YOUMOBIL - Guidelines For The PT Decision Makers On Smart Rural Transport Tools

Practical guidelines and analisys specifying further details about the feasibility of the documented tools are added in the finalisation of the tool-box.

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1. Introduction

This document is the output of the fourth and final task of the Activity T1.6 "Development of a tool-box for youth-oriented smart rural transport solutions" of YOUMOBIL projects and concerns the compendium of the projects and studies carried out to this point.

The first goal of this document is to summarize useful tools of smart rural transport experiences in Europe that are addressed mainly to young people. This includes both an overview of the projects developed with YOUMOBIL and an overview of the state of the art of other youth-oriented mobility services, in order to deliver extensive knowledge on different types of tools, their characteristics, their replicability, and their common difficulties in similar rural contexts.

The second goal of this document is to assess how the pandemic is currently changing the Youth's mobility, in order to point out a correct view of the situation and help the decision makers to do their job well.

The first goal is exploited in the second chapter, and the second goal is exploited in the third chapter. The conclusions of all these studies will follow in the last fourth chapter

2. Youmobil Toolbox

Limited mobility options are often mentioned as a reason why young people choose to leave their native rural area and migrate to larger cities. This intensifies demographic change, which is a concern in many rural areas of Central Europe. A number of tools such as shared mobility and demand-oriented flexible collective transport services have emerged across Europe, but only a few have been introduced in rural areas of Central Europe.

The YOUMOBIL project has tried to improve the passenger transport system for young people living in rural areas and to improve their access to European and national transport networks by networking with local young people in rural areas.

In this chapter of the document the **five pilot-tested tools** analysed in the DT1.6.3 "Documentation of pilot-tested tools" and the **six rural smart transport tools** addressed to young people studied in D.T1.6.2 "Documentation of smart rural transport tools" will be presented focusing on their strengths and weaknesses. In particular, a **"how to" guide** will be proposed, based on the experience of the solutions tested within and outside the YOUMOBIL project.

2.1.   Smart rural transport tools

Mobility can be defined as the ability to move from one place to another, for any reason and by any means of transport. Moving freely is an essential need, and everyone should be able to easily reach schools, health services or places of entertainment. In fact, mobility can be considered as the "horizontal" layer, useful not only to go to predefined places but also to ensure equal economic and social opportunities for all citizens and, at the same time, their social inclusion and access to other elements that guarantee a high quality of life. In rural areas, it is difficult to provide public transport services that are targeted to the mobility needs of different user groups and trip origins/destinations. Such rural services are usually the result of a balance between financial sustainability and the need to cover the main (or at least the most used) connections and the hours of low demand. Such a dispersed and diversified mobility demand and low passenger numbers therefore lead to high operating costs for transport services and a greater need for subsidies.

It is therefore time to reconsider not only transport policies for rural areas, but also to define new approaches and service systems for possible transport solutions, based on the potential of new ICT devices and IT tools.

For this reason, a detailed analysis of the studied smart rural transport tools is proposed.

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Loyalty programme

The loyalty programme "Young traveller", developed in Mazovia in the framework of the YOUMOBIL project, aims to promote public passenger transport services among young people and young adults in rural areas and in subregions of the Mazowieckie Voivodeship.

Target users are people between the ages of 13 and 26 years (primary and secondary schools youth, university students, young

Figure 2-1 Web page screenshot of the Mazovia's Loyalty programme

working people) who have an electronic ticket - Mazowiecka Card – and use the services of the Koleje Mazowieckie online train ticket sales system.

Once the loyalty programme has been activated, scores can be collected by purchasing monthly tickets via the website: https://bilety.mazowieckie.com.pl/. The accumulated scores can be redeemed when purchasing the next monthly season ticket, thereby reducing the price. The programme is intended for passengers who commute with Koleje Mazowieckie Company trains on eleven railway lines' sections.

The main phases of the pilot implementation were as follows:

- June 2020 - defining the rules for the operation of the program;
- July 2020 - preparation of documents and procedures related to the implementation of the program;
- August 2020 - preparation of technical specifications related to the modification of IT systems;
- September 2020 - signing contracts with system suppliers for their modification;
- October 2020 - IT systems have been modified;
- November 2020 - loyalty program tests and official release to users;
- On November 16 2020 - the pilot project was officially launched;
- On November 30 2021 - the pilot project was officially completed.

DRT services

The YOUMOBIL toolbox includes four DRT services that have been studied in detail:

- Modena Night Taxi
- Publicar
- Taxibus
- Bummelbus

Modena night taxi

The service tested within the YOUMOBIL project is a local public transport service using taxis that can be used by anyone.

Figure 2-2 aMo Youmobil App screenshot

It consists of three lines (BLUE, RED and GREEN), each served by a taxi that operates on Friday/Saturday and Saturday/Sunday evenings.

LINEA BLU

Collegherà le frazioni di
Ganaceto, Lesignana, Villanova
e Albareto al centro.

Ganaceto · Lesignana · Villanova · Albareto · Stazione FS · Autostazione · P.zza Matteotti

LINEA ROSSA

Collegherà le frazioni di
Marzaglia N., Cittanova, Cognento,
Baggiovara al centro.

Marzaglia N. · Cittanova · Cognento · Baggiovara · P.zza Matteotti · Autostazione · Stazione FS

LINEA VERDE

Collegherà le frazioni di
Portile, Paganine, San Donnino
e San Damaso al centro.

Portile · Paganine · San Donnino · San Damaso · P.zza Matteotti · Autostazione · Stazione FS

Figure 2-3 Summary of Youmobil service lines

All lines connect the centre of Modena (in particular Modena station or the main square of the city) with the outlying districts. The departure times of the routes are fixed but the order of stops is not rigid and depends from the reservations. If the route is only partially booked, only one section of the route will be operated and if there are no reservations for a trip it will not be done at all.

The service will run on a trial basis from 10/12/2021 and will ve continued for additional 6 months with own resources from aMo after the end of the Project.

In order to use the service, travellers must make a reservation and payment via the app, and boarding can only take place at the stop indicated when booking the trip.

Reservations (which can only be made for oneself) can be made up to 60 minutes before the departure time of a journey; after this time the journey will no longer be visible in the app.

Publicar

PubliCar is a Demand responsive Transport service operating in some areas of Switzerland. It is operated by PostAuto[1], a Swiss company specialised in postal transport and as a courier service. In each area, the service operates with different timetables (some services run only in summer, others offer night-time services) and different modalities (e.g. some services have to be booked in advance). Depending on the particular PubliCar area, the user will be collected from his front door, from an agreed boarding location or from a bus stop. All

Figure 2-4 Publicar service

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[1] https://www.postauto.ch/en/search/publicar

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PubliCar vehicles offer free wi-fi on board and are suitable for people with limited mobility and wheelchair transport.

Only PubliCar Vaud and PubliCar Appenzello are bookable via app and via phone, the other services can only be booked calling the call centre. PubliCar Vaud and PubliCar Appenzello have two different but similarly functioning apps, both operated by PostBus Ltd:

- let you choose the departure or arrival time
- enables reservations for several people
- booked trips can be shared via whatsapp and other social media
- enables payment of the surcharge by credit card (the PubliCar fare comprises a public transport ticket and the PubliCar surcharge)
- shows where you are and the current location of the vehicle on the map
- combines trips with similar travel destinations
- informs you of delays through a push notification
- generates a booking code for each order, which needs to be given to the driver upon boarding
- provides an overview of earlier bookings; start and final locations can be copied into a new booking
- allows you to be contacted if the driver isn't at the departure location at the agreed time

Bookings may be made at short notice up to 15 to 30 minutes before departure, though it depends on the stops and how full the bus is. The PubliCar app allows the user to make bookings up to 30 days before the trip.

Taxibus

The Taxibus Demand Responsive Transport service, owned by AMT (the public transport operator in Genoa Municipality) was set up with the aim of rationalising the public transport system in areas of lower demand while continuing to guarantee public transport service coverage. Taxibus operates on 9 lines within the territory of the Municipality of Genoa.

Figure 2-5 Genoa's Taxibus

 The public transport service managed through the Taxibus system is a "reservation-based" service, which means that the timetables and routes of the service are fixed, but only those journeys expressly booked by at least one customer are carried out. Customers wishing to make a trip can call the AMT telephone number for Taxibus bookings free of charge and book the trip they are interested in between the scheduled trips. The number for reservations is available every day, except holidays, from 6.00 to 23.30. Taxibus reservations can also be made online from a PC or smartphone using the AMT app. Reservations are compulsory. It is possible to request a ride for the same day, at least 30 minutes in advance, and for subsequent days and weeks; each ride can be booked for one or more people. In addition, if the same trip is to be repeated several times a week, it is possible to book several trips at once. The timetables of the rides can be seen in the printed booklets and on the AMT website and app. The AMT operator records the trip request in the system's database (departure and arrival stop, day and time of departure).

In order to minimise empty journeys, the taxi driver is entitled to shorten the route of the Taxibus if the entire journey is not necessary. Clients may board and alight from the taxi car only at Taxibus stops, which are signposted by special stop signs.

Bummelbus

The Bummelbus is a complement to public and private transport[2] in the northern part of Luxembourg. It is an on-demand transport service organised in the framework of professional driver training for people that are long term unemployed.

The good practice started in June 2001 in 3 villages as a service for elderly people and those deprived of public transport. At that time it was an extension of services offered by the "Forum pour l'emploi" (social insertion of people) who offered services like garden maintenance often for elderly people.

In the meantime, the service expanded to 80 towns – 255 villages. In addition, the target group of people was expanded to the whole population, but mainly youngsters for their activities after school.

Figure 2-6 Bummelbus service

It functions as a complement to the general public transport offer from Monday to Saturday. It is available to every person living in the participating municipality, who wants to travel on demand on short distances. The system offers door-to-door transport. The general operating times are between 06.30h and 21.15h from Monday to Friday and between 06.30h and 17.15h on Saturday.

The service itself is organised by an association without a profit-making objective. The Bummelbus is co-financed by the municipalities and the government (Ministère du Travail) and organised by Forum pour l'emploi, a regional employment initiative that evolved from ERDF (European Regional Development Fund) projects in 1998.

Each inhabitant of a town where the service is active can call the service for a journey from his/her home to a destination in his/her town or an adjacent town (the point of departure can be anywhere within the coverage area, it does not have to be exclusively from home). The maximum distance is 35 km. Trips can be made within the town itself and the adjacent towns.

The service supports different technologies: on one hand, there is the algorithm organising the allocation of reservations to routes. On the other hand there is also a "tracking system" for passengers, especially for children. Thanks to a chip, children can be localised in real time when they are on the bus.

From September 2020, the Bummelbus app is also available, allowing users to book their journey by selecting timetables and stops.

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[2] http://www.fpe.lu/services/bummelbus/

Community car sharing

Talybont Energy has run a community zero carbon car share scheme since from 2010 to 2013[3]. It has served Talybont, a small village in rural Powys with less than 300 households and a population of 743.

Discovering that personal transport accounted for 40% of our rural carbon footprint, Talybont Energy decided to see if it could set up a zero carbon car share scheme. With help from the Brecon Beacons Sustainable Development Fund, Talybont Energy purchased two cars: a second hand car which could run on recycled vegetable oil and an electric car.

Figure 2-7 Talybont service

The scheme was launched in February 2010 with 10 member households and the principal aim of reducing the community's carbon footprint by replacing as many fossil fuel miles as possible with zero carbon miles. The aim was also to assess how a rural car share scheme might work. Because of the lack of public transport and the distance to shops, work, schools and social events, nearly all Talybont households own a car and many run two or more. In setting up the scheme, the community members didn't expect that people would or could give up running a car completely but they thought they might be able to give up a 2nd car if they had access to a shared vehicle. Members payed £25/year to belong to the scheme. They provided copies of their driving licences and signed a standard rental form. They have been then instructed in use of the vehicles. The vehicles were booked online via a SaaS (software as a service) solution called SuperSaaS. It is an "Appointment Scheduling Software for Every Situation" and allow users to book a vehicle specifying the time interval needed.

Both vehicles were parked at the community hall where there was a 4 kW PV panel which powers the electric vehicle. There was a key-coded cabinet at the hall and a log book in each car. Users completed the log book for each trip and, once a month, the entries were copied manually into a spread sheet which calculated the amounts owed from which email invoices were created and sent. Members payed either online or at the village Post office. One member received discounted use of the vehicles in return for maintaining them, ordering and organising biodiesel delivery and copying the log books.

The 2013 scheme has 15 member households – only 6 of these are from the original 10. Members' use of both vehicles is extremely skewed. 5 member households account for 91% of the car trips and 97% of the revenue. 4 households haven't used the cars at all in 2013 and 2 households have only used them once. Despite various changes (and growth) in membership, this skewed pattern of usage has remained much the same across the 4 years.

App for real-time information/ticketing/reservation and journey planner
The YOUMOBIL toolbox includes four apps/on-line journey planners that have been studied in detail:

- INSA YOUNG app
- POSEIDON app
- Danube Scout
- Rejseplanen

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[3] www.talybontenergy.co.uk

INSA YOUNG app

In Saxony-Anhalt, the Ministry of Regional Development and Transport (MLV), together with its in-house partner Nahverkehrsservice Sachsen-Anhalt GmbH (NASA GmbH), has developed a new information app on public transport services, called INSA YOUNG, as the central part of the YOUMOBIL pilot project. The new application is primarily addressed to youth and young adults in the rural areas of the federal state. The aim of the app is to present local transport services in a more visible and user-friendly way, while including functionalities that are desired by the target group. INSA YOUNG is built on the existing information app "INSA", enhanced with new functionalities specifically tailored to the target group of young people.

Figure 2-8 INSA YOUNG app

The "parent" app INSA offers information services and accompanies PT users on their journey form door to door.

INSA YOUNG expands the range of information and therefore increases the attractiveness of public transport services. It allows users to easily find their next connection, whether this is from one transport stop to the next or door-to-door. Via the app, users are able to save their connections, making them available offline, which can be extremely useful in rural areas, where areas without signal still exist. If the journey is under 10 km long, in addition to the public transport connections, a bicycle route is shown. Furthermore the "take-me-there" function has been expanded. This function allows users to save addresses with icons, photos or initials, to allow quick routing. Through the pressing of a single icon a route from the current location to the saved address is planned immediately.

For the student summer holiday ticket, known as "Schülerferienticket", a checking function was included. The ticket is valid in all of Saxony-Anhalt and even in some areas outside of the federal state during the summer holidays. To enable the user to easily and quickly check where the ticket is valid, the "Schülerferienticket-Check" was included in INSA YOUNG.

The map functionalities have been expanded by including points of interests as well as a reachability layer, which shows the user which areas are reachable by public transport within the next 20 minutes. Moreover, the map includes a "live-map" function, which shows the movement and position of buses, trams and trains in the area.

Additionally, the digital booking of call-a-bus services required the development of a booking platform. The background system for this already existed. This background system allows the call-centre to receive bookings and pass them onto the operating transport company. Therefore, only a user interface, that is connected to the background system, needed to be developed. This user interface allows the passenger to enter a booking directly into the background system. The development of the user interface was done by NASA GmbH.

POSEIDON app

The YOUMOBIL pilot action is focused on improving the app POSEIDON, which is an official ticketing app for the South Moravian Region. The pilot is based on young travelers' declaration that no new app is needed, but improvement on the existing one could be a good solution. During the YOUMOBIl project was improved an e-shop IDS JMK (the Integrated transport system of the South Moravian region), which is mostly used to purchase prepaid tickets. The E-shop was translated to English language. Also, chatbots were implemented in the e-shop IDS JMK and in the web IDS JMK. The chatbots are customer support automated chat service.

**Figure 2-9
Poseidon App**

The POSEIDON app offers the following services:

- Search for connections
- Find the nearest departures from nearby stops with real delays
- Learn current vehicle locations on the map
- Download valid timetables or network plans
- Find out the current traffic situation
- Buy e-tickets
- Buy a single ticket for up to 10 passengers at the same time
- Set up one account to transfer money for fare to other passengers (eg. children)
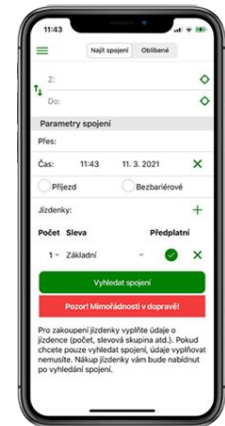
In addition, the latest version of the app brings a few new features:

- The ticket is now just a single QR code that is shown on the train, on the bus and to the ticket inspectors
- To simplify checking on trains where passengers were previously asked to provide proof of identity, the option to upload their photo has been introduced in the app settings. This will appear at the checkpoint along with a QR code.
- Students do not have to proof their right to student fare with a separate ID, anymore. ISIC card is verified directly in the back-office system and informations shown in the app.
- A new landing page has been developed to ease access to user information and credit recharging
- Faster ticket repurchases
- Improved fare calculation

Danube Scout

Multimodal travel information services, such as journey planners, inform travellers about the details of their travel as well as about the best means of transport. They therefore contribute to intensifying the use of public transport. While high-quality information systems already exist for local and regional areas, cross-border information is lagging behind. The LinkingDanube project addresses this problem by linking the largely isolated systems across borders. LinkingDanube stands for "Linking transnational, multimodal traveller

Figure 2-10 Danube Scout

information and journey planners for environmentally-friendly mobility in the Danube region". The project is supported by the INTERREG Danube Transnational Programme of the EU. LinkingDanube aims at improving the end user experience of travellers in cities as well as rural areas in the Danube Region. By linking existing traveller information services through Open API it has enhanced the availability and access to transnational journey planning. Thus it has opened up the path to transport on demand in remote areas and foster the use of sustainable transport modes.

In the framework of the project, at the beginning of 2019, DanubeScout.eu was finalized and ready to use. It is a website (information service) that provides a comprehensive overview on travel information services in theDanube Region. Regional and local services are displayed for specific target groups like crossborder commuters and tourists. Also the Danube Region Journey Planner (DRJP) is accessible over the DanubeScout.The aim of the service is to bring a tool for travellers and especially tourists who are going to visit the neighbouring regions in the Danube Region. The site contains information about different transportation modes, local transport services, Points Of Interest (POI), public transport maps, ticket prices and recommendations for easy and cheap connections between cities and regions. From the site it is also possible to access the journey planners. It finds the route between two locations for a given time, while the filters allow to specify route search criteria, such as public transportation mode, walking distance or walking speed. After selecting a start and end point, the DRJP presents an overview of the journey with several alternatives depending on the chosen transportation mode and the departure time.

Rejseplanen

The mobile application MinRejseplan or My travel plan, is a Mobility as a Service (MaaS) developed by the Transport Authority of Northern Denmark (Nordjyllands Trafikselskab) in 2018 in the framework of the MAMBA EU project (Interreg Baltic Sea Region).

For the past 15-20 years, Nordjyllands Trafikselskab (NT) has been working to improve mobility in their rural areas by focusing on responsive solutions for elderly and for others which are also better coordinated with public transport. Another issue was how to transport users the

Figure 2-11 Reiseplanen

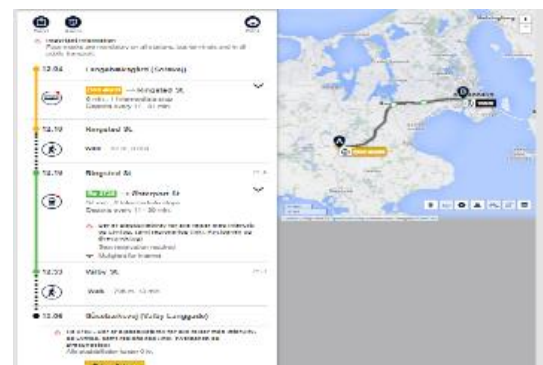last mile, to and from the main bus routes and stops to people's homes. For a long time, the goal was to increase public transport as a share of the total number of rides in the region, and reduce CO2 emissions. Lately this has changed to enhancing residents' sense of mobility by offering more and smarter mobility services. This in turn is assumed to increase the attractiveness of the region as a place to live.

By developing MinRejseplan, NT aims to make it easier for users/residents to plan their journeys from A to B while also making more options available – both public and private. Options that were added besides regular public transport were European company specialized in providing carpooling or ride sharing services. The main barrier in developing MinRejseplanen has been related to the development of a common payment system, due to lack of interest among the different transport providers to share data about their customers, and difficulties in pooling payment systems between private and public actors. NT needs to convince them that if the new app can be a fully-fledged MaaS solution, it is not going to increase competition. Instead it will increase the number of travelers by making sure different travel modes can be combined. Currently, when the user has found the journey he is interested in, the app redirects him to the provider of the journey, where he can book or buy the ticket for the trip.

Resources are another barrier. It is very expensive for a single transport authority to develop a MaaS system. Therefore, all the regional transport authorities in Denmark have founded a company, Rejseplanen A/S, which today own and run the application.

The app launch in May 2018 was a success. Currently (March 2021) the app has over 1 million downloads and a score of 4,7/5. In addition to the app, there is also an online site in English, Danish and German in which the following functions are available:

- trip planning (by selecting the departure stop, the arrival stop and the desired time, the system offers several alternatives on how to make the journey)
- departure board (if the user selects a stop and a departure time, the board shows all the transport services that depart from there at that time)
- book and buy ticket
- real time traffic info

In addition, the user can select further options, including whether the selected trip guarantees accessibility, the travel settings and the bike and walk settings.

Once the journey has been selected, the app shows the route to be taken with the different means of transport, the interchange stops, the travel times and finally the possibility of purchasing the tickets.

Development of a rail service

The pilot tested tool in Croatia has the goal to increase mobility of young people living in rural areas near the Croatia's capital and to provide them with a new railway service and real-time traffic data.

The pilot is primarily intended for young people (high-school students, university students and young employed adults) that have a need to go to Zagreb from the rural area of Dugo Selo and back. Since Dugo Selo does not have any (or at least close to metropolitan quality) cultural or entertainment industry, young people go to the movies, clubbing and to theatre to Zagreb.

Figure 2-12 HZPP train

HŽPP introduced an innovative service of night trains going from Zagreb to Dugo Selo (and back), accompanied by the systematic display of timetable information in the sales application, mobile application and online application. The solution itself is a continuation of an existing process in HŽPP when drafting timetable and preparing the data for online display and usage.

The pilot started on 11th of July 2020 and ran for a year, until the 11th of July 2021.

HŽPP as a railway undertaking has a specific pilot, because it was introducing a new innovative service of night trains, accompanied by a smart solution communication and data display. Infrastructure manager (HŽ Infrastructure Ltd) had an important role in this pilot because it owns the software that is essential to insert the timetables and share them with HŽPP, so it can be displayed on ISPRO interfaces. The pilot communication was facilitated by smart solutions available to HŽPP and stakeholders from Dugo Selo, via available online media.

2.2. "How to" guide to support PT Decision Makers

This chapter aims at describing how to develop a smart rural transport tool of the previously identified categories, in order to transfer and disseminate knowledge.

In particular, this guide aims to:

- allow easy reproduction of the developed IT tool by reducing the obstacles caused by lack of adequate tools, incorrect timing prediction and an underestimated consideration of possible risks;
- avoid the mistakes that have occurred;
- create general guidelines, in order to suggest suitable strategies for LPT decision makers.

An essential element of the **planning process** is the **involvement of young people**, as their involvement enables that the development of the service is as tailored as possible to their needs.

The template used includes the following sections:

- number of time progression of steps to be implemented;
- description of each action carried out;
- competencies and tools (technological and not) needed into the development of the step;
- timing occurred into the complete development of the step;
- risk(s), or what to pay attention to;
- mitigating actions done, in order to obtain the result.

Loyalty programme

Loyalty programmes could be a useful tool in order to attract young people to public transport. The concept of 'loyalty' and 'incentive' is developing more and more throughout Europe, which is why in this section is presented an how-to guide for the development of a loyalty programme in rural areas addressed to Public Transport decision makers.

Step	Description	Competencies and tools needed	Timing	Risk(s)	Mitigating actions
#1	Contact the target group to collect their needs and expectations	Contacts to schools/universities/ institutions and involvement of public transport users	Depending on the context	Non-realistic wishes and requests	Explain how a loyalty programme works and what the possibilities are
#2	Choose between an in-house or external partnership programme	See notes below the table			
#3	Define how to identify the membership of a loyalty programme (electronic car, QR code,..)	Not relevant	1 month	Not relevant	Not relevant
#4	Development of the web platform and integration with any electronic devices	IT system	4 months	Low level of use if the main target is elderly people; possible	Have a clear knowledge of the possible users

			duplication with other similar tools already available	
#5	Determining the amount of benefits and discounts related to participation in the project	Discounts and rewards at the level of passenger satisfaction and without a significant burden on the organizer's finances	2 months	whether discounts are not a financial burden for the program organizer. Reduced income compared to intended goals.	program implemented in a limited area. Benefits at a controlled level.
#6	Establish rules that will allow as many users as possible to participate in the programme	Optimization of the method of issuing and delivering to users an electronic ticket in the form of a plastic card	8 months	participation in the program is not possible without an electronic ticket	Possibility of sending an electronic ticket to the user via traditional mail (so far only personal collection possible).

After contacting the target group and collecting feedback, the first decision to be made is to choose between an in-house or external partnership programme, where the term "in-house" is used for loyalty programs that are used only within a specific company. External partnership loyalty programs, on the other hand, are shared by multiple companies that offer it to their clients.

In general:

- In-house programmes are usually most beneficial for bigger companies;
- Partnership loyalty programmes are very beneficial for cross-marketing;
- Partnership loyalty programmes usually involve more complicated business rules to harmonize the loyalty system across different partners.

To choose which type of programme to implement, it should be taken into account who constitutes the core of customers. For example, if the focus is on commuters, in-house loyalty programmes may be more relevant.

The next three steps concern the actual implementation of the system: for the programme to work properly, it is necessary that there is an online platform where tickets can be bought, that it is defined and developed how to identify the membership of a loyalty programme and that the two systems are integrated.

With regard to the system for identifying membership, several options are available:

- Physically, with a plastic card or via QR code;
- Digitally, with an account or digital tokens.

The fifth step is to define the amount of benefits and discounts related to participation in the project, which is one of the most relevant step in order to determine the success of the programme.

Some of the best known ways of rewarding passengers are listed below:

- Discounts – Loyal customers get discounted tickets;
- Upgrade to the service – Loyalty program members get better service than the ones that haven't joined. For example, you get a better, preferred seat, waiting room, additional products (water, headphones, newspaper, etc.);
- Offers from other loyalty programme partners (in the external partnership loyalty programme).

For a well-executed loyalty programme, understanding who are the customers, what segment they represent, what are their preferences, and evaluating the technical limitations of the systems and tool used is fundamental to build a better service.

Among the points to be addressed, it is suggested to build consumption-based programmes instead of giving rewards just for joining the programme as receiving rewards should not be too easy to gauge actual loyalty to the company. On the other hand, the effort should also not be too high because it can be very demotivating for the client, especially if the reward is low.

Finally it is suggested all information (how to collect loyalty levels, how rewards are applied, etc..) is clearly expressed to the customer so that they can easily appreciate the value of their loyalty.

DRT services

Analysing new practices suitable for rural and peripheral areas, the introduction of new specific services is obviously needful. In particular, implementation of on demand services is one of the prevailing strategies. DRTs are sometimes an integration to an existing PT service and aims to support it reaching low density areas or covering particular time frames, but in other cases they are even more important because they could represent the only PT alternative. In this section is presented an how-to guide for the development of a DRT service in rural areas addressed to Public Transport decision makers.

Step	Description	Competencies and tools needed	Timing	Risk(s)	Mitigating actions
#1	Searching of suitable area in which to implement the service	The following parameters were required: • a purely low-density settlement in rural region • lack of PT links in the area • proximity to the T-network with the possibility of connection • starting point at intermodal point (rail-bus connection)	1 month	Not relevant	Not relevant

		• innovation requirement of the line			
#2	Contact the target group to collect their needs	Contacts to schools/universities/ institutions and involvement of public transport users	1 month	Non-realistic wishes and requests	Explain how DRT service works and what the possibilities are put a lot of effort in local information campaigns
#3	Stakeholders engagement	Focus group/workshops/living lab	1 month	competition among operators low interest	involving operators from the beginning of the process
#4	Analysis of the demand for mobility and the transport offer in the pilot area according to the attractive hubs, evaluating the potential mobility demand	The demographic situation and operational parameters such as the number of existing links, the number of passengers transported, the frequency of services, and the other data have to be collected	2 months	Lack of data	Not relevant
#5	Technical dimensioning of the new services and identification of the characteristics of service rigidity in terms of timetable and routes	Knowledge of the context and knowledge of the technical and operative issues regarding the PT service planning and implementation	6 months	Multiplicity of different needs from the different stakeholders	Continuous communication with stakeholders during the implementation phase Taking care of interchange with the major public transport networks
#6	Definition of the governance model and tender procedure	Knowledge of the procedures, models appliable, etc.	Depending on the context, specific issues, etc.	The possibility of involving non-professional drivers differs from country to country No applicant in the tender procedure	Less strict technical criteria for operation bus line in the tender procedures (e.g. average age of vehicles, capacity of bus), in order to allow more transport

					companies to participate
#7	Development of the web platform for reservations and service management	see the "How to" guide for the Implementation of an App for real time information/ticketing/reservation			

This solution is essential for all those areas where there are no links between the different settlements or villages due to a low density of inhabitants.

For the design of a DRT service, three main macro phases can be identified:

- Stakeholders engagement and contact with the target group;
- Analysis of the territorial context;
- Technical and economic assessment.

The first step is essential as low-cost solutions can be devised thanks to cooperation between the various stakeholders in the area. It is important that the involvement occurs from the very beginning of the process and that the service is designed in a cooperative manner, in order to avoid creating competition between different operators.

The analysis of the territorial context is a prerequisite for the design of DRT in areas of weak demand. The local mobility system is analysed in both its components:

- Transport supply, i.e. analysis of the road network and current services:
- Mobility demand, i.e. demographic and socio-economic analysis of transport demand and estimation of trips.

The technical dimensioning of the service deals with the definition of the network, the identification of the operating period, the definition of the reservation system and the identification of the type and number of vehicles and resources available. Attention should be paid to the tender procedure phase, as there is a risk that no operator will respond. The more flexible the requests are, the more likely it is to find interested operators.

Costs of this kind of service is very high and this aspect limits the expansion but globally the balance is positive considering the amount of traditional public transport services that should be necessary to cover the same areas and give a similar level of service. Wherever possible, it is suggested to try to involve associations and volunteers, which would lower costs considerably.

Community car sharing

The "Community car sharing" scheme is a tool that could be implemented by a group of ci citizens who are members of a community/association. While car sharing is highly concentrated in major urban areas, numerous examples exist outside of cities. In many ways, the organization and operation is closely linked to differing geographic context and target market. Smaller and more rural communities tend to have a high degree of personal involvement by members, in some cases by volunteers. Studies have shown that a local champion is more important in making rural car sharing feasible than factors such as extensive public transportation. Other smaller communities share administration with a parent organization.

The actions to be taken to implement this service are shown in the following table.

Step	Description	Competencies and tools needed	Timing	Risk(s)	Mitigating actions
#1	Creating the community and stakeholders engagement	Surveys and awareness-raising activities	2 months	Lack of involvement Administrative difficulties	advertising and involvement campaigns
#2	Analysis of the territorial context and available resources	Data on the territorial context, information on the mobility habits of potential users and their willingness to change, data on available resources	1 months	Lack of data	Working in close cooperation with the entire network of stakeholders
#3	Define the operating model and the rules of usage	Technical competencies	2 months	Difficulties in finding resources to design the service	Not relevant
#4	Definition of all insurance aspects and identification of administrative procedures linked to the carsharing service	Knowledge of the administrative procedures and technical requirements	1 months	In some countries the regulatory framework has some gaps and not all aspects are regulated	Not relevant
#5	Identify and implement any necessary infrastructures/ICT tools	rely on competent suppliers	Variable	Long terms of supply Bugs that influence other systems Difficulties in the development of functions	Proper project preparation, flexible reaction on technical issues emerged Stay in close contact to the development Use existing connections to brainstorm/get tips Test the application well, to avoid releasing the app with bugs

To implement a car sharing community scheme is not a rigid process, the order of activities to be done may vary depending on the needs and complexity of the actions. A different approach will work

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for each community and will depend on many factors ranging from the availability of resources to the number of community members.

After creating the community, the first step is to define the rules of usage of the vehicles and the operating model based on the resources available and the relationships created with the stakeholders.

This action includes activities such as:

- Define the number and type of vehicles (electric, fuel etc.)
- Define the rules for taking, using and delivering the car (where will they be parked? Who is in charge of charging/refuelling? How to reserve the car? How to manage the possession of keys? Are ICT solutions needed to support the service)?
- Define the tariff system

Another fundamental step concerns the definition of all insurance aspects and the identification of administrative procedures related to the carsharing service.

Finally, a last step that can be taken to ensure a higher level of service concerns the possible identification and implementation of ICT tools for service payment, vehicle reservation and vehicle unlocking. These tools can be more or less useful depending on the number of members that are part of the community and the relationships that exist between them.

App for real-time information/ticketing/reservation

Infomobility applications can be of many types and offer many different functions. They can support many services for young people living in rural areas, since they concern a lot of fields, all important to make a service more attractive and, above all, simple. Many of them refer to the matter of real-time information (which is for sure very heartfelt by users) that can really improve the perceived quality of a service. Other actions focus on helping people in their trip planning, to make useful decisions, while other propose to manage booking services and ticket buying to make users save time and troubles.

Step	Description	Competencies and tools needed	Timing	Risk(s)	Mitigating actions
#1	Contact the target group to collect requirements for the app	Contacts to schools/universities/ institutions and involvement of competent public transport users	1 month	Lack of interest of the specific group, lack of contact to the target group Too ambitious ideas for the new app form participants	Create an interesting and interactive event that includes various interests. Use existing structure or contacts to the target group. Public consultation on technical background of the information provided to the passengers and its expensiveness
#2	Finalise the requirements of the app based on the technical possibilities and the	Knowledge of technological information inputs (journey planners, maps, real time positioning,	1 month	Too high cost and time effort for too complex SW combining plenty of information inputs	Excellent knowledge and analysis, modular development of the app and information services.

	requirements of the target group	dispatching tools, fleet mamangement SW, etc..)			Get in touch with institutions that have had similar projects
#3	Find appropriate supplier	Good reputation of supplier	3 months	Not reliable supplier	Look for references
#4	SW development	Open communication with supplier, specific knowledge of information inputs	7 months	Long terms of supply Bugs that influence other systems Difficulties in the development of functions	Proper project preparation, flexible reaction on technical issues emerged Stay in close contact to the development Look for alternative solutions to reach the same goal Use existing connections to brainstorm/get tips Test the application well, to avoid releasing the app with bugs
#5	Test and fine tune the app	n/a	3 months	n/a	n/a
#6	Marketing	Marketing skills, contact to target group	4 months	Marketing campaign doesn't reach target group	When using online marketing strategies evaluate their effectiveness readily. Speak to target group to evaluate effectiveness of marketing
#7	Reply to customers' queries and complains	Open communication with supplier	continuously	n/a	Proper project preparation incl. financial reserve, flexible reaction on technical issues emerged

The table shows the essential steps to implement this type of application for young people living in rural areas.

The fundamental aspect is to define the requirements that the app must satisfy: to do this it is important to involve potential users and understand which functionalities must be implemented, always paying attention to mitigate the ideas proposed in order to aim to create a product that is not too complex and therefore easily usable.

Once the app requirements have been identified, a market analysis has to be carried out to find a supplier to whom the development work can be assigned. At this stage the execution of the public procurement for the selection of the software system supplier could be envisaged.

The most time-consuming part is the development of the application: this step takes about 7 months and it is important that in this phase the developers are constantly in contact with the providers in

order to collect continuous and reciprocal feedback to ensure the respect of the technical specifications.

The next phase, the software testing phase, is of fundamental importance: launching an application on the market with unresolved bugs means risking losing a share of potential users right from the start. For this reason, about three months of testing must be carried out to ensure that everything works properly.

Once the application has been launched, there should be a period of constant support from the supplier, as users may report any malfunctions or improvements to be implemented.

