2 Step 2 – Stakeholders Evaluation

To identify and evaluate the stakeholders operating in the local context in an easier way, four macro-categories can be taken into consideration for the purpose of SUMMA project, each of them presenting different features in terms of potential relevance and potential willingness/interest to participate:

- Mobility users: individuals or groups who, on a daily basis or occasionally, utilise transportation networks to move from one place to another. It might include student or working commuters, tourists, recreational travellers, etc. Their behaviour and preferences are influenced by the perception related with factors such as convenience, cost, availability, comfort, etc.
    - Relevance of mobility users is mostly defined by their impact, in terms of generated mobility demand in the analysed areas. The greater is the mobility demand attributable to the assessed group, the bigger is the relevance.
    - Interest of mobility users might be derived from their level of willingness to choose sustainable mobility solutions instead of other options to fulfil their mobility needs. This might also be linked to their permanent or temporary status

in the area of reference, as well as other factors driving the (positive) perception and acceptance of sustainable mobility solutions.

- Mobility providers: entities that supply transportation services or infrastructure, including public transit, sharing and rental companies, parking lot facilities, tolled roads and bridges, rail networks, airports and ports.
    - Relevance of mobility providers is also defined by their impact, in this case connected to the importance of the managed mobility service, also in terms of interconnection with other means and final destinations.
    - Interest of mobility providers is mainly driven by the compatibility of SUMMA foreseen solutions with the single actor's financial and management strategies in place. Mobility providers might feel threatened, or advantaged, by strategies which include the promotion of sustainable mobility solutions. Also, the interest of mobility providers is affected by the degree of "autonomy" of the single actor, meaning that interconnected mobility providers are more likely expected to engage in interactions with other actors, including in the framework of SUMMA.
- Mobility attractors: managers and/or responsible of locations, areas, or functions that generate significant demand for mobility, drawing people to travel to them. This might include institutions, economic organisations, civil society organisations, etc.
    - Relevance of mobility attractors mostly reside in their attractiveness. This means, for example, that in touristic contexts hotels, or beach managers, or big museums and attractions, are more relevant than in non-touristic contexts.
    - Interest of mobility attractors to engage within SUMMA activities might be affected by several features, including economic convenience, material and symbolic attachment to the analysed area, political commitment, etc.
- Mobility regulators: government bodies that monitor and regulate transportation systems and policies. Mobility regulators act in between other actors, by setting standards for safety, emissions, licensing, and infrastructure and system development.
    - Relevance depends on the area of operation of the mobility regulator and its impact on daily mobility activities.
    - Interest is mainly linked to the degree of integration of the mobility regulator in the local context, as mobility regulators which are strongly rooted in the managed area are more likely willing to take active part in the participatory process rather than far, detached, and more technocratic institutions.

One of the key features of every stakeholder is represented by the characteristics of their available capitals, i.e., the resources every stakeholder is capable/willing to bring into a given interaction (in this case, in a participatory process promoted within SUMMA). As in the case of the attributes of the community, the same four dimension guide this assessment, as follows:

- **Social capital** – referring to the capacity/willingness of stakeholders to engage into social life and activities.
- **Economic capital** – referring to the economic resources/capacity of each stakeholder.
- **Political capital** – referring to the engagement of individual stakeholders in the political life, legal schemes and/or broader governance frameworks.
- **Human capital** – referring to the specific capacities – being technical and/or experiential – of each stakeholder on given topics and in the participation arena.

6.3.3 Step 3 – Participation Strategy

By taking into consideration the categorisation represented in Figure 4 above, four main Patterns of Interaction can be envisaged, determining specific types of engagement activities, as illustrated below:

- Stakeholders with low interest and low relevance can be addressed through **Information activities** – In this case stakeholders are not expected to play an active role in the involvement process; they are rather considered as the targets of informative activities, for instance regarding the development of SUMMA project. In this case, information must be clear and easily understandable, so to reach non-expert actors as well. The main goal of this approach is to ensure overall visibility to the project approach and actions, providing useful information to the public – intended both as the general public and as the group of stakeholders assessed as pertaining to this quadrant.
- Stakeholders with high interest and low relevance can be targeted by **Consultation activities** – These activities are mostly focused on collecting the views, perceptions, and stances of stakeholders falling in this quadrant, throughout the different stages of SUMMA project. Consultation activities can be performed individually and in a collective manner, as well as via online and/or offline activities.
- Stakeholders with low interest and high relevance can be involved in **Dialogue activities** – Dialogue implies a structured, two-ways communication process with stakeholders which are deemed as strategic for the project. Engagement with stakeholders falling in this quadrant paves the way for SUMMA project to benefit from stakeholders'

competences, and allows for the establishment of a feedback process, thus ensuring both effectiveness and social acceptance of the foreseen sustainable mobility solutions. Since stakeholders categorised in this quadrant do not show a high level of interest in taking part into the participatory process, it is important to properly deliver the scope and the structure of the project, in order to present the project a space where different voices can be heard and different experiences and competences can be shared, seeking the development of sustainable mobility solutions. Incentives for the engagement of stakeholders might play a role in fostering participation.

