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Informal and Shared Mobility – Status, Challenges, and Opportunities in Southeast Europe and Central Asia

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August 2026
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ISBN
978-91-991090-0-8.

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Acknowledgements
The editors and country chapter authors would like to thank the informants and interview partners without whom this collection would not have been possible. Further thanks go to three reviewers who provided crucial comments for sharpening arguments in the report, and contributed to its coherence: Nikolaos Olma (University of the Aegean); Tauri Tuvikene (Tallinn University); and Armin Wagner (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)). We are also grateful for the constant and diligent collaboration with Holger Dalkmann and Jane Summerton in preparation of this work – and most fundamentally to the Volvo Research and Educational Foundations for making this report possible. Deborah Cornland provided meticulous and knowledgeable editorial support that went far beyond the usual degree of academic publishing editorship. Notwithstanding, the editors assume responsibility for all shortcomings of this publication. Finally, we acknowledge the hard labour to keep cities moving, which workers in the informal and shared-mobility sector perform from on a daily basis in the countries covered in this report, and throughout the world.

Design
Gabor Palotai Design, Sweden

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Foreword

Informal and shared mobility systems remain critical components of urban transport infrastructure across the Global South and increasingly in Central and Eastern Europe. These systems provide essential access to employment, education, and services for millions of residents while generating livelihoods for transport operators and informal workers. Yet despite their ubiquity and social significance, evidence on their current status, regulatory frameworks, and development trajectories remains fragmented and geographically sparse. This knowledge gap undermines effective policy design and perpetuates a disconnect between academic research and the lived realities of transport users and operators.

To strengthen equity and sustainability in urban transport by advancing research on Informal and Shared Mobility in Low- and Middle-Income Countries (ISM), VREF launched a dedicated program as part of their Future Urban Transport (FUT) portfolio. Beginning in 2022, this program aims to generate context-specific knowledge to inform how stakeholders - policymakers, planners, and practitioners - can govern, regulate, and develop informal and shared mobility systems in ways that enhance access, safety, affordability, and environmental sustainability.

The program is characterized by several strategic pillars:

- A geographical focus on Low- and Middle-Income Countries across diverse regions
- Comparative studies spanning multiple urban and regional contexts
- South-South collaboration and peer learning among researchers in Global South countries
- Interdisciplinary approaches grounded in transport studies, political economy, anthropology, and critical mobility scholarship

In November 2023, VREF achieved a major milestone by commissioning the Partnership for Research on Informal and Shared Mobility (PRISM) as its International Research Program (IRP). Led by the Center for Sustainable Urban Development (CSUD) at Columbia University's Climate School, PRISM is structured as a global research consortium guided by three core principles: Equity, Ecosystems, and Engagement. PRISM has established eight living labs in cities across Africa, Asia, and Latin America, functioning as collaborative research spaces where researchers work directly with operators, workers, passengers, and local authorities to generate robust, comparative evidence on informal and shared mobility systems.

Complementary to PRISM's work, VREF is strategically supporting targeted regional studies to deepen understanding of the current landscape in specific geographical areas. These studies focus on data collection, policy analysis, and research synthesis to inform both the IRP and the wider transport policy community. They serve as foundational diagnostics that map the regional terrain, identify research gaps, and provide context-specific insights that strengthen PRISM's living lab investigations.

This publication continues a vital regional research series. Following the 2022 WRI China report on the Status and Future of Informal Public Transport in China, the 2023 study on Informal and Shared Mobility: Status and Opportunities in India, and the 2025 assessment of Informal and Shared Mobility across Cambodia, Vietnam, Indonesia, and Thailand, this report provides the first comprehensive regional assessment of informal and shared mobility across Southeast Europe and Central Asia.

The region encompassing Greece, Serbia, Kyrgyzstan, and Uzbekistan - alongside neighbouring countries in Southeast Europe and Central Asia - presents a unique constellation of post-socialist legacies, diverse regulatory environments, and distinct transport cultures. From the marshrutka minibus systems deeply embedded in Central Asian urban life to informal taxis and shared rides across the Balkans, the region's mobility ecosystems demonstrate both common challenges and distinctive solutions that merit international attention. This study fills a critical gap in regional knowledge, contributing essential data, policy analysis, and research priorities to the growing global evidence base on informal and shared mobility.

The study draws on a comprehensive review of academic and grey literature, examination of current research activities, expert interviews, and stakeholder consultations across the region. It analyzes the contextual situation, trends, roles, and future trajectories of informal and shared mobility while identifying key policy implications and research agendas specific to the region's needs.

This research would not have been possible without the extensive collaboration of local researchers, transport practitioners, policymakers, civil society organizations, and community stakeholders across the region. Their insights, data, and engagement have been fundamental to understanding context-specific transport dynamics and identifying locally-grounded policy pathways. These partnerships reflect VREF's commitment to genuine South-South knowledge exchange and to ensuring that regional voices shape global transport scholarship.

We invite the transport community to build on these findings - drawing on the growing body of research across our regional studies and PRISM's living lab investigations - to advance more equitable, sustainable, and locally-rooted approaches to informal and shared mobility governance. The urgency has never been greater.

Holger Dalkmann and Henrik Nolmark

VREF

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Chapter One: Introduction

Egor Muleev and Wladimir Sgibnev

Figure 1: A bus in Albania, 2025. Photo by Egor Muleev

1.1. Scope and Ambition

This report provides a description of the status and challenges of, and opportunities associated with, informal and shared mobility in two significantly different regions. It is a collective effort of scholars, practitioners, and activists involved in local transport issues. The report is comprised of five chapters, containing case studies from Greece, Kyrgyzstan, Serbia, and Uzbekistan, and an overview chapter describing the situation in neighbouring countries. **The authors shared a single and simple ambition: to assess the outlook and scope of informal and shared mobility in our respective regions of concern – Southeast Europe and Central Asia.**

The geographical disparity between the two regions is coupled with a conceptual one. Recent developments in Artificial Intelligence (AI) agents have made it easier to identify mainstream definitions of informal and shared mobility. According to Google Gemini (Google, 2025), "informal transport" refers to transportation services that operate outside of formal regulation and often have no fixed routes, schedules or official stops. Shared mobility encompasses

services that are often managed by commercial providers through digital platforms. ChatGPT (OpenAI, 2025) provides similar definitions. Behrens et al. (2021, p.14) note that "a feature of the literature on informal public transport and smart mobility is the use of duplicative or inconsistent terminology." Our main struggle was indeed the lack of consistency – mainly because there is no clear definition of the subject in focus. **Instead of criticising such uncertainty, or trying to sort it out, we have embraced and made the best of it.**

We depict and deconstruct various stances on the definition of the phenomena, concepts and methods in use, and allow chapter contributors to work with terms that are at play in their regions of expertise. We have not shied away from ideational heterogeneity. Each chapter is an essay in which the author provides not only observations regarding **the contextual situation, trends and roles** of informal and shared mobility but also an **epistemic stance.** Drawing on this one, they propose future work that is needed within the academic circles and decision makers to improve the delivery of services in each of the studied countries. We certainly aim to draw generalizable conclusions, but each case stands equally on its own. Taking epistemic and conceptual differences seriously, and acknowledging the disparate definitions in use in the landscape of informal and shared mobility, we have not interfered with authors' chosen definitions. **The report contains inconsistencies in the use of terminology between chapters, as well as differences in what the authors highlight and present as insights.** For instance, our report refers to sharing services as micromobility and individual mobility devices while informal transport is accompanied by paratransit, flexible transport, shuttle taxis and marshrutkas. **These differences reflect the authors' conceptual leanings, preferences, research styles, approaches to presenting results, and outlying future efforts.** We consider these differences to be an essential characteristic of the report.

All sections of the report (except of this introduction) follow a common structure, consisting of an abstract, an introduction, an academic literature review, an overview of current research activities, a grey literature review including policy documents, a section on interviews, policy suggestions, research agenda implications, and conclusion.

Case studies illustrate how different the understanding of informal and shared mobilities, as well as associated policy responses, can be. The chapter on Greece by Yannis Paraskevopoulos centers on distinctions between many technical publications on shared mobility and one about informality as a socially-embedded practice. Regardless of non-academic affiliation, Altynai Nogoibaeva, the author of the chapter on Kyrgyzstan, makes a strong invitation for further studies asking "what happens when informal transport disappears from a system deeply dependent on it, and which forms of informality re-emerge within new shared and platform-based mobility systems?" Draženko Glavić, in the chapter on Serbia, describes a stunning observation of the great imbalance between literature analysis findings on the one hand, and interview results on the other. In the Uzbekistan chapter, Ilya Sogolov focuses on the available but very scarce research activities in the region. A dedicated chapter contains brief outlines of neighbouring countries that provide insights and overviews on a wider regional scale for Central Asia and Southeast Europe.

The provision of observations regarding contextual situations, trends and roles of informal and shared mobility as well as propositions of future work require a set of theories and methodological approaches. In this introduction, our main purpose is to outline conceptual challenges and four approaches to analysing informal and shared mobility to provide a common ground for the report. Each of them applies a distinct way of theorising and means of analysis. In terms of methods this report relies mainly on various secondary sources embracing a wide range of publications from academic contributions to legal acts. All authors have also interviewed practitioners in the field in order to discuss their findings and clarify gaps they have identified.

The remaining part of this introduction provides an overview of various approaches to the analysis of informal and shared mobility and discuss the state of current research. We present an overview of grey literature with similar attention four approaches. Finally, we discuss future research agendas and present concluding remarks.

1.2. Academic Literature and Current Research

Academic contributions addressing informal and shared mobility employ a variety of approaches, theories and methods. In this brief overview, we will provide a description of four methodological conceptual toolkits used to understand the phenomena of informal and shared mobility. All of these approaches are present in each case study of this report.

First, we present what we term the "mainstream agenda," which is evident in both academic and non-academic spheres of knowledge production. We position this topic within the domain of transportation studies, which, conceptually, rely heavily on statistically-friendly neoclassical-neoliberal economics. Then we present an anthropological perspective. Numerous authors have contributed to this topic by analysing market transitions in urban transport, hitchhiking, and informal taxis. Third, we briefly touch upon the historical perspective. Finally, we present critical transport and mobility studies, which represent a mixture of various approaches with a specific emphasis on power, governance, labour conditions, and business strategies.

The "Mainstream" Research Agenda

Susan Owens (1995) captured a central premise of mainstream transport studies in a paper where she introduced a concept of "predict and provide." Although her research was on the topic of road construction, the epistemic stance seems relevant to transport studies more generally. The concept implies a governmental emphasis on reasonable evidence on the potential effects of the implementation at hand and, importantly, provide a sufficient supply to satisfy the forecasted demand. **Mainstream transport studies are oriented toward problem solving. Consequently, the definition of the problem and its measurement become central policy concerns.**

Mainstream transport studies are, first and foremost, statistical in essence. Secondly, they are very much centered on the premise of forecasting the future. Thirdly, they are closely tied to executive structures, functioning as an institutionalised means of persuasion. Issues associated with informal and shared mobility are not an exemption. This report provides many illustrations of this point.

In their seminal publication, Cervero and Golub (2007) approach **informal transport** as a set of issues concerning traffic congestion, road safety, unreliable service provision and environmental damage. While recognizing its global importance, they portray informal transport as very problematic. Consequently, due to the aforementioned orientation of mainstream transportation studies towards problem solving, they tend to provide a single response to the elimination of issues. This approach has relied on relatively similar, mainly descriptive, measurement techniques and definitions that focus on the technical side of functioning, and various techniques that aim to transform the transport sector under the promise of efficiency. The latter obviously constitutes a political statement, which is centered around a neoliberal agenda of "proper" regulation that sustains market-mediated transactions and, therefore, encourages entrepreneurship and innovation. Some chapters of this report argue for similar recommendations.