Linked to the theme of infomobility is the increasingly popular topic of MaaS (Mobility as a Service). The core idea of MaaS is the integration of different modes of transport into one service for customers. It is an approach that is used to facilitate a shift towards sustainable mobility by improving the availability of high-quality alternatives to private cars. MaaS includes the creation of business models that enable cooperation with different existing service providers. At the same time, it attracts new MaaS operators to cities by creating different service packages and marketing them through a variety of communication channels. MaaS concept must include as many types of services and modes of transport as possible (intercity travel, local public transport, car sharing, etc.) and offer smooth one-stop-shopping including real-time information, trip planning, booking and payment. Thus, information and communication technologies (ICT) are vital for MaaS.

In terms of population and demography, a MaaS solution should have an adequate base of potential users. This means that it is easier to create useful and feasible MaaS services in densely populated areas. In rural areas, MaaS can also be an option, but it needs to take a differetn form[4].

Development of a rail service

Main common actions in the different cities have been oriented towards a double goal: improving the PT offer and/or its attractiveness. In fact, there can be observed plans of spatial densification of stations/stops and interchange terminals, better integration among existing services, as well as redefinition of timetables. All this goes along with a huge stakeholders' involvement, which is considered as an essential step for an efficient planning process.

This section proposes a how-to guide for the development of a railway service in rural areas.

Step	Description	Competencies and tools needed	Timing	Risk(s)	Mitigating actions
#1	Direct involvement of the rail operator and the infrastructure manager	Depending on the context and stakeholders to be involved			
#2	Dialogue with the chosen demographic	Basic knowledge of railway	At least 6 months prior to	Non-realistic wishes and requests	Explaining the railway operation to laymen and making them

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[4] How to implement MaaS in local contexts – 2020 CIVITAS ECCENTRIC

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	determining details of the service	operation and negotiation	planned service implementation		understand what can and what can't be done and why – crucial step for acceptance and positive evaluation
#3	Internal assessment of possible scenarios and decision	Deep knowledge of railway operation, logistics and sales analysis	Few months prior to planned service implementation	Putting emphasis on finance before the service even starts and before market research	Doing a prior market potential research and achieving stakeholder approval
#4	Timetable planning	Train paths, railway graphs, internal railway regulation	Few months prior to service implementation	No train paths/collision with existing train paths	Having an excepted/elaborated "B" option for train operation
#5	Inserting all data required into the existing databases for public display	Software such as ISPRO[5], CMS[6]	1 month prior to service implementation	No risks, multiple backups available (IT, people…)	Not relevant
#6	Planning vehicle fleet and daily fleet management	Logistics operational knowledge (what, who, why, where, how, when…)	Daily, during the service implementation	Daily disturbances (lack of vehicles, collisions, delays…)	Planning the service on days/times when there is no shortage of vehicles. Having 24/7 operational service to handle operational issues.

In order to develop a railway service, a basic requirement is the direct involvement of the rail operator and the infrastructure manager, otherwise it is practically impossible to start the development process.

The next step, in line with YOUMOBIL's objective of improving the mobility of young people living in rural areas, is to involve young people in the planning process in order to understand their mobility habits/wishes and thus determine the details of the service that will be implemented. At this stage it is crucial to match the (often unrealistic) requests of the young people involved with the actual resources available.

The "internal assessment of possible scenarios and decision" and the "timetable planning" phases are those in which the railway operator must plan in detail the service to be developed, assessing the number of trains required to meet the demand for mobility, in relation to the development plan for

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[5] Modular and powerful complete system for all requirements in the modern maintenance management. isproNG communicates through interfaces with all common ERP systems as well as with machines and sensors (MES, BDE, OPC) and is therefore the answer to the topic of Industry 4.0 and "Predictive Maintenance".

[6] A content management system (CMS) is a computer software used to manage the creation and modification of digital content (content management. A CMS is typically used for enterprise content management (ECM) and web content management (WCM).

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the additional service, and the timetable. To do this the operator must have available the train path(s), i.e. the capacity available on the infrastructure (to request from the line manager).

In this phases, the regulatory aspect plays an important role: it is necessary to wait for permissions from the infrastructure manager, and this process is often very long. At this point, in some countries (e.g. Italy) the operator has to pay the toll, i.e. the use of the network to the line operator.

Once the planning of the service has been completed, the integration with technological solutions can take place: there are numerous tools/software that can be used in the railway sector, including panels with real-time information for the public, tools for the maintenance management, etc..

Daily, during the service implementation, there will be day-to-day fleet management tasks to be carried out. Having a 24/7 operational service can help manage this phase.

Clearly, a service such as the one proposed by HZPP and in areas of weak demand (the context of YOUMOBIL) must be carried out at "marginal cost" by the operator, i.e. using staff and rolling stock already in use on the network and fitting this additional service into the "gaps" in staff and train shifts.

2.3.   Lessons learnt

This chapter firstly describes the strengths and weaknesses of the tools implemented during the YOUMOBIL project, as well as the main findings from the analysis of quantitative and qualitative KPIs and the feedback received from young people during the workshops.

The loyalty program in rail transport could be a very attractive tool that allows to create a relationship with the passenger by offering a number of benefits related to active and regular purchase of tickets. The program implemented under the YOUMOBIL pilot project was by definition a limited tool due to the duration of the project as well as the financing possibilities. The limits area about the territorial coverage (railway lines in rural areas), the age of users (adolescents and young adults aged 13 - 26) and the possibility of purchasing a ticket (monthly tickets only). A weaknesses of the pilot was that the limited number of ticket offices in the area covered by the pilot project discourages from applying for the Mazowiecka Card (a prerequisite for participating in the program). On the other hand, the pilot implemented by Mazowieckie Voivodeship, has among its strengths the characteristic that the rules for the operation of the programme were clear and transparent, with the points that were calculated automatically. The possibility to use points when purchasing a ticket was also automatic. One possible development of the loyalty programme could be to to offer users a wider range of benefits (free: cinema and restaurant vouchers, mobile top-ups, company gadgets). In the case of the full form of the program, points would be charged for each type of ticket purchased and assigned to the account of a given user.

The night train service planned by HZPP could list several strength factor that have led to its success: first of all it was a tailor-made service, according to the chosen demographic of young people living in the rural/suburban areas near the capital Zagreb. The uniqueness is another strength factor because there is no public transport service in the late hours of the weekend. The train connection from Zagreb Main station (GK) to Dugo Selo is fast and cost-effective, especially when compared to the individual transport. Besides the train operation, were implemented also real-time information panels and online ticket purchase, which are a "must" and a standard for young people. Another factor that proved to be essential was the involvement of local stakeholders, who supported HŽPP in the contacts with the local community and service promotion. Also, their positive view reflected in the local media. Weaknesses included the cost of railway operations for the supplier, which is partly subsidised by the state (PSC) and is very inflexible when it comes to software improvements and any innovation. What HŽPP learned from the experience is that it is essential to include local communities in activity planning regarding public transport and that the responsible Ministry of Transport should be more involved. In addition, some non-flexible railway regulations can be presented differently to the public by customized and user-friendly communication activities. The challenge that HŽPP faces is the active will to use the public transport, but with unrealistic expectations to be cheap, reliable and comfortable, without investments and innovations, because the financial side of railway investment is substantial. In comparison to the relative effort done, smaller interventions are more difficult than big ones when it comes to procurement necessary interventions, so usually larger, more comprehensive investments occur. The most important thing is to find interest for all participating entities and to have a quality communication from the beginning to the end; this prevents people from misunderstanding and opposing new things.

Apps are also a tool that is becoming increasingly popular in the transport sector, even in rural areas. Experimentation carried out by YOUMOBIL pilots has highlighted the strengths/weaknesses and future opportunities of this type of tool. The POSEIDON app operated by KORDIS in South Moravian Region and the INSA YOUNG app operated by MLV NASA in Saxony-Anhalt have some similar functionalities (real

time information, local journey planner) but also different functionalities, e.g. the INSA YOUNG app allows to book rides on DRT services while the main feature of the POSEIDON app is the ticketing function.

Concerning the POSEIDON app, the development of the pilot is based on young travelers' declaration that no new app is needed, but improvement on the existing one could be a good solution. The main strength of the POSEIDON app is certainly the fact that it is the only app in the SMR (South Moravia Region) and that the app provides all current information about the public transport in the SMR. Linked to the ticketing functionality, the possibility to pay with one's own user credit proved to be very popular with users. Finally, a valuable feature of the application is the 'park and ride' map, which can be consulted by car drivers. This tool allows users travelling in private vehicles to identify nearby interchange parking spaces, i.e. parking lot with public transport connections that allows commuters and other people heading to city centres to leave their vehicles and transfer to a bus, rail system or carpool for the remainder of the journey.

An opportunity in the development of the application was the inclusion of notifications for unplanned mobility events. Users will be able to get real-time infomobility information, congestion and traffic status and have access to route modification suggestions during the trip.

In addition, according to the questionnaire, young people suggested creating the functionality to upload the ISIC (International Student Identuty Card) in the POSEIDON app, so that it would be available in digital format.

Keeping up with all requests for improvement of the application is a long and expensive process, as is ensuring constant maintenance. Lack of funds for application development can be a risk factor, as more and more competitors with more modern and integrated applications are emerging on the market today.

The development of INSA YOUNG had multiple benefits that can be linked to the pre-existing app INSA. The amount of information that INSA YOUNG is able to show users is based on the background system for INSA, as a large volume of information is already being collected, which can be used for INSA YOUNG as well. Due to the expertise that was present as a result of the long existence of INSA the level quality of information that was available for INSA YOUNG is also very high.

The innovative and youth-oriented functions brought a technical complexity with them, which is inherent when developing new functions. Any new developments can bring unexpected influences on existing systems or functions, in particular when a client solution is used to benefit from existing expertise. An adequate time frame needs to be established, which allows room for mitigation actions and bug fixing. As an alternative to this approach already developed functions could be used instead, but the loss of personalisation needs to be kept in mind.

Among the young people it was not clear why a new app was developed instead of improving the already existing INSA app. The fact of having two similar apps was seen as a possible criticism.

The experimentation of the Modena Night taxi took place in a period of increased infections of COVID-19 so it was not possible to make reliable assessments as the possibility of using the service was objectively penalized by the pandemic. In addition, the pilot lasted much shorter than expected and is still ongoing.

If it is difficult to evaluate the real usefulness of this type of service for the reasons mentioned above, it is instead possible to affirm that from an organizational and functional point of view as regards the technological part, everything worked as expected and in a positive way.

In the belief that the new service under normal conditions can have a good success led to the decision to keep it active even after the end of the YOUMOBIL Project.

In its implementation, the main difficulties that have been encountered were due to the pandemic which forced continuous changes in the planning of activities, difficulties in the relationships to be held with all the actors concerned, for which some of these experiences cannot be considered as a reference for those who want to implement similar services that it is hoped that can be activated under normal conditions.

In continuing the activities of the new service, the indications received from those who used the service who were involved in a questionnaire and in a workshop will be taken into account.

In general the main request is to increase the availability of the service, especially as regards the part relating to the return at home and evaluations will be made in this regard.

Obviously, an intensification of the service means higher costs to be incurred and for this reason it will be considered whether to act also on the part of the tariffs to compensate the higher expenses with higher revenues.

This type of services is not among those that must be made available (such as services for going to school or to work); they are aimed at free time and for this reason the higher quality of the service provided may coincide with an increase in its cost; always taking care not to make it become too expensive for those who have to use it in order not to compromise its use.

3. How the pandemic changed mobility patterns of young people

Covid-19 had a devastating impact to the mobility, especially for the youth mobility. Remote teaching, social distancing and the fear of the pandemic have certainly changed the habits.

In this regard, it is important to measure the change occurred and it is important to understand the evolution of people's needs. New needs have emerged, and others have always remained important, so it is necessary that the local authorities could have an idea and understand it, in order to make choices that can really create benefit for the citizens.

The aim of this chapter is to quantify up the changes. Two quantitative studies carried out on this regard:

- Covid-19 Survey, an online web poll carried out in 2021 autumn/winter across Central Europe young people;
- FCD data analysis, implemented especially in order to study the youth mobility changes between 2019 and 2022.

These studies are described and commented briefly in the next two paragraphs, and then a little common conclusion will follow.

3.1. COVID-19 Survey

The COVID-19 emergency have caused a radical, long-term change in the mobility ecosystem: new behaviours, new requirements, new regulations, and this on.

We are now in a new mobility scenario, which is still evolving and is characterized by a high uncertainty.

The long-term impacts of the pandemic will be visible for years to come, but it is important to assess an intermediate evolution. In this purpose, in the late autumn of 2021 T Bridge and YOUMOBIL partners disseminated an online multi-lingual web survey across Central Europe.

The major aim was to collect information on how the experiences of the pandemic has affected the use and the perception of public transport.

The target group of this survey is focused on young people who lives in rural areas. This is because YOUMOBIL project is aimed at this segment of population, obviously without forgetting other users. Thus, the dissemination concerned primarily young people, spreading the web link of the survey and using partner's dissemination social medias, but all results of value obtained are considered.

This paragraph is structured as follows:

- General results. Here the most important results of the survey are shown, grouped by the tree original sections of the survey. It is possible to see the most important results and the key data based inferences.
- Open answers. The aim of this part is to highlight the salient open answers received, in order to make the most interesting ideas emerge.

- Local remarks. The aim of this part is considering the particularities between the results of the various countries of the respondents.

For a completeness of information, further results of the survey are available in the Annex #B of this deliverable. In this part it is possible to see:

- the complete text of the survey,
- All the answers collected in a schematic way, considering the global responses and then grouping them by nation of respondents.
- All the value-added open answers.

3.1.1. General results.

The part concerning "General results" in YOUMOBIL COVID-19 survey was divided in three major sections: General information, Mobility habits, Feelings and suggestions.

The aim of the first section is to discover the identikit of the respondent in order to understand the characteristics of the sample obtained.

The aim of the second section, mobility habits, is to have a preliminary idea of the variation between pre-pandemic period and the autumn 2021 situation of habits and parameters that drive the choice of respondents about mobility.

The third section is about the autumn 2021 sentiment of the respondent about public transport.

The results of the last two sections are very useful to understand the current needs of people, especially young people, in terms of mobility.

General information

There were collected 910 value-added answers across Central Europe. In the Figure 3-1 below it is possible to see in a graphic way the origin of the respondents. It is immediate to note that the sample is not homogeneous. Indeed, 99 answers are from Croatia, then 143 from Czech Republic, 49 from Germany, 389 from Italy, 143 from Poland and finally 87 from Slovakia.
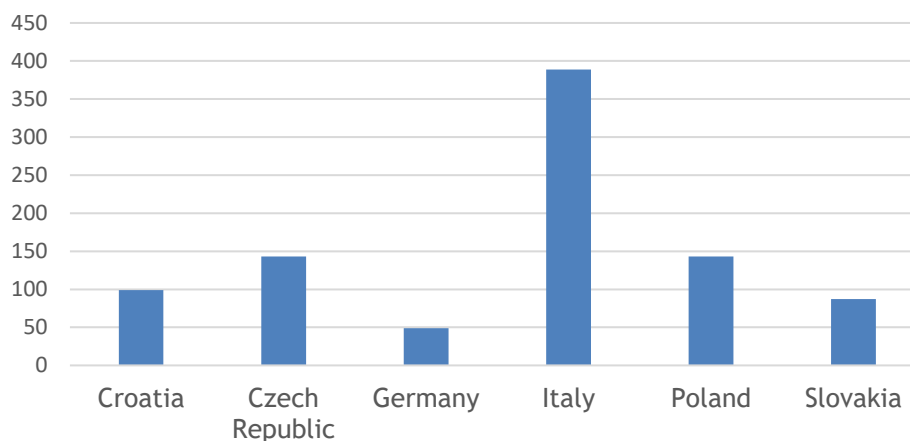
Figure 3-1 – Survey question: In which country do you live?

The dissemination between target users was rather well respected: 46% of answers were from people that live in a suburban or in a rural area and 52% were from people aged 0-25. Therefore, it is possible to deduce analyses for the target group of people of the YOUMOBIL project.

The gender equality of the respondents was also respected, 48 % of answers from both genders and considering a 4% who preferred not to declare it.

To describe the average respondent obtained, the following data can be listed:

- 47% declared that are currently students and 44% works as an employee;
- 57% has a local public transport season ticket, 53% has a driving licence;
- 84% of respondents has at least one vehicle and, about this, bicycle is the vehicle that unites the Central-Europe population probed, with 72% declaring to own it. Then, 42% declared that own at least one car. In the following Figure 3-2 it is possible to see the aggregate result of the responses obtained about vehicle ownership.
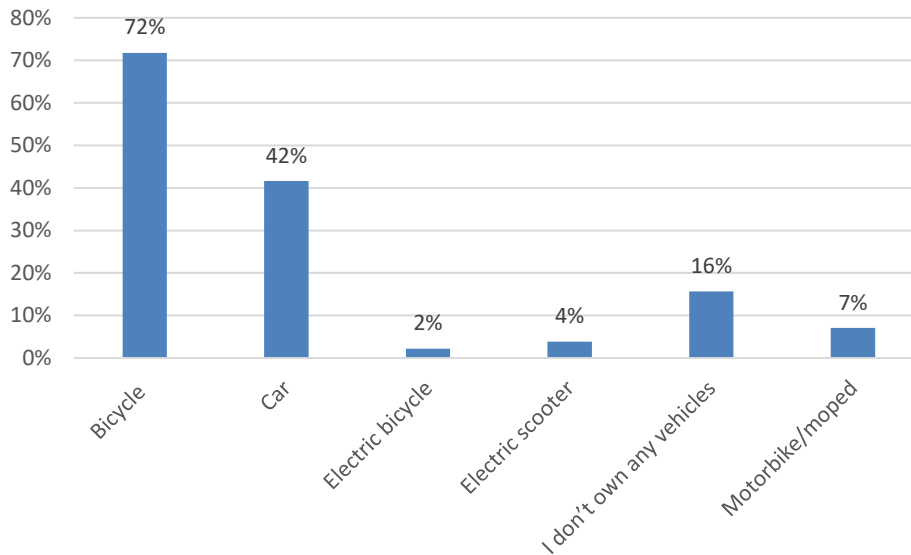
Figure 3-2 - Survey question: Please select the vehicles you own

Mobility Habits

As already mentioned, the purpose of this section is to analyse the variation of mobility habits between prior Covid-19 outbreak and the late 2021 situation, and to understand which factors influence the choice of different transport modes. In this way, it is possible to understand how the habits of the population changed, and is possible to recognise which measures are the most appreciated and useful to guarantee the comfort and the ongoing use of public transport.

For those analyses, all the value added responses received were considered.

In the following Table 1 it is possible to see the comprehensive variation of the transport mode mix used by respondents, between prior pandemic period and currently. Precisely, it was asked which was the frequency of use of some public and private mode of transport in both periods. With a view to comparability of the sample, the percentage variation on the total is considered (according to the formula $\frac{Transport\ mode\ statement\ initial\ value - final\ value}{total\ answers\ collected\ per\ transport\ mode}$).

As expected, thanks also to colour coding, it is immediately apparent that has been registered a general drop of mobility.

Public transport such as Bus, Train and Tram have been registered an average drop of 5% compared to a declaration of regular use and conversely a mean increase of 3.5% of users who said they did not use those form of public transport at all. Walk too has followed this trend. It can be inferred that distance learning and remote working have generally reduced mobility.

Also Taxi, Sharing services, Combination of travel, have followed this trend, albeit to a lesser extent. This could be explained because the services indicated have a smaller audience, for which there have not registered significant changes.

However, mobility through car have been registered an opposite trend, with a decrease of respondents that do not use at all, and conversely an increase of respondents that declared that have used it regularly.

Table 1 – Survey question: How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? (Variation between late 2021 and pre-pandemic situation)

	I did/do not use it	I have used / use it occasionally (less than once a week)	I have used / use it frequently (1 - 3 times a week)	I have used / use it regularly (4 times a week or more)
Car	-3,9%	1,7%	-0,9%	3,1%
Moped/Motorcycle	-0,9%	0,1%	0,2%	0,6%
Bike	3,8%	-0,7%	-4,0%	0,9%
Bus	1,7%	-0,7%	4,1%	-5,1%
Train	4,6%	-1,1%	0,9%	-4,4%
Metro	2,5%	-1,2%	-0,6%	-0,8%
Sharing services	1,4%	0,2%	-1,0%	-0,7%
Walk	4,2%	0,2%	-1,4%	-3,0%
Tram	4,1%	-1,0%	2,5%	-5,6%
Boat	1,3%	-0,1%	-1,1%	-0,1%
Taxi	2,2%	0,7%	-2,8%	-0,1%
Combination of travel (e.g. park and ride)	1,7%	-0,3%	-1,1%	-0,2%

This Analysis is confirmed by the following question asked in the survey: "Did COVID-19 influence your way of travelling in the post-pandemic period?"

It is possible to see in the Figure 3-3, that only a 39% of respondent said that COVID-19 Did not influenced their way of travelling. The other 61% changed at least frequency or the mode of transport: 23% changed both the frequency and the mode of transport and 29% changed only the frequency, but not the mode of transport. Therefore, the frequency is the most important factor that changed during this period, which influenced 52% of the global sample of people.
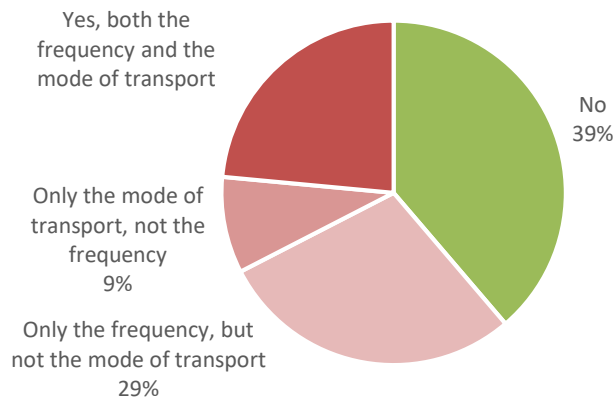
Figure 3-3 - Survey Question: Did COVID-19 influence your way of travelling in the post-pandemic period?

Another confirmation could be found in the following Table 2. An opinion was asked about three statements regarding the relation between public transport and respondent routine between pre-pandemic and currently.

The "Decisive" opinion about statement "I am dependent on public transport for my daily activities" dropped by 3,9% and the "Decisive" opinion about the statement "I had / have access to other travel option than public transport and I used / use public transport as little as possible "grew up about 5,7%. It is also important to remark that the "not very important" opinion and the "neutral" opinion of the latter statement dropped respectively about 4,3% and 3,1%.

Table 2 - Variation between prior pandemic and currently of the factors of the survey question: Please indicate below which statement applies the most to your situation. (Variation between late 2021 and pre-pandemic situation)

	Not very important	Neutral	Important	Decisive
I was / am dependent on public transport for my daily activities	1,4%	1,5%	0,9%	-3,9%
I had / have access to other travel options than public transport and I used / use public transport as little as possible	-4,2%	-3,1%	1,5%	5,7%
I had / have access to other travel options than public transport but I preferred / prefer to use public transport	-0,3%	0,7%	-0,7%	0,3%

COVID-19 pandemic has also definitely influenced the criteria for choosing between different modes of transport. In the following Table 3 it is possible to see that is clear that COVID-19 related factors have been registered an important grow between two periods.

 People dramatically changed opinion about "Security" factor, intended as reducing infection risks, and changed opinion about "Comfort and/or crowdedness" of public transport. In fact the opinion "important" or "decisive" of the first factor grew about 26,3%, and the latter grew about 13,3%.

The other factors as "travel time", "Travel cost", "Service frequency / punctuality of services" have not registered such great variations between prior pandemic period and autumn 2021.

Although the opinion about latter factors did not changed, it is important to emphasize that those are always important drivers for the choice of the mode of transport. In the last column of Table 3 it is possible to see the percentage of people who chose the current "important" or "decisive" statement about the factor of the list.

While the choice on non-pandemic factors did not change substantially between the two periods, the following factors were of considerable importance for the survey period, regardless of the pandemic:

- Service frequency / Punctuality of services chosen by 65% of respondents;
- Comfort and/or crowdedness of public transport chosen by 63% of respondents;
- Travel time, chosen by 57% of respondents.

 At the last position is "Safety", intended as reducing accident risks, chosen by 33% of respondents.

In light of these data, It becomes clear which drivers are for choosing respondent's own way of moving. Therefore, it is important to address strategies to improve the people's perception that Public transport could be competitive also in those areas

Table 3 - Variation between late 2021 and pre-pandemic situation of the factors of the survey question: "How much did the factors listed below influence your choice to use the different modes of transport"

	Not very important	Neutral	Important	Decisive	% of people who choose the "Important" or "Decisive" opinion, currently
Travel time	0,3%	-2,4%	-1,0%	3,1%	**57%**
Travel cost	2,0%	1,4%	-4,2%	0,8%	47%
Service frequency / Puntuality of services	0,3%	-1,0%	-0,4%	1,1%	**65%**
Safety (reducing accident risks)	-1,5%	-0,3%	1,4%	0,4%	*33%*
Security (reducing infection risks)	-18,8%	-7,5%	11,8%	14,5%	53%
Comfort and/or crowdedness of public transport	-4,2%	-9,2%	4,5%	8,8%	**69%**
traffic and parking (difficulty/cost)	-0,3%	1,7%	-2,0%	0,7%	39%
Freedom and independence of movement	-0,2%	-2,8%	2,2%	0,8%	56%
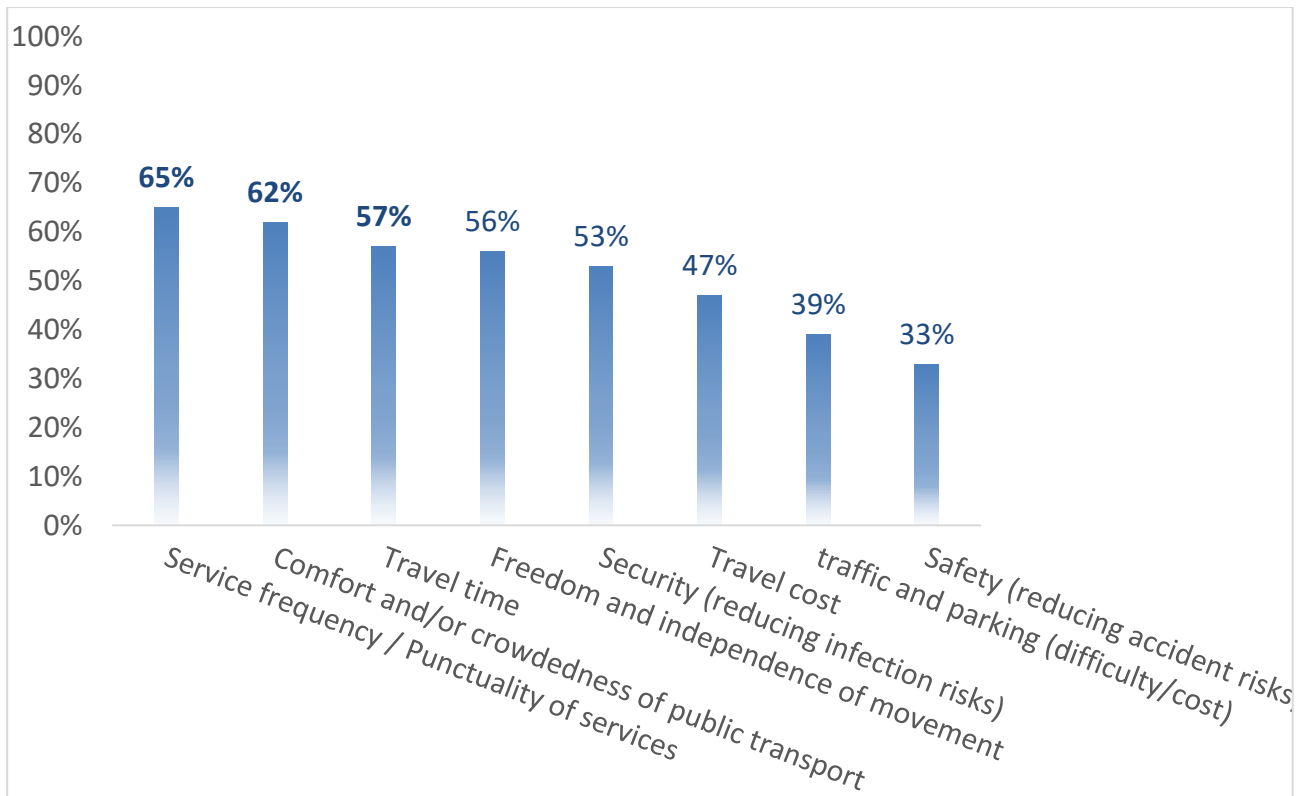
Figure 3-4 - Percentage of people who choose the current "Important" or "Decisive" opinion - Survey question: "How much did these factors influence your choice to use the different modes of transport?"

This is confirmed also by analysing the answers of the multiple-choice question "If you have abandoned/reduced the use of public services, what could make you change your mind?".

As could be found in Figure 3-5, it became glaring that less crowding – chosen by 56% of respondents - could be the most priority aspect to treat in order to encourage the use of public transport. Then, at the second and third place, with respectively 44% and 36%, factors like different timetables and quality of connections have been chosen. It is pointed out that the sum of the percentages will be greater than 100% because it is a multiple-choice question.

Crowdedness, slow and untimely transport are factors that have always created inconvenience. In order to increase the competitiveness and encourage use of public transport it could be necessary to improve this priority scale of factors just defined.
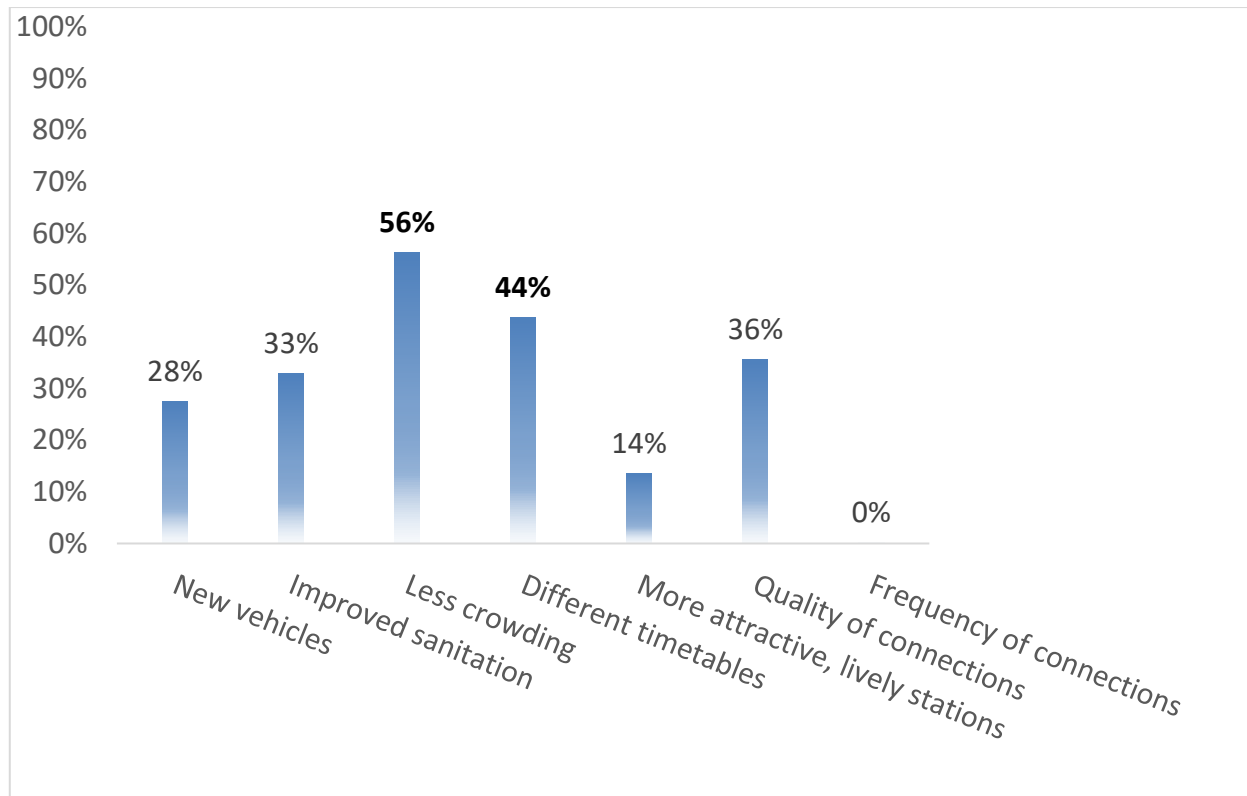
Figure 3-5 – graph of multiple-choice survey question: If you have abandoned/reduced the use of public services, what could make you change your mind?"

Feelings and suggestions

The purpose of this section is to analyse the sentiment about COVID-19 and public transport, in order to have an idea on which measures were more appreciated to protect the population itself. A focus on the future has also been made: it has been an opinion about which technologies are more important to develop.

The fear about risk of contracting COVID-19 with public transport was evident. In general, comparing it with all other public places, public transport is always considered less safe.

This is visible in Figure 3-6, in which the trend of the average opinion has been reported. There are three parallel lines: the green one that indicates the opinion "public transport is much safer of [place]", the yellow one that indicates the "equally safe" opinion and the red one that indicates the "much less safe" opinion. The purple dot finally indicates the public transport average opinion. It immediate to notice that the "public transport" dot is always below the "equally safe" opinion for all the other public spaces with which public transport has been compared.

To quantify up, 64.3% of respondents consider that public transport is "less safe" or "much less safe" than public parks. The opinion is less polarized for other public spaces, but even if considering that on average 45,6% considered public transport equally safe or did not have an opinion, it is also considered less safe than grocery stores and supermarkets (35.8 %), shopping centre (33.9%). schools and universities (36.5%). All those results are graphed in Figure 3-6 below, in which a line indicates the level of safety of each place compared with public transport.

Comparing public transport and "inner city boulevards and square", the respondents had mixed feelings, in fact for 40.1% they are considered a little / much less safe, for 30.1% equally safe / no opinion on the matter and for 29.0% they are considered a little / much safe. This is confirmed in the Figure 3-6, in which is possible to clearly see the most ondulatory movement of the result.

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Figure 3-6 - Trend of the average opinion of survey question: with regard of contracting COVID-19, I consider public transport...
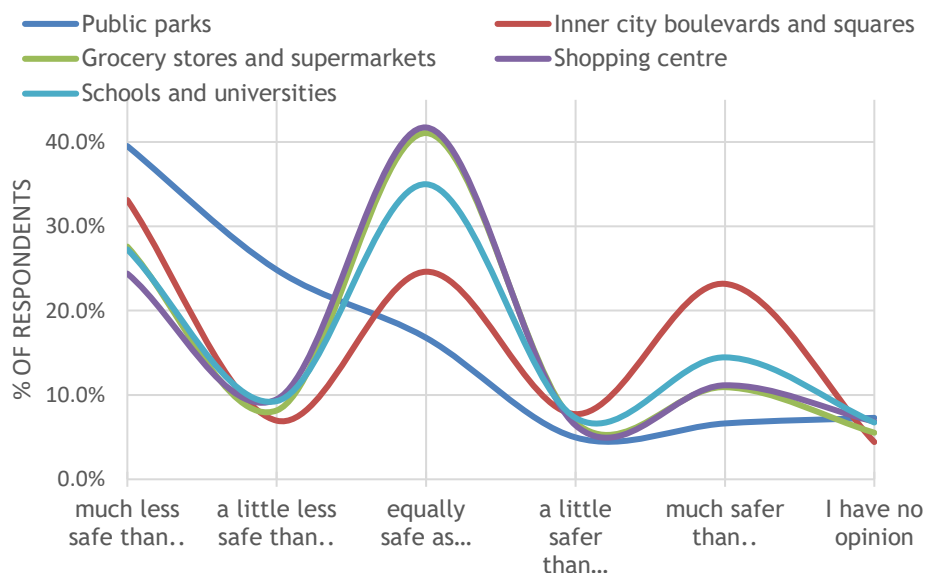
Figure 3-7 – Response trend about survey question: "with regard of contracting COVID-19, I consider public transport..."

The comparison between the various public and private means of transport makes the idea even clearer. As regards the risk of contracting COVID-19, it was asked to classify some public and private modes of transport, from the SAFER to the LESS SAFE. The average results are shown in the graph (Figure 3-8) below. Graphically, the more they are placed in the centre of the figure; the more secure they are considered.

It is evident that walking, moving with own car and riding bicycle are considered the SAFER ways. They are really close to the centre of the figure, very near to the "SAFER" zone in the centre. Just to have a precise quantification, the first is on average positioned on the 2,65 position, the second on 2,63 and the third on 2,85 position out of the 9 total means of transport considered.

