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**GRINS**  
FOUNDATION

## DELIVERABLE 2.1

# Mobility Research Center (MRC)

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## Executive summary

The goal of WP 2 is to develop models for ex-ante forecasting and ex-post evaluation of the impact of investments in infrastructures and services. It focuses on innovative green and digital solutions, policies, and strategies to improve the accessibility, resilience, sustainability, and attractiveness of territories and cities. For this scope, the set-up of a Mobility Research Center (MRC) was foreseen during the project's first year.

To support the creation of the MRC, an extensive literature review on infrastructures and smart and sustainable mobility has been performed. Moreover, a comparative review of many international experiences dealing with the accessibility conditions on the territories and the behavioural analysis of users and consumers, firms, and decision-makers has been carried out.

The Mobility Research Center would support the research activities of Spoke 7 on territorial sustainability. In particular, the MRC would address three main issues at different territorial scales: urban mobility, the impact of transport infrastructures and services on the territory and accessibility.

The development of the MRC, which has started at the beginning of the project, is aimed at networking all the research skills and needs of Spoke 7 concerning on of the main topics of the research project: transport. The MRC is set up at the Department of Economics, Management and Business Law of the University of Bari "Aldo Moro". The Center would allow the carrying out of the research activity with the cooperation of all units of the project involved in this topic and will foster discussion among academics and local stakeholders and international experts.

The Center will provide data, analysis, and report to support cities, regions, firms, and policymakers in defining effective and innovative mobility policies and design and assess measures based on scientific evidence.

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# 1. Spoke 7 Territorial sustainability

## 1.1 WP 2 Infrastructures and smart & sustainable mobility

### 1.1.1 Deliverable 2.1 Mobility Research Center (MRC)

The goal of WP 2 is to develop models for ex-ante forecasting and ex-post evaluation of the impact of investments in infrastructures and services. It focuses on innovative green and digital solutions, policies, and strategies to improve the accessibility, resilience, sustainability, and attractiveness of territories and cities. For this scope, the set-up of a Mobility Research Center (MRC) was foreseen during the project's first year. The Center focuses on the impact of sustainable, shared, and smart mobility solutions and planning strategies in improving living conditions, social welfare, productivity, and environmental indicators in specific territories and areas (cities, metropolitan areas, inner areas, etc.) using laboratory experiments, surveys, quantitative analysis and simulations.

The set-up of a Mobility Research Center is functional to address the following main activities envisaged by the WP2:

- Evaluate the role of different transport infrastructures and related services in promoting territorial accessibility and attractiveness – for individuals and firms – and their spillover effects on the territory;
- Perform surveys on mobility choices with specific attention to public and private transport services and to passengers and freight transport and assess the potential of digital and shared innovative services;
- Analyse models, factors, and policies encouraging sustainable mobility lifestyles in different contexts;
- Develop scenarios for sustainable mobility policies and strategies in urban, less densely populated areas, and specific territorial/geographical contexts;
- Investigate the structural gaps in accessibility conditions of marginal areas;
- Analyse the interconnection between transport infrastructure and firms locational choices and performances;
- Study nexus between accessibility and tourism.

The criteria for establishing a Mobility Research Center are based on a comparative review of many international experiences dealing with the accessibility conditions on the territories and the behavioural analysis of users and consumers, firms, and decision-makers.

## 1.1.2 Challenges for future mobility and transport

Many are the challenges of Mobility today. Around 4.4 billion people - more than half of the world's population - live in urban areas today. Cities are denser than ever before, yet urbanization continues to increase. By 2050, 58% of the world's population will live in cities, and by 2100 it will be 85%. This global trend spells new challenges for urban mobility planning. With technological advancements, the way people and goods move around is changing. From e-scooters to ride-sharing apps, urban mobility planning is becoming more complex than ever. There are evident problems of increasing emigration from inner and remote areas that risk becoming increasingly unattractive for residents, visitors, and the economic and business ecosystem.

Additional problems are related to the environmental implications. The transport sector is recognized as one of the main polluters worldwide. For this reason, the entire sector is undergoing drastic changes in people's lives, firms' operations, territorial set-up, and governance.

So how can governments, agencies, and local policymakers meet the demands of sustainable urbanization? How can innovation reduce the accessibility gap of the inner and peripheral areas? How can behavioural insights and quantitative models help and support decision-makers in their choices?