In the 2022 Geoforum special issue "Informalities in urban transport", the editorial provides an overview of the various conceptual approaches to the topic. The authors outline how "dispersed, disintegrated and variegated" the literature is (Rekhviashvili et al., 2022, p. 226). According to their analysis, a contemporary approach to the subject comprises several key points. First, there is a tendency to understand informality through the prism of illegality. For example, informal institutions are defined as modes of governance that are not established by law (Rye et al., 2018). Second, studies addressing cost-benefit trade-offs commonly portray informal mobility as "gap fillers" (Cervero & Golub, 2007) and "heroic entrepreneurship" (Roy, 2005). Third, informality is usually associated with the Global South, creating an analytical division that portrays the Global North as informality-free.

The mainstream approach to **shared mobility** follows a similar epistemic pattern. In seminal papers dedicated to car sharing and bike sharing, authors describe environmental benefits, and reductions in car use, fuel consumption, and congestion, alongside growth in the use of other transportation modes, cost savings, health and environmental benefits (Shaheen et al., 2010; Shaheen & Cogen, 2013; see also Roukouni & Correia, 2020; Marsden, 2022; Arbeláez Vélez, 2024). A central challenge addressed in shared mobility research in mainstream scholarship is the elimination of obstacles to service development, such as poor infrastructure and strict (or absent) regulation.

Inconsistency is mainly problematic in problem-solving-oriented narratives. In a special issue "Shared Mobility" of the journal *Sustainability*, the editors do not define shared mobility, but collect numerous empirical observations (Guyader et al., 2021). According to their view, the distinctive features of shared mobility are public transport, platform-based services, and self-service, that are placed within the ranges of the variables on the two axes of distance and flexibility.

Although the reference to public transport probably encapsulates the essence of shared mobility, the other two categories are used in terminology much more widely. This leaves both classical public transport and, paradoxically, sharing outside of authors' scope of interest. The social meaning of sharing has played a gradually decreasing role in the conceptualization of the phenomenon of shared mobility.

An Anthropological Perspective

Following insights into "mainstream" perspectives, anthropological enquiries come into play. Widlok (2017), for example, considers sharing to be a social practice which transcends its narrow understanding as specifically an action for profit (Young & Fraber, 2019). Consequently, carpooling and hitchhiking may be seen not as ***services***, but rather as forms of ***support***, since they are not profit-seeking activities. "As a genre of travel embedded in randomness and adventure, hitchhiking is an activity that effectively embodies pure trust. It challenges many established logics. In other words, it resists cultures of fear, individualism, and neoliberalism" (Laviolette, 2020). Hitchhiking is fundamentally about mutual trust (Chesters & Smith, 2001).

Nikolaos Olma provides an anthropological account of informality by examining the intricate relationships surrounding "illegal" taxi services in Tashkent, the capital city of Uzbekistan. He argues that informality is the result of the activities of various actors "where state institutions have passed legislation to regulate a given situation, but choose to ease or freeze enforcement in light of the socio-economic context of any informal practice" (Olma, 2022, p. 307). His anthropological stance on the governance of informality also sheds light on taxi services that mainstream scholars (as well as the general public) would describe as a "shared" type of movement.

Alongside Olma's contribution, Caroline Humphrey (2004) analysed the process of market transitions in Ulan-Ude with a specific emphasis on informal ***marshrutka***-minibuses. Another crucial contribution to the topic from a similar perspective is the view of Kovács et al. (2017), in which sharing economies are seen merely as more technologically-efficient versions of informal economies. In the late 1980s, urban anthropologist Douglas Uzzel (1987) studied public transport in Peru. He argued that there is always an interplay between formal and informal institutions, with the latter tending toward a "generative" approach to organizing services compared to the "dominant" official method.

A Historical Perspective

Following the dissolution of the Union of Soviet Socialist Republics (USSR), a similar "generative" adaptation occurred. Akimov and Banister's (2011) description of Tashkent's transport system and Egor Muleev's (2020) account of the rise of marshrutkas in Russia are relevant illustrations here. While their grandfather, the ***jitney***, depicted as the adaptation of the automobile for use as a "common carrier," originates in the United States in 1914 (Schwantes, 1985), the concept of "shared mobility" also has historical roots. In fact, **the phenomenon of common use of mobility devices can be traced back thousands of years, to the very first vessels.** The first one-seater Pesse canoe, for example, was built between 7500 and 8000 BCE. The first sailboat appeared in 3300 to 3100 BCE. Can we consider them to have been communal, shared vehicles? Was the invention of the multi-seater intended for sharing rides? Extending this idea, public transport can also be seen as a commercialised shared ride. The first car-sharing scheme was introduced in Zürich in 1948 (Shaheen & Cohen, 2013) and the first bike-sharing service started operation in Amsterdam in 1965 (Ploeger & Oldenziel, 2020). Both were non-commercial initiatives. The Swiss scheme was the first documented car-sharing initiative. Others, such as car clubs and bike clubs of the early 20th century, remain undocumented.

A dive into history provides another perspective on the subject of shared mobility. Ploeger & Oldenziel (2020, p.134) provide accounts of how the "Dutch railroad's public transit bicycle has transformed Schimmelpennink's original anarchist idea of bike sharing into a sustainable public transit system." In a similar vein, French academics have contributed to the discussion with evidence regarding the policy acceptance of the very idea of bike sharing schemes, in the 1970s in La Rochelle (Huré & Passalacqua, 2016). Thus, combining inquiry found in social and technology studies with historical accounts applied to urban cycling leads researchers to move beyond an exclusively technical framing of short-term bike rent services.

Critical transport and mobility studies

A relatively large body of literature on self-governance and state coercion about informal transport (e.g., Sopranzetti, 2022; Doherty et al., 2021; Rekhviashvili & Sgibnev, 2018; Kębłowski & Rekhviashvili, 2020) provides a good illustration to critical transport and mobility studies. The aim is to challenge the shortcomings of the mainstream narrative. Inspired by postcolonial and poststructuralist scholarship, Rekhviashvili et al. (2022) argue for overcoming the focus on "reductionist, Manichean and economistic" approach to urban transport. Such a conceptual shift implies widening of the definition of informality, building on observed gaps in literature. This suggests a new understanding that **informalities are neither illegal nor outdated nor supplementary.**

Another perspective provides a crucial insight is that of the political economy. It deals with "key trajectories of platform formation, focusing on the firms, institutions, and social interests that have fuelled the growth of this sector, and the modes of infrastructural organisation, spatial formation, and governance that they entail" (Stehlin et al., 2020, p. 1251). This perspective opens

up a discussion about different types of markets that are also worth noting as business models (e.g., Zhang et al., 2023), albeit based on absolutely different conceptual grounds.

Sharing has become a slogan, and some authors depict "sharewashing" activities (e.g., Hawlitschek et al., 2018). The mediation of well-known and established services such as taxis, hitchhiking, carpooling and rental through digital algorithms has become accepted as forms of sharing (e.g., Soppert et al., 2024, on car sharing). On the other hand, digital entrepreneurs (referred to collectively using the term "transport network companies") influenced researchers' interest in "shared" mobility. Therefore, marketing **plays a crucial role in the contamination of academic research by its narratives, meaning the promotion of positive effects without strong evidence.** Brlek et al. (2025) is a good example of such excitement on the premises of short-term rent services in Western Balkans.

This short overview of how informal and shared mobility is approached in academic literature provides insight into the variety of conceptual approaches to the phenomenon. Mobility scholars depart from John Urry's view of transport as a "black box" of social science and synthesize various concepts with transportation topics. Anthropology and critical studies are the most visible domains contributing to the field from a qualitative perspective, highlighting the fruitfulness of various social meanings behind the statistical apprehension of informal and shared mobility. It is important to mention that sometimes it is difficult to separate disciplines, and in practice they are usually combined. Historical considerations, for instance, might play a role in mainstream argumentation, while some technical references are highly applicable to anthropological inquiries. Case studies in this report illustrate this.

Although the mainstream approach to informal and shared mobility research is applicable to many regions of the world, substantial contributions to non-mainstream knowledge have been made by numerous researchers in Central Asia, the South Caucasus, and Russia. However, the region is very modestly represented in the bibliometric analysis conducted by Behrens et al. (2021).

	Greece	Kazakhstan	Bulgaria	Slovenia	Serbia	Kyrgyzstan
scooter sharing	1	–	–	–	–	–
bike sharing	7	1	–	–	–	–
car sharing	2	–	–	–	1	–
demand-responsive	2	–	–	1	–	
metered taxis	5	1	1	–	–	–
ride splitting	1	–	–	–	–	–
general shared mobility	2	–	–	–	–	–
general sharing systems	3	–	–	–	–	–
general flexible transport	1	–	–	–	–	–
carpooling	2	–	–	1	–	–
informal public transport	–	–	–	–	–	1
courier network services	1	–	–	–	–	–
Total	27	2	1	2	1	1

Table 1: Publications on informal and shared mobility in Southeast Europe and Central Asia.
Source: Behrens et al., 2021.

Searching for various configurations allows Romania to be added with a single observation. Of the 3,404 papers in the database, only 1% are from the countries studied in this report (with a significant bias toward Greece, as illustrated in Table 1). Informal and shared mobility in these countries is indeed a black box in contemporary academia, which we intend to mitigate with this report.

1.3. Grey Literature

The distinction between grey literature and academic inputs is sometimes blurred. Many academic authors also contribute to grey reports, policy papers and consultancy outputs. However, it is hard to identify anthropological accounts in the grey literature, while critical notions seem to become gradually incorporated in the mainstream narrative. An opposite does also take place. In a relatively fresh International Association of Public Transport (UITP) report (2024a), the term paratransit is used as a synonym for informal transport, emphasizing service parameters, business models, and government in a very similar way to what Cervero and Golub (2007) did almost 30 years ago. Similarly, the ultimate objective of all efforts in the field is, once again, "fixing" the problems of informal and shared mobility.

"New and crucial dimension" is the issue of data collection and performance indicators. In another UITP report (2024b), a holistic approach is proposed, with the intention to "unlock the full potential" of informal transport by implementing a "data-driven approach," along with the unexpected recommendation "to build trust." The report *A global scan of data collection efforts in informal and shared mobility* (Abraham et al., 2023) provides an epistemic argument focusing on knowledge. It outlines two main categories of data: statistical and mobility data. In Annex A of the report, the only difference between the two is how the data is generated. Mobility data is generated digitally and enabled by applications, while statistical data includes survey results and traditional forms of statistical accounting. The SLOCAT Partnership (2023) makes a similar argument. Data collection and analysis are also an important issue in the context of shared mobility. For example, the Shared-Use Mobility Center (2020) claims that exchanging data between public and private partners is one of the main challenges for services. While the question of what constitutes data and knowledge more is at least three thousand years old, supplemented by the philosophy of science, the sociology of knowledge, science and technology studies, the achievements made in these fields are largely absent in the grey literature on informal and shared mobility. Similarly, the report on state actions in governing micromobility raises the question "Regulate for what?" reducing it to the notion of transition to sustainable transport and without considering contributions from political philosophy and political theory (Homem de Gouveia et al., 2023).

In terms of studies exploring the study countries in trans-national terms, we found only one report focusing specifically on Central Asia (United Nations Economic Commission for Europe, 2020). However, only a small part of this report focuses on the context, providing a brief description of transport-related laws and noting the absence of any regulatory statute for various rental services. This is despite the fact that some rental services already existed at the time of publication. The majority of the report provides an overview of Western services and outlines recommendations in line with Western practice. A study by the Asian Transport Observatory (2025) focuses on Uzbekistan and indicates that shared mobility in Tashkent even outperforms public transport measured in person-kilometres travelled without providing further details.