Comparing those data with public transport modes, instead, it is clear that there is a huge gap about the level of safety perceived. Metro, Tram, Train, Taxi and bus are collocated in the last positions. They are really closer to the border of the figure, in the "LESS SAFE" zone. Moreover, Metro and bus are the means of transport that are considered LESS SAFE with respectively an average positon of 6,93 and 6,78 out of 9. It is clear that there is much room for improvement.

A last analysis about the same sentiment could be done looking at Figure 3-88. Here the percentage choice about position and mode of transport is shown. It is even here clear that respondent have a prevailing idea, from which an easy ranking can emerge.
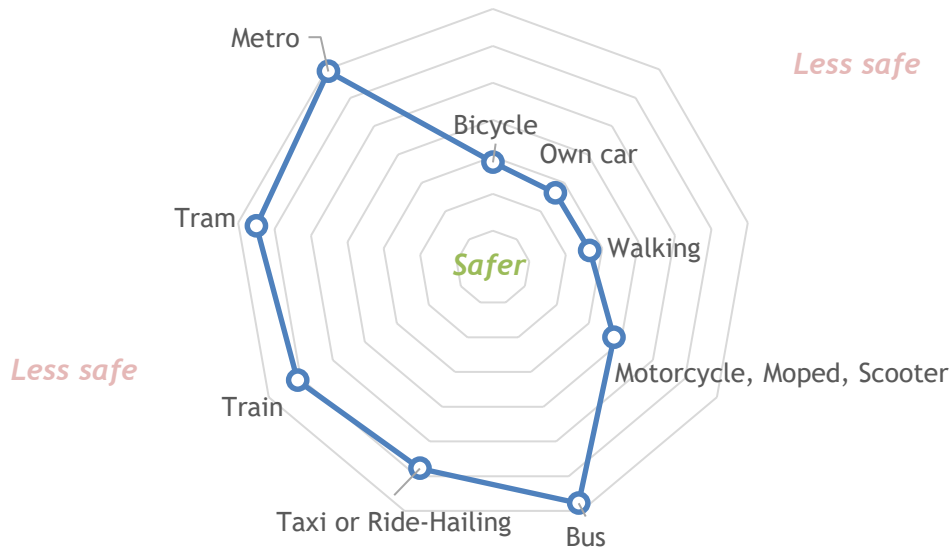
Figure 3-8 - *Average ranking* **of the responses of survey question: "please rank these modes of transport from the one you consider safer, to the one you consider the less safe (with regard to the risk of contracting COVID-19)"**
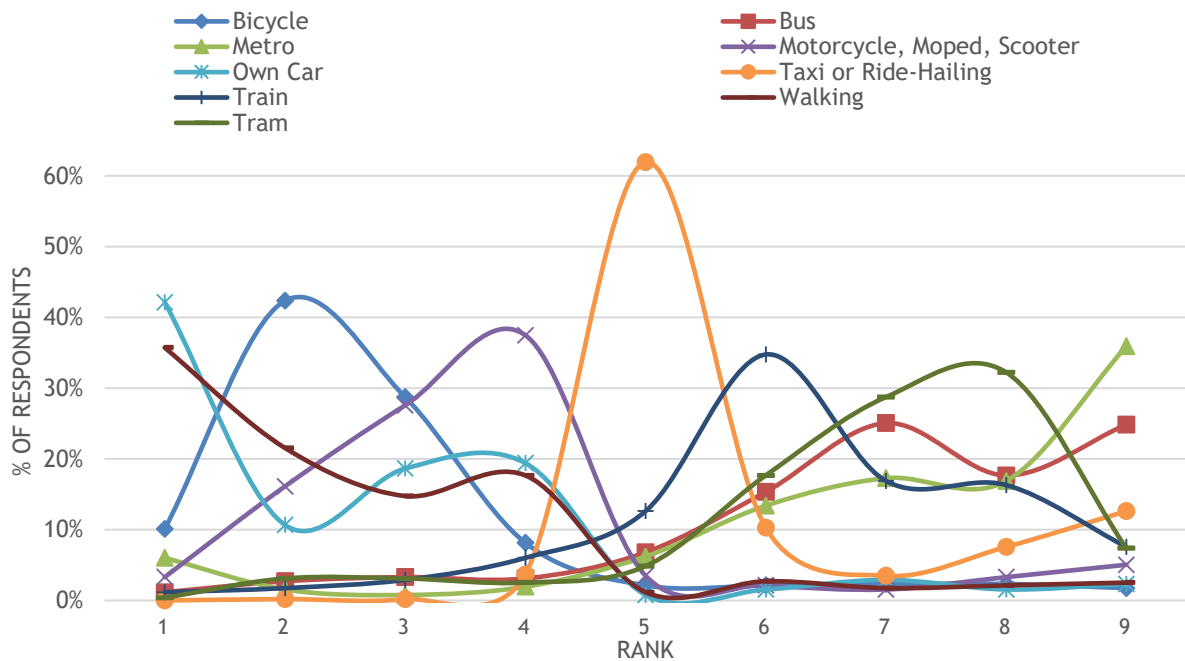
Figure 3-9 Overall trend of responses ranking of survey question: "please rank these modes of transport from the one you consider the safer, to the one you consider less safe (with regard to the risk of contracting COVID-19)"

Various measures have been implemented to reduce the risk of contracting COVID-19 and to try to ensure the continuation of life as much as possible. It is obvious that some of them are objectively more effective and others are less.

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In this regard, in the survey was also requested to classify the various anti-contagion measures from the one considered the most important, to the one considered the LESS IMPORTANT. Thanks to this, it was possible to establish a general ranking, which could be seen in the next Figure 3-10. As seen in the previous graph, the closer the measure is to the centre, the more it is considered important.

The respondents considered "Keeping distance from other passengers" and "wearing mask" as the most important measures. It is evident since they are located near the "most important" area. Those respectively have a mean position of 2,38 and 2,44 out of 7 – which is the total of the measures individuated.

To counterbalance, the measures of "presence of signposting to mark entry/exit routes from transport hubs" and "wearing gloves" have generally a low opinion, in fact those are:

- Located near the "LESS IMPORTANT" border of the figure;
- ranked on average 5,64 and 5,49 out of 7.

This overall opinion could be confirmed in Figure 3-11 below. The increasing and decreasing trend of the percentages of choice makes clear the idea of what is perceived more useful.
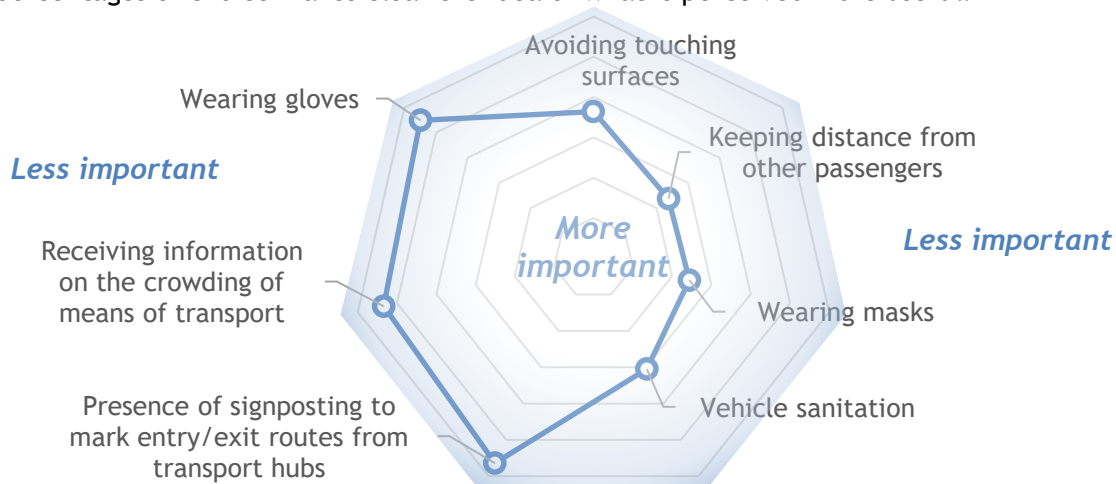
Figure 3-10 Average ranking of the responses of survey question: "In your opinion, please rank these measures from the one you consider the most important, to the one you consider the less important (with regard to the risk of contracting COVID-19)"

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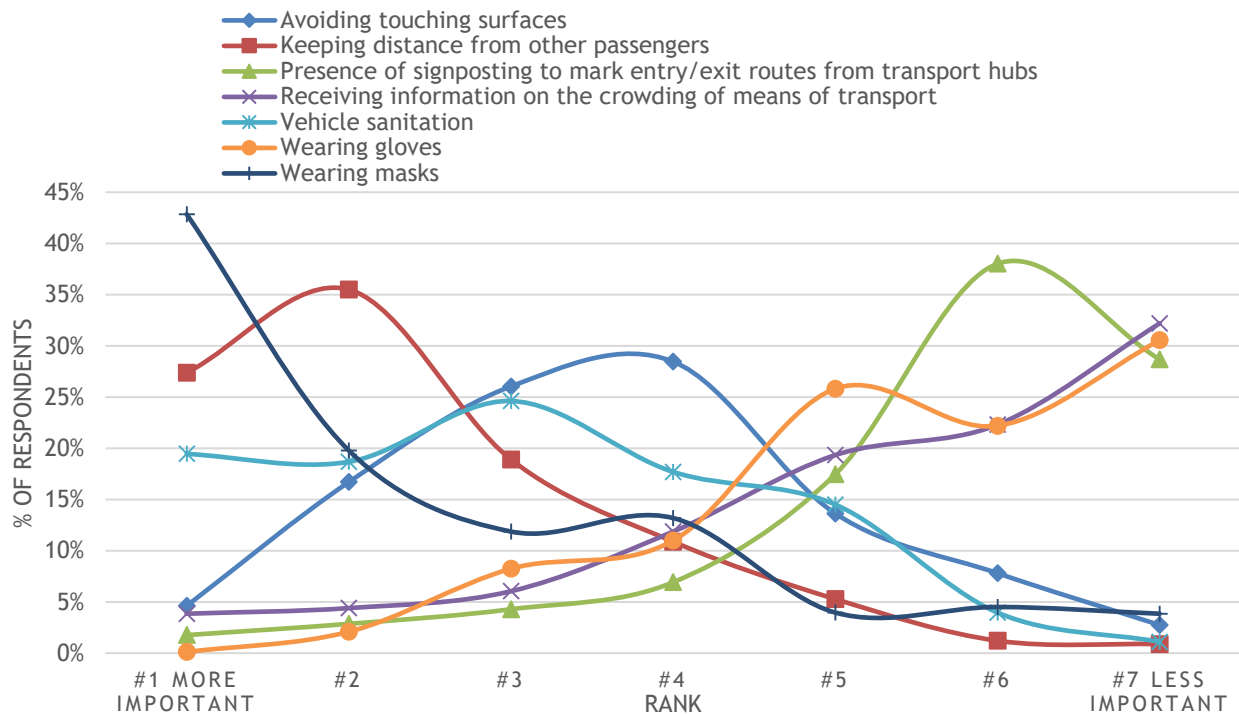
Figure 3-11 - Overall trend of responses ranking of survey question: "in your opinion, please rank these measures from the one you consider the more important, to the one you consider the less important (with regard to the risk of contracting COVID-19)"

The pandemic has forged everyone's opinions, but it is also important to look further. Several technological tools can improve the travel experience of each user. In this regard, Five technological tools not hard to implement are been individuated and respondent were asked to rank them to get the order of implementation. The results are visible in Figure 3-12. Following the previous analyses, the more are collocated in the centre of the figure, the more are considered a priority.

There is almost a substantial parity of views for the proposed measures, but, as always, people show particular interest in resolving crowding issues.

The "real-time information on the number of free places on vehicles" measure received 564 responses for first and second place, with an average position of 2.26. Therefore, the user would appreciate more this measure among others, if implemented. Then follows the "Receiving real-time information on travel times" measure, which received 572 respondents for the first and second place and with an average position of 2.33 out of 5. On the other hand, the "video surveillance camera" tool was collocated for 550 respondents in 4th or 5th place, resulting an average position 3.68 out of 5. The other two tools, that are "Application enabling travel planning and integration of services" and "applications for booking and paying for tickets (e-ticketing) have an intermediate positioning with a average value of 3.28 and 3.45 out of five.

This is also confirmed by analysing the same answer's overall trend, visible in Figure 3-13. Also in this case it is really clear that there is a sense of urgency about receiving real-time information on the number of free places on vehicles and conversely a least interest in video surveillance. The curves trend leaves no way out.

Applications enabling travel planning and integration of services (travel planner)

Video surveillance cameras

More Important

Less important

Applications for booking and paying for tickets (e-ticketing)

Less important

Receiving real-time information on travel times

Receiving real-time information on the number of free places on vehicles
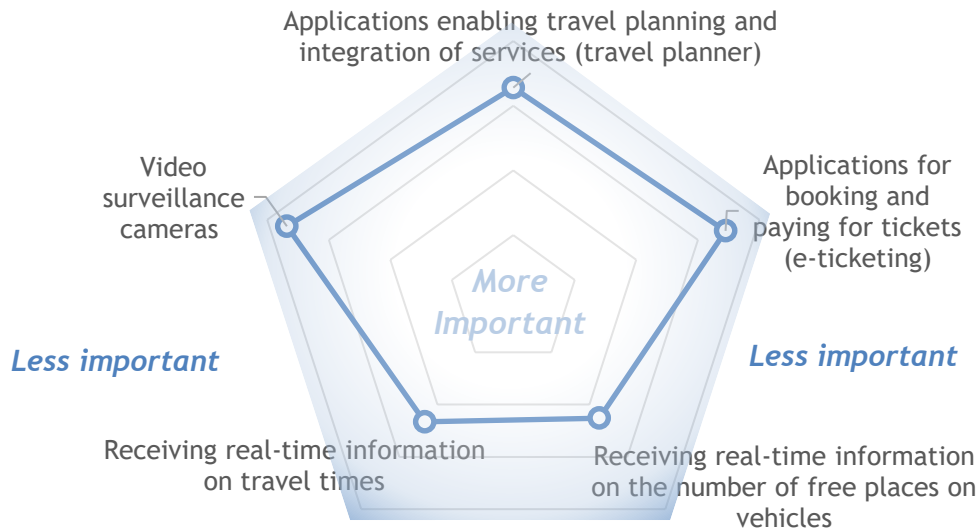
Figure 3-12 - Average ranking of the responses of survey question: "Which digital tools do you think are the most important to implement in the future?". The more are collocated in the centre of the figure, the more are considered a priority.

- Applications enabling travel planning and integration of services (travel planner)
- Applications for booking and paying for tickets (e-ticketing)
- Receiving real-time information on the number of free places on vehicles
- Receiving real-time information on travel times
- Video surveillance cameras
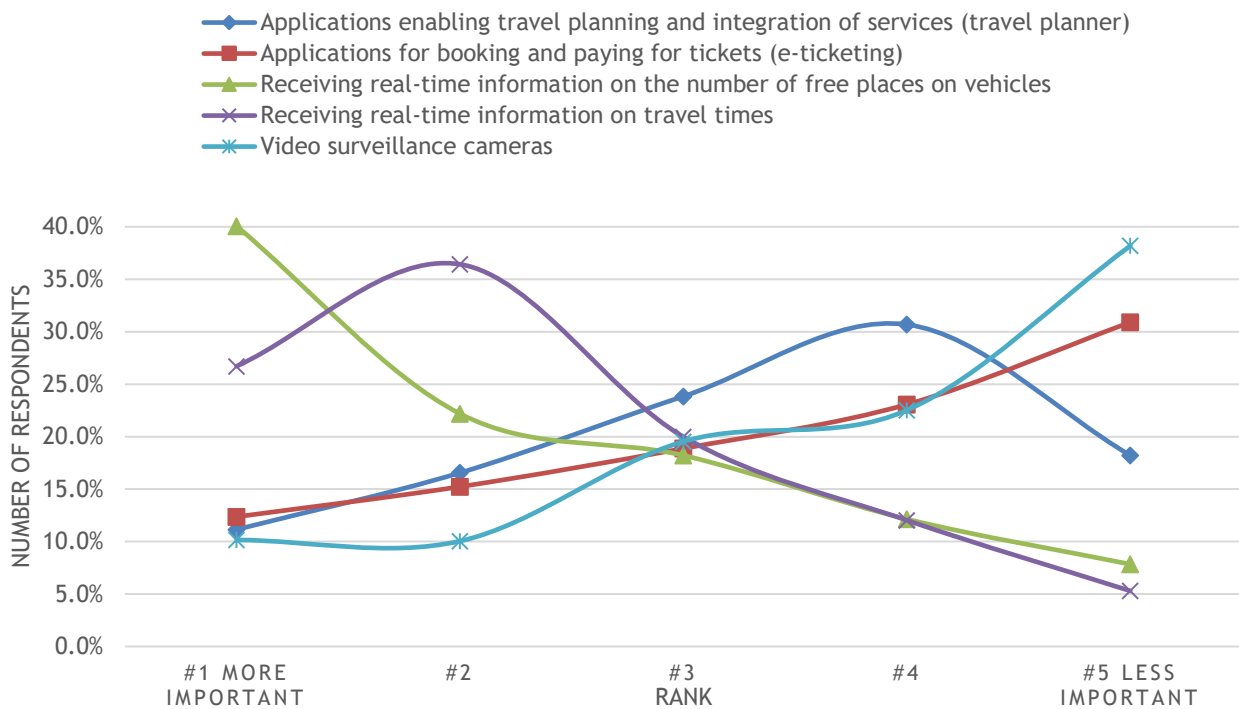
Figure 3-13 Overall trend of responses ranking of survey question: "Which digital tools do you think are the most important to implement in the future?"

To conclude, it is important to say respondents have a good opinion about increasing in digitalisation of public transport that will improve travel safety (regarding the risk of COVID-19 infection). In this regard, 47% were positive answers, only 24% were negative, although 29% do not have an opinion.

3.1.2. Open Answers

A space has been reserved to find out more about the opinion of the respondent about:

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1. Which measure could change the mind of the user who abandoned/reduced the user of public services.
2. Which digital tools are the most important to implement in the future.

Although the response at those questions was optional, several value-added responses were obtained, summarized briefly below. Further results are in annex #B, in which it is possible to find all the value-added open answers, in original language and with English translation.

At the first question the majority of suggestion are about **punctuality**, higher frequency or at least at "the right time" connection and lower travel time on public transport. Respondents confirmed the analysis mentioned in the previous paragraph: they find these characteristics important and they wanted to emphasize it in order to resolve it. The ability to quickly and easily reach specific places (network of connections, convenient transfers), with better availability of information about current disruptions (call-center, quickly appearing web messages, email, text messages) are considered crucial for a good transport.

More accessibility is another issue that has raised some complaints and it needs to be resolved.

It is also remarkable that respondent find also some problems about cost of public transport. They consider it high. They would like that public transport should be characterized by more attractive prices and they have pointed it out about twenty times.

In addition, there were opinions about pandemic, which are about:

- greater controls on correct compliance with the rules
- mitigation of rules
- fear of pandemic.

Some highlights about the second open question (regarding which digital tools are the most important to implement in the future) are:

- Need to unify the applications for the commute.
- True information about the current situation (accidents, faults, etc.), a more accurate description of the connection to find it quickly and without any problems (station number, platform, information on various local specifics).
- mobile applications as travel planner and disruptions-informer, integrating means of transport payment (e.g. all systems from public mass to public individual or even car / sharing services) on the principle of pay as much as you use;
- Advertise these app if already exists and fix bugs if not working;
- "TAP system" – which consist on tapping on an obliterator every time the passenger get on and off the public transport service. If this measure would be applied to all passengers (not only one-time trips), then passengers are marked and the driver has an overview of passengers crowdedness.
- Monitoring of busy connections with possible reactions to them, e.g. with the ability to respond by changing the route.
- Offer the user the possibility of instant choice of the most efficient vehicle in relation to availability
- Some users do not think that is the most important issue. For some, when commuting from their village, the problem is crowded buses and delayed trains
- Smart infrastructure for the preference of public transport in cities and beyond, so that PTO does not have to stand in convoys. More efficient line management planning for road closures and repairs.
- WLAN (unlimited) in trains etc., digital ticket control (QR code),

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- Any efficient application showing the actual train delays, the possibility of purchasing monthly tickets through the application, extending the validity of the card, e.g. metropolitan card via the Internet, suggested place for a wagon with a free seat.
- Ensuring continuity of connections with the transfer and having information on whether the connection will wait

3.1.3. Local remarks

Pandemic has struck all over the Europe, but the survey reveals that there are however differences and curious analogies between the answers. The aim of this sub-paragraph is to focus on some factors just seen in the general analysis, in order to have understand the specific differences between the nation of the samples.

For each country below there will be shown a brief overview, and a little comment followed by:

- Table about Variation between prior pandemic and currently of the usage of public and private modes of transport;
- Pie chart about variation of frequency and mode of transport;
- Table about variation and current values of factors which influences the different modes of transport;
- Combined graph about comparison between public transport and other public spaces safety feeling;
- Any specific question posed by the project partner.

Croatian Overview

Croatia has reserved no further issues. Dissemination took place thanks to HZPP partner, who has undertaken to spread the survey through its web channels.

11% of total answers were received from Croatia, of whom 56% are from the target area and 35% from the target age. To have a little identikit of the mean respondent: 22 % of them declared that are students, and 70% that are employees. 77% have driving licence and 26% have a local public transport season ticket.

This sample respected the global overview in a similar way. As it is possible to see in the following table, it is evident that a mobility decline between the prior pandemic period and autumn 2021 has occurred, except for the use of one's own car. Declaration of car usage grew about 8% in "frequent" and "regular" usage, meanwhile "not usage" declaration of bus and tram services grew more than 5% for each mode.

Table 4 - Croatian sample of Survey question: "How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use?" (Variation between late 2021 and pre-pandemic situation)

	I did/do not use it	I have used / use it occasionally (less than once a week)	I have used / use it frequently (1 - 3 times a week)	I have used / use it regularly (4 times a week or more)
Car	-6,1%	-2,0%	4,0%	4,0%
Moped/Motorcycle	1,0%	-1,0%	0,0%	0,0%
Bike	2,0%	0,0%	-2,0%	0,0%
Bus	5,1%	1,0%	-3,0%	-3,0%
Train	2,0%	4,0%	-3,0%	-3,0%
Metro	0,0%	0,0%	0,0%	0,0%

Sharing services	3,0%	-2,0%	0,0%	-1,0%
Walk	3,0%	0,0%	-2,0%	-1,0%
Tram	8,1%	-2,0%	-4,0%	-2,0%
Boat	1,0%	-1,0%	0,0%	0,0%
Taxi	3,0%	-7,1%	4,0%	0,0%
Combination of travel (e.g. park and ride)	7,1%	-6,1%	-2,0%	1,0%

This is confirmed also by the frequency-mode pie chart, in which only 35% respondents declared that Covid-19 did not influenced the way of travelling. The most important factor that has been involved is frequency, changed by 61% of the population probed. Conversely, COVID-19 outbreak changed mode of transport only for 24% of respondents.

Figure 3-14 – Croatian sample of Survey Question: "Did COVID-19 influence your way of travelling in the post-pandemic period?"

The way in which Croatian respondent choose the different transport modes has evolved in a similar, but not the same way. Analysing the Covid-19 related factors, as expected, it has emerged that even here they have leapt significantly forward. The "important" opinion about security factor, intended as reducing infection risks, grew about 14,1%. Conversely, people are a little bit less susceptible about "service punctuality / frequency": the current "decisive factor" fell about 6,1% in comparison to prior pandemic period.

In any case, it is also important to remark that the top three factors that currently influence the choice to use the different modes of transport are:

- "Freedom and independence of movement", chosen by 68% of people with an "important" or "decisive" opinion. This factor is distinctive for Croatian respondents.
- "Service frequency and punctuality", with 67% "important" or "decisive" choices. Although it has declined, it remains an important factor.
- "Travel time", selected in the same way by 64% of respondents.

Table 5 – Croatian sample - Variation between late 2021 and pre-pandemic situation of the factors of the survey question: "How much did the factors listed below influence your choice to use the different modes of transport"

	Not very important	Neutral	Important	Decisive	% of people who choose the "Important" or "Decisive" opinion, currently

Travel time	-3,0%	2,0%	1,0%	0,0%	64%
Travel cost	0,0%	7,1%	-3,0%	-4,0%	60%
Service frequency / Puntuality of services	-1,0%	7,1%	0,0%	-6,1%	67%
Safety (reducing accident risks)	2,0%	1,0%	1,0%	-4,0%	42%
Security (reducing infection risks)	-11,1%	-9,1%	14,1%	6,1%	48%
Comfort and/or crowdedness of public transport	-3,0%	-3,0%	6,1%	0,0%	54%
Traffic and parking (difficulty/cost)	1,0%	-5,1%	4,0%	0,0%	44%
Freedom and independence of movement	-2,0%	-7,1%	4,0%	4,0%	68%

As for the comparison between public transport and other public spaces, the results can be seen in the graph below. It is possible to note that the opinion tends slightly towards "less safe", compared to the general sample.

Figure 3-15 - Trend of the Croatian respondents' average opinion of survey question: "with regard of contracting COVID-19, I consider public transport…"

Czech Overview

Czech has reserved some little differences from the general sample. Dissemination took place thanks to KORDIS partner, who has undertaken to spread the survey on its channels.

16% of total answers were received from Czech Republic, of whom 38% are from the target area and 24% from the target age. To have a little identikit of the mean respondent: 21 % of them declared that are students, and 71% that are employees. 72% have driving licence and 69% have a local public transport season ticket.

As it is possible to see in the following table, it is evident that there has been an important decline in mobility between the prior pandemic period and autumn 2021, as always except for the use of one's own car. Declaration of train non-usage grew about 11,9%, and bus "occasionally" and non-usage grew combinate about 16,8%, indicating a greater degrowth than the general sample.

Table 6 - Czech sample of Survey question: "How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use?" (Variation between late 2021 and pre-pandemic situation)

	I did/do not use it	I have used / use it occasionally (less than once a week)	I have used / use it frequently (1 - 3 times a week)	I have used / use it regularly (4 times a week or more)
Car	-4,2%	-4,9%	1,4%	7,7%
Moped/Motorcycle	0,7%	0,0%	-0,7%	0,0%
Bike	6,3%	-6,3%	0,0%	0,0%
Bus	7,0%	9,8%	-2,8%	-14,0%
Train	11,9%	3,5%	-7,0%	-8,4%
Metro	3,5%	-0,7%	-0,7%	-2,1%
Sharing services	0,7%	-1,4%	0,7%	0,0%
Walk	0,7%	2,1%	-0,7%	-2,1%
Tram	7,0%	7,0%	2,1%	-16,1%
Boat	4,9%	-4,2%	-0,7%	0,0%
Taxi	2,8%	-2,8%	0,0%	0,0%
Combination of travel (e.g. park and ride)	0,0%	0,0%	0,0%	0,0%

The following pie chart confirm this to a lesser extent, in which half of respondents declared that Covid-19 did not influenced the way of travelling. The most important factor that has been involved is frequency, changed by 41% of the Czech population surveyed. Conversely, the change of mode of transport involved only 24% of respondents.

Yes, both the frequency and the mode of transport
15%

Only the mode of transport, not the frequency
9%

Only the frequency, but not the mode of transport
26%

No
50%

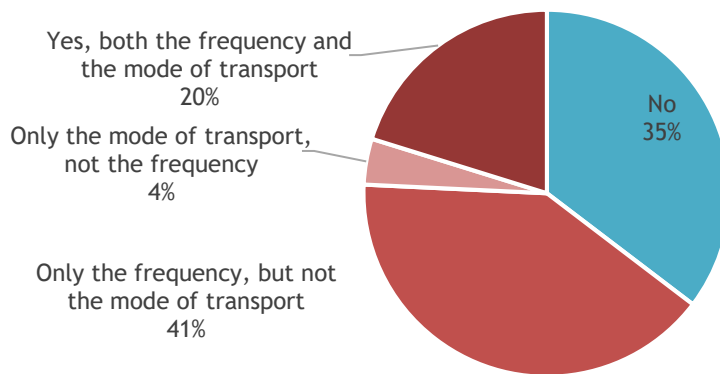**Figure 3-16 - Czech sample of Survey Question: "Did COVID-19 influence your way of travelling in the post-pandemic period?"**

The situation about Czech respondent transport choice factors traced the general situation. Same are the top three factors chosen and similar is the covid-19 related factor evolution of choices. As visible in the table below, it changed only the last factor that is "traffic and parking" in this case.

Table 7 – Czech sample - Variation between late 2021 and pre-pandemic situation of the factors of the survey question: "How much did the factors listed below influence your choice to use the different modes of transport"

	Not very important	Neutral	Important	Decisive	% of people who choose the **"Important"** or **"Decisive"** opinion, **currently**

Travel time	1,4%	-4,2%	1,4%	1,4%	58%
Travel cost	7,0%	2,1%	-9,1%	0,0%	47%
Service frequency / Puntuality of services	2,8%	0,0%	-2,8%	0,0%	73%
Safety (reducing accident risks)	-0,7%	-0,7%	2,1%	-0,7%	46%
Security (reducing infection risks)	-16,8%	-11,9%	14,0%	14,7%	46%
Comfort and/or crowdedness of public transport	0,0%	-11,2%	2,1%	9,1%	66%
traffic and parking (difficulty/cost)	0,0%	3,5%	-2,8%	-0,7%	43%
Freedom and independence of movement	-0,7%	-0,7%	-2,1%	3,5%	53%

As for the comparison between public transport and other public spaces, the results can be seen in the graph below. It is possible to note that the opinion tends slightly towards "much safer", compared to the general sample. Indeed, the average opinion about "Grocery store and supermarkets" and "Shopping center" is "equally safe" or even slightly better.

Figure 3-17 Trend of the Czech respondents' average opinion of survey question: with regard of contracting COVID-19, I consider public transport...

German Overview

Germany has reserved no further issues. Dissemination took place thanks to NASA partner, who has undertaken to spread the survey on its channels.

Only 5% of total answers were received from Germany, of whom 49% are from the target area and 35% from the target age. To have a little identikit of the mean respondent: 49% of them declared that are students, and 41% that are employees. 78% have a driving licence and 45% have a local public transport season ticket.

As it is possible to see in the following table, it is evident that there has been a general decline in mobility between the pre pandemic period and autumn 2021. It should be noted that a decline for the bus and for the train mobility has occurred, but in a less disruptive way than in the other countries. Indeed a transition from frequent to occasional use has mainly occurred, instead towards directly to a null use. To quantify up, in the first case "frequent" use dropped by 10,2% and "occasionally" use has gone up by 6,1%, and for the latter case the transition was between a drop of 14,3% for "frequent" and a rise of 12,2% for "occasionally". The only exception to this trend is related to bike mobility, in which "frequent" and "regular" usage grew about 10% combined.

Table 8 - German sample of Survey question: "How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use?" (Variation between late 2021 and pre-pandemic situation)

	I did/do not use it	I have used / use it occasionally (less than once a week)	I have used / use it frequently (1 - 3 times a week)	I have used / use it regularly (4 times a week or more)
Car	2,0%	0,0%	-4,1%	2,0%
Moped/Motorcycle	-2,0%	0,0%	0,0%	2,0%
Bike	-2,0%	-8,2%	6,1%	4,1%
Bus	6,1%	6,1%	-10,2%	-2,0%
Train	2,0%	12,2%	-14,3%	0,0%
Metro	6,1%	-10,2%	2,0%	2,0%
Sharing services	-2,0%	2,0%	2,0%	-2,0%
Walk	2,0%	0,0%	-2,0%	0,0%
Tram	10,2%	4,1%	-10,2%	-4,1%
Boat	4,1%	-2,0%	0,0%	-2,0%
Taxi	4,1%	-2,0%	0,0%	-2,0%
Combination of travel (e.g. park and ride)	2,0%	0,0%	2,0%	-4,1%

This is confirmed also by the following pie chart, in which only 37% respondents declared that Covid-19 did not influenced the way of travelling. The most important factor that has been involved is frequency, changed by 59% of the population probed. Conversely, the change of mode of transport involved only 28% of respondents.
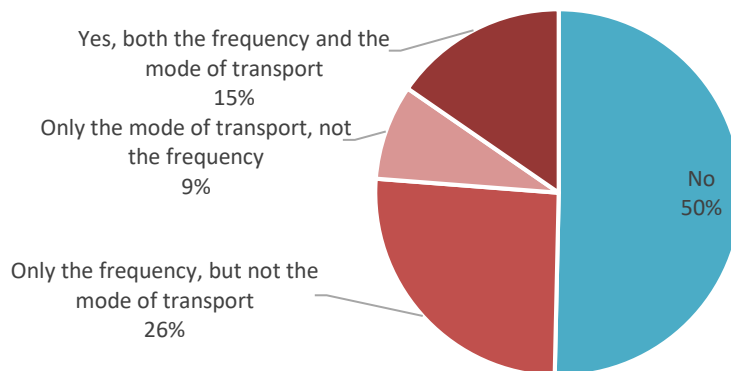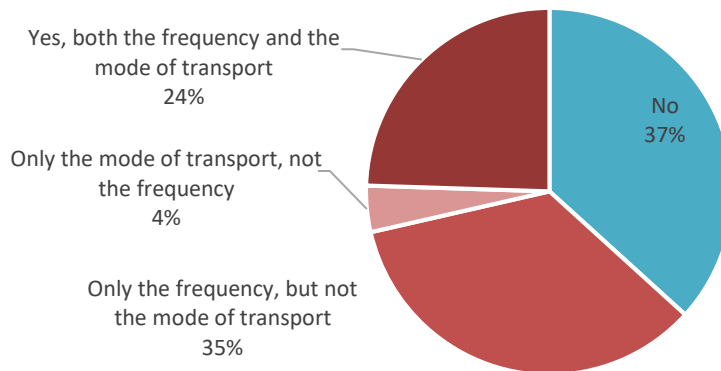

Figure 3-18 - German sample of Survey Question: "Did COVID-19 influence your way of travelling in the post-pandemic period?"

The situation about Croatian respondent transport choice factors has evolved. Analysing the Covid-19 related factors, as expected, it emerged that even here they have leapt significantly forward. The "important" opinion about security factor, intended as reducing infection risks, grew about 14,1%. Conversely, people are a little bit less susceptible about "service punctuality / frequency": the current "decisive factor" dropped about 6,1% in comparison to prior pandemic period.

In any case, it is also important to remark that the top three factors that currently influence the choice to use the different modes of transport are:

- "Travel cost", chosen by 71% of people with an "important" or "decisive" opinion.
- "Service frequency and punctuality", "travel time" and "Freedom and independence of movement" with altogether 69% "important" or "decisive" choices.

Table 9 – German sample - Variation between late 2021 and pre-pandemic situation of the factors of the survey question: "How much did the factors listed below influence your choice to use the different modes of transport"

	Not very important	Neutral	Important	Decisive	% of people who choose the "Important" or "Decisive" opinion, currently
Travel time	10,2%	-12,2%	6,1%	-4,1%	69%
Travel cost	0,0%	6,1%	0,0%	-6,1%	71%
Service frequency / Punctuality of services	-2,0%	4,1%	8,2%	-10,2%	69%
Safety (reducing accident risks)	-2,0%	0,0%	2,0%	0,0%	29%
Security (reducing infection risks)	-26,5%	-12,2%	26,5%	12,2%	59%
Comfort and/or crowdedness of public transport	0,0%	-18,4%	14,3%	4,1%	57%
traffic and parking (difficulty/cost)	4,1%	2,0%	-6,1%	0,0%	31%
Freedom and independence of movement	2,0%	-2,0%	6,1%	-6,1%	69%

As for the comparison between public transport and other public spaces, the results can be seen in the graph below. It is possible to note that "public parks" and "inner city boulevards and squares" are considered significantly safer than public transport.

Figure 3-19 Trend of the German respondents' average opinion of survey question: "with regard of contracting COVID-19, I consider public transport..."

Italian Overview

The Italian case is particular. Dissemination took place thanks to aMo partner, who has undertaken to spread the survey on its channels, like spreading the survey link to public middle and high schools students of the Italian province of Modena.

The particularity is because the relative majority (43%) of total answers were received from Italy, of whom 50% are from the target area and 83% from the target age. To have a little identikit of the typical respondent: 82 % of them declared that are students, and 14% that are employees. 25% have driving licence and 63% have a local public transport season ticket.