- Finally, stakeholders with high interest and high relevance are the ones which can enter in **Partnership activities** – These stakeholders are the ones with which it is expected to develop closer relationships, based on appropriate participation mechanisms characterised by sustainability, legitimacy, periodicity of activities, among others. A partnership is first, an agreement to address an objective by sharing responsibilities and capabilities.

The following figure (Figure 3) shows how the stakeholders' taxonomy could guide the identification of the most pertinent Patterns of interaction to be deployed:

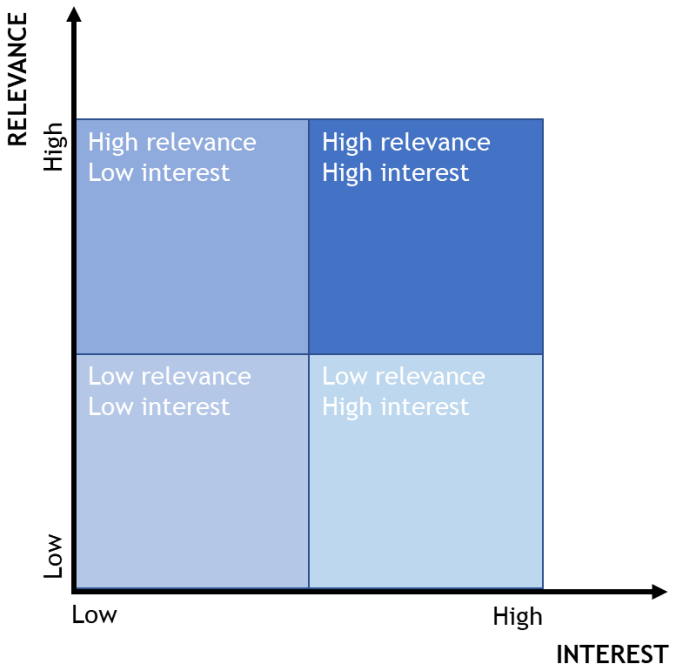


Figure 48: The Taxonomy of Patterns of Interaction (adapted from CoE, ISIG, 2017:2020)

6.3.3.1 *First step: Participatory Sense-Making and Scenario-Making*

Information deriving from Step 1 (Community Evaluation) and Step 2 (Stakeholders Evaluation) can be the object two preliminary participatory activity involving stakeholders with whom the project expects to establish a Dialogue/Partnership interaction, namely:

- **Sense-making activities**, where information from Step 1 and Step 2 are validated, integrated and interpreted, especially with qualitative contributions. Sense-making refines the assessment results, allowing for the potential multiplication of participation to project activities by identifying new relevant stakeholders to be reached during other steps of the project. During sense-making activities, the foundations for monitoring and evaluation activities can be established, so to assess the outcomes achieved through the implementation of SUMMA. Sense-making might result in stronger bonds of cooperation among actors. Questions to be asked during the sense-making activities are the following:
  - Is the community description accurate in terms of Mobility Ecosystem? Are there elements to be better explained, corrected, or integrated?
  - Is the stakeholders' overview complete and correct? Are there new stakeholders to be included or already identified stakeholders to be re-categorised?
  - Through which activities and indicators an effective Monitoring&Evaluation scheme for sustainable mobility solutions can be set up in the context of reference?
- **Scenario-making activities**, where, according to the updated results of the assessment phase, a scenario regarding future sustainable mobility solutions for the area can be drafted. This provides an operative context for the actual development and implementation of SUMMA sustainable mobility solutions. Questions to be asked for the purpose of the scenario-making include:
  - Which are the main challenges and difficulties that hinder elaboration and full implementation of sustainable mobility solutions?
  - Which are the main existing and future needs concerning transport services?
  - According to the previous information, what are the possible action/strategies to improve the development of sustainable mobility solutions in the are? Proposals can be categorised according to their level of complexity (ranging from action to strategy) and to their scale of implementation (from local to international).

- Which are the stakeholders relevant to reach the results outlined in the previous exercise?

Besides specific project goals, both activities are ultimately expected to contribute to increasing awareness and overall strengthening the culture of sustainable mobility within targeted communities.

7 Conclusions

The present report highlighted the complexity of achieving sustainable mobility in cross-border area. The analysis emphasised the need to integrate environmental, social, and economic dimensions when assessing existing mobility systems and their potential to develop in a sustainable way. Key challenges include aligning governance structures, overcoming socio-cultural resistance, leveraging on technological advancements, and addressing logistical obstacles like infrastructure gaps and service misalignment. Participatory frameworks are pivotal in creating innovative solutions, supported by multi-level governance and stakeholder engagement.

The SUMMA model proposes a participatory approach to assess mobility state of the art and needs, with strategies rooted in the mobility ecosystem dynamics, resulting in context-specific solutions. Next steps focus on refining the Cross-border Sustainable Mobility Analysis, bridging it with local analyses, and on starting implementing stakeholders' engagement activities.

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