The World Bank and the International Finance Corporation have published a report on an urban mobility initiative targeting ten cities in the Western Balkans (World Bank, 2024). The authors

briefly touch upon the topic of shared mobility, outlining the region's modest service offerings. They focus instead on identifying low service levels and suggesting the establishment of Sustainable Urban Mobility Plans (SUMPs) and Public-Private Partnerships (PPPs) to fill service gaps.

The striking conceptual similarities between grey reports are not surprising. According to Shaheen et al. (2019, p. 8), shared mobility is "the shared use of a vehicle, motorcycle, scooter, bicycle, or other travel mode that provides users with short-term access to a transportation mode on an as-needed basis." Vehicle use lies at the heart of the phenomenon, which limits social science enquiries, and, taken together with epistemic leanings of mainstream transportation studies, drastically reduces the phenomena to a few physical characteristics. This raises a crucial issue that is addressed in contemporary scholarship on epistemic injustice: the systemic lack of hermeneutical opportunities to understand the subject (e.g., Fricker, 2007).

Some NGOs propose numerous attempts to break this cycle by addressing issues of justice, gender, equity and human-centric planning. They offer an essentially political critique of automobilities through marketing narratives and neutral language. In the report *Myths and realities of "informal" public transport in developing countries* (Arroyo-Arroyo et al., 2021, p. 15), the field of research is defined in terms of "the service offered, how it is operated, and its financial aspects." In this report, which is focused on African cities, the authors consider 17 myths about informal transport that are very much in line with mainstream leanings. These topics are rather new to the grey literature. Similar updates happen due to re-branding of "informal" in "popular," transforming the notion of a "problem" into an "asset" (San Gil León, 2025). Similarly, the Global Network for Popular Transportation prioritizes "valuing the environment, advancing equity, and empowering people and communities" (GNPT, 2025). This shift creates a new market for expertise that incorporates recent tendencies from critical academic narratives.

There is also a systemic problem. Undoubtedly, many authors would agree that addressing factors such as nepotism, incompetence, corruption, and freedom of speech are crucial for promoting a sustainability agenda. Statistical reductionism leaves little space for addressing such factors in a mainstream narrative. Ultimately, customers, such as multilateral financial entities, would not appreciate a report studying the impact of nepotism practices amongst their clients. In that sense, **technocratic reductionism to statistics is a single way to provide "appropriate" and, perhaps more importantly, profitable analytics.**

There is also an opportunity to prioritise marketing promises, arguing for positive effects aligned with sustainability values despite a lack of solid evidence. Proponents of new technologies must sell their advantages to potential users and governments by referring exclusively to effects that align with the latest sustainability agenda trends. This narrative stimulates a new market through a constant call for unique effects, and expertise is the forefront of such efforts. It explains the uncertain and inconsistent terminology, as well as the gradual drifting away from considerations of what sharing and informalities are. This is how "sharewashing" and, sometimes, "sciencewashing" (Borie & Bracking, 2024) come into play. This observation is not unique: some

authors raise provocative concerns about the quality of sustainability research, arguing that at least half of publications do not contribute to the field at all (Kirchherr, 2023).

1.4. Research Agenda

The launch of the UN Decade of Sustainable Transport in December 2025 will generate a great deal of analysis aimed at "unpacking the potential" of informal and shared mobility or, more accurately, identifying problems that need solving. **The definition of these problems and their associated metrics will set the tone and will most likely maintain the mainstream orientation.** We anticipate studies concerning metrics, methods, data, and governance, alongside reviews of case studies, best practices, and general descriptions (since lots of countries in the region remain scarcely described let alone researched). **The formalisation of the informal, and the governance of the self-governed**, are probably the main trends in our regions of scrutiny. Similar trends are also apparent in the sections of the report on shared mobility, where the digitalization of illegal taxi services acts as a disciplinary tool.

In terms of the overall quality of the research, we expect a significant contribution of AI models, which will undoubtedly lead to an increase of "sciencewashed," low-quality analytics. The same goes for the data craze of recent years, which remains analytically empty due to the lack of discussion about fundamental philosophical issues of knowledge production.

Apprehension of critical concepts has already brought the subjects of labour and gender into mainstream consideration, alongside environment and democracy. **More attention will probably be given to local contexts.** A counter-move is also suspected, due to the political instability that will move the research agenda back to the narrow understanding of "efficiency" associated with car favouritism (***drive, baby, drive***, as a friendly companion to ***drill, baby, drill***), and quick-fix modernisation agendas of increasingly authoritarian elites throughout the countries covered in this report.

Authors publishing grey literature reports will probably not contribute to theoretical developments, but will certainly provide valuable data for theory-building. Critical studies will elaborate new concepts and invite new frameworks into the analysis. Editors of a special issue in the International Journal of Transport Geography call for decolonising research in transport geography, highlighting the problem of "obscuring unique transport processes… by Global North narratives" (Liu et al., 2025). Epistemic issues are indeed one of the highly-discussed topics today, and publications stemming from various disciplines and mainstream transport studies, as well as the grey literature, will certainly respond to it very soon.

Obviously, research is highly dependent on funding. Recent trends such as budget cuts, military threats, a right-wing resurgence, political divides, and the general public's (and many scientist's) diminishing trust in scientific arguments do not contribute positively to the research agenda and the acceptance of findings. The tendency is thus highly uncertain and rather pessimistic.

Study Region	Southeast Europe		Central Asia	
In-depth country chapters	Greece	Serbia	Kyrgystan	Uzbekistan
Country Briefs	Bulgaria, Romania, Kosovo, Albania, Bosnia and Herzegovina, North Macedonia, Slovenia, Croatia		Kazakhstan, Tajikstan, Turkmenistan	

Table 2: Overview of country studies

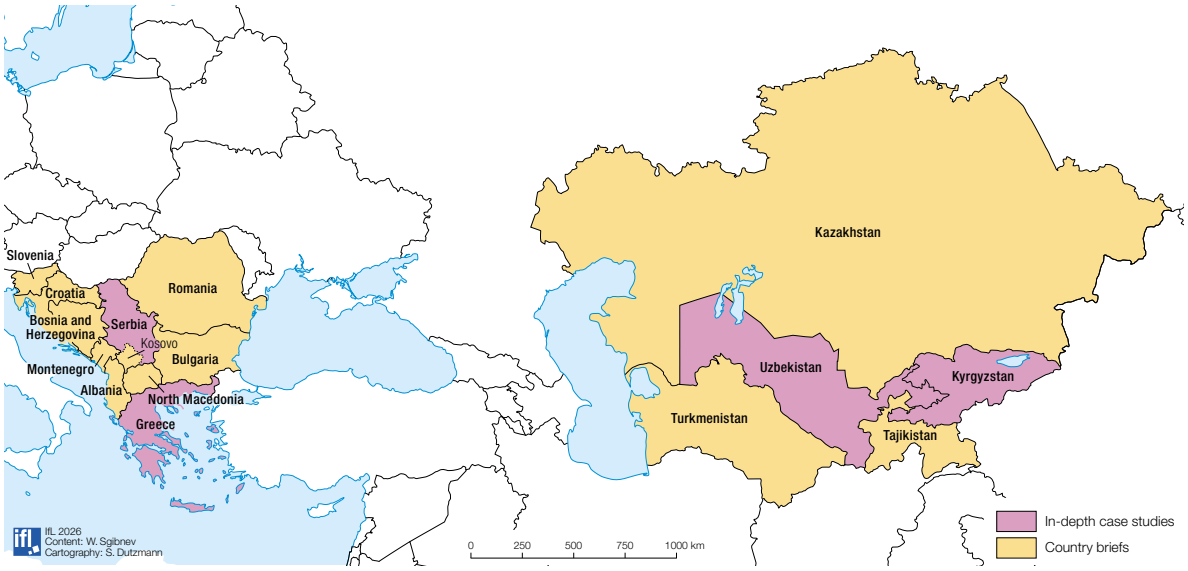

Figure 2: Study region overview map

1.5. Conclusion

This report highlights one crucial and obvious observation: there are multiple ways of dealing with the phenomena of informal and shared mobility. Consequently, the difference in methodological apprehension leads to various highlights on what kind of issues, problems and gaps are worthwhile to address and how to do it. The topic of transport governance starts to play a crucial role here, shifting the agenda to the domain of politics rather than simply the list of interventions needed to develop the transport system in accordance with certain standards. It makes the field of informal and shared mobility more complex to apprehend but simultaneously provides a new set of problems to think about. Which, in turn, can lead to new ideas and approaches.

Another observation is that all urban contexts are a unique constellation of various factors which make the implementation of universal solutions very much dependent on local circumstances. A good illustration to the point are still very modest research activities which shed a light on the current state of affairs in the sector. In many cases, even statistical data is unavailable. However,

this does not stop officials to act on various issues associated with informal and shared mobility services. And again, while changes can be made even without a lot of data at hand, researchers don’t know much about the process of transport governance. One of the key lessons we would like to extract from our report is to shift attention from the question "what to do?" to the still salient question "what is going on?"

Chapter Two: Greece

Yannis Paraskevopoulos

Figure 3: Rental bikes in Greece. Photo by https://thessaloniki.travel

2.1. Abstract

There is substantially more academic and policy interest in analysing shared mobility in Greece than in informal mobility. Shared mobility is predominantly conceptualised within technocratic and economic frameworks, focusing on adoption dynamics, behavioural intentions, and system viability. Conversely, informal mobility is extremely scarce in publications. Those that have been published are framed through socio-spatial, relational, and justice-oriented lenses. The dominant narrative across the academic and grey literature focuses on governance, regulation, and implementation, aiming for unified, strategic coordination of shared modes. This chapter discusses these gaps and highlights limited epistemic capabilities, inviting a shift toward research on mobility conditions, policy challenges, local contexts, and experimental projects.

2.2. Introduction

In recent decades, there has been growing interest in Greece in subjects such as walkability (Paraskevopoulos et al., 2020), accessibility (Mitropoulos et al., 2023), shared mobility (Vassi et al., 2023), and sustainable mobility more generally. In addition, these topics are explored not only through a transport planning or transport geography lens but also through an urbanism lens (Paraskevopoulos et al., 2024; Tsigdinos et al., 2024, 2021; Paraskevopoulos et al., 2022). Shared mobility, more specifically, has recently been the subject of significant research, especially for bike-sharing and, to a lesser extent, car-sharing and ride-sharing perspectives (Bakogiannis et al., 2019; Mitropoulos et al., 2024; Narayanan et al., 2023; Nikiforiadis et al., 2020; Nikitas, 2018; Palantzas & Nalmpantis, 2021). **Informal mobility is far less researched** in the Greek context. Only a few studies have addressed the topic, mostly indirectly within the broader context of the informal economy and the COVID-19 pandemic (Baig et al., 2022; Chita et al., 2020), and to a lesser extent, more directly, regarding informal mobility practices in rural areas (Kiousi et al., 2020).

This report contributes to closing these gaps by providing a critical and comprehensive overview of the state of both shared and informal mobility in Greece, within the broader regional context of Southeast Europe. Rather than treating informality as a transitional anomaly or shared mobility as a self-evident solution, the analysis adopts a socio-spatial and governance-oriented perspective that focuses on everyday practices, territorial inequalities, and power relations. By integrating input from academic literature, grey policy documents, ongoing research, expert interviews, and comparative regional insights, the report aims to illuminate both the opportunities and limitations of current mobility trajectories in Greece.

This country chapter is structured as follows. Following the abstract and introduction**, section 3** presents a systematic review and analysis of the academic literature on shared and informal mobility in Greece. **Section 4** maps current research activities and projects shaping the national mobility research landscape. **Section 5** reviews the relevant grey literature and policy-oriented documents, including selected key policy documents on sustainable urban mobility, micromobility, and LPEV regulation. **Section 6** presents the expert interviews conducted for this chapter. **Section 7** examines policy challenges, gaps, and needs, drawing primarily on the interview material. **Section 8** outlines implications for the future research agenda, highlighting critical research gaps and directions for inquiry into shared and informal mobility as interconnected components of Greece's evolving mobility system. **Section 9** concludes by summarising the main findings and policy-research implications.