This sample respected the global overview, albeit in a less decisive way. This is possible to see in the following table. Mobility through car registered a slight increase, meanwhile the other way of transport remained almost the same. One notable exception is walking, in which the "do not use it" option increased about 6,2%. This a interesting trend, which could be explained in two ways:

1) A drop of general mobility has been occurred;
2) A change of mode of transport has been occurred, for example from public transport to own car.
3) 51,5% of the respondents declared that are 15-18 years old, this means that before the pandemic they went to middle school, with a route that was usually done on foot, as it was usually closer to one's home. Currently, however, this segment of the population generally attends high schools, which usually involve longer transfers. This is confirmed by some feedbacks obtained in Italian "open answers", in which respondents said that they started using buses after the pandemic to get to high school. This can explain the decline in the "walk" and the increase in "buses" and "cars".

Table 10 - Italian sample of Survey question: How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? (Variation between late 2021 and pre-pandemic situation)

	I did/do not use it	I have used / use it occasionally (less than once a week)	I have used / use it frequently (1 - 3 times a week)	I have used / use it regularly (4 times a week or more)
Car	-5,4%	1,0%	3,1%	1,3%
Moped/Motorcycle	-2,8%	0,8%	1,0%	1,0%
Bike	4,1%	-2,8%	-2,1%	0,8%
Bus	-3,6%	1,5%	2,1%	0,0%
Train	1,8%	-2,8%	1,5%	-0,5%
Metro	2,1%	-2,3%	0,0%	0,3%
Sharing services	1,3%	-0,8%	0,3%	-0,8%
Walk	6,2%	-2,1%	-2,1%	-2,1%
Tram	0,3%	0,0%	-0,3%	0,0%
Boat	0,3%	-0,5%	0,0%	0,3%
Taxi	0,5%	-0,8%	0,0%	0,3%
Combination of travel (e.g. park and ride)	1,0%	-1,0%	-0,3%	0,3%

Asking that expressly, respondent confirmed those hypotheses and had clearer ideas. In the following pie chart, only 34% of the interviewees declared that Covid-19 did not influenced the way of travelling. The most important factor that has been involved is frequency, changed by 52% of the population probed followed by the change of mode of transport, which involved 42% of respondents.

Yes, both the frequency and the mode of transport 28%

No 34%

Only the mode of transport, not the frequency 14%

Only the frequency, but not the mode of transport 24%

Figure 3-20 - Italian sample of Survey Question: "Did COVID-19 influence your way of travelling in the post-pandemic period?"

Table 11 - Italian sample of Survey question: Please indicate below which statement applies the most to your situation. (Variation between late 2021 and pre-pandemic situation)

	Not very important	Neutral	Important	Decisive
I was / am dependent on public transport for my daily activities	-4,9%	-1,5%	3,6%	2,8%
I had / have access to other travel options than public transport and I used / use public transport as little as possible	-2,1%	-5,7%	1,3%	6,4%
I had / have access to other travel options than public transport but I preferred / prefer to use public transport	-4,1%	0,0%	1,5%	2,6%

The situation about Italian respondent transport choice factors has evolved. All of them have a little bit increased. Analysing the Covid-19 related factors, as expected, it emerged that even here they have leapt significantly forward. The "important" and "decisive" combined opinion about security factor, intended as reducing infection risks, grew about 27,1%.

In any case, it is also important to remark that the top three factors that currently influence the choice to use the different modes of transport are:

- "Comfort and crowdedness", chosen by 63% of people with an "important" or "decisive" opinion.
- "Security", selected in the same way by 52% of respondents.
- "Service frequency and punctuality", with 52% "important" or "decisive" choices.

Table 12 – Italian sample - Variation between late 2021 and pre-pandemic situation of the factors of the survey question: "How much did the factors listed below influence your choice to use the different modes of transport"

	Not very important	Neutral	Important	Decisive	% of people who choose the "**Important**" or "**Decisive**" opinion, currently
Travel time	-0,3%	-4,9%	-0,5%	5,7%	43%
Travel cost	1,5%	-2,8%	-1,5%	2,8%	33%

Service frequency / Puntuality of services	-1,0%	-4,1%	0,8%	4,4%	52%
Safety (reducing accident risks)	-3,3%	1,8%	0,3%	1,3%	17%
Security (reducing infection risks)	-21,6%	-5,4%	11,1%	15,9%	55%
Comfort and/or crowdedness of public transport	-7,2%	-8,0%	4,1%	11,1%	63%
traffic and parking (difficulty/cost)	-1,3%	0,8%	-1,0%	1,5%	30%
Freedom and independence of movement	1,8%	-3,6%	1,8%	0,0%	49%

As for the comparison between public transport and other public spaces, the results can be seen in the graph below. The opinion is clear-cut. It is possible to note that the opinion tends towards "less safe", compared to the general sample.

Figure 3-21 Trend of the Italian respondents' average opinion of survey question: "with regard of contracting COVID-19, I consider public transport..."

Polish Overview

Poland has reserved no further significant issues. Dissemination took place thanks to Mazovia partner, who has undertaken to spread the survey on its channels.

16% of total answers were received from Poland, of whom 38% are from the target area and 24% from the target age. To have a little identikit of the mean respondent: 13 % of them declared that are students, and 73% that are employees. 71% have a driving licence and 62% have a local public transport season ticket.

This sample respected in a slightly polarized way the global overview. As it is possible to see in the following table, it is evident that there has been a decline in mobility by public transport between the prior pandemic period and autumn 2021. For instance, regular use of bus, train, tram fell respectively by 8,4%, 14% and 12,6%. Conversely, Declaration of car usage grew about 4,2% in "regular" use.

Table 13 - Polish sample of Survey question: "How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use?" (Variation between late 2021 and pre-pandemic situation)

	I did/do not use it	I have used / use it occasionally (less than once a week)	I have used / use it frequently (1 - 3 times a week)	I have used / use it regularly (4 times a week or more)
Car	-0,7%	-3,5%	0,0%	4,2%
Moped/Motorcycle	1,4%	0,0%	-1,4%	0,0%
Bike	2,8%	-5,6%	0,7%	2,1%
Bus	4,2%	5,6%	-1,4%	-8,4%
Train	2,8%	8,4%	2,8%	-14,0%
Metro	5,6%	5,6%	-7,0%	-4,2%
Sharing services	2,8%	-3,5%	0,7%	0,0%
Walk	4,2%	-3,5%	8,4%	-9,1%
Tram	7,7%	8,4%	-3,5%	-12,6%
Boat	1,4%	-0,7%	0,0%	-0,7%
Taxi	3,5%	-4,2%	1,4%	-0,7%
Combination of travel (e.g. park and ride)	3,5%	-0,7%	-1,4%	-1,4%

This is confirmed in part by the following pie chart, in which 45% respondents declared that Covid-19 did not influenced the way of travelling. The most important factor that has been involved is frequency, changed by 52% of the population probed. Conversely, the change of mode of transport involved only 25% of respondents.
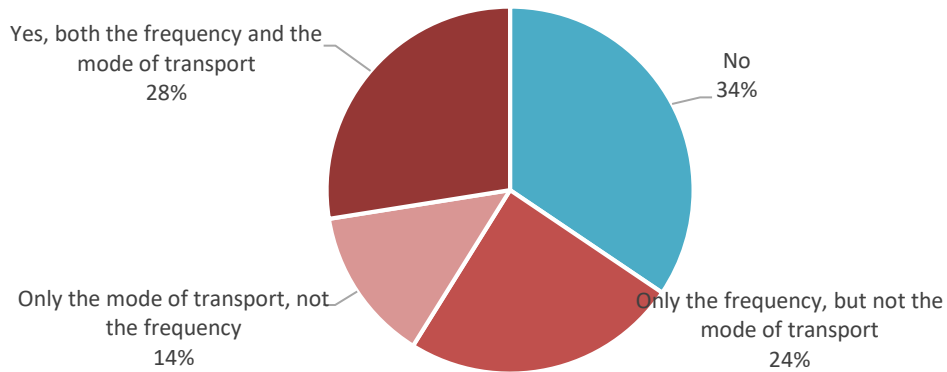

Yes, both the frequency and the mode of transport 22%

Only the mode of transport, not the frequency 3%

Only the frequency, but not the mode of transport 30%

No 45%

Figure 3-22 - Polish sample of Survey Question: "Did COVID-19 influence your way of travelling in the post-pandemic period?"

The situation about Polish respondent transport choice factors has evolved. Analysing the Covid-19 related factors, as expected, it emerged that even here they have leapt significantly forward. The "important" opinion about security factor, intended as reducing infection risks, grew about 18,4%. Conversely, people are a little bit less susceptible about "travel time" and "travel cost": the current "important" factor dropped more than 7% for both, in comparison to prior pandemic period.

In any case, it is also important to remark that the top three factors that currently influence the choice to use the different modes of transport are:

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- "Service frequency and punctuality", with a top of 84% "important" or "decisive" choices. Therefore, this factor is the most crucial factor for Polish respondents.
- "Travel time", selected in the same way by 77% of respondents.
- "Travel cost", by 66% of respondent. The last two factors remained crucial, although a remarkable drop has been registered between prior COVID-19 outbreak and autumn 2021 situation.

Table 14 – Polish sample - Variation between late 2021 and pre-pandemic situation of the factors of the survey question: "How much did the factors listed below influence your choice to use the different modes of transport"

	Not very important	Neutral	Important	Decisive	% of people who choose the "Important" or "Decisive" opinion, currently
Travel time	2,1%	1,4%	-7,0%	3,5%	77%
Travel cost	4,9%	3,5%	-9,8%	1,4%	66%
Service frequency / Puntuality of services	3,5%	2,1%	-4,9%	-0,7%	84%
Safety (reducing accident risks)	2,1%	-4,2%	2,1%	0,0%	45%
Security (reducing infection risks)	-16,8%	-7,0%	5,6%	18,2%	50%
Comfort and/or crowdedness of public transport	-4,2%	-9,1%	1,4%	11,9%	62%
traffic and parking (difficulty/cost)	0,7%	4,2%	-2,8%	-2,1%	50%
Freedom and independence of movement	-2,8%	-2,1%	4,2%	0,7%	60%

As for the comparison between public transport and other public spaces, the results can be seen in the graph below. It is possible to note that the opinion tends slightly towards "equally safe", compared to the general sample.
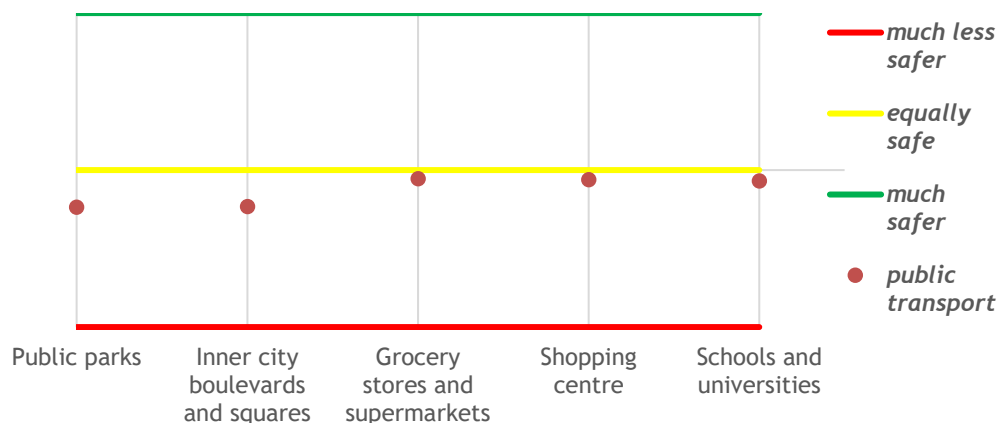
Figure 3-23 Trend of the Polish respondents' average opinion of survey question: "with regard of contracting COVID-19, I consider public transport..."

Slovak Overview

Slovakia has reserved no further relevant issues. Dissemination took place thanks to UNIZA partner, who has undertaken to spread the survey on its channels.

10% of total answers were received from Slovakia, of whom 63% are from the target area and 39% from the target age. To have a little identikit of the average respondent: 24 % of them declared that are students, and 57% that are employees. 77% have driving licence and 46% have a local public transport season ticket.

This sample respected in a similar way the global overview. As it is possible to see in the following table, it is evident that there has been a decline in mobility between the prior pandemic period and autumn 2021.

Table 15 - Slovak sample of Survey question: "How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use?" (Variation between late 2021 and pre-pandemic situation)

	I did/do not use it	I have used / use it occasionally (less than once a week)	I have used / use it frequently (1 - 3 times a week)	I have used / use it regularly (4 times a week or more)
Car	-2,3%	3,4%	-2,3%	1,1%
Moped/Motorcycle	0,0%	0,0%	0,0%	0,0%
Bike	4,6%	-4,6%	0,0%	0,0%
Bus	4,6%	5,7%	0,0%	-10,3%
Train	12,6%	-10,3%	0,0%	-2,3%
Metro	-1,1%	1,1%	0,0%	0,0%
Sharing services	-5,7%	2,3%	-2,3%	-1,1%
Walk	3,4%	-3,4%	0,0%	0,0%
Tram	1,1%	1,1%	1,1%	-3,4%
Boat	-1,1%	1,1%	0,0%	0,0%
Taxi	4,6%	-4,6%	0,0%	0,0%
Combination of travel (e.g. park and ride)	-2,3%	0,0%	1,1%	0,0%

This is confirmed also by the following pie chart, in which only 34% respondents declared that Covid-19 did not influenced the way of travelling. The most important factor that has been involved is frequency, changed by 58% of the population probed. Conversely, the change of mode of transport involved 33% of respondents.
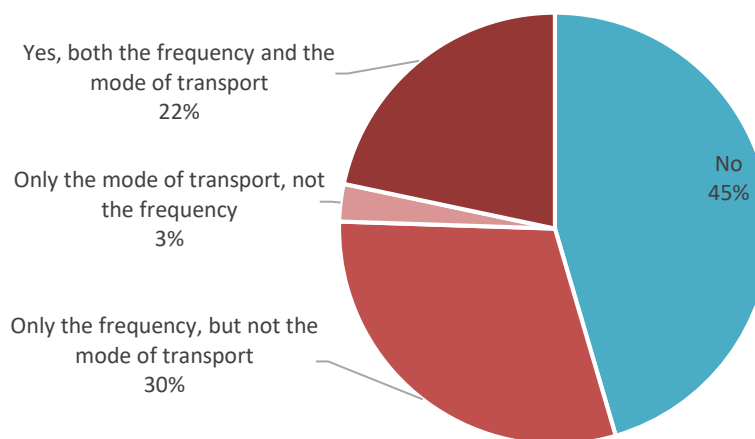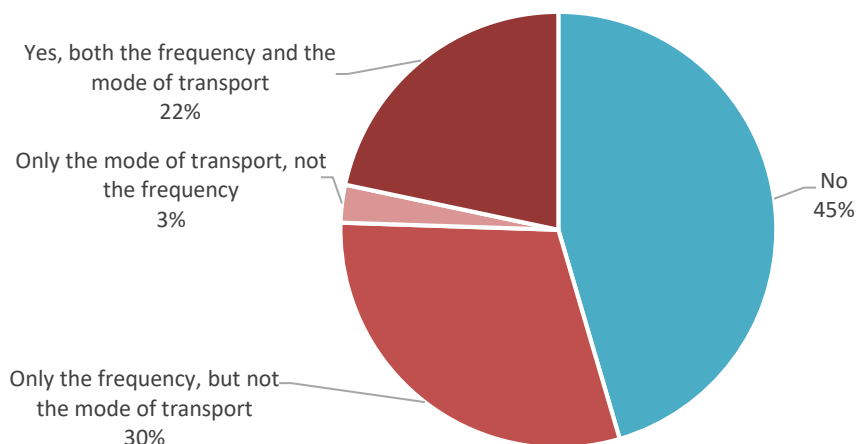

Figure 3-24 - Slovak sample of Survey Question: "Did COVID-19 influence your way of travelling in the post-pandemic period?"

The situation about Slovak respondent transport choice factors has evolved. The COVID-19 related factor have been registered a major growth, but also others registered some changes. This is possible to see in the following table.

In any case, the top three factors that currently influence the choice to use the different modes of transport are:

- "Service frequency and punctuality", with 74% "important" or "decisive" choices.
- "Travel time" and "comfort and crowdedness" both selected in the same way by 70% of respondents.

Table 16 – Slovak sample - Variation between late 2021 and pre-pandemic situation of the factors of the survey question: "How much did the factors listed below influence your choice to use the different modes of transport"

	Not very important	Neutral	Important	Decisive	% of people who choose the "Important" or "Decisive" opinion, currently
Travel time	-2,3%	4,6%	-3,4%	1,1%	70%
Travel cost	-5,7%	6,9%	-2,3%	1,1%	52%
Service frequency / Puntuality of services	0,0%	-4,6%	1,1%	3,4%	74%
Safety (reducing accident risks)	-5,7%	-3,4%	4,6%	4,6%	48%
Security (reducing infection risks)	-16,1%	-5,7%	9,2%	12,6%	62%
Comfort and/or crowdedness of public transport	0,0%	-12,6%	5,7%	6,9%	70%
traffic and parking (difficulty/cost)	-1,1%	4,6%	-8,0%	4,6%	52%
Freedom and independence of movement	-3,4%	0,0%	2,3%	1,1%	66%

As for the comparison between public transport and other public spaces, the results can be seen in the graph below.

Figure 3-25 Trend of the Slovak respondents' average opinion of survey question: "with regard of contracting COVID-19, I consider public transport…"

To sum up

In conclusion, every country has its particularity. The sample of population is not the same, but those have followed a common trend. Therefore, those analyses could be useful for every local decision maker to have an idea of the current impact of the COVID-19 impact in mobility. There was generally a decrease in the frequency of trips, with a slight change of means of transport.

To sum up, It is important to address strategies to improve the people's perception about PT competeveness on the top factors for each country, and "Less crowding" could be overall the most priority aspect to treat about.

Annyway, the "punctuality" factor has appeared as the top factor for Poland, Czech and Slovakia, and this need clearly emerged from the local open answers, in which respondents left no doubts about it.

For Croatia the most important factor is "Freedom and independence of movement" and for Germany is "Travel cost" (and it was also remarked in the opens answers). In the following figure the various trends of the top factors by country are reported, so it can be seen that:

- there is a common trend
- There are however, some national peculiarities which it needs to deal with.
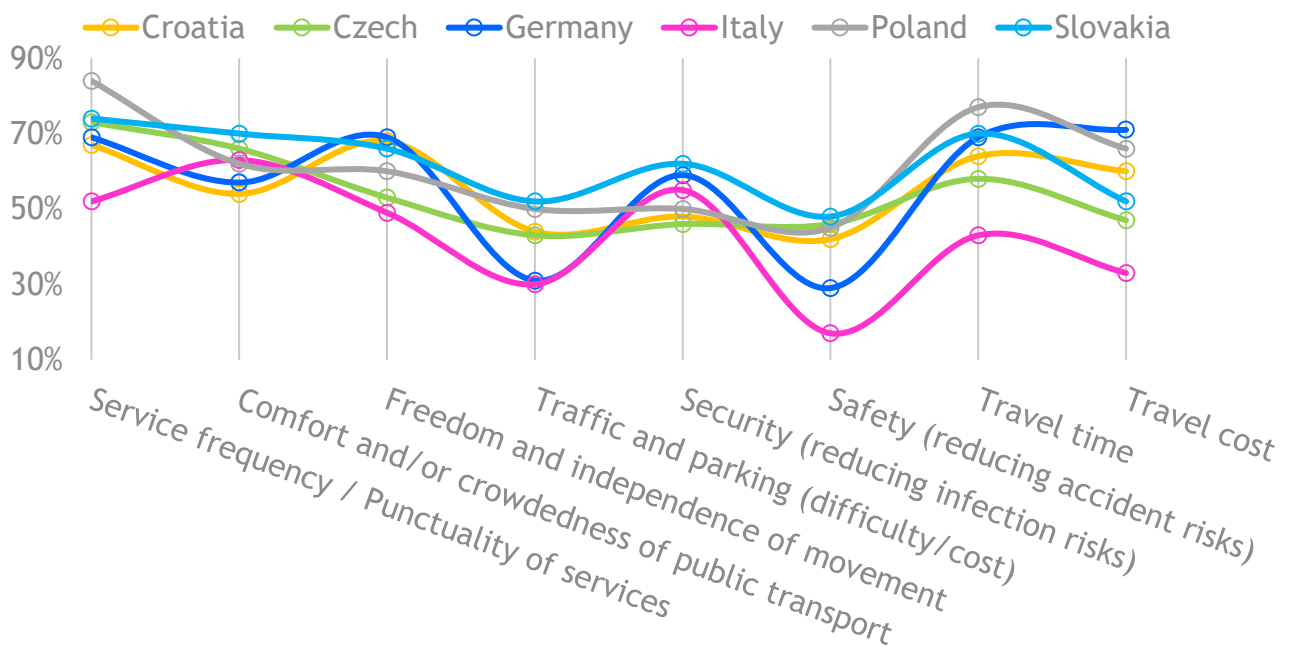
Figure 3-26 Comparison between people's country % who choose the "Important" or "Decisive" opinion, currently about the survey question: ""How much did these factors influence your choice to use the different modes of transport?"
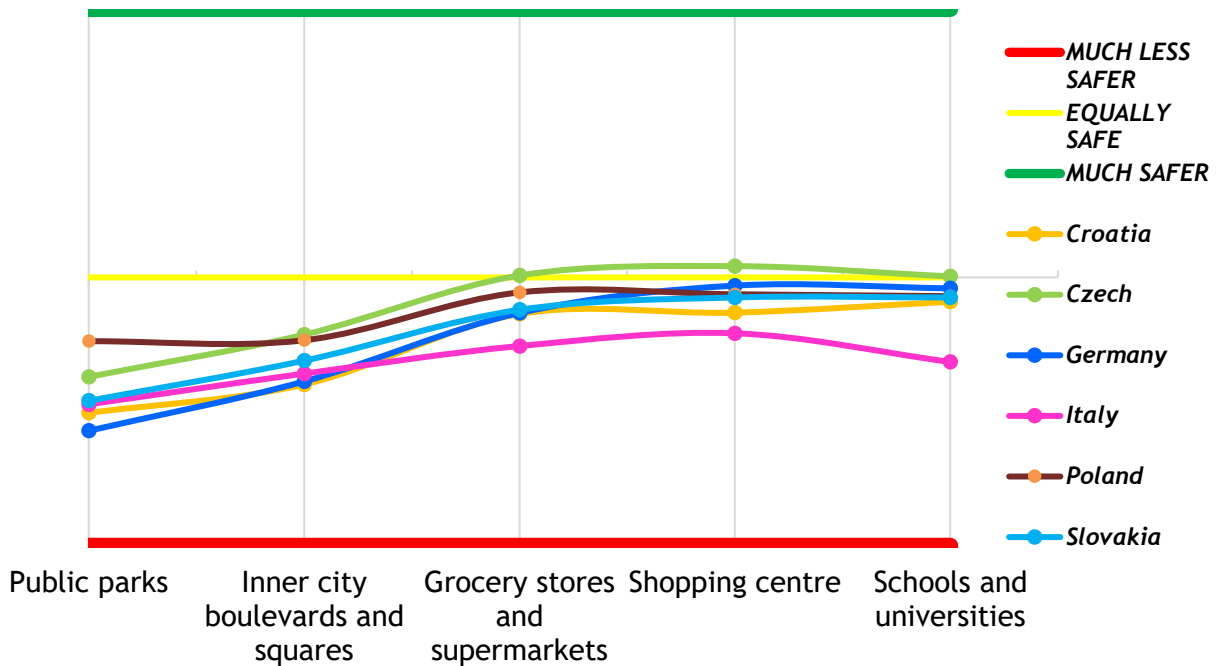
Figure 3-27 - Each country average opinion graph between public transport and some public areas - Survey Question: "With regard of contracting COVID-19, I consider public transport..."

3.2.   FCD Data Analisys

Among mobility data sources, Floating Car Data (FCD) plays a very and increasingly significant role. This data source generally refers to data collected directly by the vehicle itself as it is in motion, typically covering its location and speed[7,8]. By leveraging the information provided by connected vehicles through FCD it is possible to calculate a range of mobility indicators relevant to selected areas and time frames, which in turn may shed light upon the mobility changes occurred during the first two years of the coronavirus pandemic. Areas and time frames that are most related to youth activities—such as schools' neighbouring areas around start times—can be further investigated to find potential clues on how youth mobility has changed between 2019 and 2021.

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[7] ECE/TRANS/WP.6/2021/11

[8] Zannat, Khatun E., and Charisma F. Choudhury. "Emerging big data sources for public transport planning: A systematic review on current state of art and future research directions." Journal of the Indian Institute of Science 99.4 (2019): 601-619.

The FCD Data analysis reported in this study attempts to evaluate the youth mobility changes during the first two years of the coronavirus pandemic by focusing on five selected high schools in the Modena municipality, located in the Emilia-Romagna region of northern Italy. To this purpose, we pursue the following research questions:

> **RQ1: Does traffic density near selected high schools in 2021 significantly differ from 2019?**
>
> We want to shed light on how youth mobility changed during the coronavirus pandemic. We decided to focus on mobility indicators within areas relevant to youth education, namely, schools' neighbouring areas, in 2019 and 2021.
>
> **RQ2: How does the traffic density changes near high schools compare to those in the whole Municipality of Modena in 2019 and in 2021?**
>
> To better evaluate the traffic density changes within areas linked to youth activities, we should compare it to an appropriate baseline. As a consequence, we also evaluated the mobility changes in the whole Municipality of Modena, where the schools' areas are located.

In the following sections, we first introduce the context under investigation, that is the schools' areas within the Modena Municipality and the reference time frames; then, we describe the FCD dataset and the methodology used; finally, we present the obtained results and discuss them.

3.2.1. Selected schools and Modena Municipality

The FCD analysis focuses primarily on the traffic density around five selected high schools in the Modena municipality, on the south side of the Po Valley, in the Province of Modena in the Emilia-Romagna region of northern Italy (see Figure 3-28). The schools, all located to the west of the old city centre, are the following:

- F. Selmi Institute of Higher Education, located at Via Leonardo da Vinci 300, in Villaggio Artigiano district[9];
- F. Corni Institute of Higher Education, located at Via Leonardo da Vinci 300, next to the F. Selmi institute, in Villaggio Artigiano district[10];
- Wiligelmo High School, located at Viale Corassori 101, in San Faustino district[11].
- G. Guarini Institute of Higher Education. The school is located at Via Corassori 95, very close to Wiligelmo High School, in San Faustino district[12];
- Cattaneo-Deledda Professional Institute. The school is located at Strada degli Schiocchi 110, in San Faustino district, close to G. Guarini Institute of Higher Education[13].

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[9] www.istitutoselmi.edu.it
[10] https://www.istitutocorni.edu.it/
[11] https://www.liceowiligelmo.edu.it/
[12] https://www.istitutoguarini.edu.it/
[13] https://www.cattaneodeledda.edu.it/

Interreg
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European Union
European Regional
Development Fund
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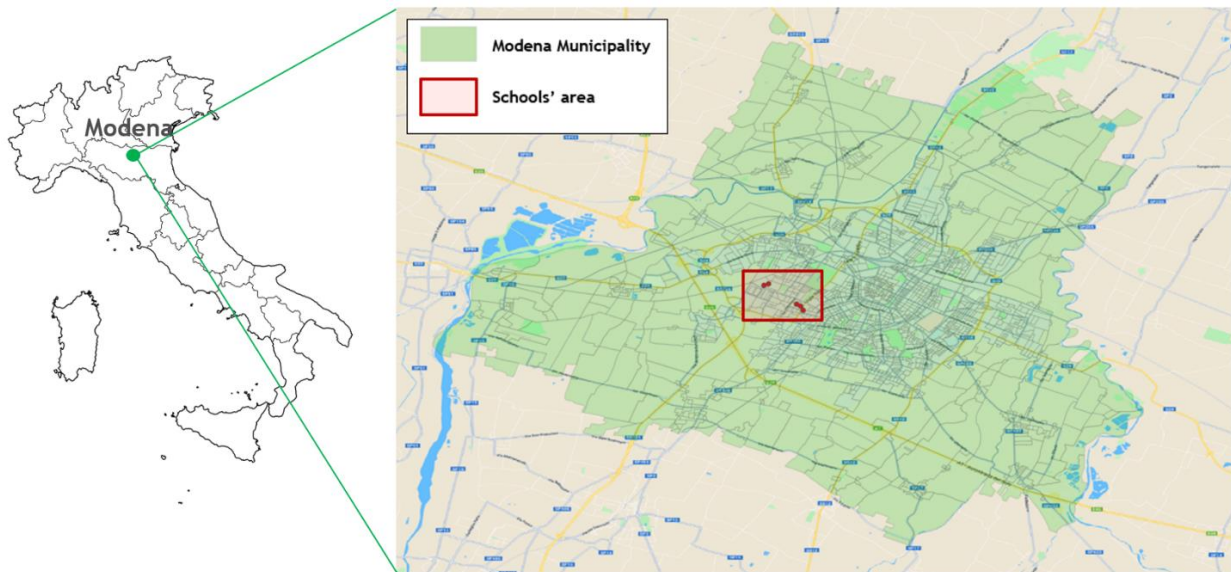
Figure 3-28 – Location of Modena within Italy (left) and location of the five selected schools (red dots, right) within the Municipality of Modena.

Since two or more schools located next to each other share their surroundings, to the purpose of the mobility analysis the five schools can be grouped in three main areas (Selmi and Corni, Wiligelmo and Guarini, and Cattaneo-Deledda) according to the schools' proximity to each other. To allow for a better detection of the impact of the traffic flow generated by the schools, such areas can be made large enough to include the main parking areas and roads where students can get out of a private vehicle after having a ride to school at start times, leading to the identification of the areas shown in Figure 3-29 and Figure 3-30.

Table 17 reports the total number of enrolled students for each area in school year 2021/2022.

Table 17 - Enrolled students by area in school year 2021/2022

Area	District	Number of schools	Enrolled students (2021-2022)
Selmi and Corni	Villaggio Artigiano	2	3,033
Wiligelmo and Guarini	San Faustino	2	1,587
Cattaneo-Deledda	San Faustino	1	1,281

Figure 3-29 - The three schools' areas under study (Selmi and Corni, Wiligelmo and Guarini, Cattaneo-Deledda)
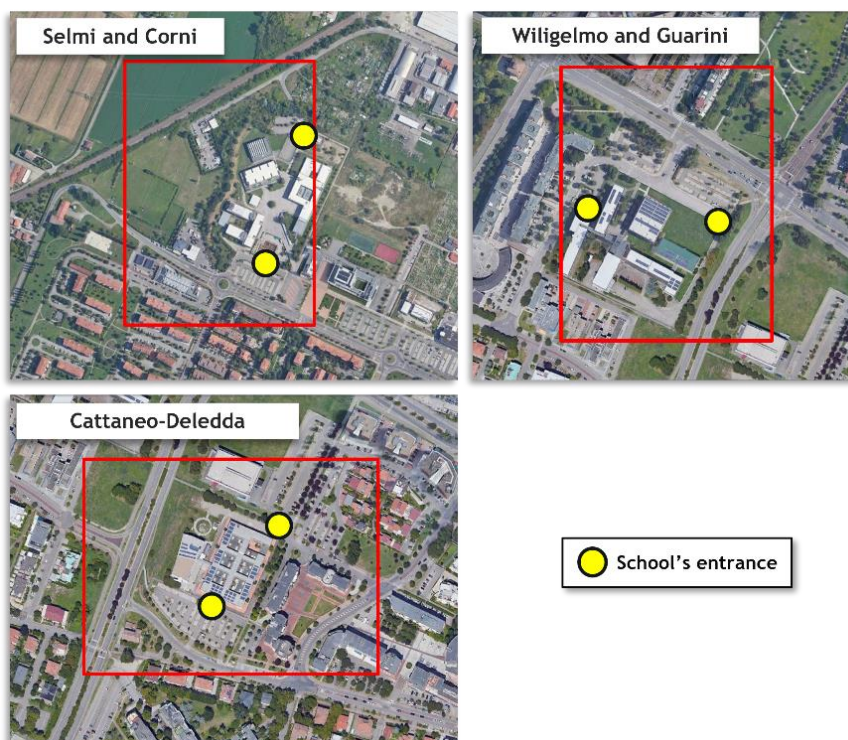
Figure 3-30 - Schools' areas under study and main entrances

3.2.2. Reference periods for comparison

To allow for an effective comparison on mobility changes between the period before the coronavirus pandemic and the most recent times, we first identified a recent time period in which tough coronavirus restrictions affecting mobility (and especially youth mobility) were not in place (e.g., no lockdowns, limited distance learning), so that the impact of the coronavirus pandemic on mobility patterns could possibly be observed devoid of the temporary effects of harsh COVID-19 measures.

To this purpose, we selected November 2021 as a suitable candidate time frame for the study[14]. This choice also led to select November 2019 as the corresponding counterpart in the period before the coronavirus pandemic, since the two time frames correspond to the same period of the year and consequently allow for a meaningful comparison between 2019 and 2021.

More specifically, we focused on the periods 9-29 November 2019 and 8-28 November 2021, because the two time frames:

1. Are the same length (21 days);
2. Cover the same period of the year almost exactly (1-day difference);
3. Each features exactly 3 occurrences of each day of the week;
4. Do not include public holidays (1 November), only regular weekends.

In addition, to further focus on the impact of schools' activity on mobility, we also focused on the hours 7:00-9:00 a.m., since the start time of the schools under study is 8:00 a.m.

3.2.3. The FCD dataset

To the purpose of the study, an appropriate FCD dataset was queried in order to extract meaningful information on mobility changes.

Such dataset, acquired from a third-party provider and constituted by FCD collected by private and commercial vehicles equipped with an onboard GPS device, comprises two tables. The most significant table is a collection of GPS records, each corresponding to a specific probe vehicle's position. Each record contains a *trip identifier*, and all the records with the same *trip identifier* are part of the same *trip*. A *trip* is defined as a collection of GPS records between two points where the vehicle remained stationary for at least 5 minutes. The other table of the dataset is constituted by records each containing the start and end GPS position of each identified trip, with additional information on the distance covered during the trip as provided by the vehicle's odometer.

Each record of the main table of the dataset also includes additional data other than the GPS position (latitude and longitude) and the trip identifier; among these additional data is the *vehicle identifier*, the corresponding *timestamp*, the vehicles' *direction* (0-360), the vehicle *type* (private/commercial), and other data related to the vehicle's position, including the address and the municipality.

To focus on the Modena case study, the dataset only comprises the trips which have at least one GPS record within the Modena Municipality in November 2019 and November 2021.

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[14] https://www.ilgiorno.it/cronaca/scuola-nuovo-protocollo-covid-dad-quarantene-1.6985457#Elementari,%20medie%20e%20superiori:%20regole%20diverse

3.2.4. Methodology

To perform the FCD analysis, different queries were devised to allow for the extraction of meaningful mobility indicators relevant to the context (e.g., number of distinct vehicles, average distance per trip), both on the whole of the Modena Municipality, as it constitutes the baseline against which schools' areas were compared, and the schools' areas themselves, as such areas constitute the main subject of the analysis. In particular, we focused on the number of distinct probe vehicles identified in each area, as this is an indicator which might reflect traffic density.

For each of the areas considered, all the queries were executed separately for each time frame of interest—namely, 9-29 November 2019 and 8-28 November 2021—averaging the results per each day of the week and per the five-day school week (Monday through Saturday). Since the FCD dataset allows for a separate analysis of private and commercial vehicles, we specifically focused on private vehicles, due to the fact that hardly any commercial vehicle may be associated to students' home-to-school trips.

After extracting the data for the selected time frames in 2019 and 2021, relative deltas were calculated to compare the difference between the most meaningful indicators in each area. As a result, the deltas relevant to the schools' areas could also be compared to the deltas relevant to the Modena Municipality.

Finally, we estimated the FCD penetration rate both in 2019 and 2021, to evaluate its impact on the resulting key mobility indicators.

3.2.5. Results

3.2.5.1. Modena municipality

To the purpose of focalising on the changes directly related to schools' activities, mobility changes around schools were compared to the changes in the whole of the Modena Municipality, whose FCD were analysed specifically to build a baseline for comparison. As previously stated, the municipality's FCD were analysed focusing between 7 and 9 am, as such time slot is the most relevant to schools-related mobility, being 8:00 am the start time for lessons for all the 3 selected schools.