A sustainable and accessible transport system requires planning, monitoring, and evaluating the current system to address behavioural change on the demand side and an appropriate sustainable policy and planning on the supply side (Bergantino et al., 2023). The Mobility Research Center tries to address the territorial mobility challenges by considering the spatial heterogeneity within Italian territories and using the latest available methodologies. The MRC will consider the transport sector in its different and variegated aspects also with a multidisciplinary focus; however, to effectively support the activities that have to be carried out within GRINS and, in particular, spoke 7, it will focus mainly on urban mobility, the impact of transport infrastructures on the territory and the issue of accessibility.

## Urban mobility

Urban mobility is about getting people from where they are to where they need at different times throughout the day, ideally most efficiently and sustainably. This incorporates the length of the journey from point A to point B, the length of time spent in transit, and the type of transportation used—whether it be personal vehicles, buses, trains, ride-share cars, or bicycles. Urban policymakers need to determine the best way to reduce congestion and the environmental impact without adding to current transit times. Efficient urban mobility is required to address these challenges and to support a growing population while allowing both the transportation of goods and people to move freely, quickly, and reliably using affordable transportation solutions. To address this issue, empirical evidence related to users' mobility preferences using stated and revealed preference data and discrete choice techniques is of fundamental importance. Furthermore, data and analysis on different urban transport modes preferences and the conditions that make urban public transport and micro-mobility complementary or substitutes are important in tailored urban policies for different territorial typologies (inner areas, coastal areas, metropolitan areas, etc.).

## Impact of transport infrastructures and services on the territory

Transport infrastructures contribute to the economic and social development of a territory. If adequately distributed, these infrastructures allow the movement and transport of people and goods, connecting regions and significantly reducing mobility time and emissions. For this reason, infrastructure investments are central to the main programming and strategies at local, national, and European levels, involving both firms and public regulators. Policy evaluation is essential to monitor ex-ante and ex-post the impact of these infrastructures and services on the territories (including innovative green and digital solutions, policies, and strategies to improve accessibility, resilience, sustainability, and attractiveness of territories and cities). Realizing infrastructures requires large public investments, so evaluating where and when to start new investments is necessary. The PNRR distributes many resources on the territory for which impact assessment should be carried out. The MRC will have the capacity to realise the specific analysis of the impact of infrastructures and services on residential choices, firm-level outcomes, real estate values, environment and regional growth, and tourists' attractiveness for the different Italian territories, which can be of fundamental importance for policymakers. Also, the MRC can support the analysis concerning the detection of structural gaps in infrastructure

endowment and infrastructure expenditure and contribute, concerning transport, to identify possible infrastructure equalization measures.

## Accessibility

Accessibility is a fundamental factor for territorial development. A lack of accessibility limits people's opportunities to improve and sustain their social and economic well-being. Furthermore, accessibility is strictly related to the territory. Therefore, its evaluation should not be limited to how transport improvements influence the overall accessibility level. The analysis should also be inseparably related to the spatial extent of the impact and the influence the investment has on regional disparities and territorial cohesion (Stepniak and Rosik, 2013). This is extremely relevant for the Italian territories characterized by a different level of accessibility. Usually, a lower level of territorial accessibility (i.e., lower public transport services or sustainable sharing mobility services) has been compensated by a higher car presence. The more cars on the road, the more congestion occurs, which causes major disruptions and delays in the lives of residents. Congestion in cities leads to air and noise pollution, risking public health and reducing overall quality of life. Cities face this problem by introducing several urban policies like low carbon areas, pedestrian areas, public transport services, etc. However, additional analysis on urban transport infrastructures and services that improve urban accessibility (local public transport efficiency, planned cycle routes towards those already built, the impact of possible malfunctions of the transport system on the network nodes, the effect of strikes in the public transport sector on other transport modes, implementation of shared mobility systems, etc.) are needed.

## 1.2 Set up of the Mobility Research Center

Mobility is a political, social, economic, and cultural issue. Mobility is, possibly, one of the major factors and elements that are shaping and transforming the contemporary world. Analysing and understanding the multiple aspects of mobility and its impact and connection with several fields of society has become necessary and urgent. The practice and the experience of mobility – with its richness and obstacles – are generating new knowledge, new forms of interrelationships, and new important questions that need to be addressed. What kind of knowledge, ideas, and visions do mobility practices generate? How do mobility, and its restrictions, produce and/or contrast the transformation and alteration of geographies, borders, territories, and



cities? How could cultural mobility contribute to a responsible and sustainable transformation of society? What are the overall impacts of mobility?