2.3. Academic Literature Review

The academic research ecosystem on shared and informal mobility in Greece is **diverse but fragmented**, spanning peer-reviewed journals, institutional repositories, national archives, and scientific conference proceedings. Key journals include *Aeichoros*, focused on urban and spatial planning, and *GEOGRAPHIES*, a critical geography journal addressing urban and regional transformations. Both regularly publish work on mobility, accessibility, and related socio-spatial dynamics in the Greek context. Another central platform is the biennial Conference on Sustainable Mobility (CSuM), organised by the University of Thessaly, whose proceedings are published in the Scopus-indexed *Lecture Notes in Intelligent Transportation and Infrastructure* series and link Greek research to international mobility debates. Beyond journals and conference proceedings, institutional repositories (particularly those of the National Technical University of Athens, Aristotle University of Thessaloniki, and the University of Thessaly), along with the National Archive of PhD Theses, are essential sources of empirically rich, methodologically diverse research that is highly relevant to national mobility discussions.

This academic literature review was conducted using a **structured scoping-review approach**, combining systematic searching with qualitative synthesis. Given the exploratory nature of informal mobility research and the uneven development of shared mobility studies in Greece, the aim was to map key empirical findings, conceptual framings, governance perspectives, and research gaps, rather than to perform quantitative synthesis. Bibliographic searches were performed in **Scopus**, selected for its broad coverage of peer-reviewed literature in transport, urban planning, and sustainability. Search strings were developed iteratively to capture the different concepts associated with shared mobility and informal mobility, and were combined with geographic identifiers for Greece and major Greek cities. For shared mobility, searches combined umbrella terms (e.g., *shared mobility*) with **mode-specific concepts** commonly used in the literature, including bike- and bicycle-sharing, car-sharing, ride-sharing, ride-hailing, carpooling, and other shared micromobility services such as e-scooters and dockless scooters. For reviewing research on informal mobility, the term was deliberately extended beyond its usual meaning to include established transport-related concepts such as informal transport, unregulated mobility, paratransit, informal rides, informal public transport, and shared or illegal taxi services, to capture publications using the fragmented, context-dependent terminology found in academic research. For both informal and shared mobility, terms were combined with **geographic identifiers for Greece and major Greek cities** (including Athens, Thessaloniki, Patras, Heraklion, Larissa, and Volos) and applied to searches of titles, abstracts, and keywords.

The review followed a **PRISMA-informed screening process** (for details see Appendix A), including title, abstract, and full-text assessment. Data were extracted using a standardised coding framework to ensure consistent cross-study comparison, emphasising contextual relevance and policy interpretability. The initial Scopus search returned **35 records** for informal mobility and **63 records** for shared mobility. Following **title and abstract screening**, the sample was reduced to **8 informal mobility** and **16 shared mobility** publications, based on relevance to urban mobility practices, governance, and the Greek context. Full-text screening was then conducted to

assess substantive relevance, empirical grounding, and analytical contribution. This resulted in a final corpus of **1 academic article on informal mobility** and **13 articles on shared mobility**. The dearth of informal mobility studies reflects both the **limited academic attention to informality in Greece** and the dominance of shared mobility research within peer-reviewed literature. The fourteen retained articles were subsequently coded, using a standardised extraction framework to enable systematic comparison and synthesis.

The academic literature on shared and informal mobility in Greece reveals a **strong asymmetry in research focus**, both in volume and in analytical orientation. Research on **shared mobility** focuses primarily on understanding adoption dynamics, behavioural intentions, and system viability in Greek urban and peri-urban contexts. Collective research objectives emphasise identifying socio-demographic, economic, spatial, and attitudinal factors that influence the uptake of shared mobility services, including bike-sharing, car-sharing, ride-sharing, shared taxis, and other shared micromobility services. These studies are typically motivated by the expectation that shared mobility can contribute to achieving sustainability goals, reducing congestion, producing modal shifts, and improving first-/last-mile connectivity, especially in metropolitan areas such as Athens and Thessaloniki, as well as in selected medium-sized cities and touristic regions (Deloukas et al., 2020; Efthymiou et al., 2013; Nikiforiadis et al., 2019; Nikitas, 2019; Savva et al., 2023).

In contrast, the volume of academic research on **informal mobility** in Greece is limited but distinctive in scope and purpose. Rather than examining adoption or optimisation, Greek informal mobility research **documents mobility deprivation, accessibility deficits, and everyday coping strategies** in contexts where formal transport systems fail to meet basic needs. Research objectives focus on understanding how informal practices (such as peer-to-peer car-sharing, informal chauffeuring, and community-based transport arrangements) emerge as practical responses to remoteness, seasonality, and inadequate public transport provision, particularly in island and rural contexts (Kiousi et al., 2020). As a result, informal mobility researchers are less concerned with innovation and more with **social inclusion, territorial inequality, and mobility poverty**, highlighting fundamentally different academic priorities than those addressed in shared mobility studies.

The academic literature frames shared and informal mobility in Greece through **largely disconnected conceptual paradigms**. Shared mobility is predominantly conceptualised within a **technocratic, behavioural, and economic framework**, drawing on theories of technology acceptance, travel behaviour, and transport economics. Shared mobility services are treated as **formal, platform-mediated systems**, whose performance and uptake depend on measurable attributes such as cost, travel time, incentives, service reliability, digital interfaces, and infrastructure quality. Many studies employ stated-preference experiments, discrete-choice models, behavioural segmentation, or willingness-to-pay analyses, framing shared mobility as a rational choice within an evolving transport market (Asimakopoulou et al., 2022; Efthymiou et al., 2013; Salanova Grau et al., 2022; Sorkou et al., 2022).

Within this framing, shared mobility is frequently positioned as a **complement to public transport**, particularly for first- and last-mile connections, and as a tool for advancing sustainable urban mobility agendas through intermodality, digitalisation, and system efficiency (Deloukas et al., 2020; Mavrogenidou et al., 2023; Nikiforiadis et al., 2020). Governance is typically approached instrumentally, focusing on regulation, pricing, infrastructure provision, and public-private coordination, rather than broader questions of social justice or power relations (Nikitas, 2019; Vassi et al., 2023). By contrast, informal mobility is framed through **socio-spatial, relational, and justice-oriented lenses.** Rather than conceptualising mobility as a service choice, informal mobility is understood as a **socially embedded practice**, shaped by community relations and social obligation. Concepts such as mobility poverty, social exclusion, vulnerability, and territorial inequality are central, and informal practices are interpreted as adaptive responses to systemic transport failures rather than as transitional or marginal phenomena (Kiousi et al., 2020). This framing places the lived experience, everyday practices, and the uneven geographies of accessibility in the foreground, in sharp contrast to the efficiency-oriented narratives that dominate shared mobility research. Notably, the literature rarely bridges these two conceptual domains. Shared mobility is framed as modern, scalable, and regulated, while informal mobility is treated as residual, place-specific, and compensatory. This conceptual separation limits critical engagement with how formal shared mobility systems interact with, coexist alongside, or potentially displace informal practices, especially outside major urban centres.

Across the academic literature, shared mobility in Greece is consistently characterised as **promising but unevenly developed**. Empirical findings show generally positive attitudes toward shared mobility services, yet **actual usage remains limited and socially selective**. Adoption is strongly associated with younger age groups, higher education levels, digital literacy, and urban residence, while older populations and residents of peri-urban and rural areas are less likely to participate (Efthymiou et al., 2013; Nikiforiadis et al., 2019; Vassi et al., 2023). Infrastructure quality, and particularly cycling infrastructure, pavement condition, and perceived safety, emerges as a decisive factor across studies of bike-sharing and micromobility (Arabatzis et al., 2024; Bakogiannis et al., 2019; Sorkou et al., 2022). The literature also highlights persistent **practical and governance barriers.** These include fragmented regulatory frameworks, limited municipal capacity, weak integration with public transport, cultural attachment to private car ownership, and uncertainty regarding business models and long-term viability (Mavrogenidou et al., 2023; Nikitas, 2019). In island and tourist contexts, shared mobility services are often seasonal or oriented toward visitors, raising questions about their capacity to meet residents' everyday mobility needs (Nikiforiadis et al., 2023). Studies examining shared mobility in crisis contexts, such as the COVID-19 pandemic, suggest that shared mobility can become relatively more attractive during disruptions, but only when supported by trust, safety measures, and infrastructure investment (Nikiforiadis et al., 2020).

Findings on informal mobility present a contrasting but equally systematic picture. Informal practices **play a critical role in sustaining basic accessibility** in remote and insular areas, compensating for infrequent, unreliable, or absent formal transport services. Peer-to-peer car-sharing and informal chauffeuring enable access to education, healthcare, and social life, particularly for

children, older adults, and non-drivers (Kiousi et al., 2020). However, dependency on these practices also creates vulnerabilities, as they rely on social capital, unpaid care labour, and reciprocal obligations and tend to exclude those without access to local networks.

Taken together, the academic literature depicts a **fragmented mobility landscape** in Greece. Shared mobility is framed as an emerging, technology-driven solution with uneven reach and uncertain transformative capacity, while informal mobility persists as a real-life necessity rooted in territorial inequality and governance gaps. The lack of analytical integration between these research areas represents a significant knowledge gap, underscoring the need for research and policy approaches that address shared and informal mobility as interconnected elements of a broader socio-spatial mobility system.

2.4. Current research activities

The landscape of research on mobility in Greece is anchored in a network of specialised laboratories, institutes, and research groups embedded within the country's leading universities and national research centres. The **Hellenic Institute of Transport (CERTH/HIT)** serves as the principal applied research hub with a strong orientation toward national and European transport policy agendas. At the same time, groups such as **I-SENSE** have adopted an interdisciplinary, technology-driven approach to research on mobility, automation, and digital infrastructure. Within the academic domain, National Technical University of Athens (NTUA) hosts multiple units dedicated to transportation and sustainable mobility, spanning the **Department of Transportation Planning and Engineering**, the **Sustainable Mobility Unit** and the **Laboratory of Transportation Engineering**, thereby covering both the technical and human-centred dimensions of mobility research. Complementing this, the **Transport Engineering Laboratory at Aristotle University of Thessaloniki** and the **Traffic, Transportation & Logistics Laboratory** at the University of Thessaly constitute regional poles of expertise with strong engagement in applied projects and international networks. Collectively, these entities form a dense and complementary research ecosystem that links engineering, planning, and policy perspectives on mobility and transportation. Therefore, we can reliably expect them to be the main outlets for research on shared and informal mobility.

Current research activities on shared and informal mobility in Greece are embedded mainly within **European-funded research and innovation frameworks,** reflecting both the strategic priorities of EU transport policy and the comparatively **limited domestic funding for critical mobility research.** Most ongoing and recent projects **focus on shared mobility** systems (particularly micromobility, ride-sharing, and digitally-mediated services, while **informal mobility remains underexplored** and is typically addressed indirectly, as a residual or governance-related issue rather than a primary object of research. Several Horizon Europe projects position Greece as a pilot, follower, or replication context for testing shared-mobility innovations. The **SUM – Seamless Shared Urban Mobility** project (2023–2026) includes the Municipality of Penteli in the Athens metropolitan area as a living lab, focusing on integrating shared mobility

services with public transport, affordability, and governance frameworks. SUM explicitly aims to embed shared mobility within Sustainable Urban Mobility Plans (SUMPs), yet its approach essentially assumes formalised service provision and regulated market actors, leaving informal practices at the margins of analysis. Similarly, **RIDE2RAIL** (2019–2023) explored integrating ride-sharing with rail and bus services, with Athens among the demonstration cities. The project developed digital tools and multimodal platforms to position ride sharing as a complement to public transport, addressing congestion and emissions. While socially embedded ride-sharing practices exist in Greece – particularly informal carpooling in peri-urban and rural areas – these remain largely outside the project's analytical scope, which prioritises platform-based and data-driven solutions.