Table 20 reports the number of distinct private probe vehicles detected within the municipality of Modena between 7 and 9 am, averaged from Monday to Saturday over the time frames 9-29 November 2019 and 8-28 November 2021, and the resulting delta between 2019 and 2021.

Table 18 - Average daily distinct private probe vehicles (Monday to Saturday, 7-9 am) within Modena Municipality

Area	Daily average 2019	Daily average 2021	Delta 2021/2019
Modena Municipality	685.8	632.9	-8%

Results show that, within the Modena Municipality, the number of distinct private probe vehicles detected in 2021 is 8% lower than in 2019.

In addition, we also calculated the variation of the total distance covered by all the private probe vehicles in the same time frame, and also the average distance covered per vehicle, to the purpose of detecting if such variations reflected that of the number of distinct vehicles (Table 20). The results

show that the total distance travelled by private probe vehicles in 2021 increased by 14% on an average day between Monday to Saturday between 7 and 9 am, and that the average travelled distance per vehicle increased by 22%. Thus, in 2021 were detected 8% fewer private probe vehicles than in 2019, but the total distance travelled by the detected vehicles increased by 14%.

Table 19 – Deltas 2021/2019 of the average of total distance covered and distance per vehicle relative to private probe vehicles (Monday to Saturday, 7-9 am) within Modena Municipality

Area	Total distance (delta 2021/2019)	Distance per vehicle (delta 2021/2019)
Modena Municipality	+14%	+22%

3.2.5.2. Schools' areas

The FCD detected within the 3 identified schools' areas were analysed focusing between 7 and 9 am, as such time slot is the most relevant to schools-related mobility, being 8:00 am the start time for lessons for all the 3 selected schools.

Table 20 reports the number of distinct private probe vehicles detected within each of the 3 schools' areas between 7 and 9 am, averaged from Monday to Saturday over the time frames 9-29 November 2019 and 8-28 November 2021, and the resulting delta between 2019 and 2021.

Table 20 - Average daily distinct private probe vehicles (Monday to Saturday, 7-9 am) within the schools' areas

Area	Daily average 2019	Daily average 2021	Delta 2021/2019
Selmi and Corni	10.3	9.2	-11%
Wiligelmo and Guarini	19.7	19.0	-3%
Cattaneo-Deledda	8.6	8.7	+1%

Results show that in 1 of the 3 schools' areas the number of distinct private probe vehicles detected in 2021 is around 1% higher than in 2019, whereas in the other 2 schools' areas the number decreased. Within the area where the number decreased, only that of Selmi and Corni (-11%) decreased more (and only slightly so) than that of the whole Modena Municipality (-8%), whereas in the Wiligelmo and Guarini's area the extent of the decrease is considerably less noticeable (-3%) when compared to the whole Modena municipality (-8%).

3.2.5.3. FCD penetration rate

Connected vehicles that provide FCD are effectively transformed into moving sensors, which distinguish them from other data sources traditionally used for traffic prediction such as fixed traffic detectors (e.g., induction loops and traffic cameras). The latter, contrary to FCD data, provide information about the total traffic, even if only relevant to the road section where the detectors are deployed. In general, however, it is yet unclear how much FCD data is necessary for traffic estimations and predictions,

considering that not all the vehicles can be equipped with FCD devices such as GPS, smartphones, V2X onboard units, and considering that these devices may not always actively transmit traffic data[15].

As previously mentioned, the FCD data analysed in this study might be used as a basis to estimate traffic within the case study areas, which means we have to first determine how many vehicles the employed FCD data actually represent. To this purpose, assuming that the probe vehicles are uniformly distributed across the network—even if this is not realistic in many cases—we calculated the ratio of the probe vehicles (FCD penetration rate), as suggested by Nagle and Gayah[16]. More specifically, Nagle and Gayah suggested to use such ratio to estimate network-wide variables from FCD data, also proposing to acquire the ratio by dividing the number of vehicles tracked by GPS in the analysis area for a specific time period to the number of vehicles that crossed the fixed traffic detectors in the same area and period. Traffic density can be then estimated by multiplying the number of vehicles detected with FCD in a specific area by the reciprocal of the penetration rate of the FCD devices.

Although the FCD penetration rate can vary in space and time, it must be noted that the mobility indicators calculated in the previous sections were averaged over a period of three weeks both in 2019 and 2021, thus limiting the impact of temporary variations in the FCD penetration rate and, especially regarding the indicators calculated for the Modena municipality, rate variation in space were smoothed out by the considerable extension of the area of the analysis.

Given the previous considerations, we estimated the 2019 and 2021 FCD penetration rate related to the area under study on the basis of the number of vehicles that crossed the fixed traffic detector with identification number 328, located around 3.5 km south-west of the 5 schools under investigation on SP486 road (see Figure 3-31), on the peak day of November 2019 and November 2021 (13/11/2019 and 11/11/2021)[17].

To determine the FCD penetration rate we identified all the trips that crossed the fixed traffic detector on the monitored road section by analysing on map the private probe vehicles' GPS positions in chronological order. We then divided the number of identified trips by the traffic detected by the fixed traffic detector, thus estimating the FCD penetration rate both in 2019 and 2021 (see Table 21).

Table 21 – Estimation of the 2019 and 2021 FCD penetration rate for private vehicles on the monitored SP486 road section

Year	Detected traffic	FCD traffic	FCD penetration rate
2019	26,294	195	0.85%
2021	25,389	184	0.82%

[15] Mena-Oreja, J., & Gozalvez, J. (2021). On the Impact of Floating Car Data and Data Fusion on the Prediction of the Traffic Density, Flow and Speed Using an Error Recurrent Convolutional Neural Network. IEEE Access, 9, 133710-133724.

[16] Nagle, A. and V. Gayah, Accuracy of network-wide traffic states estimated from mobile probe data. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2421, 2014, pp. 1–11.

[17] The real traffic data used for the estimation of the FCD penetration rate is publicly available on the Emilia-Romagna Web portal "Flussi online" (https://servizissiir.regione.emilia-romagna.it/FlussiMTS/)
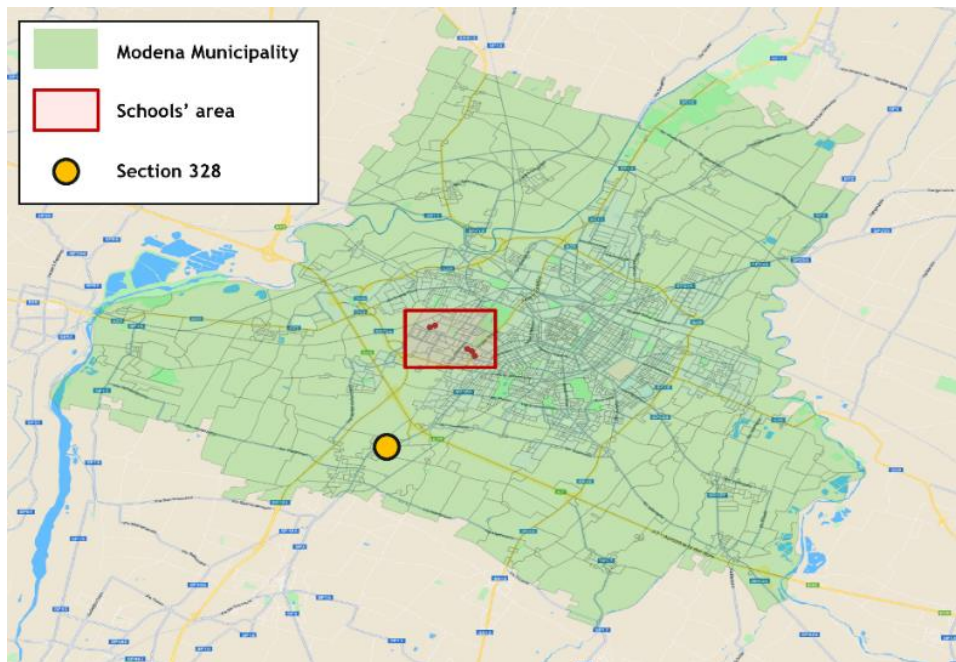
Figure 3-31: Location of the fixed traffic detectors on road SP486 with respect to the schools' area

The difference between the estimated FCD penetration rates in 2019 and 2021 does not appear to be significant. This suggests that the deltas calculated in the previous sections between the number of detected private probe vehicles in the 3 schools' areas and the Modena Municipality in 2019 and 2021 could effectively reflect the deltas between the real traffic densities in the same areas, even if it is not possible to draw such a conclusion from the sole comparison of the estimates in one road section.

3.2.6. Discussion

In this section, we discuss the results of the FCD analysis and investigate the possible reasons behind the difference between the mobility indicators calculated within the Modena Municipality and the 3 selected schools' areas, thus trying to answer the research questions introduced at the beginning of this chapter.

In the Municipality of Modena, the decrease in the number of detected distinct private probe vehicles from November 2019 to November 2021 is around 8% and, therefore, noticeable. However, 2 out of the 3 schools' areas under investigation, namely Wiligelmo and Guarini's area and Cattaneo-Deledda's area, do not show a similar significant variation between the two years (-3% and +1% respectively). This would suggest that the traffic density around schools in November 2021 grew back to the traffic density characterizing the period before the COVID-19 pandemic. Nevertheless, 1 out of the 3 schools' areas, namely Selmi and Corni's area, shows a significant decrease in the number of detected private probe vehicles in 2021 when compared to 2019 (11%), suggesting a noticeable decrease in private vehicles traffic density within such area. This decrease is even higher than that detected within the whole of Modena Municipality.

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Table 22 - Average daily distinct private probe vehicles (Monday to Saturday, 7-9 am) within Modena Municipality and the 3 selected schools' areas

Area	Daily average 2019	Daily average 2021	Delta 2021/2019
Modena Municipality	685.8	632.9	-8%
Selmi and Corni	10.3	9.2	-11%
Wiligelmo and Guarini	19.7	19.0	-3%
Cattaneo-Deledda	8.6	8.7	+1%

As the results from Selmi and Corni's areas differ considerably from those obtained around the other schools' areas, we further investigated the local context to find possible reasons that could explain such difference.

Selmi and Corni's 11% decrease in distinct private (probe) vehicles could be due to many factors, or a combination of them. Among the various possible reasons, one could be that of an increased use of personal mobility vehicles, such as e-scooters and bikes/e-bikes, also considering that a nearby brand-new bicycle route was inaugurated at the beginning of October 2021—just one month before the time frame investigated in 2021— which effectively connect Selmi and Corni schools to the Central Station in a very convenient away. Such infrastructure could have led many citizens which regularly move to or from the areas crossed by the cycling route—thus including the Selmi and Corni's students—to rely on personal mobility vehicles instead of private ICE vehicles.

In addition, we must highlight the results concerning the total distance travelled by private probe vehicles in 2019 and 2021 in the Municipality of Modena (Table 23). As previously reported, the total distance travelled by the detected vehicles increased by 14%, with a 22% increase in the average travelled distance per vehicle, but in 2021 were detected 8% fewer private probe vehicles than in 2019. These results suggest that in 2021, even if the number of private vehicles was lower than in 2019, not only each of these vehicles covered a longer distance, but they all together also travelled a longer distance (14% variation). This might have led to a higher traffic density within the Municipality of Modena on the whole.

Table 23 – Deltas 2021/2019 of the average of total distance travelled and distance per vehicle relative to private probe vehicles (Monday to Saturday, 7-9 am) within Modena Municipality

Area	Total distance (delta 2021/2019)	Distance per vehicle (delta 2021/2019)
Modena Municipality	+14%	+22%

It must be underlined that hypothesis such as the one reported previously are based on the results from the FCD Analysis, and thus should be further verified with real traffic density data since, as previously stated, the FCD penetration rate relative to the analysed dataset is slightly lower than 1% and could also vary considerably in space and time. Nevertheless, the FCD analysis provides interesting information which can be leveraged to further investigate the local context and the related changes in traffic density.

3.3.   FCD and Survey Analysis: Grounds for comparison

Concerning potential grounds for comparison between the COVID-19 survey and the FCD analysis, it is first necessary to identify the survey and FCD results that are relevant to the same - or, at least, the most similar - data sources. To this respect, it must be noted that all the results obtained from the FCD analysis concern private vehicles and, in particular, cars; moreover, the FCD dataset used in the analysis contains only data from the municipality of Modena, which is an Italian city.

Consequently, we compared the COVID-19 survey results relevant to the Italian sample, focusing on the information related to cars; in particular, answers to the question on the frequency of use of different modes of transport showed that cars are being used more frequently after the pandemic. This result appears to reflect the FCD analysis results regarding the municipality of Modena, as the reported data showed that the total distance travelled by the detected vehicles increased by 14% on average from Monday to Saturday between 7 and 9 am, with a 22% increase in the average travelled distance per vehicle. To further investigate this aspect, we also extended the FCD analysis to determine the average over a week (and 24 hours a day), finally obtaining 3% and 14% increases, respectively.

These results seem to confirm the increase in the frequency of car use reported by the COVID-19 survey even with the FCD analysis. Regarding this aspect, it must also be noted that answers to the question "Did Covid-19 influence your way of travelling in the post-pandemic period?" show that the variation in the frequency of use appears to be a more pronounced pandemic effect than the change in the mode of transport.

4. Conclusions

In this chapter, the main results emerged in the definition of the "how to" guide to implement the different services in rural and peripheral areas will be summarised, also considering the impacts of the COVID-19 pandemic on the transport and mobility sector and the results of studies carried out.

Regarding the practices pointed out (chapter 2) more common points can be highlighted. In particular, the analysis outline that implementing a good rural and peripheral transport service mainly needs:

- taking into account the whole system, in order to develop integrated solutions;
- involving the stakeholders in a continuous way and starting from the initial phase of the improvement action;
- assessing customer expectations, analysing competitive strengths and weaknesses, and aligning customer expectations with service capabilities;
- launching a good promotion campaign to make people aware of the service;
- recurring monitoring to evaluate the service;
- enhancing the centrality of clients, by satisfying their needs and tailoring services to particular market segments;
- providing technological tools to support implemented solutions;
- making the best use of available resources.

Furthermore, wherever possible (e.g. for the implementation of DRT services in countries where this is legally possible), the involvement of volunteers and associations is a strong point to focus on.

Concerning the differences of the types of the practices examined, one of the main ones concerns the field of applicability of the solutions: while DRT services and the community car sharing scheme are typical of low demand areas, the other types of services are also developing in urban contexts. How to implement these types of services will be practically similar. The main changes concerns the resources available and more generally the territorial context, which will lead to the development of ad hoc solutions for each specific need.

Another difference relates to the extent to which these solutions aim to improve mobility from a multimodal perspective: some solutions are (or are related to) a small component of the travel system, while others aim to manage it as a whole, such as some apps. Only the car sharing community scheme is the service that deviates the most from a vision of service integration.

Regarding the main differences of the types of the practices examined, it is also advised to keep in mind that the fear about crowdedness emerged as an important driver that weight on the modal choices. In this regard, some useful tools could help to mitigate this fear, for instance:

- Finding a way to inform users about the current level of crowding. It is possible through luminous panels inside each transport service showing the number of free seats of each service, or also through app with real-time vehicle geolocalization and updates;
- DRT services like on-call taxis could be appreciated because they inherently provide less crowding;
- It is also possible to think about differentiated price ranges, depending on the time of day and the expected congestion of the means of transport, in order to distribute the population in the schedules and therefore reduce the crowding rate of vehicles;

Furthermore, the open answers of the survey also revealed the need to integrate apps and services, that is, to have a single comprehensive solution that can help the traveller in each need of his local trip. Services like real time tracking, showing free seats, showing ETA, purchasing tickets via app, enabling contactless payments are really appreciated.

Future decision makers are advised to integrate E-apps, infomobility, also advertising them if they exist, and add features that allow them to monitor and track each mobility solution in real time.

As a whole, with a view to sustainability, it is also important to consider all slow mobility solution integrating them in a MAAS service. To this respect, multimodal travel information services could be fine-tuned to suggest itineraries which involve using bicycle routes where also folding e-powered personal mobility vehicles can be used, thus leading to a more environmentally-friendly mobility - in fact, most public transportation services do allow passengers to carry their electric scooters on buses.

Loyalty programs could be a great idea to encourage the use of the public service. They can also be useful for encouraging the development of good practices, for example by encouraging people to post photos on social networks of compliance with the rules, they can earn points that allow discounts on tickets / season tickets and at the same time being made aware.

Finally, according to both the COVID-19 survey and the FCD analysis, it seems that a significant effect of the pandemic, at least within the Italian context, has been that of an increase in the frequency of the use of cars, especially among those who already had one.

Nevertheless, the peculiar case of Selmi and Corni schools in Modena within the FCD analysis seems to suggest that the nearby new bicycle route impacted the mobility around the area by causing a reduction in the use of cars. These two results are not to be necessarily considered as antagonistic, since they both suggest that the overall effect of the pandemic was that of leading road users to prefer private vehicles over public transport, as also confirmed by the COVID-19 survey results.

In addition, such results could suggest that, when proper infrastructure is made available to the public (e.g. a dedicated bicycle route with a more convenient itinerary than that available to private vehicles) road users might decide to use more environmentally-friendly personal mobility vehicles than ICE vehicles.

This virtuous potential effect could also be amplified by the increasing use of e-powered personal mobility vehicles in European cities.[18]

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[18] *https://www.mdpi.com/2071-1050/12/1/273*

Annexes

A. Youmobil Toolbox

Night trains on Zagreb Main Station – Dugo Selo line

<table>
<tr><td rowspan="9">General information</td><td>Name</td><td>Night trains on Zagreb Main Station – Dugo Selo line</td></tr>
<tr><td>Youmobil Project Partner</td><td>HZPP</td></tr>
<tr><td>Type of solution</td><td>an innovative service of night trains going from Zagreb to Dugo Selo (and back), accompanied by the systematic display of timetable information in the sales application, mobile application and online application</td></tr>
<tr><td>Start date
End date</td><td>11/7/2020 – 11/7/2021</td></tr>
<tr><td>Where (city, country)</td><td>Continental Croatia - Zagreb County</td></tr>
<tr><td>Type of context (urban, suburban, rural)</td><td>Small town and surroundings (suburban and rural area)</td></tr>
<tr><td>Target users</td><td>young people (high-school students, university students and young employed adults) that have a need to go from Zagreb to the rural area of Dugo Selo in the late hours due to work, culture, entertainment and similar reasons</td></tr>
<tr><td>Description</td><td>HŽPP introduced an innovative service of night trains going from Zagreb to Dugo Selo (and back), accompanied by the systematic display of timetable information in the sales application, mobile application and online application. The solution itself is a continuation of an existing process in HŽPP when drafting timetable and preparing the data for online display and usage.

The pilot started on 11th of July 2020 and ran for a year, until the 11th of July 2021.

In the 2019/2020 timetable, on Saturdays and Sundays, the train on the route Zagreb - Dugo Selo - Ivanić-Grad departed from Zagreb at 0.30 AM, with stops in Dugo Selo at 0.56 am and Ivanić-Grad at 1.17 AM. In the opposite direction, the train left Ivanić-Grad at 1.31, from Dugo Selo at 1.53 and arrived in Zagreb at 2.19.

In the timetable 2020/2021, on Saturdays and Sundays, the train on the route Zagreb - Dugo Selo - Ivanić-Grad departed from Zagreb at 0.28 AM, with stops in Dugo Selo at 0.53 and Ivanić-Grad at 1.16 AM. In the opposite direction, the train from Ivanić-Grad departed at 1.26, from Dugo Selo at 1.50 and arrived in Zagreb GK at 2.16.

The pilot communication was facilitated by smart solutions available to HŽPP and stakeholders from Dugo Selo, via social</td></tr>
</table>

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		media, intranet and websites as well as local media and national media.
	Previous experiences on which it is based	Tourist trains are organized for certain events and regular timetable is done according to local community suggestions, but these were the first trains in regular timetable that were introduced based on a certain, limited, demographic behavior.
Stakeholders' engagement	How is the solution financed?	Infrastructure costs (85% EU funds, 15% HŽPP): around EUR 14.500 This budget is covering external service costs during the 1-year pilot implementation. The external services consist of infrastructure fees (train track, electricity, train formation, delays, use of passenger stations). Other costs (engine, personnel, depreciation etc.): HŽPP
	Stakeholders involved	HŽ Infrastructure Ltd – timetable planning, (paid) support with train operations, support with financial administration City of Dugo Selo – participation in workshops, online course, joint pilot promotion
Accessibility	When is it available? When does it operate?	The timing of the preparation activities was carefully planned to be in line with the start of timetable 2019/2020, so all the activities started in the very early stage of the project, for the pilot to be launched in summer 2020. The operation started on 11/07/2020 and lasted until 11/7/2021, on weekends. ICT part of the pilot, displaying data solution on all available platforms was available in June 2020, before the actual service started.
	Is it a multimodal solution? Why?	The service itself isn't multimodal because it is a train service, but users could buy joint tickets for train and public transport in Zagreb, or for train and bike, and use them in night trains.
Technologies	ICT solution (smartcard, on-board technologies, panel information, etc.)	The innovative character of the pilot mostly concerns the service. It is focused on creating customer-oriented timetable with online information provision (website). The information is also displayed in real-time in mobile application, but it proved unreliable at times, because it didn't take into consideration infrastructure works that started in Dugo Selo railway station (reconstruction and construction of the second gauge done by HŽ Infrastructure).
	App (real time info, payment, booking, etc.)	No new apps were developed, but the existing systems adapted to display data for the new service – real time info, ticket purchase, timetable display.
Tariff schemes	Fares/Pricing models	The ticket price on line Zagreb GK — Dugo Selo is 14,30 Kuna (about 1,90 Euro), per person. Monthly ticket price for students (for all trains on line Zagreb GK – Dugo Selo and every public transport line in the City of Zagreb) is 305,00 Kuna (about 40,60 Euro).

Evaluation	Does it offer some awards/benefits?	n/a
	Number of passengers per trip	15
	Number of passengers per month	120
	Number of youths involved in the youth workshops (D.T1.4.1) and raised awareness for the pilot service	71
	Young users' level of satisfaction of the YOUMOBIL service collected during the youth workshops	32 answers, average score (for railway transport in Croatia in general) is 3,2/5, all the respondents expressed their wish that the service of night trains continued
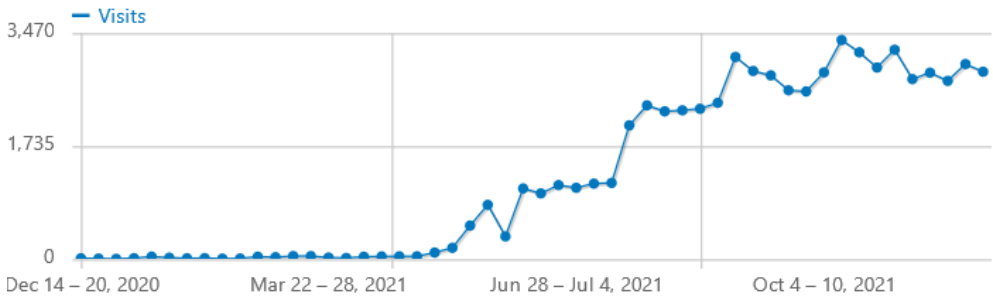
INSA YOUNG App

General information	Name	INSA YOUNG App
	Youmobil Project Partner	MLV NASA
	Type of solution	app
	Start date End date	03/2021 not determined, not before 12/2022
	Where (city, country)	Saxony-Anhalt
	Type of context (urban, suburban, rural)	The information system behind INSA YOUNG has public transport information for the whole federal state of Saxony-Anhalt. Therefore, this entails urban, suburban and rural areas in Saxony-Anhalt.
	Target users	Young people between the ages of 13 and 24
	Description	INSA YOUNG is a public transport information app for young adults living in rural areas of Saxony-Anhalt.
	Previous experiences on which it is based	INSA YOUNG is based on an existing app called INSA. This allowed in INSA YOUNG to benefit from a very good background system which large amounts of data that can be portrayed for users in INSA YOUNG.
Stakehol ders'	How is the solution financed?	The development of the app and the maintenance costs until 31/12/2021 came to a sum of 200.013,70 EUR (incl. VAT). YOUMOBIL financed 58.500,00 EUR and the remaining sum of 141.513,70 EUR was financed by the federal state Saxony-Anhalt.

	Stakeholders involved	To evaluate the requirements of a public transport information app for teenagers and young adults, workshops with year 9 students (aged 14 – 15) were conducted in Wolmirstedt, Dessau and Querfurt.
		Furthermore, the development of INSA YOUNG was overseen by the Nahverkehrsservice Sachsen-Anhalt GmbH (NASA GmbH). NASA GmbH is a fully owned subsidiary of the German Federal State of Saxony-Anhalt. It plans, controls and finances the regional rail passenger transport service. On behalf of Saxony-Anhalt, NASA GmbH closely cooperates with transport associations, PTAs, railway transport companies, local authorities and road transport companies. NASA GmbH coordinated the development process with the developer HaCon Ingenieursgesellschaft mbH.
Accessibility	When is it available? When does it operate?	The app was published in March 2021 in the form of an Android app (Google Play Store) and an iOS app (App Store). It therefore is usable on two operating systems. The app also adapts to the use of tablets and can be used in German and English.
	Is it a multimodal solution? Why?	No
Technologies	ICT solution (smartcard, on-board technologies, panel information, etc.)	Through the client solution basic functions in INSA YOUNG are linked to INSA. This means there is a connection between the two apps. When these basic functions are altered in INSA they also cause an alteration in INSA YOUNG. In terms of bug fixing this can be useful, as the maintenance of the system is not as tedious. However, the impact of alterations for both applications needs to be considered when altering the basic functions.
		For the development of the student summer holiday checking function, attributes had to be added to stations in the background system, that allowed the app to assess whether the stations in question are within the area of validity of the summer ticket.
	App (real time info, payment, booking, etc.)	INSA YOUNG allows users to easily find their next connection, whether this is from one transport stop to the next or door-to-door. Via the app, users are able to save their connections, making them available offline. If the journey is under 10 km long, in addition to the public transport connections, a bicycle route is shown.
		For the student summer holiday ticket, known as "Schülerferienticket", a checking function was included. The ticket is valid in all of Saxony-Anhalt and even in some areas outside of the federal state during the summer holidays. In certain places such as Wolfsburg the ticket is not valid in all forms of public transport. To enable the user to easily and quickly check where the ticket is valid, the "Schülerferienticket-Check" was included in INSA YOUNG.
		The map functionalities have been expanded by including points of interests as well as a reachability layer, that shows the user which areas are reachable by public transport within the next 20 minutes. Moreover, the map includes a "live-map" function, that shows the movement and position of buses, trams and trains in the area.
Tariff sche	Fares/Pricing models	-

Evaluation	Does it offer some awards/benefits?	-
	No. app Download	1666 Android, 1048 iOS
	No. Ratings and average	Google play Store: 4,4 out of 5
	No. Visits	 (Visit = If a visitor opens the app for the first time or if they visit the app more than 30 minutes after their last app view, this will be recorded as a new visit) Maximum = 3359 visits in week 41 (11th until 17th October 2021)
	number of users using a specific function	• Summer holiday ticket check function was used 789 times (max. no. 396 in July 2021) • Take-me-there function was used 1468 times • Map (incl. live map) was opened 27 747 times

Modena night taxi bus line

General information	Name	Modena night taxi bus line
	Youmobil Project Partner	aMo
	Type of solution	a mix between DRT services and normal line services
	Start date End date	December 10, 2021 September 30, 2022 (further extension are possible)
	Where (city, country)	Modena – Emilia-Romagna, Italy
	Type of context (urban, suburban, rural)	A big urban centre with small villages and rural areas surrounding
	Target users	Young people who live in the peripheral and rural areas around Modena
	Description	The pilot project of aMo is a new service, which is a mix between DRT services and normal line services.

Three new lines (see image below) will be established which will be carried out by the Modena Taxi Cooperative CoTaMo.

The lines will be active on Friday and Saturday evenings and the trips will be performed only in case of reservations; to optimize the use of economic resource in case there are no reservations on a trip, it will not be done.

Reservations and related payments will be managed by a new app (Android, iOS and Huawei stores) expressly developed for the Project.

Travel routes are also optimized according to the stops that have been booked in order to minimize the number of kilometers traveled by taxis needed to perform the service.

The network of new lines will connect the following hamlets to the city center of Modena:

• BLU Line: will connect the hamlets of Ganaceto, Lesignana, Villanova and Albareto to the Center;

• RED Line: will connect the hamlets of Marzaglia, Cittanova, Cognento, Baggiovara to the Center;

• GREEN Line: will connect the hamlets of Portile, Paganine, S.Donnino and S.Damaso to the Center.

The number of lines, trips and stops may vary depending on the results that will occur during the duration of the pilot project as the software has been implemented in order to manage different scenarios.

For further details more information are available in the dedicated web site youmobil-modena.eu

	Previous experiences on which it is based	The pilot is based on the experiences gained in the management of non-standard services (DRT and night Taxibus) and on the experiences gained in the European projects RUMOBIL and RegiaMobil.
Stakeholders' engagement	How is the solution financed?	These costs are borne by the YOUMOBIL Project. Part of the costs will be covered, instead, by the payment of the trip by those who will use the service. The costs incurred at the moment are equal to € 20,000 for the development of the booking app and an additional cost of about € 15,000 is estimated for the execution of the service. Since it is planned to keep the service active even after the end of the YOUMOBIL project, economic resources will be made available by aMo to be able to carry it out until the end of September 2022 but further extensions are not excluded if the service is used satisfactorily.
	Stakeholders involved	• Young people living in the rural areas around Modena who have been involved in targeted meetings and workshops in order to gather information on their needs; • Young people who participated in the Interrail initiative who provided them with proposals also based on the travel experience made within the YOUMOBIL project; • The Municipality of Modena, which provided its evaluations and endorsement of the pilot project.
Accessibility	When is it available? When does it operate?	The new service will be available every weekend on Friday and Saturday evenings. Two services will initially be active from the hamlets towards the center at 21:00 and 00:00 and one from the center to the hamlets at 23:30. The service will be carried out by taxi and the availability of seats will be that provided for by the legislation in force.
	Is it a multimodal solution? Why?	No, it is not a multimodal solution.
Technologies	ICT solution (smartcard, on-board technologies, panel information, etc.)	In order to manage the pilot project, a new ICT tool was introduced which allow users to book and pay for services while the backend will optimize the resources necessary for its performance. It will also allow accurate reporting of the services performed: number of trips performed, number of taxis used, kilometers traveled, number of passengers transported, origin and destination of the trips, etc. These data will make it possible to modify the available service in order to better meet the needs of users; the system is in fact completely parameterized, thus allowing at any time its modification, extension and implementation in areas other than Modena.

	App (real time info, payment, booking, etc.)	An app has been developed to book the trip of interest selecting the line, the origin and destination stops and paying for it with different fares depending from age and the ownership of a public transport season card.
		In addition to the app, a backend system will be made available to configure the main features of the new service, which are:
		• stops • routes • rates • timetables and trips available • service calendar • interface with the taxi booking system
		The development cost of the entire system was of € 20,000.
Tariff schemes	Fares/Pricing models	Fares are higher than those of normal public transport services but considerably lower than those of taxis.
		They range from € 3.00 for a single journey up to a maximum of € 7.00 for a round trip and depend on age and whether or not the user is a subscriber of a public transport season card.
		It is possible to pay trips only through the app.
	Does it offer some awards/benefits?	Fares are discounted for those under 27 and for those who have a public transport season card
Evaluation	Downloaded apps	63 downloaded app
	No. of trips	38 trips
	No. Visits YOUMOBIL site	326 different visitors

POSEIDON App and IDS JMK web site

	Name	POSEIDON App and IDS JMK web site
General information	Youmobil Project Partner	KORDIS
	Type of solution	Improving information services on IDS JMK website and in the POSEIDON app, which is an official ticketing app for the South Moravian Region
	Start date End date	1.4.2019 31.03.2022
	Where (city, country)	South Moravian Region

	Type of context (urban, suburban, rural)	South Moravian Region, which includes all types of territory – urban, suburban, rural
	Target users	Young public transport users (but not only, the information services and the app are used by people of all age, however foremostly by those people who affiliate to ICT and usage of mobile app. These are predominantly young users.
	Description	The pilot action is focused on improving information services and the app POSEIDON, which is an official ticketing app for the South Moravian Region. The pilot is based on young travelers' declaration that no new app is needed, but improvement on the existing one could be a good solution. Several upgrades of the application were provided to improve the user-friendliness and popularity of the app. In particular, information on public transport services such as delays, irregularities in operation, frequently bought tickets were rearranged in one dashboard page. Further rearrangement of information was done on the IDS JMK website, where information was bundled according to opinions resulting from workshops with youth. To enrich the communication with passengers, two chatbots were implemented. These new web tools are able present a conversation with passengers and answer predefined frequently asked questions.
	Previous experiences on which it is based	The pilot action was implemented according to opinions youths declared during specific workshops. KORDIS have experience from previous version of the website and the POSEIDOIN app.
Stakeholders' engagement	How is the solution financed?	Maintenance of all information services will be financed from KORDIS budget after finalization and evaluation of the pilot action.
	Stakeholders involved	The workshops with young public transport users were held and software developers were hired to respond on youth's needs and upgrade the information services on website and in the POSEIDON app.
Accessibility	When is it available? When does it operate?	The app is already available. It operates 24 hours a day, 365 days a year.
	Is it a multimodal solution? Why?	Yes, the information services regard whole IDS JMK which covers regional trains, regional buses and urban public transport in one city and eight smaller towns. On-demand services on several bus lines in peak times are also included.
Technologies	ICT solution (smartcard, on-board technologies, panel information, etc.)	Application uses ICT services owned and operated by KORDIS – e.g. real time vehicle positioning, ticketing server, etc.

	App (real time info, payment, booking, etc.)	Ticketing from prepaid account in the app, online vehicle positions, changes and diversions in public transport, updated information on unexpected situations in Public Transport Services, information on free parking capacity on several P+R car parks.
Tariff schemes	Fares/Pricing models	No special pricing for tickets is offered via the mobile app. Prior usage of bank cards as identifier for ticketing the advantage of the app was to make purchase of tickets available 24/7 independently of the place (even from small villages without no railway station or news stands), however passengers are nowadays getting used to paying by bank cards for tickets.
	Does it offer some awards/benefits?	
Evaluation	No. Download	number of app downloads since the upgrade of the app has been done - 3,000
	No. Ratings and average	1 128 ratings, average 3 stars
	No. Visits/	Not available (number of tickets sold through the app - 80 000 tickets sold, the number of tickets sold increased by 60% compared to the number of tickets sold during the lockdown.)

Loyalty programme "Young Traveller"

	Name	loyalty programme "Young Traveller"
General information	Youmobil Project Partner	Mazowieckie Voivodeship (Mazovia Region)
	Type of solution	Digital loyalty program via card and web account
	Start date End date	November 18, 2020 November 30, 2021
	Where (city, country)	Mazowieckie Voivodeship, with the exception of the Warsaw Metropolitan Area
	Type of context (urban, suburban, rural)	Regional urban centre/small town and surrounding/Sprawl rural district
	Target users	People between 13 and 26 years of age (youth from primary and secondary schools, university students, young working people) whos have an electronic ticket - Mazowiecka Card and use the services of the online ticket sales system of Koleje Mazowieckie.
	Description	The programme is addressed to the youth from 13 up to 26 years who regularly make use of Mazowieckie Railways services (on the basis of a monthly ticket). If you do not have Karta Mazowiecka (Mazowiecka Card) yet, apply for one, activate the loyalty programme and collect points when purchasing each monthly ticket via https://bilety.mazowieckie.com.pl/ website:

		• Activate your participation in the loyalty programme on your user account. • Collect points for purchasing monthly tickets on-line, without leaving home. Redeem points, reduce the purchase price of next monthly tickets.
	Previous experiences on which it is based	Project is an innovative solution when it comes to loyalty programs in rail transport. No other passenger carrier in Poland offers a loyalty program, which allows you to earn points for purchasing a ticket and exchange them for discounts when buying another one.
Stakeholders' engagement	How is the solution financed?	The cost of the introduced modifications to IT systems amounted to EUR 10,700. Sources of financing: 85% European Funds, 15% funds from the budget of the Mazowieckie Voivodeship.
	Stakeholders involved	Koleje Mazowieckie, our main stakeholder of the project. The loyality program is closely related to the on-line ticket sales system and the electronic ticket - the Mazowiecka Card, which is owned by Koleje Mazowieckie.
Accessibility	When is it available? When does it operate?	The program was available on the website https://bilety.mazowieckie.com.pl/youmobil during the implementation of the pilot project.
	Is it a multimodal solution? Why?	not applicable
Technologies	ICT solution (smartcard, on-board technologies, panel information, etc.)	• a new tool in the field of ticket sales, • belonging to a dedicated program, • collecting points with which you can partially pay for the purchase of further tickets, • surveys and opinions on the idea of the project and the operation of the loyalty program itself, advertising and experience of suppliers related to the participation in the project.
	App (real time info, payment, booking, etc.)	not applicable
Tariff schemes	Fares/Pricing models	The basic tariff of the Mazowieckie Railways with statutory and commercial discounts for school children and young adults up to the age of 26.
	Does it offer some awards/benefits?	The collected points for the purchase of a ticket could be exchanged for discounts for the purchase of another monthly ticket
Evaluation	No. Download	The on-line ticketing system is not app based. The only possible measure to define is the number of registered users.