The Mobility Research Center attempts to cover these crucial issues at different territorial scales along with the topics described in section 1.1.2.

## 1.2.1 Design criteria

### What is the MRC

The Mobility Research Center is a multidisciplinary group of leading academics focused on socio-economic, geospatial research and quantitative analysis applied to infrastructures, services, firms, consumer demand analysis, mobility preferences, accessibility, policy evaluation, regulation, and data analysis.

The MRC is set up at the Department of Economics, Management and Business Law of the University of Bari "Aldo Moro" and aims to be an environment of independent and cutting-edge experimentation in which academics, researchers, and students analyse and discuss the latest transport infrastructure and mobility issues supported by adequate IT equipment and specific statistical software to conduct the research activity.

### What the MRC does

The MRC will provide data, analysis, and report to support cities, regions, firms, and policymakers in defining effective and innovative mobility policies and measures based on scientific evidence.

The main activities of the MRC are:

- Economic and econometric analysis on topics described in 1.1.2;
- Scientific report on transport systems and mobility with a multidisciplinary approach;
- Participation in research projects at international, national, and local levels founded by public and private institutions;
- Seminars and short courses (e.g. the Apulian Summer School in Transport Economics and Infrastructures; Multidisciplinary Competence Courses; Mobility Manager Courses; Knowledge Center for Territorial Data; PhD short courses) for PhD students and master students involving worldwide experts;

- Dissemination activities through press articles in online and offline journals and magazines and organization of specific sessions and/or participation in transport, mobility, and related fields' academic conferences.

### **Who is the MRC aimed at**

The MRC aims to quantitatively analyse the topics relevant to Spoke 7 and provide tailored policy implications by conducting transdisciplinary research with other academics, students, and scientists. Using the latest IT equipment and software, the MRC researcher will do laboratory experiments, econometric analysis, consumer behavior analysis, policy evaluation analysis, survey preparation and analysis, geospatial statistics, simulation models, etc.

Furthermore, the MRC hosts workshops for PhD students, Master students, and the relevant stakeholders. By focusing on various international research fields of mobility, doctoral students and experts from different disciplines can present their latest research and network with other colleagues on the future of mobility. Bachelor students can incorporate this Speaker Series into their study program.

The MRC regularly shares the latest research developments, noteworthy news, and insightful perspectives. Key communication channels include LinkedIn, an E-Mail Newsletter, and the official website.

### **MRC IT equipment and software**

To address the main activities described in the previous sections, the Spoke 7 leader has identified a physical space at the University of Bari "A. Moro" that would allow both the carrying out of the research activity and the discussion between academics and local stakeholders. In particular, the laboratory will comprise approximately 25 computers and server, allowing researchers, doctoral students, and students to conduct their econometric analyses using several statistical software necessary for the research activity.

The laboratory is also suitable for conducting laboratory experiments, simulations, and analyses on various topics (Figures 1 and 2). The MRC has also been equipped for the discussion and/or presentation of the main research works produced by GRINS researchers with sector experts and interested stakeholders will be promoted (Figures 3 and 4). This space has been identified on the third floor of the Department of Economics, Management and Business Law, University of Bari Aldo Moro (CORPO V – III floor rooms n.6-8-10-12). The choice of these rooms was shared with the University.



Figure 1. MRC rendering



Figure 2 MRC rendering



Figure 3 MRC rendering



Figure 4 MRC rendering

The University administrative offices have started all the procedures for establishing the MRC, adapting the MRC to all current safety regulations, and making these spaces functional to the objectives set by the project. In particular, the Board of the University of Bari, in the meeting of 07/27/2023, resolved to approve the decision made by the University Commission (Commissione Spazi) on 06/12/2023 and 06/23/2023 regarding the note sent by the Department of Economics, Management and Business Law (DEMDI) – GRINS Project, prot. 11564 of 05/26/2023, signed by Prof. Angela Stefania Bergantino, aimed at establishing the WP2 Deliverable called "Mobility Research Center (MRC)" at the Department of Economics, Management and Business Law (DEMDI). The Construction Section (Sezione Edilizia) of the University of Bari – (O.U. Plant Maintenance Unit) has drawn up the project relating to the construction works, electrical systems, and the on-site supply of multimedia equipment. The University has identified the firm that will carry out the work and has set aside the sums necessary to carry out the activity. The procedures were started in time, and in the coming months, the MRC will be fully usable and accessible to researchers, students, and stakeholders.

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