Policy-oriented and governance-focused research is more explicitly addressed through **SMAPE – Shared Mobility Action Programmes Exchange** (2023–2027), an Interreg Europe project involving Greece as one of the participating countries. SMAPE focuses on regulatory frameworks, public–private partnerships, data governance, and behavioural change, contributing to policy learning around shared-mobility integration. While SMAPE opens space for reflection on governance, informal mobility is again treated implicitly, mainly as a challenge to regulation and enforcement rather than as a socio-spatial practice with its own rationalities. More technologically-driven projects, such as **metaCCAZE** (2024–2028) and **MOBILITIES for EU** (2024–2028), include Athens and Ioannina, respectively, as follower or replication cities. These projects emphasise automation, electrification, and connected mobility services, reinforcing a techno-centric vision of shared mobility transitions. At the national research level, **SIM4TRAN** (2021–2023), coordinated by NTUA, represents one of the few Greece-based projects explicitly engaging with micromobility through advanced simulation and agent-based modelling in Athens. While methodologically innovative, its primary contribution lies in transport planning optimisation rather than in critical engagement with informal or hybrid mobility practices.

It should be noted that shared mobility research in Greece primarily serves to promote urban sustainability, framed in terms of **integration, efficiency, and technological innovation. Informal mobility remains weakly institutionalised** as a research field, appearing mainly as an externality of crises, governance gaps, or regulatory lag. This asymmetry highlights a persistent research gap and underscores the need for socio-politically grounded studies that treat informal and shared mobility as interconnected practices shaped by post-crisis restructuring, spatial inequality, and everyday survival strategies.

2.5. Grey literature review

Grey literature on shared and informal mobility in Greece is produced within a **multi-level governance and practice ecosystem** that includes national ministries, municipalities, professional associations, research-oriented organisations, and civil society initiatives. These sources primarily document **policy frameworks, regulatory instruments, technical standards, and implementation practices**, offering insight into how mobility priorities are translated into planning and governance. National authorities shape overarching regulatory and strategic directions, while municipalities operationalise these through local plans, regulations, and pilot interventions. Professional and civic organisations complement institutional outputs by articulating technical consensus, advocating for integrated planning approaches, or introducing more critical and participatory perspectives on mobility, accessibility, and public space.

The review of the grey literature was conducted using a structured, transparent search protocol designed to complement the academic review by capturing policy-oriented and practice-based evidence not represented in peer-reviewed sources. The search focused on documents produced by public authorities, professional bodies, NGOs, research institutes, and universities, in both Greek and English, related to shared and informal mobility. The search relied primarily on advanced Google search techniques, combined with targeted manual searches of institutional and municipal websites. Implementation involved iteratively using keyword-based queries that combined mobility-related terms, geographic identifiers, institutional descriptors, and document-type filters. For example, searches included queries such as: *intitle: "shared mobility" AND Greece AND policy*; Greek-language searches targeting municipal micromobility regulations (e.g., «*κοινόχρηστα ηλεκτρικά πατίνια*» *AND δήμος AND κανονισμός*); and targeted searches for theses hosted on Greek university domains (e.g., *site:ntua.gr, site:auth.gr*). Retrieved documents were screened for substantive relevance and coded using a **standardised extraction framework aligned with the academic review**, enabling integrated analysis across evidence types.

Across the **reviewed grey literature**, shared and informal mobility in Greece is primarily addressed through the lens of **governance, regulation, and implementation**, rather than behavioural analysis or user perspectives. The dominant objective expressed in policy and institutional documents is to **establish regulatory clarity, institutional responsibility, and formal control mechanisms** for emerging mobility practices, particularly shared micromobility, ride-sharing, and electrified fleets, within a fragmented, historically car-oriented transport system. Publications on national-level legislation and strategies focus on standardising rules, aligning with EU sustainable mobility agendas, and integrating shared mobility into formal planning instruments such as Sustainable Urban Mobility Plans (SUMPs). At the municipal level, expressed objectives focus on **managing conflicts in public space**, improving road safety, and responding to the rapid and often uncoordinated deployment of shared micromobility services.

Organization	Title	Year
Hellenic Parliament – Ministry of Infrastructure and Transport	Greece on the Move: Sustainable Urban Mobility – Micromobility – Regulations for the Modernisation, Simplification and Digitalisation of Procedures of the Ministry of Infrastructure and Transport and Other Provisions	2021
Municipality of Athens – Department of Sustainable Mobility	Technical Report on the Traffic and Parking Regulation of Light Personal Electric Vehicles (LPEVs) in the Municipality of Athens	2025
Hellenic Parliament – Ministry of Infrastructure and Transport	Road Traffic Code and Other Provisions	2025
Ministry of Infrastructure, Transport and Networks – Ministry of Education and Religious Affairs	Measures for Ensuring Accessibility and Traffic Safety in School Units	2013
Ministry of Environment and Energy	Special Provisions for Serving Persons with Disabilities in Public Spaces	2022
OECD – International Transport Forum	Advancing Sustainable Mobility in Greece: Electric Vehicles	2024
Cities for Cycling – Network for Cycling in Greek Cities	Bicycle in Greek Cities – Proposals to Municipal Authorities	2017
Public Transport Lab – POLIS Network	Integration of Public Transport and Shared Mobility: SUM's Living Labs Interventions	2025
RIDE2RAIL Consortium – CERTH	State-of-the-art of Ride-Sharing in Target EU Countries	2020
Ministry of Environment and Energy – Ministry of Infrastructure and Transport	National Strategy for Walking	2023
Ministry of Environment and Energy – Ministry of Infrastructure and Transport	National Electromobility Plan	2023

Table 3: Greece: grey literature sources overview

In contrast, informal mobility is not addressed as an explicit policy domain. Instead, it appears indirectly through documents concerned with **accessibility, pedestrian safety, school mobility, and universal design**, where everyday mobility practices are implicitly acknowledged but not framed as informal systems. Hence, in the grey literature, authors seek to regulate shared mobility as a visible and governable phenomenon. In contrast, informal mobility remains, for the most part, unarticulated, treated as a residual condition rather than a subject of strategic intervention.

Conceptually, shared mobility is predominantly framed in the grey literature in Greece as a **technocratic and regulatory challenge**. Mobility is approached as a domain to be governed through legal definitions, compliance mechanisms, enforcement, and planning hierarchies. Shared mobility services, particularly e-scooters, bicycles, car-sharing, and ride-sharing, are concep-

tualised as formal systems whose legitimacy depends on adherence to national rules, municipal regulations, and spatial order. This framing prioritises safety, standardisation, and control over public space, often positioning shared mobility as a potential disruption to be contained through regulation rather than as a socially **embedded practice**. At the same time, strategic documents at the national and international level frame shared mobility within broader narratives of **sustainability transitions**, including decarbonisation, electrification, and multimodality. In these contexts, shared mobility is conceptualised as a complementary extension of public transport and as part of integrated mobility ecosystems (e.g., Mobility-as-a-Service (MaaS) and mobility hubs), with emphasis on experimentation, pilot projects, and technological innovation. This contrasts with municipal regulatory documents, which adopt a more defensive stance focused on mitigating negative externalities such as sidewalk obstruction, pedestrian conflicts, and enforcement challenges. Informal mobility, by contrast, lacks a coherent conceptual framing in grey sources. Where relevant, it is implicitly subsumed under broader categories such as pedestrian movement, accessibility, or everyday mobility, framed through **technical standards and safety requirements** rather than social practices or community networks. Documents addressing accessibility and school mobility conceptualise everyday movement as a function of infrastructure provision and regulatory compliance, rather than recognising informal arrangements as adaptive responses to systemic gaps. As a result, informal mobility remains conceptually invisible, despite its material significance in many Greek contexts.

Taken together, the grey literature reveals a **highly centralised and regulation-driven approach** to shared mobility governance in Greece. National legislation and strategies have significantly expanded the formal recognition of shared and micromobility modes, embedding them within traffic law, urban mobility planning, and sustainability strategies. However, the findings consistently point to **implementation gaps**, particularly at the municipal level, where limited technical capacity, fragmented responsibilities, and enforcement constraints undermine policy effectiveness. Municipal-level documents highlight recurring challenges in public-space management, pedestrian safety, and coordination with private operators, illustrating how shared mobility often becomes a governance problem rather than a mobility solution. International and EU-level reports further underline governance fragmentation, regulatory ambiguity, and uneven spatial deployment as key barriers to effective integration of shared mobility with public transport and everyday travel needs. Regarding informal mobility, grey sources indicate that accessibility deficits persist, particularly in walking environments, school access, and universal accessibility. While these documents do not explicitly analyse informal practices, they implicitly reveal the conditions under which informal mobility emerges: discontinuous pedestrian networks, car-dominated street design, weak local planning capacity, and uneven territorial provision. Informal mobility thus appears as a **shadow system**, filling gaps left by formal planning and regulation, yet remaining largely unacknowledged in policy discourse. On the whole, the grey literature depicts a mobility governance landscape in which shared mobility is increasingly formalised and regulated, while informal mobility remains socially embedded but institutionally marginal. This imbalance highlights a critical disconnect between regulatory ambition and evReryday mobility realities, underscoring the need for more integrated, context-sensitive, and socially-informed approaches to mobility governance in Greece.

- Regulatory framework on Sustainable Urban Mobility, Micromobility and Modernisation of Mobility (Law 4784/2021)

Law 4784/2021[1] constitutes the first comprehensive national effort to regulate shared micromobility in Greece and to integrate it into the sustainable urban mobility policy framework formally. The law marks a clear shift from regulatory absence to formalisation, introducing legal definitions, operational conditions, and governance responsibilities for micromobility modes, particularly shared e-scooters and bicycles. Shared micromobility is framed as a regulated transport service whose legitimacy depends on compliance with traffic rules, spatial regulations, and municipal oversight. This reflects a state-centric, control-oriented approach, prioritising order and safety while aiming to embed shared mobility within the existing transport regime.

A central element of the law is the delegation of regulatory responsibilities to municipalities, including the regulation of circulation, parking, fleet size, and permitted operating areas. While this decentralisation acknowledges the spatially specific impacts of micromobility, interviewees and policy analyses point to limitations in local governance capacity. The law presupposes technical expertise, administrative coordination, and enforcement capabilities that many municipalities lack, resulting in uneven and fragmented implementation across the country. Conceptually, the law treats shared micromobility primarily as a traffic and public-space management issue. Regulatory emphasis is placed on conflicts with pedestrians, safety risks, and compliance with road regulations, while issues related to affordability, accessibility, first- and last-mile integration, and territorial equity receive limited attention. As a result, shared mobility is normalised within an existing car-oriented legal framework that requires adaptation to established street hierarchies rather than contributing to their transformation.

The law is notable for its complete absence of reference to informal mobility. Informal practices such as community-based transport arrangements, peer-to-peer rides, and non-commercial sharing are usually excluded from the regulatory scope. The law implicitly assumes a binary mobility landscape, distinguishing only between formal, licensed services and non-compliant practices. This leaves no policy space for recognising informal mobility as a functional response to accessibility gaps, particularly in rural, island, and peripheral areas.

1 Greece on the Move: Sustainable Urban Mobility – Micromobility – Regulations for the Modernisation, Simplification and Digitalization of Procedures of the Ministry of Infrastructure and Transport and Other Provisions (Law 4784/2021)

In summary, Law 4784/2021 represents an important institutional milestone that formally recognises and regulates shared micromobility. However, its governance logic remains largely reactive and enforcement-driven. The simultaneous formalisation of shared mobility and the invisibilisation of informal mobility underscore a persistent policy imbalance, reinforcing the need for approaches that engage more directly with everyday accessibility and territorially uneven mobility needs.