	No. users	69
	No. ticket sold	31
	No. points achieved	3101

Bummelbus

	Name	**Bummelbus**
General information	Type of solution	DRT
	Start date End date	June 2001 Ongoing
	Where (city, country)	North of Luxembourg
	Type of context (urban, suburban, rural)	Rural
	Target users	All adults in need of mobility for whatever activity (e.g. going to a doctor, a shop, restaurant, hairdresser, etc.). Also children willing to go to their sports training, music school, leisure activity, etc.
	Description	It is an on-demand transport service organised in the framework of professional driver training for people that are long term unemployed. Bummelbus is a comfortable, safe and flexible means of transport. Anyone can take advantage of this service for short-distance journeys, especially within the municipal territory and neighbouring towns / villages. Each inhabitant of a town where the service is active can call the service for a journey from his/her home to a destination in his/her town or an adjacent town (the point of departure can be anywhere within the coverage area, it does not have to be exclusively from home). The maximum distance is 35 km. The service is operated by 50 buses. Around 100 persons/jobseekers are employed in the service.
	Previous experiences on which it is based	-
	Source	http://www.fpe.lu/services/bummelbus/
Stakeholders' engagement	How is the solution financed?	The main financing source is the Ministry of Labour, it provides a 70% subsidy. The municipalities in which the service operates and the revenues from ticket sales provide the remaining 30%.
	Stakeholders involved	The service itself is organised by an association without a profit-making objective called "Forum pour l'emploi".

		The main body involved is the Ministry of Labour, Employment and the Social Economy which takes care of the main financing. Also municipalities are involved to promote the service. They also finance partly the service.
Accessibility	When is it available? When does it operate?	The general operating times are between 06.30h and 21.15h from Monday to Friday and between 06.30h and 17.15h on Saturday
	Is it a multimodal solution? Why?	The aim of the Bummelbus is a shared service in itself. It rather rarely brings people to a PT stop. It is however certainly not the aim to replace regular PT. (The aim is mainly to complement the regular PT, so to be a supplementary offer where the PT cannot cover the demand).
Technologies	ICT solution (smartcard, on-board technologies, panel information, etc.)	On the one hand side, there is the algorithm organising the allocation of reservations to routes. It goes in different steps with first a proposition done by the software. In the next step, it can be improved by the operators. There is on the other hand also a "tracking system" for passengers, especially for children. Thanks to a chip, children can be localised in real time when they are on the bus.
	App (real time info, payment, booking, etc.)	Bummelbus app is available from 2021. It allows users to book their trip 24/7 selecting the departure and arrival stops and the date of the trip. Through the app is also possible pay securely online.
Tariff schemes	Fares/Pricing models	The fare is from €2 to €6.50, depending on the length of the route (up to 35 km).
	Does it offer some awards/benefits?	-

DanubeScout

General information	Name	**DanubeScout**
	Type of solution	Website with journey planner
	Start date End date	2019 Ongoing
	Where (city, country)	Austria, Czech Republic, Hungary, Romania, Slovenia, Slovakia
	Type of context (urban, suburban, rural)	Rural context
	Target users	Al people living in the Danube Region and also tourists
	Description	It is a website (information service) that provides a comprehensive overview on travel information services in theDanube Region. Regional and local services are displayed for specific target groups like crossborder commuters and

		tourists. Also the Danube Region Journey Planner (DRJP) is accessible over the DanubeScout website.
		The aim of the service is to bring a tool for travellers and especially tourists who are going to visit the neighbouring regions in the Danube Region. DanubeScout helps them to travel easier and more comfortable by public transport in the Danube Region. The site contains information about different transportation modes, local transport services, Points Of Interest (POI), public transport maps, ticket prices and recommendations for easy and cheap connections between cities and regions.
	Previous experiences on which it is based	-
	Source	http://danubescout.eu/?lang=en
Stakeholders' engagement	How is the solution financed?	Previously funded by the European Regional Development fund, actually not known
	Stakeholders involved	Public transport authorities, public transport service providers
Accessibility	When is it available? When does it operate?	24/7
	Is it a multimodal solution? Why?	One of the objectives of Danube Scout is to promote multimodality. The Journey planner suggest to users multimodal solutions.
Technologies	ICT solution (smartcard, on-board technologies, panel information, etc.)	Website: by clicking on the city or region, users can obtain official links to tourist information, public transport maps, ticket prices and recommendations for easy and cheap connections between cities and regions. Applications containing information on local public transport are also suggested for each city and region. The website also contains links to local journey planners and to the cross border journey planner.
	App (real time info, payment, booking, etc.)	-
Tariff schemes	Fares/Pricing models	-
	Does it offer some awards/benefits?	-

Publicar

Gen	Name	Publicar

	Type of solution	DRT
	Start date End date	1995 Ongoing
	Where (city, country)	The service is available in 32 regions of Switzerland
	Type of context (urban, suburban, rural)	Rural areas
	Target users	All people living in rural areas
	Description	PubliCar is a fully flexible demand-responsive door to door minibus service in Switzerland. It was developed by the public transport operator PostAuto and aims especially at low density areas. The scheme is seen as complementary or as an alternative to traditional public transport. In each area, the service operates with different timetables (some services run only in summer, others offer night-time services) and different modalities (e.g. some services have to be booked in advance). Depending on the particular PubliCar area, the user will be collected from his front door, from an agreed boarding location or from a bus stop. All PubliCar vehicles offer free wi-fi on board and are suitable for people with limited mobility and wheelchair transport. Only PubliCar Vaud and PubliCar Appenzello are bookable via app and via phone, the other services can only be booked calling the call centre.
	Previous experiences on which it is based	-
	Source	https://www.postauto.ch/en/search/publicar
Stakeholders' engagement	How is the solution financed?	Public funding: Federal level, cantons
	Stakeholders involved	Swiss Post (operator), municipalities, cantons, federal administration
Accessibility	When is it available? When does it operate?	It depends on the area in which it operates: there are night services, summer services, services that are operational all year round, etc.
	Is it a multimodal solution? Why?	Flexible bus scheme with door to door service/ in some areas link to regular public transport services

Technologies	ICT solution (smartcard, on-board technologies, panel information, etc.)	All PubliCar vehicles offer free wi-fi on board and are equipped with a GPS system
	App (real time info, payment, booking, etc.)	Only PubliCar Vaud and PubliCar Appenzello are bookable via app and via phone. The apps are both operated by PostBus Ltd and have the following functionalities: • let you choose the departure or arrival time (for train connections or fixed times, it is suggested to select the arrival time) • enables reservations for several people • booked trips can be shared via whatsapp and other social media • enables payment of the surcharge by credit card (the PubliCar fare comprises a public transport ticket and the PubliCar surcharge) • shows where you are and the current location of the vehicle on the map • combines trips with similar travel destinations • informs you of delays through a push notification • generates a booking code for each order, which needs to be given to the driver upon boarding • provides an overview of earlier bookings; start and final locations can be copied into a new booking • allows you to be contacted if the driver isn't at the departure location at the agreed time
Tariff schemes	Fares/Pricing models	The PubliCar fare comprises a public transport ticket and the CHF 5.00 PubliCar surcharge per passenger and per journey. Otherwise there are also the following subscriptions: • Multi surcharge (27.50 CHF for 6 journeys) • Monthly pass (100 CHF) • Annual pass 900 (CHF)
	Does it offer some awards/benefits?	-

Rejseplanen

General information	Name	Rejseplanen
	Type of solution	MaaS
	Start date End date	2019 Ongoing
	Where (city, country)	Northern Denmark
	Type of context (urban, suburban, rural)	Rural
	Target users	All people living in rural areas
	Description	The aim of Rejseplanen is to help users/residents to plan their journeys from A to B while also making more options available –

		both public (trains, busses, metro, ferry, flight) and alternative (city cars, city bikes, ridesharing, etc). The main user group are young people and the middle-aged. Once the journey has been selected, the app shows the route to be taken with the different means of transport, the interchange stops, the travel times and finally the possibility of purchasing the tickets.
	Previous experiences on which it is based	It is based on MinRejseplan, a MaaS service developed in 2018 in the framework of MAMBA EU project (Interreg Baltic Sea Region).
	Source	http://www.rejseplanen.dk/webapp/
Stakeholders' engagement	How is the solution financed?	Regional transport authorities in Denmark
	Stakeholders involved	All the regional transport authorities in Denmark have founded a company, Rejseplanen A/S, which today own and run the application.
Accessibility	When is it available? When does it operate?	It is available 24/7.
	Is it a multimodal solution? Why?	It is a multimodal solution because allow the user to plan his trip using different means of transport, both public and private.
Technologies	ICT solution (smartcard, on-board technologies, panel information, etc.)	-
	App (real time info, payment, booking, etc.)	In Rejseplanen app/website the following functions are available: • trip planning (by selecting the departure stop, the arrival stop and the desired time, the system offers several alternatives on how to make the journey) • departure board (if the user selects a stop and a departure time, the board shows all the transport services that depart from there at that time) • book and buy ticket • real time traffic info
Tariff schemes	Fares/Pricing models	-
	Does it offer some awards/benefits?	-

Talybont Energy

<table>
<tr><td rowspan="10">General information</td><td>Name</td><td>Talybont Energy</td></tr>
<tr><td>Type of solution</td><td>Community car sharing</td></tr>
<tr><td>Start date
End date</td><td>2010
2013</td></tr>
<tr><td>Where (city, country)</td><td>The village of Talybont-on-Usk (Wales)</td></tr>
<tr><td>Type of context (urban, suburban, rural)</td><td>Rural</td></tr>
<tr><td>Target users</td><td>Anyone living in the local Talybont area, over the age of 24 years, is eligible to join the car sharing scheme.</td></tr>
<tr><td>Description</td><td>Talybont Energy is a not-for-profit limited company that aims to reduce the Talybont community's energy consumption and to maximise the conversion of the community's energy consumption to renewable sources.

Talybont Energy has sponsored a community car sharing project since 2010, with two vehicles which use alternative fuel (electric and vegetable oil).

Members pay for use of the vehicles online or via the village Post Office.

Users must travel to the village's community centre, Henderson Hall, to pick up and return the vehicle.</td></tr>
<tr><td>Previous experiences on which it is based</td><td>-</td></tr>
<tr><td>Source</td><td>https://talybontenergy.co.uk/</td></tr>
<tr><td rowspan="2">Stakeholders' engagement</td><td>How is the solution financed?</td><td>The main financing sources are:
Brecon Beacons Sustainable Development Fund
User membership and user charges</td></tr>
<tr><td>Stakeholders involved</td><td>Talybont Energy
Brecon Beacons Sustainable Development Fund
Henderson Hall (community hall which provides space for parking).</td></tr>
<tr><td rowspan="2">Accessibility</td><td>When is it available? When does it operate?</td><td>The car sharing service is available 24/7.</td></tr>
<tr><td>Is it a multimodal solution? Why?</td><td>The car sharing scheme is available to support mobility needs and to encourage households to consider alternatively fuelled vehicles. However, it is not explicitly stated that the main aim is to act as an interconnection with public transport.</td></tr>
<tr><td>Technologies</td><td>ICT solution (smartcard, on-board technologies, panel information, etc.)</td><td>Talybont Energy uses an online appointment scheduling service, SuperSaaS, to digitise convenient vehicle booking.</td></tr>
</table>

	App (real time info, payment, booking, etc.)	-
Tariff schemes	Fares/Pricing models	£25/annum membership. £18/day or £0.18/ mile for the vegetable oil fuelled vehicle. £2.50/hour or £0.05/mile for the electric vehicle.
	Does it offer some awards/benefits?	-

Taxibus

	Name	Taxibus
General information	Type of solution	DRT
	Start date End date	2017 Ongoing
	Where (city, country)	Genoa, Italy
	Type of context (urban, suburban, rural)	Rural
	Target users	All people living in rural areas
	Description	The Taxibus Demand Responsive Transport service was set up with the aim of rationalising the public transport system in areas of lower demand while continuing to guarantee public transport service coverage. Taxibus operates on 9 lines within the territory of the Municipality of Genoa. Taxibus is a "reservation-based" service, which means that only those journeys expressly booked by at least one customer are carried out. It is possible to book a trip for the same day, at least 30 minutes in advance. The AMT operator records the trip request in the system's database (departure and arrival stop, day and time of departure). The timetables and routes of the service are fixed.
	Previous experiences on which it is based	-
	Source	https://www.amt.genova.it/amt/trasporto-multimodale/taxibus/
Stakeholders' engage	How is the solution financed?	Ministry of the Environment and the Municipality of Genoa

	Stakeholders involved	AMT is the service provider RadioTaxi is the operator
Accessibility	When is it available? When does it operate?	It depends on the line, but all runs are operational on weekdays.
	Is it a multimodal solution? Why?	Yes, the terminus of Taxibus are located near some relevant bus stops.
Technologies	ICT solution (smartcard, on-board technologies, panel information, etc.)	The Taxibus service consists of an operations centre in communication with the taxi cars participating in the project, each of which has been equipped with an on-board device comprising the following devices: • an on-board logic system used to detect the position of the vehicle and to manage communications to and from the operations centre (with particular reference to the dispatching of booked trips); • a multi-user taximeter whose large display is used as a driver interface for displaying dispatched trips; • a luminous display, installed on the roof of the vehicle, indicating the destination of the trip.
	App (real time info, payment, booking, etc.)	The AMT app allow user to buy tickets online and to show the timetable and the route of all the Taxibus line.
Tariff schemes	Fares/Pricing models	To use Taxibus it is necessary to carry a valid and regular AMT ticket (1,50€).
	Does it offer some awards/benefits?	-

B. Questionnaire structure

Text of the survey

The COVID-19 emergency is causing a radical, long term change in the mobility ecosystem: new behaviours, new requirements, new regulations,... We are now in a *new mobility* scenario, which is still evolving and is characterized by a high uncertainty.

The long-term impacts of the pandemic will be visible for years to come, so the survey - created for the European Interreg Central Europe Project "YOUMOBIL" - allows us to collect information on how the experiences of the pandemic has impacted on the use of public transport.

Before anything, we would like your consent to participating in the survey:
1. I agree to take part in the survey and to having my responses anonymised in project deliverables and dissemination material
      o   Yes

General information

2. In which country do you live? [drop down menu]

3. In which region do you live? [open question]

4. The place where you live is located:
     o In an urban area
     o In a suburban area
     o In a rural area

5. Please indicate your age category
     o <15
     o 15-18
     o 19-25
     o 26-35
     o >35

6. Please indicate your gender
     o Male
     o Female
     o I prefer not to declare it

7. Do you have a driving licence?
     o Yes
     o No

8. Do you have a local public transport season ticket?

o Yes

o No

9.   Please select the vehicles you own:

     o Car

     o Motorbike/Moped

     o Bicycle

     o Electric scooter

     o Electric bicycle

     o I do not own any vehicles

10.   What degree of education do you hold?

     o Primary education

     o Secondary education

     o Vocational training degree

     o Higher education degree

     o I prefer not to say

     o Other [specify]

11.   Currently:

     o I work as an employee

     o I work as freelance work

     o I am a student

     o I do not work

     o I prefer not to say

Mobility habits

12.   How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Prior to COVID-19 outbreak**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	☐	☐	☐	☐
Moped/Motorcycle	☐	☐	☐	☐
Bike	☐	☐	☐	☐
Bus	☐	☐	☐	☐
Train	☐	☐	☐	☐

Interreg
CENTRAL EUROPE
European Union
European Regional
Development Fund
YOUMOBIL

Metro	☐	☐	☐	☐
Sharing services	☐	☐	☐	☐
Walk	☐	☐	☐	☐
Tram	☐	☐	☐	☐
Boat	☐	☐	☐	☐
Taxi	☐	☐	☐	☐
Combination of travel (e.g. park and ride)	☐	☐	☐	☐

13. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Currently:**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	☐	☐	☐	☐
Moped/Motorcycle	☐	☐	☐	☐
Bike	☐	☐	☐	☐
Bus	☐	☐	☐	☐
Train	☐	☐	☐	☐
Metro	☐	☐	☐	☐
Sharing services	☐	☐	☐	☐
Walk	☐	☐	☐	☐
Tram	☐	☐	☐	☐
Boat	☐	☐	☐	☐
Taxi	☐	☐	☐	☐
Combination of travel (e.g. park and ride)	☐	☐	☐	☐

14. Did covid-19 influence your way of travelling in the post-pandemic period?

- o Yes, both the frequency and the mode of transport
- o Only the frequency, but not the mode of transport
- o Only the mode of transport, not the frequency
- o No

15. How much did the factors listed below influence your choice to use the different modes of transport? **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
Travel time	☐	☐	☐	☐
Travel cost	☐	☐	☐	☐
Service frequency / Puntuality of services	☐	☐	☐	☐
Safety (reducing accident risks)	☐	☐	☐	☐
Security (reducing infection risks)	☐	☐	☐	☐
Confort and/or cwdedness of public transport	☐	☐	☐	☐
traffic and parking (difficulty/cost)	☐	☐	☐	☐
Freedom and independence of movement	☐	☐	☐	☐

16. How much did the factors listed below influence your choice to use the different modes of transport? Currently

	Not very important	Neutral	Important	Decisive
Travel time	☐	☐	☐	☐
Travel cost	☐	☐	☐	☐
Service frequency / Puntuality of services	☐	☐	☐	☐
Safety (reducing accident risks)	☐	☐	☐	☐
Security (reducing infection risks)	☐	☐	☐	☐
Confort and/or cwdedness of public transport	☐	☐	☐	☐
traffic and parking (difficulty/cost)	☐	☐	☐	☐
Freedom and independence of movement	☐	☐	☐	☐

17. Please indicate below which statement applies the most to your situation **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive

I was dependent on public transport for my daily activities	☐	☐	☐	☐
I had access to other travel options than public transport and I used public transport as little as possible	☐	☐	☐	☐
I had access to other travel options than public transport but I preferred to use public transport	☐	☐	☐	☐

18.   Please indicate below which statement applies the most to your situation **currently**

	Not very important	Neutral	Important	Decisive
I am dependent on public transport for my daily activities	☐	☐	☐	☐
I have access to other travel options than public transport and I used public transport as little as possible	☐	☐	☐	☐
I have access to other travel options than public transport but I preferred to use public transport	☐	☐	☐	☐

19.   If you have abandoned/reduced the use of public services, what could make you change your mind?

- o New vehicles
- o Improved sanitation
- o Less crowding
- o Different timetables
- o More attractive, lively stations
- o Quality of connections
- o Other [to specify]

20.   Have you observed a change in your family's or friends' mobility habits as a consequence of COVID-19?

- o Yes
- o No

Feelings and suggestions

21.   With regard to the risk of contracting COVID-19, I consider public transport to be

	much less safe than..	a little less safe than..	equally safe as…	a little safer than…	much safer than..	I have no opinion
Public parks	☐	☐	☐	☐	☐	☐

Inner city boulevards and squares	☐	☐	☐	☐	☐	☐
Grocery stores and supermarkets	☐	☐	☐	☐	☐	☐
Shopping centre	☐	☐	☐	☐	☐	☐
Schools and universities	☐	☐	☐	☐	☐	☐

22. Do you consider transport modes (e.g. Metro, Tram, Bus, Train, Walking...) equally safe? (with regard to the risk of contracting COVID-19)

- o Yes
- o No

23.   If so, In your opinion, please, rank these transport modes from the SAFER to the LESS SAFE during COVID-19 outbreak (with regard to the risk of contracting COVID-19)

Metro

Tram

Bus

Train

Bicycle

Walking

Own Car

Taxi or Ride-Hailing

Motorcycle, Moped, Scooter

24.   In your opinion, please rank these measures from the one you consider the most important, to the one you consider the LESS IMPORTANT (with regard to the risk of contracting COVID-19)

Keeping distance from other passengers

Avoiding touching surfaces

Wearing gloves

Wearing masks

Vehicle sanitation

Presence of signposting to mark entry/exit routes from transport hubs

Receiving information on the crowding of means of transport

25.   Would you be willing to change your entry/exit times to school/work to avoid overcrowding of public vehicles during rush hours?

- o Yes

o No

o I don't know

26. Do you think that the increase in digitalisation of public transport will improve travel safety? (Regarding the risk of COVID-19 infection)

   o Yes

   o No

   o I don't know

27. Which digital tools do you think are the most important to implement in the future? Please **rank** these solutions from the one you consider the most important, to the one you consider the LESS IMPORTANT

   Receiving real-time information on the number of free places on vehicles

   Receiving real-time information on travel times

   Video surveillance cameras

   Applications enabling travel planning and integration of services (travel planner)

   Applications for booking and paying for tickets (e-ticketing)

28. Which digital tools do you think are the most important to implement in the future? [Open question]

Specific pilot experience [only for the Italian aMo]

29. Do you think that during pandemic local public transport passenger capacity limitation (80% and 50%) was respected?

   o Yes

   o No

   o I don't know

30. Do you think that the commissioning of additional buses contributed to making public transport safer during the pandemic?

   o Yes

   o No

   • I don't know

General results

1. I agree to take part in the survey and to having my responses anonymised in project deliverables and dissemination material[19]

Yes	910

General information

2. In which country do you live?

Croatia	99
Czech Republic	143
Germany	49
Italy	389
Poland	143
Slovakia	87

3. In which region do you live?[20]

Unique Answers	521

4. The place where you live is located:

in a urban area	487
in a suburban area	215
in a rural area	204

5. Please indicate your age category

<15	98
15 – 18	236
18 – 25	146
26 – 35	133
> 35	293

6. Please indicate your gender

Female	438
Male	433
I prefer not to declare it	35

7. Do you have a driving licence?

Yes	481
No	425

8. Do you have a local public transport season ticket?

Yes	518
No	388

9. Please select the vehicles you own:[21]

Bicycle	650
Car	377

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[19] Corresponds to the number of value-added responses
[20] open question
[21] multiple choice

Electric bicycle	20
Electric scooter	35
I don't own any vehicles	142
Motorbike/moped	64

9.1   Kind of vehicle owned [combination]

Only Bicycle	**339**
Bicycle + car + electric bicycle	1
Bicycle + car	14
Bicycle + electric bicycle	2
Bicycle + electric scooter	18
Bicycle + motorbicke	15
Only car	91
Car + bicycle + electric bicycle	10
Car + bicycle + electric scooter	7
Car + bicycle + electric scooter + electric bicycle	1
Car + bicycle + motorbike	26
Car + bicycle + motorbike + electric scooter	3
Car + bicycle + motorbike + electric scooter + electric bicycle	1
Car + bicycle	210
Car + electric bicycle	2
Car + electric scooter	2
Car + motorbike	8
Only electric bicycle	2
Only electric scooter	1
Electric scooter + electric bicycle	1
I don't know any vehicles	144
Only motorbike	10

10.   What degree of education do you hold?

primary education	**135**
secondary education	335
higher education degree	327
vocational training degree	44
other	15
I prefer not to say	141

11.   Currently:

I am a student	**433**
I do not work	24
I prefer not to say	33
I work as an employee	400
I work as freelance work	27

Mobility habits

12.   How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? Prior to COVID-19 outbreak

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a

				week or more)
Car	240	167	199	300
Moped/Motorcycle	842	16	36	12
Bike	336	143	290	137
Bus	266	116	159	365
Train	392	86	264	164
Metro	770	27	79	30
Sharing services	814	18	54	20
Walk	135	187	143	441
Tram	598	72	113	123
Boat	865	2	36	3
Taxi	784	10	109	3
Combination of travel (e.g. park and ride)	805	16	66	19

13. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? Currently:

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	205	182	191	328
Moped/Motorcycle	834	17	38	17
Bike	370	137	254	145
Bus	281	110	196	319
Train	434	76	272	124
Metro	793	16	74	23
Sharing services	827	20	45	14
Walk	173	189	130	414
Tram	635	63	136	72
Boat	877	1	26	2
Taxi	804	16	84	2
Combination of travel (e.g. park and ride)	820	13	56	17

14. Did covid-19 influence your way of travelling in the post-pandemic period?

No	**351**
Only the frequency, but not the mode of transport	260
Only the mode of transport, not the frequency	82
Yes, both the frequency and the mode of transport	213

15. How much did the factors listed below influence your choice to use the different modes of transport? Prior to COVID-19 outbreak

	Not very important	Neutral	Important	Decisive
Travel time	175	232	310	189
Travel cost	185	265	312	144
Service frequency / Punctuality of services	134	190	383	199
Safety (reducing accident risks)	310	318	196	82
Security (reducing infection risks)	372	291	157	86
Confort and/or cwdedness of public transport	172	285	291	158

traffic and parking (difficulty/cost)	274	268	263	101
Freedom and independence of movement	153	270	263	220

16. How much did the factors listed below influence your choice to use the different modes of transport? Currently

	Not very important	Neutral	Important	Decisive
Travel time	178	210	301	217
Travel cost	203	278	274	151
Service frequency / Puntuality of services	137	181	379	209
Safety (reducing accident risks)	296	315	209	86
Security (reducing infection risks)	202	223	264	217
Confort and/or cwdedness of public transport	134	202	332	238
traffic and parking (difficulty/cost)	271	283	245	107
Freedom and independence of movement	151	245	283	227

17. Please indicate below which statement applies the most to your situation Prior to COVID-19 outbreak

	Not very important	Neutral	Important	Decisive
I was dependent on public transport for my daily activities	298	139	176	293
I had access to other travel options than public transport and I used public transport as little as possible	392	267	136	111
I had access to other travel options than public transport but I preferred to use public transport	439	222	149	96

18. Please indicate below which statement applies the most to your situation currently

	Not very important	Neutral	Important	Decisive
I am dependent on public transport for my daily activities	311	153	184	258
I have access to other travel options than public transport and I used public transport as little as possible	354	239	150	163
I have access to other travel options than public transport but I preferred to use public transport	436	228	143	99

19. If you have abandoned/reduced the use of public services, what could make you change your mind?

New vehicles	**251**
Improved sanitation	300
Less crowding	512
Different timetables	398
More attractive, lively stations	124

Quality of connections	324
Frequency of connections	1

19. If you have abandoned/reduced the use of public services, what could make you change your mind? [Open answers]

[The Answers list will be shown in the country extraction]

20. Have you observed a change in your family's or friends' mobility habits as a consequence of COVID-19?

Yes	**527**
No	379

Feelings and suggestions

21. With regard to the risk of contracting COVID-19, I consider public transport to be

	much less safe than..	a little less safe than..	equally safe as…	a little safer than…	much safer than..	I have no opinion
Public parks	358	225	152	45	60	66
Inner city boulevards and squares	300	63	223	70	210	40
Grocery stores and supermarkets	250	74	372	61	99	50
Shopping centre	221	86	378	58	101	62
Schools and universities	247	84	317	66	131	61

22. Do you consider transport modes (e.g. Metro, Tram, Bus, Train, Walking...) equally safe? (with regard to the risk of contracting COVID-19)

Yes	**384**
No	520

23. If so, In your opinion, please, rank these transport modes from the SAFER to the LESS SAFE during COVID-19 outbreak (with regard to the risk of contracting COVID-19)

[Values obtained.1 = SAFER and 9 = LESS SAFE]

	#1 SAFER	#2	#3	#4	#5	#6	#7	#8	#9 LESS SAFE
Bicycle	52	218	148	42	11	11	12	12	9
Bus	6	14	17	16	35	79	129	91	128
Metro	31	8	4	10	32	69	89	87	185
Motorcycle, Moped, Scooter	17	83	142	193	18	11	8	17	26
Own Car	217	55	96	100	4	8	15	8	12
Taxi or Ride-Hailing	0	1	1	19	319	53	18	39	65
Train	6	9	15	31	65	179	87	84	39
Tram	2	16	16	13	25	91	148	166	38
Walking	184	111	76	91	6	14	9	11	13

[Pondered average value between 1 = SAFER and 9 = LESS SAFE]

Bicycle	**2,85**
Bus	6,78
Metro	6,93
Motorcycle, Moped, Scooter	3,78
Own car	2,63
Taxi or Ride-Hailing	5,78
Train	6,10
Tram	6,50
Walking	2,66

24.   In your opinion, please rank these measures from the one you consider the most important, to the one you consider the LESS IMPORTANT (with regard to the risk of contracting COVID-19)

[Values obtained, between 1 = most important and 7 = LESS IMPORTANT

	#1 MOST IMPORTANT	#2	#3	#4	#5	#6	#7 LESS IMPORTANT
Avoiding touching surfaces	42	152	237	259	124	71	25
Keeping distance from other passengers	249	323	172	99	48	11	8
Presence of signposting to mark entry/exit routes from transport hubs	16	26	39	63	159	346	261
Receiving information on the crowding of means of transport	35	40	55	108	176	203	293
Vehicle sanitation	177	170	224	161	132	36	10
Wearing gloves	1	19	75	100	235	202	278
Wearing masks	390	180	108	120	36	41	35

[Pondered average value between 1 = most important and 7 = LESS IMPORTANT]

Keeping distance from other passengers	**2,38**
Avoiding touching surfaces	3,64
Wearing gloves	5,49
Wearing masks	2,44
Vehicle sanitation	3,05
Presence of signposting to mark entry/exit routes from transport hubs	5,64
Receiving information on the crowding of means of transport	5,34

25.   Would you be willing to change your entry/exit times to school/work to avoid overcrowding of public vehicles during rush hours?

Yes	**347**
No	338
I don't know	219

26.   Do you think that the increase in digitalisation of public transport will improve travel safety? (Regarding the risk of COVID-19 infection)

Yes	**426**
No	220
I don't know	258

27.   Which digital tools do you think are the most important to implement in the future? Please rank these solutions from the one you consider the most important, to the one you consider the LESS IMPORTANT

[Values obtained, between 1 = most important and 5 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5 LESS IMPORTANT
Applications enabling travel planning and integration of services (travel planner)	101	150	216	278	165
Applications for booking and paying for tickets (e-ticketing)	112	138	171	209	280
Receiving real-time information on the number of free places on vehicles	363	201	165	110	71
Receiving real-time information on travel times	242	330	181	109	48
Video surveillance cameras	92	91	177	204	346

[Pondered average value between 1 = most important and 5 = LESS IMPORTANT]

Applications enabling travel planning and integration of services (travel planner)	**3,28**
Applications for booking and paying for tickets (e-ticketing)	3,45
Receiving real-time information on the number of free places on vehicles	2,26
Receiving real-time information on travel times	2,33
Video surveillance cameras	3,68

28.   Which digital tools do you think are the most important to implement in the future? [Open question]

[The Answers list will be shown in the country extraction

Croatia

General information

2.   In which country do you live? [drop down menu]

Croatia	99

3.   In which region do you live? [open question]

Unique Answers

4.   The place where you live is located:

in a urban area	44
in a suburban area	27
in a rural area	28

5.   Please indicate your age category

<15	1
15 – 18	16
18 – 25	18
26 – 35	20
> 35	44

6.   Please indicate your gender

Female	45
Male	54
I prefer not to declare it	0

7. Do you have a driving licence?

Yes	76
No	23

8. Do you have a local public transport season ticket?

Yes	26
No	73

9. Please select the vehicles you own: [multiple choice]

Bicycle	n/a
Car	n/a
Electric bicycle	n/a
Electric scooter	n/a
I don't own any vehicles	n/a
Motorbike/moped	n/a

10. What degree of education do you hold?

primary education	17
secondary education	19
higher education degree	56
vocational training degree	3
other	-
I prefer not to say	0

11. Currently:

I am a student	22
I do not work	5
I prefer not to say	0
I work as an employee	69
I work as freelance work	3

Mobility habits

12. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Prior to COVID-19 outbreak**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	24	15	15	45
Moped/Motorcycle	95	2	1	1
Bike	46	22	15	16
Bus	42	27	12	18
Train	48	26	10	15

Interreg
CENTRAL EUROPE
YOUMOBIL
European Union
European Regional
Development Fund

Metro	98	1	0	0
Sharing services	85	9	2	3
Walk	17	8	24	50
Tram	53	25	10	11
Boat	89	10	0	0
Taxi	74	23	2	0
Combination of travel (e.g. park and ride)	78	15	3	3

13. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Currently:**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	18	13	19	49
Moped/Motorcycle	96	1	1	1
Bike	48	22	13	16
Bus	47	28	9	15
Train	50	30	7	12
Metro	98	1	0	0
Sharing services	88	7	2	2
Walk	20	8	22	49
Tram	61	23	6	9
Boat	90	9	0	0
Taxi	77	16	6	0
Combination of travel (e.g. park and ride)	85	9	1	4

14. Did covid-19 influence your way of travelling in the post-pandemic period?

No	**35**
Only the frequency, but not the mode of transport	40
Only the mode of transport, not the frequency	4
Yes, both the frequency and the mode of transport	20

15. How much did the factors listed below influence your choice to use the different modes of transport? **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
Travel time	11	26	38	24
Travel cost	12	21	44	22
Service frequency / Puntuality of services	10	17	48	24
Safety (reducing accident risks)	21	33	35	10
Security (reducing infection risks)	29	42	16	12
Confort and/or cwdedness of public transport	15	37	29	18
traffic and parking (difficulty/cost)	21	38	30	10
Freedom and independence of movement	9	31	30	29

16. How much did the factors listed below influence your choice to use the different modes of transport? Currently

	Not very important	Neutral	Important	Decisive
Travel time	8	28	39	24
Travel cost	12	28	41	18
Service frequency / Puntuality of services	9	24	48	18
Safety (reducing accident risks)	23	34	36	6
Security (reducing infection risks)	18	33	30	18
Confort and/or cwdedness of public transport	12	34	35	18
traffic and parking (difficulty/cost)	22	33	34	10
Freedom and independence of movement	7	24	34	33

17. Please indicate below which statement applies the most to your situation **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
I was dependent on public transport for my daily activities	37	18	16	28
I had access to other travel options than public transport and I used public transport as little as possible	36	31	15	17
I had access to other travel options than public transport but I preferred to use public transport	42	27	19	11

18. Please indicate below which statement applies the most to your situation **currently**

	Not very important	Neutral	Important	Decisive
I am dependent on public transport for my daily activities	41	21	15	22
I have access to other travel options than public transport and I used public transport as little as possible	35	23	17	24
I have access to other travel options than public transport but I preferred to use public transport	45	32	13	9

19. If you have abandoned/reduced the use of public services, what could make you change your mind?

New vehicles	n/a
Improved sanitation	n/a
Less crowding	n/a
Different timetables	n/a
More attractive, lively stations	n/a
Quality of connections	N/a

Frequency of connections	n/a

19.   If you have abandoned/reduced the use of public services, what could make you change your mind? [Open answers]

ORIGINAL LANGUAGE	TRANSLATION IN ENGLISH
Redovitost i učestalost	**Regularity and frequency**
Pandemija na mene nema utjecaj.	The pandemic has no effect on me.
novac - osobni standard	money - a personal standard
završetak pandemije COVID-19	end of the COVID-19 pandemic
Brzina putovanja	Travel speed
Not wear unhealty and unprotective face mask in public transport.	Not wear unhealty and unprotective face mask in public transport.
nije primjenjivo jer ne koristim javni prijevoz	not applicable because I do not use public transportation
Nisam koristio javni prijevoz	I did not use public transport
punctuality	punctuality
Cijena javnog prijevoza koja je visoka za prigradske linije	The cost of public transport is high for suburban lines
Gušći vozni red, odn. češći polasci	Thicker timetable, ie. more frequent departures
Da je besplatno	Yes, it's free
Nista, vozim samo auto	Nothing, I just drive a car

20.   Have you observed a change in your family's or friends' mobility habits as a consequence of COVID-19?

Yes	51
No	48

Feelings and suggestions

21.   With regard to the risk of contracting COVID-19, I consider public transport to be

	much less safe than..	a little less safe than..	equally safe as...	a little safer than...	much safer than..	I have no opinion
Public parks	39	24	25	2	0	9
Inner city boulevards and squares	26	31	28	4	0	10
Grocery stores and supermarkets	6	26	50	7	2	8
Shopping centre	5	27	52	3	4	8
Schools and universities	2	24	58	4	3	8

22. Do you consider transport modes (e.g. Metro, Tram, Bus, Train, Walking...) equally safe? (with regard to the risk of contracting COVID-19)

Yes	42
No	57

23. If no, In your opinion, please, rank these transport modes from the SAFER to the LESS SAFE during COVID-19 outbreak (with regard to the risk of contracting COVID-19)

[Values obtained.1 = SAFER and 9 = LESS SAFE]

	#1 SAFER	#2	#3	#4	#5	#6	#7	#8	#9 LESS SAFE
Bicycle	2	24	22	6	0	2	1	0	0
Bus	0	0	1	1	4	7	15	17	12
Metro	3	0	1	0	2	8	13	5	25
Motorcycle, Moped, Scooter	2	13	1	23	1	0	1	0	2
Own Car	26	9	7	12	2	0	0	0	1
Taxi or Ride-Hailing	0	0	0	34	3	0	5	5	7
Train	0	1	0	1	11	27	8	6	3
Tram	0	1	2	0	1	10	14	22	7
Walking	24	9	9	11	2	0	0	8	0

[Pondered average value between 1 = SAFER and 9 = LESS SAFE]

Bicycle	**2,79**
Bus	7,33
Metro	7,37
Motorcycle, Moped, Scooter	3,56
Own car	2,32
Taxi or Ride-Hailing	5,35
Train	6,21
Tram	7,19
Walking	2,97

24. In your opinion, please rank these measures from the one you consider the most important, to the one you consider the LESS IMPORTANT (with regard to the risk of contracting COVID-19)

[Values obtained, between 1 = most important and 7 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5	#6	#7 LESS IMPORTANT
Avoiding touching surfaces	10	30	23	15	13	5	3
Keeping distance from other passengers	41	22	15	11	6	1	3
Presence of signposting to mark entry/exit routes from transport hubs	0	5	4	9	16	32	33
Receiving information on the crowding of means of transport	13	2	6	8	17	27	26
Vehicle sanitation	21	17	17	16	20	6	2
Wearing gloves	0	1	13	17	19	19	30
Wearing masks	14	22	21	23	8	9	2

[Pondered average value between 1 = most important and 7 = LESS IMPORTANT]

Avoiding touching surfaces	**3,18**
Keeping distance from other passengers	2,33
Presence of signposting to mark entry/exit routes from transport hubs	5,67
Receiving information on the crowding of means of transport	5,01
Vehicle sanitation	3,23
Wearing gloves	5,33
Wearing masks	3,24

25. Would you be willing to change your entry/exit times to school/work to avoid overcrowding of public vehicles during rush hours?