- Traffic and Parking Regulation of Light Personal Electric Vehicles (LPEVs) by the Municipality of Athens

The Technical Report on Traffic and Parking Regulation of Light Personal Electric Vehicles (LPEVs)(2025) of the Municipality of Athens represents a concrete municipal-level implementation of the national micromobility framework. The document translates the provisions of Law 4784/2021 into spatially-specific rules governing the circulation and parking of LPEVs, with an implicit focus on shared e-scooter services. From a shared-mobility perspective, the report adopts a problem-oriented governance approach, framing micromobility primarily as a source of conflict in dense urban public space, rather than a mobility solution. The report places strong emphasis on **public space regulation**, introducing detailed circulation rules, parking typologies, designated zones, and spatial exclusions. These measures are explicitly designed to address perceived negative externalities associated with dockless e-scooters, including sidewalk obstruction, pedestrian safety concerns, and conflicts with vulnerable users. Shared micromobility is thus conceptualised as an object that requires spatial control, whose legitimacy depends on its orderly coexistence with existing street hierarchies and pedestrian flows. Accessibility outcomes, modal integration, and everyday mobility needs receive comparatively limited attention.

Governance responsibility is clearly concentrated at the municipal level, positioning the City of Athens as the primary regulator, coordinator, and enforcer of LPEV-related practices. While this enables context-sensitive regulation, it also presupposes sustained enforcement capacity, administrative coordination, and cooperation with private operators. As a result, effective governance becomes contingent on local institutional capacity, with potential implications for uneven implementation across neighbourhoods and over time. Overall, the Athens LPEV Technical Report illustrates how shared micromobility governance is enacted through detailed spatial regulation that prioritises safety, order, and enforceability. While it addresses concrete management challenges, its narrow focus and lack of engagement with informal mobility practices highlight a persistent tension between formal regulatory control and the everyday logic of urban mobility in Greek cities.

2.6. Expert Interviews

The policy implications and suggestions presented in this chapter are primarily informed by semi-structured interviews conducted with selected Greek experts active in the field of shared and informal mobility. Given the fragmented institutional landscape and the limited availability of systematic quantitative data in Greece, expert knowledge was considered essential for capturing regulatory dynamics, governance practices, and emerging policy debates that are not fully reflected in academic or grey literature. Experts were identified through an institutional analysis of the field, focusing on actors positioned at the intersection of research, policy design, and implementation.

In total, five experts were interviewed. All hold doctoral degrees in transport-related disciplines and combine academic expertise with applied research, advisory, or policy-making roles (see affiliation in Appendix B).

The interviews followed a semi-structured format covering sector performance, key challenges, policy measures, and relevant policy documents. However, the primary analytical value of the interviews lies in the expert's positioning. Collectively, the interviews reflect the dominant epistemic and institutional centres shaping shared mobility governance in Greece, while also revealing institutional gaps.

2.7. Policy Implications

The policy implications presented in this section are primarily informed by **semi-structured interviews** conducted with selected Greek experts active in the field of shared and informal mobility. Given the fragmented institutional landscape and the **limited availability of systematic quantitative data** in Greece (particularly regarding informal mobility practices), expert knowledge was considered essential for capturing regulatory dynamics, governance practices, and emerging policy debates that are not fully reflected in academic or grey literature. Experts were identified through an institutional analysis of the field, focusing on actors positioned at the intersection of research, policy design, and implementation.

Performance of Shared and Informal Mobility

According to the interviewed experts, the overall use of shared mobility in Greece remains limited. In terms of modal split, shared mobility modes were consistently estimated to account for approximately 2% to 5% of trips in Greek cities. These estimates were provided as indicative figures rather than as outputs of systematic monitoring, reflecting the limited availability of consolidated performance data at the national or metropolitan level.

Experts also referred to performance-related targets included in Sustainable Urban Mobility Plans (SUMPs), noting that key performance indicators (KPIs) for shared mobility are generally underdeveloped. Where such indicators exist, they are typically framed within five-year scenarios. Indicative targets mentioned by interviewees include shared mobility usage by approximately 25% of residents and the provision of one shared mobility system per 500 residents. Interviewees emphasised that these figures function primarily as planning targets rather than as measured outcomes.

More concrete data were discussed regarding Light Personal Electric Vehicles (LPEVs), drawing on a study conducted by the Municipality of Athens for the Metropolitan Athens area. According to this study, the total number of LPEVs was estimated to range between 4,000 and 6,000 vehicles, with approximately 3,000 to 4,000 located within the Municipality of Athens. Interviewees noted that, despite the presence of LPEVs in the urban environment, estimated usage levels are relatively low. Experts noted that LPEVs are primarily used for short trips with low passenger volume. Average trip distances were reported at approximately 1.5 km, with average trip durations of 10 to 15 minutes.

Regarding informal mobility, interviewees consistently pointed to the **absence of explicit research or monitoring frameworks** for the Greek context. As a result, no quantitative performance indicators were identified. Expert observations were based on professional experience and aligned with the literature review, emphasising the role of informal mobility networks in rural and other areas where formal public transport is insufficient.

Key Challenges for the Sector

Interviewed experts identified a set of recurring challenges affecting both shared and informal mobility in Greece. A primary issue relates to **cost and affordability**. Experts noted that, as currently configured, shared mobility services are not affordable for everyday use by residents and therefore do not adequately serve daily mobility needs. Instead, they are predominantly utilised for leisure or tourism-related trips, with limited relevance for routine commuting or essential travel. The affordability issue should therefore be understood less as a simple comparison with the full cost of private car ownership and more as a problem of per-trip costs, payment models, and perceived value for routine travel. For many residents, especially those with limited incomes or weak access to public transport, shared mobility may remain too expensive to use regularly, while walking remains the only genuinely low-cost alternative.

A second challenge concerns the **lack of appropriate infrastructure**, which directly affects user safety. Interviewees emphasised that insufficient or discontinuous infrastructure (particularly for micromobility) creates safety risks and constrains broader uptake. This infrastructural gap was identified as a persistent barrier across Greek cities. Experts also highlighted **low levels of social acceptance** as a fundamental challenge. Greek cities, and Greek society more broadly, were described as strongly car-dominated, a condition that negatively influences attitudes

towards shared mobility services and limits their perceived legitimacy within the urban transport system. Regarding mobility interactions, interviewees noted that when shared mobility services are used, they tend to compete more directly with **active mobility (especially walking) and public transport** than with private car use. Experts stressed the importance of maintaining a balance that supports active mobility and healthy lifestyles, rather than unintentionally undermining them.

A further challenge identified is the **lack of a unified and integrated strategy** linking shared and informal mobility with the wider transport system. Interviewees noted weak coordination among shared mobility services, public transport networks, and active mobility infrastructure, leading to fragmented planning and limited systemic integration. Experts also emphasised the absence of **context-specific approaches** tailored to the Greek setting. Current shared-mobility initiatives were described as insufficiently adapted to local needs, preferences, and socio-spatial conditions, particularly those of vulnerable groups. Finally, for informal mobility, interviewees identified cultural barriers and entrenched attitudes as significant obstacles. The absence of formal recognition or facilitation was noted as a limiting factor in uptake. In this context, experts suggested the need for **semi-formal shared mobility schemes** that would not simply "formalise" informal practices, but would selectively support them through light-touch regulation, local coordination, and targeted incentives. In practice, this could include municipally or regionally facilitated ride-sharing, community transport arrangements, registered volunteer-driver schemes, or locally coordinated carpooling in rural, island, and peripheral areas. Such schemes could build on existing informal networks while introducing basic safeguards related to accessibility, reliability, safety, and accountability.

Key Policy Measures for Implementation

Interviewed experts outlined a limited but coherent set of priority policy measures to strengthen the everyday role of shared and informal mobility in Greek passenger transport. A central recommendation is to improve affordability, especially for residents and regular users, rather than allowing shared mobility services to remain oriented mainly toward occasional, leisure, or tourist trips. This does not necessarily mean that shared mobility is more expensive than private car ownership in full-cost terms. Rather, experts suggested that, as currently priced and organised, many shared-mobility services remain too costly per trip to serve routine mobility needs, particularly for groups with limited access to private cars or for residents in areas with weak public transport provision. This creates a risk that shared mobility competes with walking or public transport rather than addressing suppressed mobility demand or reducing car dependence. Experts therefore emphasised the need for spatially targeted and socially targeted incentives, such as resident discounts, student schemes, subsidised first-/last-mile trips, or support for peripheral and underserved areas. Experts also highlighted the importance of strengthening multi-level regulation and strategic coordination across national, regional, and municipal levels. In this regard, interviewees stressed the need for clearer regulatory frameworks and strategic alignment to support consistent planning and implementation of shared mobility services.

Related to this, experts noted the need to provide local authorities with appropriate regulatory tools, enabling municipalities to plan, regulate, and implement shared-mobility strategies and associated infrastructure more systematically within a clearly defined institutional framework.

Infrastructure was identified as another key area for intervention. Interviewees referred not only to permanent infrastructure investments but also to **soft and flexible interventions**, such as the allocation and delineation of road space for micromobility modes. Tactical urbanism approaches and implementing pilots were highlighted as suitable methods for accommodating both cycling and other micromobility solutions within existing street networks. Experts further emphasised the value of community-driven, **participatory approaches**. Using participatory methods to collect feedback from residents (and making adjustments based on the collected feedback) was identified as a means to support the uptake of shared and informal mobility, particularly in contexts where acceptance and everyday use remain limited. In terms of mode-specific priorities, interviewees suggested **prioritising e-bike over e-scooter sharing systems, noting that the latter tend to have a stronger leisure-** or tourism-oriented character. E-bike sharing was viewed as more closely aligned with everyday mobility needs.

For informal mobility, experts recommended **building on existing networks** in rural areas and peripheral regions. These networks could be supported through semi-formal, flexible shared-mobility schemes, regulated or at least facilitated by local or regional transport authorities. Finally, experts identified **university campuses** as strategic targets. The provision of free or significantly reduced-cost access to shared mobility services for university students was proposed to address last-mile connectivity issues commonly observed on Greek campuses.

2.8. Research Agenda Implications

Insights from the expert interviews converge on the assessment that research on shared and informal mobility in Greece remains **uneven, fragmented, and insufficiently connected to policy and everyday mobility realities**. Shared mobility has attracted growing academic attention, particularly regarding behavioural intention, adoption factors, and technological innovation. However, experts consistently highlighted that this focus has come at the expense of a deeper understanding of **mobility systems, governance capacity, and territorial inequalities**. Informal mobility, in particular, was repeatedly identified as a critical knowledge gap, despite its continued importance for everyday accessibility in island, rural, and peripheral contexts.

One key research gap concerns the **systematic neglect of informal mobility as a component of the Greek mobility landscape**. Experts emphasised that informal transport practices (e.g. peer-to-peer rides, informal escorting, and community-based transport arrangements) are not marginal anomalies but adaptive responses to long-standing deficiencies in formal transport services. Future research should therefore move beyond viewing informality as residual or transitional and instead conceptualise it as a legitimate object of inquiry, closely linked to issues of mobility, poverty, ageing populations, and territorial exclusion. Qualitative, ethnographic, and

mixed-method approaches were identified as particularly suitable for capturing these practices and their socio-cultural dimensions.

Experts also highlighted a strong **metropolitan and pilot-project bias** in existing research. Athens and Thessaloniki dominate both academic and applied studies, while medium-sized cities, non-metropolitan regions, and non-touristic islands remain under-researched. This spatial imbalance limits the explanatory power of current knowledge, especially given that shared-mobility services often struggle to scale beyond dense urban environments. A future research agenda should prioritise place-sensitive, **comparative studies** that examine how shared and informal mobility operate under different demographic, economic, and infrastructural conditions across Greece.

Interviewees identified the dominance of **behavioural and stated-preference methodologies** as another limiting factor. While valuable for understanding intentions, these approaches offer limited insight into actual usage, persistence, and long-term impacts of shared-mobility services. Experts called for greater use of **revealed-preference data, longitudinal designs, and post-implementation evaluations**, particularly in relation to regulatory changes, pilot termination, and shifts in everyday travel behaviour following crises or policy interventions.

A further research priority concerns the **governance and institutional dimensions of mobility**. Experts stressed that municipal capacity, regulatory implementation, enforcement practices, and public-private coordination remain under-analysed, despite their decisive role in shaping shared-mobility outcomes. Future research should explicitly examine multi-level governance arrangements, the uneven capacities of local authorities, and the interaction between national regulation and local practice.

Finally, the interviews underscored the need for a **system-level and justice-oriented research agenda**. Rather than treating shared-mobility modes in isolation, future studies should analyse interactions between shared, informal, public, micromobility, and active mobility, with explicit attention to accessibility, equity, and socio-spatial inequalities. Such an agenda would support a shift from innovation-driven narratives to research more closely aligned with the lived mobility conditions and policy challenges facing Greece.

In summary, future research should critically engage with the unintended consequences of shared-mobility systems, with particular attention to the role of e-scooters as barriers to walkability and as disruptors of mobility-centred accessibility and just mobility. Their presence in Greek cities raises questions not only about safety and regulation but also about the politics of urban space and the right to mobility. In parallel, informal mobility in peri-urban and rural areas requires deeper investigation as a socio-cultural phenomenon. Rather than being reduced to technical stopgaps to address insufficient public transport, these networks operate as human infrastructures built on trust, reciprocity, and local knowledge. Studying them as socio-cultural systems would provide valuable insights into resilience, community-based solutions, and the ways informality continues to shape mobility beyond metropolitan centres.

2.9. Conclusion

The Greek case reveals a strongly uneven mobility landscape, in which shared mobility is increasingly visible but still limited in everyday use, while informal mobility remains largely invisible despite its practical importance. Shared mobility has attracted growing academic, policy, and project-based attention, but it remains limited in everyday use, socially selective, weakly integrated with public transport, and often oriented toward leisure, tourism, or pilot-based innovation rather than routine mobility needs. Informal mobility, by contrast, remains largely invisible in academic and policy debates, despite its importance for sustaining everyday accessibility in rural, island, peripheral, and otherwise underserved contexts.

The main finding is therefore not simply that shared mobility should be expanded or that informal mobility should be formalised. Rather, the Greek case points to the need for a more integrated and context-sensitive understanding of mobility provision, one that recognises shared and informal practices as interconnected responses to gaps in the formal transport system. Policy efforts should focus on affordability, infrastructure, municipal capacity, multi-level coordination, and light-touch support for semi-formal shared mobility schemes where existing informal networks already compensate for weak public transport provision.

Overall, the Greek case highlights the limits of treating shared mobility as a purely technological or market-based solution. Future policy and research should move beyond fragmented pilots and regulatory control toward a justice-oriented agenda that foregrounds everyday mobility needs, territorial inequalities, and the lived conditions of residents. This would allow shared and informal mobility to be addressed not as separate or marginal phenomena, but as part of a broader socio-spatial mobility system that needs more inclusive governance.

Chapter three: Kyrgyzstan

Altynai Nogoibaeva

Figure 4: Marshrutkas in Bishkek, 2016. Photo by Lela Rekhviashvili

3.1. Abstract

For decades, an informal minibus-based transport system known as *marshrutkas* served as the backbone of urban mobility in Bishkek, the Kyrgyz capital. While marshrutkas initially drew academic interest in a research project that challenged the theoretical framing of "informality," no further studies have been conducted on the topic since. Meanwhile, carpooling and marshrutkas remain vital outside the capital, where they were phased out in 2022. Instead, issues of shared mobility are currently addressed by NGOs. Multilateral financial organizations, and tech "super-apps" also contribute to addressing the subject. Legislative gaps, coupled with a lack of planning studies and mobility research constitute the core challenges for research and policy on informal transport in Kyrgyzstan.

3.2. Introduction

Kyrgyzstan is currently experiencing a **rapid and uneven transformation** of its transport system. In Bishkek, once almost entirely dependent on minibuses (marshrutkas), the city has largely phased them out, reducing their number to only 29 routes that mostly serve peripheral districts and 13 routes that serve suburban settlements, with transfers to larger public transport on the outskirts of the city. Some of these remaining routes are now integrated into digital platforms that allow real-time tracking (e.g., e-meria.kg). In contrast, in other Kyrgyzstan cities and for long-distance travel, **marshrutkas and informal ride-sharing services remain the backbone of mobility.**

In Bishkek, marshrutkas accounted for more than two-thirds of daily passenger trips during the 2000s and 2010s. However, since 2022 the city has implemented a large-scale reform that gradually phased out marshrutkas, replacing them with CNG buses. This reform has been supported by state investments as well as international donors, including the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), and KfW Development Bank. Osh, the country's second largest city, has followed a similar strategy, with gradual removal of marshrutkas in favor of larger-capacity buses. In contrast, small towns and intercity transport remain highly dependent on informal and semi-formal services. Marshrutkas and shared taxis (poputka) are vital for linking rural areas and secondary cities with regional centers, often **filling accessibility gaps** where formal large-scale transport is financially unsustainable.

In parallel, new forms of shared and digitally-mediated mobility are emerging, particularly in Bishkek and Osh. These include electric-scooter-sharing services and **informal carpooling** facilitated by ride-hailing platforms (such as inDrive and Gettik), as well as Telegram-based groups (e.g., Poputka KG Mezhgorod (Carpool Intercity), Poputka Bishkek (Carpool Bishkek)). E-scooter sharing is primarily hampered by insufficient infrastructure and ongoing conflicts with pedestrians due to the lack of dedicated lanes. Informal carpooling via messengers raises additional concerns related to safety and reliability. The **absence of platform governance** allows speculative taxi drivers to dominate these spaces, while users must constantly monitor chats to secure rides. More critically, these unregulated practices carry serious personal safety risks, including the potential for violence, as illustrated by past incidents associated with informal hitchhiking (24.kg, 2021).

Kyrgyzstan therefore presents a distinctive case of a "post-marshrutka transition," in which formal transport service upgrades in major cities coexist with, and are heavily supplemented by, a dynamic informal mobility sector that continues to underpin small- and medium-sized urban and intercity transport. This chapter examines how formalization, digitalization, and informality interact across different spatial scales within Kyrgyzstan's evolving mobility system.

3.3. Academic Literature Review

Academic research on mobility in Kyrgyzstan has been limited but insightful, with a particular focus on the marshrutka phenomenon in Bishkek. Marshrutkas emerged in the early 1990s as a flexible, low-cost response to collapsing public transport systems after independence. For nearly three decades they became the backbone of urban mobility, accounting for the majority of daily trips. Scholars have analyzed marshrutkas **not only as a transport mode, but also as a social institution.**

Sgibnev & Rekhviashvili (2018) documented how marshrutkas structured everyday mobility, shaped social interactions, and created unique "economies of access" in Bishkek. Their work shows that marshrutkas offered dense coverage and frequent service, but at the cost of overcrowding, safety concerns, and highly-informal regulation. Turdalieva and Edling (2017) studied gendered dimensions of marshrutka mobility, demonstrating how women utilizing marshrutkas experienced the challenges of personal safety, bodily comfort, and space negotiation in tightly-packed vehicles.

Other research has highlighted marshrutkas as a hybrid between formality and informality: they operated under official licensing but often ignored defined schedules, routes, and safety norms (Rekhviashvili & Sgibnev, 2018). Studies also point out their role in sustaining **livelihoods**, since marshrutka driving became one of the most accessible forms of self-employment in post-Soviet Kyrgyzstan. The informality of marshrutkas created both **opportunities** (flexibility, low entry barriers, user affordability) and **systemic problems** (corruption in licensing, competition with municipal buses, weak enforcement of safety standards).

The emergence of marshrutkas is often described in the literature **not just as a temporary transport solution**, but as part of broader **post-socialist urban changes**. Their growth was linked to economic difficulties, weak public governance, and the need for people to rely on informal ways to manage everyday life. This perspective helps to better understand Bishkek's current transition from marshrutkas to larger buses. This transition can be seen as a move toward what can be described here as a "post-marshrutka" urban model. It also helps to explain current policy reforms and the fact that **informality is still present, but now appears in new, often digital, forms**.

3.4. Current Research Activities

Recent research extends the analysis of urban mobility beyond Bishkek to the city of Osh. Mamazhakypova and Aliev (2022) applied GIS-based network analysis to assess public transport accessibility in Osh, identifying areas reachable within a ten-minute walking distance from stops. Their results reveal pronounced **spatial disparities:** in peripheral neighborhoods such as Ak-Tilek and Kulatova there is limited access to public transport, while central areas are characterized by a high concentration of routes and stop density. The public transport system in Osh comprises 56 routes and approximately 1000 vehicles (predominantly small-capacity marshrutkas (10-16 passengers)), alongside a limited trolleybus and bus network operating mainly in central districts. Complementing this spatial perspective, Adieva et al. (2022) analyzed passenger flows on selected routes and found significant peak-hour congestion, irregular headways, and frequent overloading of small-capacity vehicles. Together, these studies indicate that while marshrutkas play a dominant role in ensuring coverage across the city, their prevalence is associated with uneven service provision and operational challenges, particularly under peak-demand conditions.

Academic attention has also begun to address the rapid rise of individual mobility devices (IMDs), including micromobility modes such as electric scooters, hoverboards, and monowheels. Saitkhojaev (2023) draws attention to the **fast diffusion of IMDs in Bishkek and Issyk-Kul, alongside a pronounced regulatory vacuum.** By late 2023, approximately 60 officially-recorded traffic accidents involved scooters, resulting in over 60 injuries. At that time, IMDs lacked any legal definition in Kyrgyzstan's traffic code, leaving users outside administrative or criminal liability frameworks. The study proposed introducing legal definitions, speed limits, spatial restrictions, and mandatory safety equipment. The regulatory gap identified in the study was partially addressed in **April 2025, when amendments to the Traffic Code** (Resolution No. 191) formally defined IMDs, established speed and age limits, and clarified permissible areas of movement (Government of the Kyrgyz Republic, 2025). While enforcement and infrastructure adaptation remain unresolved, these changes marked an important step toward integrating IMDs into Kyrgyzstan's legal mobility framework.

Civil society organisations have also contributed substantially to the empirical knowledge base. A joint study by Peshcom and Bankwatch documents the fragmented nature of cycling infrastructure in Bishkek, much of which is discontinuous, unsafe, and/or obstructed (Valentina kyzy & Nogoibaeva, 2024). Research supported by the Friedrich-Ebert-Stiftung further indicates that Bishkek's cycling network totals just 46.4 km, more than half of which is shared with pedestrian sidewalks. Accident risk on such shared paths is estimated to be eight times higher than on segregated lanes, underscoring the need for better design standards and enforcement (Zhuravlev & Nogoibaeva, 2024).

3.5. Grey Literature Review

Grey literature specifically addressing informal mobility and shared transport in Kyrgyzstan remains limited. This reflects the absence of institutional frameworks capable of recognising and regulating these practices, and explains why the handful of existing publications have had disproportionate influence on how the topic is framed in donor and policy discussions.