Yes	55
No	27
I don't know	17

26. Do you think that the increase in digitalisation of public transport will improve travel safety? (Regarding the risk of COVID-19 infection)

Yes	46
No	19
I don't know	34

27. Which digital tools do you think are the most important to implement in the future? Please **rank** these solutions from the one you consider the most important, to the one you consider the LESS IMPORTANT

[Values obtained, between 1 = most important and 5 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5 LESS IMPORTANT
Applications enabling travel planning and integration of services (travel planner)	12	18	26	24	19
Applications for booking and paying for tickets (e-ticketing)	15	14	20	28	22
Receiving real-time information on the number of free places on vehicles	31	18	25	15	10
Receiving real-time information on travel times	26	43	14	14	2
Video surveillance cameras	15	6	14	18	46

[Pondered average value between 1 = most important and 5 = LESS IMPORTANT]

Applications enabling travel planning and integration of services (travel planner)	**3,20**
Applications for booking and paying for tickets (e-ticketing)	3,28
Receiving real-time information on the number of free places on vehicles	2,55
Receiving real-time information on travel times	2,22
Video surveillance cameras	3,75

28. Which digital tools do you think are the most important to implement in the future? [Open question]

ORIGINAL LANGUAGE	TRANSLATION IN ENGLISH

Mozak nekim ljudima.	The brains of some people.
apps	apps
Informacije o stanju u prometu na svim mjestima ulaska i izlaska putnika.	Information on the traffic situation at all points of entry and exit of passengers.
Informaciju o broju slobodnih mjesta te o vremenu putovanja u realnom vremenu	Information on the number of vacancies and travel time in real time
dobivanje informacija o vremenu putovana	obtaining travel time information
Informacije o vremenu putovanja	Travel time information
APLIKACIJE	APPLICATIONS
Planer putovanja	Travel planner
mobilne aplikacije kao planer, informator, integrator te sredstvo naplate prijevoza (svih sustava od javnih masovnih do javnih individualnih ili čak car/sharing usluga) po principu plati koliko koristiš	mobile applications as a planner, informant, integrator and means of transport payment (all systems from public mass to public individual or even car / sharing services) on the principle of pay as much as you use
Real-time praćenje vlakova, njihovih kretanja, slobodnih mjesta, i drugih opcija koje mogu biti korisne (veze, integracija i sl.)	Real-time tracking of trains, their movements, free seats, and other options that may be useful (connections, integration, etc.)
Location of the bus or train	Location of the bus or train
Potrebno je implementirati prvenstveno aplikacije za kontrolu zauzetosti kapaciteta u prijevoznim sredstvima u javnom prijevozu	It is necessary to implement primarily applications to control the occupancy of capacity in means of transport in public transport
DOBIVANJE INFORMACIJE O VREMENU PUTOVANJA U REALNOM VREMENU	GETTING INFORMATION ABOUT REAL TIME TRAVEL TIME
Live time vehicle tracking apps,	Live time vehicle tracking apps,
aplikacije za korisnike sa više mogućnosti	applications for users with multiple capabilities
alarm za gužvu	crowd alarm
aplikacije za planiranje putovanja	travel planning applications
Aplikacija za dobivanje obavijesti o zastojima u realnom vremenu	Real-time congestion notification application
jasne vozne redove	clear timetables
Beskontaktna naplata	Contactless payment
Aplikacija za rezervaciju i kupnju karata	Application for booking and buying tickets
Kamere u autombilima za upozoravanje na moguću opasnost	Cameras in cars to warn of possible danger
Vrijeme cekanja ako prijevoz kasni	Waiting time if transport is delayed
najbolje bi bilo kombinirati sve navedene digitalne alate u jednu aplikaciju	it would be best to combine all the listed digital tools into one application

Czech Republic

General information

2.   In which country do you live? [drop down menu]

Czech Republic	143

3.   In which region do you live? [open question]

	n/a

4.   The place where you live is located:

in a urban area	90
in a suburban area	18
in a rural area	35

5.   Please indicate your age category

<15	4
15 – 18	10
18 – 25	28
26 – 35	33
> 35	68

6.   Please indicate your gender

Female	44
Male	94
I prefer not to declare it	5

7.   Do you have a driving licence?

Yes	103
No	40

8.   Do you have a local public transport season ticket?

Yes	99
No	44

9.   Please select the vehicles you own: [multiple choice]

Bicycle	n/a
Car	n/a
Electric bicycle	n/a
Electric scooter	n/a
I don't own any vehicles	n/a
Motorbike/moped	n/a

10.   What degree of education do you hold?

primary education	12
secondary education	64
higher education degree	56
vocational training degree	5
other	
I prefer not to say	6

11.   Currently:

I am a student	30
I do not work	4
I prefer not to say	6
I work as an employee	102
I work as freelance work	1

Mobility habits

12. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Prior to COVID-19 outbreak**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	52	50	24	17
Moped/Motorcycle	137	2	2	2
Bike	75	46	15	7
Bus	9	29	31	74
Train	27	57	28	31
Metro	121	16	2	4
Sharing services	136	6	1	0
Walk	8	17	15	103
Tram	28	29	23	63
Boat	123	18	1	1
Taxi	128	12	2	1
Combination of travel (e.g. park and ride)	130	11	1	1

13. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Currently:**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	46	43	26	28
Moped/Motorcycle	138	2	1	2
Bike	84	37	15	7
Bus	19	43	27	54
Train	44	62	18	19
Metro	126	15	1	1
Sharing services	137	4	2	0
Walk	9	20	14	100
Tram	38	39	26	40
Boat	130	12	0	1
Taxi	132	8	2	1
Combination of travel (e.g. park and ride)	130	11	1	1

14. Did covid-19 influence your way of travelling in the post-pandemic period?

No	**72**
Only the frequency, but not the mode of transport	37
Only the mode of transport, not the frequency	12
Yes, both the frequency and the mode of transport	22

15. How much did the factors listed below influence your choice to use the different modes of transport? **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive

Travel time	21	43	47	32
Travel cost	18	45	56	24
Service frequency / Puntuality of services	10	25	75	33
Safety (reducing accident risks)	31	48	44	20
Security (reducing infection risks)	68	50	15	10
Confort and/or cwdedness of public transport	16	49	55	23
traffic and parking (difficulty/cost)	41	35	44	23
Freedom and independence of movement	22	47	42	32

16. How much did the factors listed below influence your choice to use the different modes of transport? Currently

	Not very important	Neutral	Important	Decisive
Travel time	23	37	49	34
Travel cost	28	48	43	24
Service frequency / Puntuality of services	14	25	71	33
Safety (reducing accident risks)	30	47	47	19
Security (reducing infection risks)	44	33	35	31
Confort and/or cwdedness of public transport	16	33	58	36
traffic and parking (difficulty/cost)	41	40	40	22
Freedom and independence of movement	21	46	39	37

17. Please indicate below which statement applies the most to your situation **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
I was dependent on public transport for my daily activities	19	24	29	71
I had access to other travel options than public transport and I used public transport as little as possible	57	36	34	16
I had access to other travel options than public transport but I preferred to use public transport	70	40	21	12

18. Please indicate below which statement applies the most to your situation **currently**

	Not very important	Neutral	Important	Decisive
I am dependent on public transport for my daily activities	34	26	33	50
I have access to other travel options than public transport and I used public transport as little as possible	58	41	28	16
I have access to other travel options than public transport but I preferred to use public transport	59	38	24	22

19. If you have abandoned/reduced the use of public services, what could make you change your mind?

New vehicles	n/a
Improved sanitation	n/a
Less crowding	n/a
Different timetables	n/a
More attractive, lively stations	n/a
Quality of connections	n/a
Frequency of connections	n/a

19. If you have abandoned/reduced the use of public services, what could make you change your mind? [Open answers]

ORIGINAL LANGUAGE	TRANSLATION IN ENGLISH
eventuální omezení nebyla dobrovolná	**any restrictions were not voluntary**
Častější spoje, lepší výbava vozů (klimatizace, jízdní vlastnosti, pohodlné sezení,...), lepší infrastruktura (trolejové + kolejové vedení umožňující vyšší rychlost)	More frequent connections, better car equipment (air conditioning, driving characteristics, comfortable seating, ...), better infrastructure (overhead contact line + higher speed rail)
obecná situace	general situation
Cena jízdenek (dnes je dražší než nafta)	Ticket price (today it is more expensive than diesel)
Používám MHD	I use public transport
Častější spoje, lepší výbava vozů (klimatizace, jízdní vlastnosti, pohodlné sezení,...), lepší infrastruktura (trolejové + kolejové vedení umožňující vyšší rychlost)	More frequent connections, better car equipment (air conditioning, driving characteristics, comfortable seating, ...), better infrastructure (overhead contact line + higher speed rail)
Proste spoj nejel nebo nenavazoval	The connection just didn't work or didn't work
lepší chování cestujících	better passenger behavior
Navýšení počtu spojů i v okrajových časech	Increasing the number of connections even in marginal times
obecná situace	general situation
kontrolování nastavených opatření proti covidu	control of set measures against covid
konec hubohadri onanie	the end of hubohadri masturbation
nic, verejnou dopravu vyuzivam co nejvice	nothing, I use public transport as much as possible
neomezila jsem používání veřejných služeb	I did not limit the use of public services
preference MHD - např. vyhrazené jízdní pruhy	public transport preferences - eg reserved lanes
větší intenzita spojů, které nejsou přeplněné	greater intensity of connections that are not crowded
zrušit povinnost nosit respirátor	abolish the obligation to wear a respirator
zlepšení situace zmírnění émezení	improving the situation of easing restrictions
zrušení respirátorů	abolition of respirators
Veřejné služby využívám stále stejně	I still use public services the same way
Využívám veřejné služby pořád.	I still use public services.

20. Have you observed a change in your family's or friends' mobility habits as a consequence of COVID-19?

Yes	98
No	45

Feelings and suggestions

21. With regard to the risk of contracting COVID-19, I consider public transport to be

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	much less safe than..	a little less safe than..	equally safe as...	a little safer than...	much safer than..	I have no opinion
Public parks	42	45	34	7	8	7
Inner city boulevards and squares	21	47	49	10	9	7
Grocery stores and supermarkets	11	21	75	17	14	5
Shopping centre	14	22	63	20	21	3
Schools and universities	8	27	65	24	10	9

22. Do you consider transport modes (e.g. Metro, Tram, Bus, Train, Walking...) equally safe? (with regard to the risk of contracting COVID-19)

Yes	85
No	58

23.   If so, In your opinion, please, rank these transport modes from the SAFER to the LESS SAFE during COVID-19 outbreak (with regard to the risk of contracting COVID-19)

[Values obtained.1 = SAFER and 9 = LESS SAFE]

	#1 SAFER	#2	#3	#4	#5	#6	#7	#8	#9 LESS SAFE
Bicycle	2	19	23	8	2	1	1	1	1
Bus	0	4	1	0	5	13	19	7	9
Metro	4	0	1	1	1	8	10	10	23
Motorcycle, Moped, Scooter	1	16	13	21	1	0	2	2	2
Own Car	29	6	10	8	0	1	2	1	1
Taxi or Ride-Hailing	0	0	0	1	35	3	1	5	13
Train	0	0	1	5	10	21	9	7	5
Tram	1	1	2	1	4	8	14	25	2
Walking	21	12	7	13	0	3	0	0	2

[Pondered average value between 1 = SAFER and 9 = LESS SAFE]

Bicycle	**3,12**
Bus	6,62
Metro	7,26
Motorcycle, Moped, Scooter	3,60
Own car	2,41
Taxi or Ride-Hailing	6,22
Train	6,26
Tram	6,84
Walking	2,66

24.   In your opinion, please rank these measures from the one you consider the most important, to the one you consider the LESS IMPORTANT (with regard to the risk of contracting COVID-19)

[Values obtained, between 1 = most important and 7 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5	#6	#7 LESS IMPORTANT
Avoiding touching surfaces	10	27	41	29	22	10	4
Keeping distance from other passengers	33	42	27	24	16	1	0
Presence of signposting to mark entry/exit routes from transport hubs	6	11	14	14	24	37	37
Receiving information on the crowding of means of transport	5	11	11	21	26	33	26
Vehicle sanitation	32	29	32	23	20	5	2
Wearing gloves	0	4	6	15	29	41	48
Wearing masks	57	19	12	17	6	16	16

[Pondered average value between 1 = most important and 7 = LESS IMPORTANT]

Avoiding touching surfaces	**3,50**
Keeping distance from other passengers	2,66
Presence of signposting to mark entry/exit routes from transport hubs	5,08
Receiving information on the crowding of means of transport	4,92
Vehicle sanitation	2,95
Wearing gloves	5,69
Wearing masks	3,06

25. Would you be willing to change your entry/exit times to school/work to avoid overcrowding of public vehicles during rush hours?

Yes	57
No	59
I don't know	27

26. Do you think that the increase in digitalisation of public transport will improve travel safety? (Regarding the risk of COVID-19 infection)

Yes	66
No	43
I don't know	34

27. Which digital tools do you think are the most important to implement in the future? Please **rank** these solutions from the one you consider the most important, to the one you consider the LESS IMPORTANT

[Values obtained, between 1 = most important and 5 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5 LESS IMPORTANT
Applications enabling travel planning and integration of services (travel planner)	24	37	34	41	7
Applications for booking and paying for tickets (e-ticketing)	7	13	23	32	68

Receiving real-time information on the number of free places on vehicles	40	35	31	25	12
Receiving real-time information on travel times	64	48	20	9	2
Video surveillance cameras	8	10	35	36	54

[Pondered average value between 1 = most important and 5 = LESS IMPORTANT]

Applications enabling travel planning and integration of services (travel planner)	**2,79**
Applications for booking and paying for tickets (e-ticketing)	3,99
Receiving real-time information on the number of free places on vehicles	2,54
Receiving real-time information on travel times	1,86
Video surveillance cameras	3,83

28. Which digital tools do you think are the most important to implement in the future? [Open question]

ORIGINAL LANGUAGE	TRANSLATION IN ENGLISH
obnova a dezinfekce vozidel	vehicle recovery and disinfection
Rozvoj informačních systémů, kamerové systémy ve vozidlech se záznamem	Development of information systems, camera systems in recorded vehicles
Smart infrastrukturu pro preferenci veřejné dopravy ve městech i mimo něj, aby VHD nemusela stát v kolonách. Efektivnější plánování vedení linek při výlukách a opravách na pozemních komunikacích.	Smart infrastructure for the preference of public transport in cities and beyond, so that PTO does not have to stand in convoys. More efficient line management planning for road closures and repairs.
Samoobslužné nakupování jizdenek	Self-service ticket shopping
Rezervace na konkrétní spoje	Reservations for specific connections
cestovní doba v reálném čase	real time travel time
Sjednocení aplikací (např. v Brně používám DPMB info, Poseidon, iRIS, IDOS, můj vlak + dohledávání informací na internetu)	Unification of applications (eg in Brno I use DPMB info, Poseidon, iRIS, IDOS, my train + searching for information on the Internet)
TAP systém (při nástupu i výstupu se cestující označí v terminálu u dveří, tyká se VŠECH cestujících, nejenom jednorázových cest) - naprosto běžná věc v zahraničí (USA, Kanada, Austrálie,..), řidič má tak přehled o konkrétních cestujících	TAP system (on boarding and exiting, passengers are marked in the terminal at the door, applies to ALL passengers, not only one-time trips) - a completely common thing abroad (USA, Canada, Australia, ..), the driver has an overview of specific passengers
Přesnost řidičů a možnost návaznosti autobusu ci možnost ovlivnit spojení které nedává smysl pro navaznost pracovní doby	The accuracy of the drivers and the possibility of bus continuity or the possibility of influencing the connection which does not make sense for the continuity of working hours
jakékoliv, které pomohou zlepšit chování arogantních řidičů	any that will help improve the behavior of arrogant drivers
technologie pro zaměstnance	technology for employees
Sledování vytíženosti spojů s možnou reakce na ně; Sledování provozu s možností reagovat změnou trasy.	Monitoring of busy connections with possible reactions to them; Traffic monitoring with the ability to respond by changing the route.
On-line poloha vozidel	Online location of vehicles
poloha vozidel, aktuální odjezdy spojů ze zastávky	location of vehicles, current departures of connections from the stop
jednotná jízdenka, aplikace pro nákup jízdenek v různých tarifech	single ticket, application for buying tickets in different tariffs
nevím co to je	I do not know what that is

Moznost nakupu jizdenek na MHD/IDS v ramci vyhledávače IDOS. cz	Possibility to buy tickets for public transport / IDS within the IDOS search engine. cz
Pravdivé informace o aktuální situaci (nehody, poruchy atd.), přesnější popis daného spoje k jeho rychlému a bezproblémovému nalezení (číslo stanoviště, nástupiště, informace o různých místních specifikách).	True information about the current situation (accidents, faults, etc.), a more accurate description of the connection to find it quickly and without any problems (station number, platform, information on various local specifics).
Řádně informovat o změnách jízdních řádů	Properly inform about changes to timetables
ELP na zastávkách	ELP at stops
počet volných míst v reálném čase	number of vacancies in real time
Zavádění papírových přestupních jízdenek v rámci IDS, jež to neumožňují; rozšiřování využívání a lepší zpracování vnitřních panelů ve vozidlech s informacemi o nácestných zastávkách a přestupech; propracovávání stávajících aplikací týkajících se veřejné dopravy	Introduction of paper transfer tickets within IDS, which do not allow it; expanding the use and better processing of interior panels in vehicles with information on waypoints and transfers; elaboration of existing public transport applications
informace o cestě	travel information
Obsazenost vozu	Car occupancy
rezervace	reservation
plánovač cest	trip planner
organizace návaznosti spojů - příjem info v reálném čase	organization of connections - receiving info in real time
Žádné nejsou potřeba.	None are needed.
Myslím, že to není nejpodstatnější problém. Pro mne, při dojíždění z naší obce, jsou problémem přeplněné busy a zpožděné vlaky	I don't think that's the most important issue. For me, when commuting from our village, the problem is crowded buses and delayed trains
GPS lokalizace vozidla, ve městě preference MHD na SSZ	GPS location of the vehicle, in the city preferences of public transport on the SSZ

Germany

General information

2.   In which country do you live? [drop down menu]

Germany	49

3.   In which region do you live? [open question]

Unique Answers

4.   The place where you live is located:

in a urban area	25
in a suburban area	10
in a rural area	14

5.   Please indicate your age category

<15	2
15 – 18	5
18 – 25	21
26 – 35	17
> 35	4

6.   Please indicate your gender

Female	23
Male	24
I prefer not to declare it	2

7. Do you have a driving licence?

Yes	38
No	11

8. Do you have a local public transport season ticket?

Yes	22
No	27

9. Please select the vehicles you own: [multiple choice]

Bicycle	N/A
Car	
Electric bicycle	
Electric scooter	
I don't own any vehicles	
Motorbike/moped	

10. What degree of education do you hold?

primary education	2
secondary education	17
higher education degree	26
vocational training degree	2
other	
I prefer not to say	1

11. Currently:

I am a student	24
I do not work	1
I prefer not to say	3
I work as an employee	20
I work as freelance work	1

Mobility habits

12. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Prior to COVID-19 outbreak**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	11	13	12	13
Moped/Motorcycle	46	1	1	1
Bike	11	19	6	13
Bus	20	13	8	8
Train	12	21	10	6

Metro	41	7	0	1
Sharing services	46	2	0	1
Walk	3	6	17	23
Tram	23	10	7	9
Boat	47	1	0	1
Taxi	45	3	0	1
Combination of travel (e.g. park and ride)	41	4	0	4

13. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Currently:**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	12	13	10	14
Moped/Motorcycle	45	1	1	2
Bike	10	15	9	15
Bus	23	16	3	7
Train	13	27	3	6
Metro	44	2	1	2
Sharing services	45	3	1	0
Walk	4	6	16	23
Tram	28	12	2	7
Boat	49	0	0	0
Taxi	47	2	0	0
Combination of travel (e.g. park and ride)	42	4	1	2

14. Did covid-19 influence your way of travelling in the post-pandemic period?

No	**18**
Only the frequency, but not the mode of transport	17
Only the mode of transport, not the frequency	2
Yes, both the frequency and the mode of transport	12

15. How much did the factors listed below influence your choice to use the different modes of transport? **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
Travel time	3	13	19	14
Travel cost	3	8	19	19
Service frequency / Puntuality of services	6	8	20	15
Safety (reducing accident risks)	15	21	10	3
Security (reducing infection risks)	22	17	8	2
Confort and/or cwdedness of public transport	8	22	15	4
traffic and parking (difficulty/cost)	18	13	14	4
Freedom and independence of movement	4	11	11	23

16. How much did the factors listed below influence your choice to use the different modes of transport? Currently

	Not very important	Neutral	Important	Decisive
Travel time	8	7	22	12
Travel cost	3	11	19	16
Service frequency / Puntuality of services	5	10	24	10
Safety (reducing accident risks)	14	21	11	3
Security (reducing infection risks)	9	11	21	8
Confort and/or cwdedness of public transport	8	13	22	6
traffic and parking (difficulty/cost)	20	14	11	4
Freedom and independence of movement	5	10	14	20

17. Please indicate below which statement applies the most to your situation **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
I was dependent on public transport for my daily activities	23	3	15	8
I had access to other travel options than public transport and I used public transport as little as possible	27	7	7	8
I had access to other travel options than public transport but I preferred to use public transport	20	12	13	4

18. Please indicate below which statement applies the most to your situation **currently**

	Not very important	Neutral	Important	Decisive
I am dependent on public transport for my daily activities	27	5	10	7
I have access to other travel options than public transport and I used public transport as little as possible	22	6	8	13
I have access to other travel options than public transport but I preferred to use public transport	33	5	7	4

19. If you have abandoned/reduced the use of public services, what could make you change your mind?

New vehicles	N/A
Improved sanitation	
Less crowding	
Different timetables	
More attractive, lively stations	
Quality of connections	

Frequency of connections	

19.   If you have abandoned/reduced the use of public services, what could make you change your mind? [Open answers]

ORIGINAL LANGUAGE	TRANSLATION IN ENGLISH
Kosten	costs
Preis	price
Kostenreduzierung für Studenten/Schüler	Cost reduction for students/pupils
Attraktivere Preise	More attractive prices
Mehr Werbung, bzw. leichter die Verbindungen rauszusuchen	More advertising, or easier to find the connections
Ich habe die Nutzung nicht reduziert/aufgegeben.	I have not reduced/give up usage. costs
Kosten	frequency of connections
Häufigkeit der Verbindungen	sanitation controls
Ende der Pandemie, mehr Wochenendaktivitäten=größere Nutzung ÖPNV	End of the pandemic, more weekend activities = greater use of public transport
Same height platforms for easy access with bicycle and wheelchair	Same height platforms for easy access with bicycle and wheelchair

20.   Have you observed a change in your family's or friends' mobility habits as a consequence of COVID-19?

Yes	27
No	22

Feelings and suggestions

21.   With regard to the risk of contracting COVID-19, I consider public transport to be

	much less safe than..	a little less safe than..	equally safe as...	a little safer than...	much safer than..	I have no opinion
Public parks	25	11	6	1	2	4
Inner city boulevards and squares	10	22	10	2	1	4
Grocery stores and supermarkets	2	13	28	2	1	3
Shopping centre	2	11	24	6	3	3
Schools and universities	3	15	16	7	5	3

22. Do you consider transport modes (e.g. Metro, Tram, Bus, Train, Walking...) equally safe? (with regard to the risk of contracting COVID-19)

Yes	32
No	17

23.   If so, In your opinion, please, rank these transport modes from the SAFER to the LESS SAFE during COVID-19 outbreak (with regard to the risk of contracting COVID-19)

[Values obtained.1 = SAFER and 9 = LESS SAFE]

	#1 SAFERSAFER	#2	#3	#4	#5	#6	#7	#8	#9 LESS SAFE
Bicycle	4	7	4	0	1	0	1	0	0
Bus	6	7	2	0	2	4	4	2	3
Metro	2	0	0	0	1	1	3	6	4
Motorcycle, Moped, Scooter	1	3	3	7	0	0	0	1	1
Own Car	5	1	7	2	0	0	1	0	1
Taxi or Ride-Hailing	0	0	0	1	12	0	0	1	3
Train	0	0	0	2	0	4	2	4	3
Tram	0	2	0	2	0	6	2	4	3
Walking	5	4	1	5	0	2	0	0	0

[Pondered average value between 1 = SAFER and 9 = LESS SAFE]

Bicycle	**2,47**
Bus	4,37
Metro	6,94
Motorcycle, Moped, Scooter	3,81
Own car	3,06
Taxi or Ride-Hailing	5,82
Train	7,00
Tram	6,37
Walking	2,82

24. In your opinion, please rank these measures from the one you consider the MORE IMPORTANT, to the one you consider the LESS IMPORTANT (with regard to the risk of contracting COVID-19)

[Values obtained, between 1 = MORE IMPORTANT and 7 = LESS IMPORTANT]

	#1 MORE IMPORTANT	#2	#3	#4	#5	#6	#7 LESS IMPORTANT
Avoiding touching surfaces	1	6	17	16	7	1	1
Keeping distance from other passengers	13	21	10	3	1	1	0
Presence of signposting to mark entry/exit routes from transport hubs	1	0	2	2	11	23	10
Receiving information on the crowding of means of transport	3	0	5	5	16	11	9
Vehicle sanitation	4	10	11	16	5	1	2
Wearing gloves	0	0	2	1	8	12	26
Wearing masks	27	12	2	6	1	12	1

[Pondered average value between 1 = MORE IMPORTANT and 7 = LESS IMPORTANT]

Keeping distance from other passengers	**3,59**
Avoiding touching surfaces	2,20

Wearing gloves	5,67
Wearing masks	5,04
Vehicle sanitation	3,39
Presence of signposting to mark entry/exit routes from transport hubs	6,20
Receiving information on the crowding of means of transport	2,70

[graph showing position per number of respondent of each measure]

25. Would you be willing to change your entry/exit times to school/work to avoid overcrowding of public vehicles during rush hours?

Yes	18
No	18
I don't know	13

26. Do you think that the increase in digitalisation of public transport will improve travel safety? (Regarding the risk of COVID-19 infection)

Yes	32
No	14
I don't know	3

27. Which digital tools do you think are the MORE IMPORTANT to implement in the future? Please **rank** these solutions from the one you consider the most important, to the one you consider the LESS IMPORTANT

[Values obtained, between 1 = most important and 5 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5 LESS IMPORTANT
Applications enabling travel planning and integration of services (travel planner)	11	13	11	10	4
Applications for booking and paying for tickets (e-ticketing)	11	12	12	5	9
Receiving real-time information on the number of free places on vehicles	14	9	10	12	4
Receiving real-time information on travel times	13	14	8	13	1
Video surveillance cameras	0	1	8	9	31

[Pondered average value between 1 = most important and 5 = LESS IMPORTANT]

Applications enabling travel planning and integration of services (travel planner)	**2,65**
Applications for booking and paying for tickets (e-ticketing)	2,78
Receiving real-time information on the number of free places on vehicles	2,65
Receiving real-time information on travel times	2,49
Video surveillance cameras	4,43

28. Which digital tools do you think are the most important to implement in the future? [Open question]

Original language	Translation in English
Nutzung einer gemeinsamen Mobilitätsapp	Use of a shared mobility app
Apps, Programme, Echtzeitdaten, Buchen, Bezahlen	Apps, programs, real-time data, booking, paying
Empfangen von Echtzeit-Informationen zu freien Plätzeb	Receive real-time information on vacanciesb
Echtzeit-Informationen zu den Reisezeiten	Real-time information on travel times
Zuverlässige Informationen über Verspätungen und Auslastung	Reliable information about delays and occupancy
Baustellen und andere Hindernisse, welche die Fahrtzeit verlängern	Construction sites and other obstacles that increase travel time
online Echtzeit Linienplan	online real time line plan
Auslastungsanzeige (auf Website und/oder App oder auch auf Anzeige an Haltestelle)	Occupancy display (on the website and/or app or also on the display at the bus stop)
Bezahlsysteme / einpiepsen, auspiepsen wie Fairtiq	Payment systems / page in, page out like Fairtiq
Echtzeitreiseinformation	Real time travel information
Apps für Fahrplanauskunft und Bezahlung	Apps for timetable information and payment
Check-In-Check-Out Systeme	Check in check out systems
WLAN (unbegrenzt) in Zügen etc. , digitale Fahrkartenkontrolle (QR-Code), ansonsten siehe 27.	WLAN (unlimited) in trains etc., digital ticket control (QR code), otherwise see 27.

Italy

General information

2.   In which country do you live? [drop down menu]

Italy	389

3.   In which region do you live? [open question]

Unique Answers	

4.   The place where you live is located:

in a urban area	194
in a suburban area	104
in a rural area	91

5.   Please indicate your age category

<15	88
15 – 18	199
18 – 25	34
26 – 35	5
> 35	63

6.   Please indicate your gender

Female	220
Male	149
I prefer not to declare it	20

7. Do you have a driving licence?

Yes	96
No	293

8. Do you have a local public transport season ticket?

Yes	245
No	144

9. Please select the vehicles you own: [multiple choice]

Bicycle	n/a
Car	**n/a**
Electric bicycle	**n/a**
Electric scooter	**n/a**
I don't own any vehicles	**n/a**
Motorbike/moped	**n/a**

10. What degree of education do you hold?

primary education	101
secondary education	201
higher education degree	29
vocational training degree	13
other	
I prefer not to say	25

11. Currently:

I am a student	319
I do not work	8
I prefer not to say	3
I work as an employee	55
I work as freelance work	8

Mobility habits

12. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Prior to COVID-19 outbreak**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	91	54	63	181
Moped/Motorcycle	352	24	6	7
Bike	131	118	69	71
Bus	150	27	22	190
Train	273	83	7	26
Metro	374	14	1	0
Sharing services	353	18	8	10
Walk	100	83	90	116
Tram	379	6	3	1

Boat	383	5	1	0
Taxi	373	14	2	0
Combination of travel (e.g. park and ride)	365	15	6	3

13. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Currently:**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	70	58	75	186
Moped/Motorcycle	341	27	10	11
Bike	147	107	61	74
Bus	136	33	30	190
Train	280	72	13	24
Metro	382	5	1	1
Sharing services	358	15	9	7
Walk	124	75	82	108
Tram	380	6	2	1
Boat	384	3	1	1
Taxi	375	11	2	1
Combination of travel (e.g. park and ride)	369	11	5	4

14. Did covid-19 influence your way of travelling in the post-pandemic period?

No	**134**
Only the frequency, but not the mode of transport	95
Only the mode of transport, not the frequency	53
Yes, both the frequency and the mode of transport	107

15. How much did the factors listed below influence your choice to use the different modes of transport? **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
Travel time	122	118	106	43
Travel cost	130	136	100	23
Service frequency / Puntuality of services	97	110	131	51
Safety (reducing accident risks)	198	130	48	13
Security (reducing infection risks)	173	107	71	38
Confort and/or cwdedness of public transport	102	99	115	73
traffic and parking (difficulty/cost)	146	130	86	27
Freedom and independence of movement	87	117	108	77

16. How much did the factors listed below influence your choice to use the different modes of transport? Currently

	Not very important	Neutral	Important	Decisive

Travel time	121	99	104	65
Travel cost	136	125	94	34
Service frequency / Puntuality of services	93	94	134	68
Safety (reducing accident risks)	185	137	49	18
Security (reducing infection risks)	89	86	114	100
Confort and/or cwdedness of public transport	74	68	131	116
traffic and parking (difficulty/cost)	141	133	82	33
Freedom and independence of movement	94	103	115	77

17. Please indicate below which statement applies the most to your situation **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
I was dependent on public transport for my daily activities	170	54	61	104
I had access to other travel options than public transport and I used public transport as little as possible	163	119	49	58
I had access to other travel options than public transport but I preferred to use public transport	232	92	44	21

18. Please indicate below which statement applies the most to your situation **currently**

	Not very important	Neutral	Important	Decisive
I am dependent on public transport for my daily activities	151	48	75	115
I have access to other travel options than public transport and I used public transport as little as possible	155	97	54	83
I have access to other travel options than public transport but I preferred to use public transport	216	92	50	31

19. If you have abandoned/reduced the use of public services, what could make you change your mind?

New vehicles	n/a
Improved sanitation	
Less crowding	
Different timetables	
More attractive, lively stations	
Quality of connections	
Frequency of connections	

19. If you have abandoned/reduced the use of public services, what could make you change your mind? [Open answers]

ORIGINAL LANGUAGE	TRANSLATION IN ENGLISH
servizi veloci, con meno fermate	fast services, with fewer stops
non ho ridotto l'utilizzo	I have not reduced the usage
La mia modifica delle abitudini è per esigenze diverse	My habits change is for different needs
PROGETTI VIRTUOSI	VIRTUOUS PROJECTS
ACCESSO AI DISABILI	ACCESS TO THE DISABLED
Più linee	More lines
Sicurezza nelle stazioni	Safety in stations
Più corse a disposizione	More rides available
costi e sicurezza	costs and safety
ho iniziato ad usare gli autobus dopo la pandemia per recarmi nella scuola superiore	I started using buses after the pandemic to get to high school
Adibire alcuni mezzi solo per trasporto scolastico perciò fruibili solo da ragazzi, professori e personale ata	Use some vehicles only for school transport therefore usable only by children, teachers and ata staff
non lo utilizzo	I don't use it
puntualità e maggiori orari disponibili	punctuality and longer times available
MOLTI PIÙ VEICOLI A DISPOSIZIONE.	MANY MORE VEHICLES AVAILABLE.
Più sicurezza	More security
Prenotare i posti	Reserve seats
Maggiori veicoli	More vehicles
Nn ci sono trasporti adeguati dove abito	There are no adequate transports where I live
Più veicoli ecologici	More green vehicles
SVILUPPARSI, SIAMO ITALIANI, IGNORANTI	DEVELOP, WE ARE ITALIAN, IGNORANT
Autobus agli orari giusti e diretti a scuola	Buses at the right times and direct to school
Personale qualificato	Qualified personnel
avere la possibilità di trasporto pubblico scuola - casa anche il sabato	have the possibility of public transport school - home also on Saturdays
Rendere obbligatorio il green pass sui mezzi pubblici	Make the green pass mandatory on public transport
Vi prego togliete gli autobus gialli che fanno biiiiip ogni volta che si aprono le porte (MO)	Please take off the yellow buses that biiiiip every time the doors open (MO)
Puntualità	Punctuality
Non ho cambiato il tipo di servizi pubblici	I haven't changed the type of public services
affidabilita' nella regolarita' dei trasporti, maggiore fruibilita'	reliability in the regularity of transport, greater usability
maggiori controlli sul corretto rispetto delle norme	greater controls on correct compliance with the rules

20. Have you observed a change in your family's or friends' mobility habits as a consequence of COVID-19?

Yes	169
No	220

Feelings and suggestions

21. With regard to the risk of contracting COVID-19, I consider public transport to be

	much less safe than..	a little less safe than..	equally safe as…	a little safer than…	much safer than..	I have no opinion
Public parks	165	101	50	25	19	29
Inner city boulevards and squares	94	145	80	34	10	26
Grocery stores and supermarkets	52	155	113	26	17	26
Shopping centre	47	130	137	34	14	27
Schools and universities	89	143	86	22	27	22

22. Do you consider transport modes (e.g. Metro, Tram, Bus, Train, Walking...) equally safe? (with regard to the risk of contracting COVID-19)

Yes	105
No	204

23. If so, In your opinion, please, rank these transport modes from the SAFER to the LESS SAFE during COVID-19 outbreak (with regard to the risk of contracting COVID-19)

[Values obtained.1 = SAFER and 9 = LESS SAFE]

	#1 SAFER	#2	#3	#4	#5	#6	#7	#8	#9 LESS SAFE
Bicycle	35	129	69	16	5	4	6	8	7
Bus	6	7	10	9	16	40	64	47	80
Metro	16	4	2	5	20	39	45	43	105
Motorcycle, Moped, Scooter	10	38	81	105	11	7	5	10	12
Own Car	108	29	56	60	2	6	9	5	4
Taxi or Ride-Hailing	0	0	0	12	175	39	9	20	24
Train	3	7	9	16	31	91	52	54	16
Tram	0	9	7	11	15	45	85	85	22
Walking	101	56	45	45	4	8	4	7	9

[Pondered average value between 1 = SAFER and 9 = LESS SAFE]

Bicycle	2,80
Bus	6,99
Metro	7,13
Motorcycle, Moped, Scooter	3,83
Own car	2,72
Taxi or Ride-Hailing	5,72
Train	6,27
Tram	6,81
Walking	2,73

24. In your opinion, please rank these measures from the one you consider the most important, to the one you consider the LESS IMPORTANT (with regard to the risk of contracting COVID-19)

[Values obtained, between 1 = most important and 7 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5	#6	#7 LESS IMPORTANT
Avoiding touching surfaces	9	46	87	146	54	35	12
Keeping distance from other passengers	108	165	70	27	12	5	2
Presence of signposting to mark entry/exit routes from transport hubs	2	1	7	24	79	162	114
Receiving information on the crowding of means of transport	6	17	17	51	81	91	126
Vehicle sanitation	73	68	126	66	40	15	1
Wearing gloves	0	10	25	35	111	77	131
Wearing masks	191	81	57	40	12	4	3

[Pondered average value between 1 = most important and 7 = LESS IMPORTANT]

Keeping distance from other passengers	**3,88**
Avoiding touching surfaces	2,21
Wearing gloves	5,88
Wearing masks	5,47
Vehicle sanitation	2,95
Presence of signposting to mark entry/exit routes from transport hubs	5,58
Receiving information on the crowding of means of transport	2,03

25. Would you be willing to change your entry/exit times to school/work to avoid overcrowding of public vehicles during rush hours?

Yes	134
No	143
I don't know	112

26. Do you think that the increase in digitalisation of public transport will improve travel safety? (Regarding the risk of COVID-19 infection)

Yes	168
No	89
I don't know	132

27. Which digital tools do you think are the most important to implement in the future? Please **rank** these solutions from the one you consider the most important, to the one you consider the LESS IMPORTANT

[Values obtained, between 1 = most important and 5 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5 LESS IMPORTANT

Applications enabling travel planning and integration of services (travel planner)	33	35	83	140	98
Applications for booking and paying for tickets (e-ticketing)	47	65	65	87	125
Receiving real-time information on the number of free places on vehicles	213	91	54	19	12
Receiving real-time information on travel times	44	147	108	50	40
Video surveillance cameras	52	51	79	93	114

[Pondered average value between 1 = most important and 5 = LESS IMPORTANT]

Applications enabling travel planning and integration of services (travel planner)	**3,60**
Applications for booking and paying for tickets (e-ticketing)	3,46
Receiving real-time information on the number of free places on vehicles	1,78
Receiving real-time information on travel times	2,73
Video surveillance cameras	3,43

28. Which digital tools do you think are the most important to implement in the future? [Open question]

ORIGINAL LANGUAGE	TRANSLATION IN ENGLISH
Offrire la possibilità di scelta istantanea all'utente del mezzo più efficiente in relazione alle disponibilità	Offer the user the possibility of instant choice of the most efficient vehicle in relation to availability
informazioni sui passeggeri a bordo, e controlli tramite videocamere per chi indossa, o meno, i dispositivi di sicurezza (i quali mascherina, guanti ecc.)	information on passengers on board, and checks via video cameras for those who wear or not the safety devices (such as a mask, gloves, etc.)
Maggior numero di corse	More number of rides
informare in tempo reale sui posti disponibili	inform in real time about available places
ma quali strumenti digitali se non ci sono abbastanza autobus e siamo stipati come sardine!	but what digital tools if there aren't enough buses and we're crammed like sardines!
Più telecamere sui mezzi e più marcatori per biglietti	More cameras on the vehicles and more ticket markers
Quanti posti sull'autobus ci sono liberi	How many seats on the bus are there free
Telecamere di sorveglianza	Surveillance cameras
APP DA USARE SU CELLULARI	APP FOR USE ON MOBILE PHONES
Gli autobus	The buses
Informazioni in tempo reale sul numero di posti liberi sui veicoli	Real-time information on the number of free spaces on vehicles
Il teletrasporto	The teleportation
Siti online dei mezzi pubblici in tempo reale o dal vivo	Online sites of public transport in real time or live
Biglietti digitali	e-tickets
Doppio marcatore di biglietti in due punti diversi dell'autobus	Double ticket marker at two different points on the bus
Rispetto per i mezzi pubblici	Respect for public transport
App Qoda	Qoda App
Sull'autobus: tabellone che annuncia le fermate, più campanelli per prenotarle	On the bus: billboard announcing stops, plus bells to book them

Sapere in tempo reale se ci fosse bisogno di una corsa aggiuntiva per gli autobus	Know in real time if there is a need for an additional bus ride
app su affollamento	crowding app
Conoscere in tempo reale dove si trova il mezzo di trasporto e quando è affollato sono consapevole che l'applicazione esiste già ma non è mai funzionante purtroppo.	Knowing in real time where the means of transport is and when it is crowded I am aware that the application already exists but unfortunately it never works.

Specific pilot experience [only for the Italian aMo]

29.   Do you think that during pandemic local public transport passenger capacity limitation (80% and 50%) was respected?

Yes	47
No	282
I don't know	60

30.   Do you think that the commissioning of additional buses contributed to making public transport safer during the pandemic?

Yes	184
No	144
I don't know	61

Poland

General information

2.   In which country do you live? [drop down menu]

Poland	143

3.   In which region do you live? [open question]

Unique Answers	

4.   The place where you live is located:

in a urban area	72
in a suburban area	44
in a rural area	27

5.   Please indicate your age category

<15	2
15 – 18	6
18 – 25	26
26 – 35	33
> 35	76

6.   Please indicate your gender

Female	61
Male	77
I prefer not to declare it	5

Interreg
CENTRAL EUROPE
European Union
European Regional
Development Fund
YOUMOBIL

7.   Do you have a driving licence?

Yes	102
No	41

8.   Do you have a local public transport season ticket?

Yes	89
No	54

9.   Please select the vehicles you own: [multiple choice]

Bicycle	N/A
Car	
Electric bicycle	
Electric scooter	
I don't own any vehicles	
Motorbike/moped	

10.   What degree of education do you hold?

primary education	1
secondary education	29
higher education degree	97
vocational training degree	6
other	-
I prefer not to say	9

11.   Currently:

I am a student	19
I do not work	2
I prefer not to say	28
I work as an employee	105
I work as freelance work	9

Mobility habits

12.   How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Prior to COVID-19 outbreak**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	37	46	31	29
Moped/Motorcycle	133	7	3	0
Bike	43	58	27	15
Bus	39	35	28	41
Train	9	29	22	83
Metro	53	42	24	24
Sharing services	126	11	3	3
Walk	7	17	18	101
Tram	41	37	30	35

Boat	140	2	0	1
Taxi	104	34	4	1
Combination of travel (e.g. park and ride)	114	17	4	8

13. How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Currently:**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	36	41	31	35
Moped/Motorcycle	135	7	1	0
Bike	47	50	28	18
Bus	45	43	26	29
Train	13	41	26	63
Metro	61	50	14	18
Sharing services	130	6	4	3
Walk	13	12	30	88
Tram	52	49	25	17
Boat	142	1	0	0
Taxi	109	28	6	0
Combination of travel (e.g. park and ride)	119	16	2	6

14. Did covid-19 influence your way of travelling in the post-pandemic period?

No	**65**
Only the frequency, but not the mode of transport	43
Only the mode of transport, not the frequency	4
Yes, both the frequency and the mode of transport	31

15. How much did the factors listed below influence your choice to use the different modes of transport? **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
Travel time	10	18	61	54
Travel cost	8	29	65	41
Service frequency / Puntuality of services	4	11	71	57
Safety (reducing accident risks)	30	51	38	24
Security (reducing infection risks)	55	51	24	13
Confort and/or cwdedness of public transport	25	48	47	23
traffic and parking (difficulty/cost)	36	29	54	24
Freedom and independence of movement	20	44	43	36

16. How much did the factors listed below influence your choice to use the different modes of transport? Currently

	Not very important	Neutral	Important	Decisive

Travel time	13	20	51	59
Travel cost	15	34	51	43
Service frequency / Puntuality of services	9	14	64	56
Safety (reducing accident risks)	33	45	41	24
Security (reducing infection risks)	31	41	32	39
Confort and/or cwdedness of public transport	19	35	49	40
traffic and parking (difficulty/cost)	37	35	50	21
Freedom and independence of movement	16	41	49	37

17. Please indicate below which statement applies the most to your situation **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
I was dependent on public transport for my daily activities	29	21	33	60
I had access to other travel options than public transport and I used public transport as little as possible	78	49	15	7
I had access to other travel options than public transport but I preferred to use public transport	45	26	40	32

18. Please indicate below which statement applies the most to your situation **currently**

	Not very important	Neutral	Important	Decisive
I am dependent on public transport for my daily activities	32	31	35	45
I have access to other travel options than public transport and I used public transport as little as possible	62	45	22	14
I have access to other travel options than public transport but I preferred to use public transport	52	34	34	23

19. If you have abandoned/reduced the use of public services, what could make you change your mind?

New vehicles	n/a
Improved sanitation	
Less crowding	
Different timetables	
More attractive, lively stations	
Quality of connections	
Frequency of connections	

19. If you have abandoned/reduced the use of public services, what could make you change your mind? [Open answers]

ORIGINAL LANGUAGE	TRANSLATION IN ENGLISH
Zmiany kadrowe spółki wysokich stanowisk	Personnel changes in high positions of the company
zakończenie pandemii	ending the pandemic
wydzielone pasy ruchu dla autobusów	dedicated lanes for buses
Więcej połączeń przyspieszonych	More accelerated connections
Więcej połączeń	More connections
Umożliwienie zjazdu pasażerom z ograniczoną mobilnością lub pasazerom z cięższym bagażem wjazdu lub zjazdu w przypadku niedziałających wind na schodach	Enabling passengers with reduced mobility or passengers with heavier luggage to exit in the event of non-operating stair lifts
Time	Time
Tickets prices	Tickets prices
Rezygnacja z masek!	Giving up masks!
Punktualność, płynniejsza jazda kierowców (mniej szarpania), więcej tramwajów zamiast autobusów	Punctuality, smoother driving of drivers (less jerking), more trams instead of buses
punktualność pociągów	punctuality of trains
Punktualność	punctuality
powrót do pracy staqcjonarnej	return to stationary work
powrót do pracy stacjonarnej	return to stationary work
ograniczyłam korzystanie z usług publicznych, ponieważ pracuję z domu	I have restricted my use of public services because I work from home
Nowy tor między trasą podkowa leśna Główna Grodzisk Mazowiecki	A new track between the Podkowa Lesna Main - Grodzisk Mazowiecki
no	No
nie zrezygnowalem	I did not quit
Nie mam możliwości dojechania do pracy transportem publicznym	I cannot commute to work by public transport
Nic, komunikacja zbiorowa skutecznie mnie zniechecila	Nothing, public transport effectively discouraged me
Możliwość szybkiego i łatwego dotarcia w określone miejsca (siatka połączeń, wygodne przesiadki)	The ability to quickly and easily reach specific places (network of connections, convenient transfers)
More frequent trains	More frequent trains
lepsza dostępność informacji o aktualnych zakłoceniach (call-center, szybko pojawiające się komunikaty www, email, sms)	better availability of information about current disruptions (call-center, quickly appearing web messages, email, text messages)
Integrakcja biletowa	Ticket integration
Egzekwowanie przez obsługę noszenia maseczek przez podróżnych	Enforcement by service of the wearing of masks by travelers
egzekwowanie przestrzegania obostrzeń covidowych	enforcing compliance with covid restrictions
Dostosowanie infrastruktury do potrzeb rodziców z dziećmi, osób nirpełnosprawnych i działłające windy, a nie wieczna awaria lub wybudowanie podjazdów dla wózków, które skasowano przy okazji budowania psedo nowoczesnych inpseudo dostosowanych dla wózków przystanków kolejowych	Adapting the infrastructure to the needs of parents with children, disabled people and working lifts, and not an eternal failure or construction of ramps for prams, which were removed during the construction of modern in-pseudo wheelchairs adapted to railway stops' trolleys
częstsze połączenia pociągiem	more frequent train connections

częstotliwość	frequency
ceny biletów	ticket prices

20. Have you observed a change in your family's or friends' mobility habits as a consequence of COVID-19?

Yes	80
No	63

Feelings and suggestions

21. With regard to the risk of contracting COVID-19, I consider public transport to be

	much less safe than..	a little less safe than..	equally safe as...	a little safer than...	much safer than..	I have no opinion
Public parks	49	27	22	7	25	13
Inner city boulevards and squares	35	36	31	11	14	16
Grocery stores and supermarkets	17	21	65	13	13	14
Shopping centre	19	22	61	14	14	13
Schools and universities	18	18	63	14	10	20

22. Do you consider transport modes (e.g. Metro, Tram, Bus, Train, Walking...) equally safe? (with regard to the risk of contracting COVID-19)

Yes	83
No	60

23. If so, In your opinion, please, rank these transport modes from the SAFER to the LESS SAFE during COVID-19 outbreak (with regard to the risk of contracting COVID-19)

[Values obtained.1 = SAFER and 9 = LESS SAFE]

	#1 SAFER	#2	#3	#4	#5	#6	#7	#8	#9 LESS SAFE
Bicycle	4	25	16	8	1	2	3	1	0
Bus	0	3	0	3	2	8	11	1	19
Metro	3	2	0	3	2	10	12	15	13
Motorcycle, Moped, Scooter	3	6	15	24	2	3	12	2	5
Own Car	30	5	10	8	0	1	1	2	3
Taxi or Ride-Hailing	0	1	1	0	44	4	2	2	6
Train	3	1	2	4	6	21	7	6	10
Tram	0	0	5	1	3	11	7	16	3
Walking	17	17	11	9	0	0	3	2	1

[Pondered average value between 1 = SAFER and 9 = LESS SAFE]

Bicycle	**3,00**

Bus	7,06
Metro	6,83
Motorcycle, Moped, Scooter	4,57
Own car	2,63
Taxi or Ride-Hailing	5,55
Train	6,17
Tram	6,61
Walking	2,77

24.   In your opinion, please rank these measures from the one you consider the most important, to the one you consider the LESS IMPORTANT (with regard to the risk of contracting COVID-19)

[Values obtained, between 1 = most important and 7 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5	#6	#7 LESS IMPORTANT
Avoiding touching surfaces	10	27	45	34	14	11	2
Keeping distance from other passengers	43	48	22	17	8	3	2
Presence of signposting to mark entry/exit routes from transport hubs	7	5	10	8	12	56	45
Receiving information on the crowding of means of transport	8	7	12	13	26	24	53
Vehicle sanitation	24	26	28	26	34	4	1
Wearing gloves	0	1	16	23	40	34	29
Wearing masks	51	29	10	22	9	11	11

[Pondered average value between 1 = most important and 7 = LESS IMPORTANT]

Keeping distance from other passengers	**3,39**
Avoiding touching surfaces	2,41
Wearing gloves	5,52
Wearing masks	5,28
Vehicle sanitation	3,25
Presence of signposting to mark entry/exit routes from transport hubs	5,24
Receiving information on the crowding of means of transport	2,90

25.   Would you be willing to change your entry/exit times to school/work to avoid overcrowding of public vehicles during rush hours?

Yes	55
No	58
I don't know	30

26.   Do you think that the increase in digitalisation of public transport will improve travel safety? (Regarding the risk of COVID-19 infection)

Yes	72
No	37
I don't know	34

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27.   Which digital tools do you think are the most important to implement in the future? Please rank these solutions from the one you consider the most important, to the one you consider the LESS IMPORTANT

[Values obtained, between 1 = most important and 5 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5 LESS IMPORTANT
Applications enabling travel planning and integration of services (travel planner)	13	30	37	37	26
Applications for booking and paying for tickets (e-ticketing)	14	21	29	38	37
Receiving real-time information on the number of free places on vehicles	40	28	25	25	25
Receiving real-time information on travel times	61	49	18	13	2
Video surveillance cameras	11	15	34	30	53

[Pondered average value between 1 = most important and 5 = LESS IMPORTANT]

Applications enabling travel planning and integration of services (travel planner)	**3,23**
Applications for booking and paying for tickets (e-ticketing)	3,45
Receiving real-time information on the number of free places on vehicles	2,77
Receiving real-time information on travel times	1,92
Video surveillance cameras	3,69

28.   Which digital tools do you think are the most important to implement in the future? [Open question]

ORIGINAL LANGUAGE	TRANSLATION IN ENGLISH
wprowadzenie możliwości zakupu biletów różnych przewoźników	introducing the possibility of purchasing tickets from various carriers
aplikacja do planowania podróży	travel planner app
rozkłady jazdy na e-papierze	timetables on e-paper
punktualność	punctuality
położenie pojazdów transportu publicznego	location of public transport vehicles
aplikacje pomagające podróżnym	applications that help travelelrs
aplikacja o lokalizacji pojazdu, wyszukiwanie połączeń w czasie rzeczywistym	Vehicle location application, real-time connections search
Otrzymywanie informacji w czasie rzeczywistym o liczbie wolnych miejsc w pojazdach	Receive real-time information on the number of vacancies in vehicles
skuteczny monitoring	effective monitoring
Mapa z aktualną lokalizacją pociągów	Map with the current location of trains
centralna informacja o awariach	central information about failures
aplikacje na smartfona	smartphone applications
jakaś sprawna aplikacja pokazująca rzeczywiste opóźnienia pociągów, możliwość zakupu biletów miesięcznych przez aplikację, przedłużenie ważności karty np metropolitalnej przez internet, sugerowane miejsce wagon do z wolnym miejscem	any efficient application showing the actual train delays, the possibility of purchasing monthly tickets through the application, extending the validity of the card, e.g. metropolitan card via the Internet, suggested place for a wagon with a free seat
Możliwość latania autobusem nad korkami	The possibility of flying the bus over traffic jams
Informacja o wolnych miejscach	Information about vacancies

Automatyczne powiadomienia, że pociąg, którym zamierzam jechać będzie miał opóźnienie...	Automatic notifications that the train on which I intend to travel will have a delay ...
1) informacja na żywo o rzeczywistym położeniu pojazdów z dodatkowym info o występującym lub przewidywanym opóźnieniu. 2 informacja o dogodnych przesiadkach w czasie rzeczywistym (po wskazaniu docelowego miejsca podróży)	1) live information about the real position of vehicles with additional information about the actual or expected delay. 2 information about convenient transfers in real time (after indicating the destination)
KAMERY NA PRZEJAZDACH	CAMERAS on crossings
Otrzymywanie w czasie rzeczywistym informacji o liczbie wolnych miejsc w pojazdach	Receiving real-time information on the number of vacancies in vehicles
witrualne rozkłady jazdy	virtual timetables
1. Wprowadzenie biletów typu pay as you go tj. możliwość opłaty jak kartą Oyster w TfL lub kartą płatniczą. 2. Monitoring zajętości pojazdów aktualny i przewidywany na podstawie danych historycznych. 3. Zróżnicowanie opłaty za przejazd od pory podróży (tańsze przejazdy socjalne w godzinach mniejszej zajętości), droższe w godzinach szczytu.	1. Introduction of pay as you go tickets, i.e. the possibility of paying with an Oyster card in TfL or with a payment card. 2. Vehicle occupancy monitoring - up-to-date and forecast based on historical data. 3. Differentiation of the toll from the time of travel (cheaper social travel in less busy hours), more expensive in peak hours.
Aplikacja mobilna do śledzenia pociągów	Mobile application for tracking trains
Otrzymywanie informacji w czasie rzeczywistym	Receiving real-time information
Tablice świetlne na przystankach i w pojeżdżę informacja o przesiadkach na inne linie lub kierunki podróż y	Light boards at bus stops and travel information about transfers to other lines or travel directions
aplikacje do zakupu biletów	applications for purchasing tickets
Ilość osób w pojeździe i ilość wolnych miejsc	Number of people in the vehicle and number of vacancies
Umożliwienie płatności banknotami lub monetami za bilety kupowane w automacie w pojeździe oraz umieszczenie pisemnej informacji o zakazie palenia tytoniu na terenie całego przystanku	Payments with banknotes or coins for tickets bought in the machine in the vehicle and placing written information about the prohibition of smoking throughout the bus stop
bieżąca i rzetelna informacja o opóźnieniach	current and reliable information about delays
telefon	Telephone
Punktualność podróży	Punctuality of travel
autonomiczne pojazdy	autonomous vehicles
Mierniki temperatury ciała	Body temperature thermometers
Możliwość zakupu biletu w pociągu	Możliwość zakupu biletu w pociągu
aplikacje z danymi o pozycji pojazdu, pokazujące odchylenie od rozkładu jazdy (+ dodatkowo pozycję na mapie z odświeżaniem co minimum 30 sek.)	applications with data about the vehicle's position, showing the deviation from the timetable (+ additionally, the position on the map with a refresh every 30 seconds)
bilet elektroniczny	electronic ticket
Ostrava w Czechach ma genialnie rozwiązane płacenie za bilety: https://youtu.be/hTQwv6qbYzc to jest coś co moglibyśmy ściągnąć do Polski	Ostrava in the Czech Republic has a brilliant solution to pay for tickets: https://youtu.be/hTQwv6qbYzc this is something that we could download to Poland
brak	none
Informacja na przystankach	Information at bus stops
kontrola przepływu pieniędzy w spółkach pkp	control of money flow in the company PKP

Slovakia

General information

f2.   In which country do you live? [drop down menu]

Slovakia	87

3.   In which region do you live? [open question]

Unique Answers	

4.   The place where you live is located:

in a urban area	64
in a suburban area	12
in a rural area	11

5.   Please indicate your age category

<15	1
15 – 18	2
18 – 25	21
26 – 35	25
> 35	38

6.   Please indicate your gender

Female	45
Male	39
I prefer not to declare it	3

7.   Do you have a driving licence?

Yes	67
No	20

8.   Do you have a local public transport season ticket?

Yes	40
No	47

9.   Please select the vehicles you own: [multiple choice]

Bicycle	n/a
Car	
Electric bicycle	
Electric scooter	
I don't own any vehicles	
Motorbike/moped	

10.   What degree of education do you hold?

primary education	2
secondary education	7
higher education degree	61
vocational training degree	15
other	-
I prefer not to say	2

11.　　Currently:

I am a student	21
I do not work	8
I prefer not to say	3
I work as an employee	50
I work as freelance work	5

Mobility habits

12.　How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Prior to COVID-19 outbreak**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	26	23	23	15
Moped/Motorcycle	83	0	3	1
Bike	31	28	12	16
Bus	7	29	16	35
Train	24	49	9	5
Metro	86	0	0	1
Sharing services	78	8	4	3
Walk	0	12	25	50
Tram	75	6	1	5
Boat	87	0	0	0
Taxi	64	23	0	0
Combination of travel (e.g. park and ride)	81	5	2	0

13.　How often do you use the following modes of transport and how has the outbreak of COVID-19 changed your use? **Currently:**

	I did not use it	I have used it occasionally (less than once a week)	I have used it frequently (1 - 3 times a week)	I have used it regularly (4 times a week or more)
Car	24	26	21	16
Moped/Motorcycle	83	0	3	1
Bike	35	24	12	16
Bus	11	34	16	26
Train	35	40	9	3
Metro	85	1	0	1
Sharing services	73	10	2	2
Walk	3	9	25	50
Tram	76	7	2	2
Boat	86	1	0	0
Taxi	68	19	0	0
Combination of travel (e.g. park and ride)	79	5	3	0

14.　Did covid-19 influence your way of travelling in the post-pandemic period?

No	**29**
Only the frequency, but not the mode of transport	29
Only the mode of transport, not the frequency	7
Yes, both the frequency and the mode of transport	22

15. How much did the factors listed below influence your choice to use the different modes of transport? **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
Travel time	9	15	41	22
Travel cost	15	26	31	15
Service frequency / Puntuality of services	8	19	39	21
Safety (reducing accident risks)	28	36	22	12
Security (reducing infection risks)	26	26	24	11
Confort and/or cwdedness of public transport	6	31	33	17
traffic and parking (difficulty/cost)	15	24	35	13
Freedom and independence of movement	12	21	31	23

16. How much did the factors listed below influence your choice to use the different modes of transport? Currently

	Not very important	Neutral	Important	Decisive
Travel time	7	19	38	23
Travel cost	10	32	29	16
Service frequency / Puntuality of services	8	15	40	24
Safety (reducing accident risks)	12	33	26	16
Security (reducing infection risks)	12	21	32	22
Confort and/or cwdedness of public transport	6	20	38	23
traffic and parking (difficulty/cost)	14	28	28	17
Freedom and independence of movement	9	21	33	24

17. Please indicate below which statement applies the most to your situation **Prior to COVID-19 outbreak**

	Not very important	Neutral	Important	Decisive
I was dependent on public transport for my daily activities	21	19	24	23
I had access to other travel options than public transport and I used public transport as little as possible	34	32	16	5
I had access to other travel options than public transport but I preferred to use public transport	30	26	15	16

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18. Please indicate below which statement applies the most to your situation **currently**

	Not very important	Neutral	Important	Decisive
I am dependent on public transport for my daily activities	26	22	17	22
I have access to other travel options than public transport and I used public transport as little as possible	25	28	21	13
I have access to other travel options than public transport but I preferred to use public transport	32	27	16	12

19. If you have abandoned/reduced the use of public services, what could make you change your mind?

New vehicles	n/a
Improved sanitation	
Less crowding	
Different timetables	
More attractive, lively stations	
Quality of connections	
Frequency of connections	

19. If you have abandoned/reduced the use of public services, what could make you change your mind? [Open answers]

Vyššia frekvencia spojov	Higher connection frequency
vyššia frekvencia spojov a nižší cestovný čas pri verejnej doprave	higher frequency and lower travel time on public transport
Rýchlejší vodiči	Faster drivers
Lepši časový rozvrh. Trolejbusy zo sidlisk priamo napájať na vlaky hlavných smerov do/z Bratislavy, Košíc	Better timetable. Trolleybuses from the housing estate feed directly to the main trains to / from Bratislava, Košice
neobmedzil som	I did not limit
Služby verejnej dopravy budem využívať za každých okolností	I will use public transport services at all times
Lepšia nadväznosť spojov, menej časté meškanie.	Better connection, less frequent delays.
časová nadväznosť rôznych druhov dopravy na seba	time continuity of different modes of transport
Správanie vodičov	Driver behavior
Atraktívnejšie intervaly spojov	More attractive connection intervals
som spokojná	I am satisfied
zrušenie dopytového otvárania dverí, posilnenie spojov v čase špičky	cancellation of demand opening of doors, strengthening of joints at peak times

Väčšia frekvencia spojov	Higher connection frequency

20. Have you observed a change in your family's or friends' mobility habits as a consequence of COVID-19?

Yes	54
No	33

Feelings and suggestions

21. With regard to the risk of contracting COVID-19, I consider public transport to be

	much less safe than..	a little less safe than..	equally safe as...	a little safer than...	much safer than..	I have no opinion
Public parks	39	17	17	3	6	5
Inner city boulevards and squares	25	19	26	3	6	8
Grocery stores and supermarkets	11	14	45	9	3	5
Shopping centre	14	9	43	10	7	4
Schools and universities	11	20	30	13	8	5

22. Do you consider transport modes (e.g. Metro, Tram, Bus, Train, Walking...) equally safe? (with regard to the risk of contracting COVID-19)

Yes	43
No	44

23. If so, In your opinion, please, rank these transport modes from the SAFER to the LESS SAFE during COVID-19 outbreak (with regard to the risk of contracting COVID-19)

[Values obtained.1 = SAFER and 9 = LESS SAFE]

	#1 SAFER	#2	#3	#4	#5	#6	#7	#8	#9 LESS SAFE
Bicycle	5	14	14	4	2	2	0	2	1
Bus	0	0	3	3	6	7	16	4	5
Metro	3	2	0	1	6	3	6	8	15
Motorcycle, Moped, Scooter	0	7	15	13	2	1	0	2	4
Own Car	19	5	6	10	0	0	2	0	2
Taxi or Ride-Hailing	0	0	0	2	19	4	1	6	12
Train	0	0	3	3	7	13	9	7	2
Tram	1	3	0	0	2	13	8	15	2
Walking	16	13	3	8	0	1	2	0	1

[Pondered average value between 1 = SAFER and 9 = LESS SAFE]

Bicycle	**3,14**
Bus	6,41

Metro	6,82
Motorcycle, Moped, Scooter	4,07
Own car	2,70
Taxi or Ride-Hailing	6,59
Train	6,16
Tram	6,57
Walking	2,55

24. In your opinion, please rank these measures from the one you consider the most important, to the one you consider the LESS IMPORTANT (with regard to the risk of contracting COVID-19)

[Values obtained, between 1 = most important and 7 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5	#6	#7 LESS IMPORTANT
Avoiding touching surfaces	2	16	24	19	14	9	3
Keeping distance from other passengers	11	25	28	17	5	0	1
Presence of signposting to mark entry/exit routes from transport hubs	0	4	2	6	17	36	22
Receiving information on the crowding of averages of transport	0	3	4	10	10	17	43
Vehicle sanitation	23	20	10	14	13	5	2
Wearing gloves	1	3	13	9	28	19	14
Wearing masks	50	16	6	12	0	1	2

[Pondered average value between 1 = most important and 7 = LESS IMPORTANT]

Keeping distance from other passengers	**3,76**
Avoiding touching surfaces	2,82
Wearing gloves	5,67
Wearing masks	5,87
Vehicle sanitation	2,97
Presence of signposting to mark entry/exit routes from transport hubs	4,99
Receiving information on the crowding of modes of transport	1,93

25. Would you be willing to change your entry/exit times to school/work to avoid overcrowding of public vehicles during rush hours?

Yes	32
No	34
I don't know	21

26. Do you think that the increase in digitalisation of public transport will improve travel safety? (Regarding the risk of COVID-19 infection)

Yes	46
No	18
I don't know	23

27. Which digital tools do you think are the most important to implement in the future? Please **rank** these solutions from the one you consider the most important, to the one you consider the LESS IMPORTANT

[Values obtained, between 1 = most important and 5 = LESS IMPORTANT]

	#1 MOST IMPORTANT	#2	#3	#4	#5 LESS IMPORTANT
Applications enabling travel planning and integration of services (travel planner)	8	17	25	26	11
Applications for booking and paying for tickets (e-ticketing)	14	13	22	19	19
Receiving real-time information on the number of free places on vehicles	25	20	20	14	8
Receiving real-time information on travel times	34	29	13	10	1
Video surveillance cameras	6	8	7	18	48

[Pondered average value between 1 = most important and 5 = LESS IMPORTANT]

Applications enabling travel planning and integration of services (travel planner)	3,17
Applications for booking and paying for tickets (e-ticketing)	**3,18**
Receiving real-time information on the number of free places on vehicles	2,54
Receiving real-time information on travel times	**2,02**
Video surveillance cameras	4,08

28. Which digital tools do you think are the most important to implement in the future? [Open question]

ORIGINAL LANGUAGE	TRANSLATION IN ENGLISH
greenhouse gas footprint calculator or availability of shared bicycles near bus stop	greenhouse gas footprint calculator or availability of shared bicycles near bus stop
Prepojenie online systémov verejnej dopravy s tým, že budeme vidieť možné prestupy medzi jednotlivými dopravnými prostriedkami ako aj dopravnými módmi (MHD,Regionálna doprava, Vlaky). Zabezpečenie náväznosti pri spojeniach s prestupom a mať informáciu o tom, či spoj bude čakať, resp. kde sa nachádza a mám šancu ho stihnúť.na základe	Interconnection of online public transport systems, with the proviso that we will see possible transitions between individual means of transport as well as modes of transport (public transport, regional transport, trains). Ensuring continuity of connections with the transfer and having information on whether the connection will wait, resp. where it is located and I have a chance to catch it
CCTV	CCTV
Neviem posúdiť	I can't judge
informácie o cestovných časoch v reálnom čase	real-time travel information
Lepšia/inteligentnejšia preferencia verejnej dopravy na svetelných križovatkách; vyššia miera operatívnosti spojená s efektívnym využívaním dostupných digitálnych nástrojov pri riešení mimoriadnych situácií/výluk v doprave.	Better / smarter preference for public transport at traffic lights; higher operational efficiency associated with the effective use of available digital tools in dealing with transport emergencies / exclusions.
Byť nezávislý na verejnej doprave	Be independent of public transport

Nepouživat vysoké schody v trolejbusch, busoch, ci električkach. Schody na sadnutie nie sú v norme a sú vysoké, mali by byť oveľa nizsie. Mam dojem, ze keď idem si v trolejbuse sadnúť, ze potrebujem rebrik.	Do not use high stairs in trolleybuses, buses or trams. Stairs to sit are not the norm and are high, they should be much lower. I have the impression that when I go to sit on a trolleybus, I need a ladder.
E-lístky	E-tickets
Informovanie v reálnom čase o počte voľných miest vo vozidlách verejnej dopravy	Real-time information on the number of vacancies in public transport vehicles
Application for booking and online payment	Application for booking and online payment
paltba smart telefonom, hodinkami, kartov	Application for booking and online payment
real time bus location and if 1 bus is late, the next bus i was going to change will wait for the late bus	real time bus location and if 1 bus is late, the next bus i was going to change will wait for the late bus
Online sledovanie vozidiel verejnej dopravy	Online tracking of public transport vehicles
Nemám vlastnú predstavu, ale všetky appky by mali byť "Users friendly", mnohé sa mi zdajú pomerne komplikované...	I don't have my own idea, but all apps should be "Users friendly", many of them seem quite complicated ...
Aplication for a real time information about actual poistion of public transport vehicles across all providers in actual area.	Aplication for a real time information about actual insurance of public transport vehicles across all providers in actual area.