Donor and Municipal Publications

The World Bank report Public Transport in Bishkek: Past, Present and Future (2021) documented the structural conditions underlying Bishkek's transport crisis at a critical moment – just before the city embarked on its large-scale reform. The report captured a transport system combining, in its own words, "the worst of both models": fares regulated too low for public operators to survive, alongside a loosely regulated private sector that compromised on safety and quality to remain viable. It documented how this dynamic produced a self-reinforcing "vicious cycle" in which bus procurement without accompanying institutional reform inevitably led to service deterioration and renewed dependence on the informal sector. It also recorded that marshrutkas accounted for over 70% of public transport ridership while operating under conditions that made safety and quality enforcement effectively impossible. The report's analytical framing of these structural failures coincided with, and may have contributed to, the policy shift toward phasing out marshrutkas that the municipality began implementing from 2022 onwards.

In the United Nations Economic Commission for Europe (UNECE, 2023) study on car-sharing and carpooling, significant potential for shared mobility in Kyrgyzstan is identified, particularly in Bishkek, where unreliable public transport schedules persist. However, the authors note the absence of formal car-sharing services and highlight informal carpooling, especially for long-distance travel, as the dominant practice. The principal barrier to formalising these already-widespread practices remains the lack of legal definitions for "car-sharing" and "carpooling" in national legislation. To address this, the report proposed a five-stage regulatory roadmap, beginning with the development of a Sustainable Urban Mobility Plan (SUMP) and proceeding through the establishment of a legal framework, licensing procedures, economic incentives for operators, and monitoring mechanisms. The report itself acknowledged that implementation could realistically be considered only after 2025, pending legislative amendments and infrastructure improvements – reflecting the depth of the regulatory gap it identified. The subsequent inclusion of SUMP development as a commitment in Bishkek's Green City Action Plan may indicate that this framing reached municipal planning discussions, even if legislative progress on defining carpooling and car-sharing remains limited.

Civil Society Publications

Local **NGOs and activist groups**, including Peshcom, MoveGreen, and trotuar.kg, have played an important role in shaping public debate on sustainable mobility, in part by producing evidence that challenges official narratives. A data analysis by Peshcom estimates that public transport meets only around 40% of daily demand for passenger transport in Bishkek (Zhuravlev, 2023), a figure widely cited in media coverage of the post-marshrutka transition and one that has contributed to sustained public pressure on the municipality to address service gaps. Zhuravlev et al. (2023) further highlighted urban sprawl and poor transport connectivity in peripheral districts, while MoveGreen has linked mobility patterns to air quality and climate impacts, reinforcing the case for accelerating the shift toward cleaner modes.

A joint study by Peshcom and Bankwatch documents the fragmented nature of cycling infrastructure in Bishkek, much of which is discontinuous, unsafe, and/or obstructed (Valentina kyzy & Nogoibaeva, 2024). Research supported by the Friedrich-Ebert-Stiftung further indicates that Bishkek's cycling network totals just 46.4 km, more than half of which is shared with pedestrian sidewalks – with accident risk on such shared paths estimated to be eight times higher than on segregated lanes (Zhuravlev & Nogoibaeva, 2024). This research had a direct practical impact: its recommendation to introduce directional separation on shared paths was adopted by the municipality in April 2025. Tariel T. (2025) launched the trotuar.kg social media account, mobilizing public opposition to unregulated e-scooter use and contributing to wider public debate about pedestrian safety at a moment when both rental operators and law enforcement were beginning to respond to growing concerns, including reported enforcement operations by the Patrol Police Service at intersections.

Taken together, these publications illustrate both the potential and the limits of grey literature in this context. Where such literature exists, it has shaped policy debates; intercity informal transport, poputka networks, and platform-based carpooling remain largely undocumented, leaving policymakers without an evidence base.

Key Policy Documents

During the period between 2023 and 2025, the Government of the Kyrgyz Republic implemented a comprehensive, multi-pronged effort to address long-standing regulatory gaps and formalize both established and emerging components of its transport sector. This initiative involved two significant legislative developments, resulting in the stringent formalization of the taxi industry and the introduction of a legal framework for micromobility devices.

- Formalization of Taxi and Public Transport Services (Resolution No. 535):

Resolution No. 535, adopted in August 2025, introduced detailed and stringent requirements aimed at structuring and professionalizing the taxi industry (Cabinet of Ministers of the Kyrgyz

Republic, 2025). The resolution updated the definition of taxis as licensed vehicles, requiring them to possess mandatory identification elements such as an official trapezoid "Taxi" sign with internal illumination, a functional taximeter, and clearly-visible information containing details regarding the carrier, driver, and vehicle registration. The use of right-hand-drive vehicles for commercial passenger transport was explicitly prohibited (Government of the Kyrgyz Republic, 2013/2025). For operators, the law established detailed licensing conditions based on the operating zone (urban/suburban up to 60 km, or intercity above 60 km). These conditions mandate that legal entities must possess or contract a production-technical base equipped to perform daily pre-trip medical checks for drivers and technical inspections of vehicles, and to enforce strict protocols for driver rest, vehicle maintenance, and to maintain operational records including logbooks of driver violations, safety briefings, and vehicle inspections. Crucially, these changes placed responsibility for digital oversight on taxi aggregator platforms, requiring them to ensure cashless payments, route tracking, automated speed monitoring, and the enforcement of driver working hours through automated restrictions on order dispatch. Furthermore, the law established robust safety thresholds, including mandatory additional insurance for every trip, strict requirements for driver background checks, and the exclusion of individuals with prior convictions for serious crimes (such as murder, sexual assault, or terrorism) from obtaining a taxi driver's license.

- Traffic Code Reform and Micromobility Regulation:

In parallel with the formalization of taxis, the Kyrgyz Traffic Code underwent significant amendments and modernization between 2023 and 2025, to **accommodate active travel and new mobility forms.** Prior to these amendments, the rules were severely limited, recognizing only fully-separated bicycle paths and leaving Individual Mobility Devices (IMDs) such as e-scooters, monowheels, and segways without any legal status.

Most importantly, the **legal status of IMDs** was established for the first time through the adoption of a separate regulatory order on 7 April 2025, defining the scope and rules for personal and kick-sharing operators (Cabinet of Ministers of the Kyrgyz Republic, 2025b). This was swiftly followed by the introduction of a comprehensive framework into the Traffic Code (Resolution No. 191), which defined IMDs within traffic law (Cabinet of Ministers of the Kyrgyz Republic, 2025c). The new framework in the updated code addressed cycling, defining multiple forms of infrastructure (lanes, zones, shared facilities) and clarifying the use of sidewalks, thereby aligning legal provisions with the diversity of urban street conditions. The reform established detailed safety requirements for IMDs, including a maximum speed limit of 25 km/h, weight restrictions for sidewalk use, and mandatory lighting. This tiered hierarchy prioritizes the use of bicycle infrastructure while permitting sidewalk use only when safer alternatives are unavailable. Together, these two legislative acts successfully placed cyclists, scooter users, and pedestrians within a coherent legal structure, providing municipalities with formal tools to manage micromobility and marking a decisive shift toward recognizing vulnerable road users as legitimate components of the transport system.

- Tax Reform for Digital Platforms:

A major regulatory shift occurred on 1 September 2025, when the State Tax Service introduced a new **taxation regime for individuals working through digital platforms.** Aggregators such as Yandex Go, inDrive, Maxim, and delivery platforms became official tax agents, responsible for automatically withholding income tax and social insurance contributions from drivers and couriers using their systems (State Tax Service, 2025).

Previously, most drivers operated under a fixed-fee monthly patent or as individual entrepreneurs, manually calculating and paying taxes. Many worked informally, without pension contributions or income transparency. The new system eliminates the need for patents, declarations, or separate registration, transferring all fiscal obligations to platforms. Income tax is now withheld proportionally (1% from 2025-2028, 2% from 2028-2030, and 5% thereafter), alongside social insurance contributions that allow workers to accumulate pension rights for the first time. This reform aligns Kyrgyzstan with international trends in platform regulation observed in Kazakhstan. By designating platforms as tax agents, the state was able to address persistent enforcement challenges stemming from limited inspection capacity, gain access to automated income reporting, and reduce public administrative costs. For platforms, the reform provides legal clarity and uniform rules. For workers, it offers formal status and simplified procedures for paying taxes and qualifies for pension benefits, as well as removes complicated tax forms reporting.

At the same time, the shift from a fixed-fee patent to proportional taxation alters behavioral incentives. While the new system benefits low-activity and part-time workers, it may reduce incentives for full-time drivers to maximize service provision, potentially affecting peak-hour availability and service coverage. These distributional effects remain underexplored and warrant further empirical assessment.

3.6. Interviews

Interviewees were selected to represent distinct perspectives on urban mobility: a practitioner embedded in donor-funded transport programmes, a civil society researcher with policy advocacy experience, a cycling advocate with daily micromobility use, and an urban journalist covering transport issues. Together they offer complementary vantage points on formal, informal, and active mobility.

Across all interviews, informal mobility, particularly Telegram-based carpooling and intercity ride-sharing, was described as a critical component of everyday mobility. While less visible within Bishkek itself, it plays a central role in connecting peripheral areas, satellite towns, and long-distance destinations, where formal transport options are scarce or unreliable. Interviewees consistently described informal ride-sharing not merely as a low-cost alternative, but as a more efficient and flexible option offering **door-to-door service**, reduced travel time, and greater comfort compared to available formal alternatives.

This dynamic is reinforced by recent spatial changes in transport infrastructure. The relocation of Bishkek's bus terminals to peripheral areas has increased reliance on informal ride-sharing, as users seek to avoid additional time and cost associated with accessing these facilities. Telegram-based carpooling services thus provide a more direct alternative, particularly for intercity travel.

While formal shared mobility services remain underdeveloped, shared practices are already widespread in informal and semi-formal forms, including Telegram groups, ride-sharing features in taxi platforms, and **community-based arrangements**. One notable exception is the existence of semi-formal school transport systems. **Private** shuttle services function as a stable form of organized ride-sharing, reducing individual car trips during peak hours. However, they remain outside municipal transport planning and are not integrated into broader mobility strategies.

This gap is particularly visible during peak hours, when public transport struggles to accommodate school-related demand. Overcrowding disproportionately affects children, especially in peripheral areas. To address traffic peak pressure, the Municipality rearranged school and university schedules (Makanbai kyzy, 2024). Experts also noted that **active mobility could play a greater role in school travel**, given that many neighborhoods have schools within cycling distance. However, the lack of safe cycling infrastructure, including protected lanes and coherent traffic rules, discourages parents from allowing children to cycle independently. As a result, bicycles are not perceived as a viable alternative, reinforcing reliance on overloaded public transport.

A recurring theme across interviews is the absence of a coherent regulatory framework. While recent reforms have introduced definitions for micromobility and formalized parts of the taxi sector, informal and digitally mediated mobility remains largely unregulated. Telegram-based carpooling, in particular, operates without user verification, rating systems, or traceability, raising concerns about safety and accountability, especially for vulnerable users. Open group formats also **expose users to digital risks**, as personal contact data can be misused. At the same time, experts noted the potential for formalization. Transforming existing informal networks into platform-based systems, similar to BlaBlaCar, could improve safety and accountability while preserving flexibility.

Experts also pointed to a broader imbalance in policy priorities. While fleet renewal has progressed, investments in walking, cycling, and micromobility infrastructure remain limited, fragmented, and poorly integrated. As a result, these modes remain marginal despite growing demand.

Taken together, expert perspectives reveal a mobility system in which informal practices are not peripheral, but structurally embedded, particularly where formal systems fail to provide reliable and accessible services. Informality is not a transitional condition, but a persistent and adaptive layer of Kyrgyzstan's mobility system.

3.7. Policy Implications

This section examines the key challenges, existing policy responses, and legislative gaps shaping Kyrgyzstan's transition toward a more formalised and diversified mobility system, and identifies priority areas for policy action.

Key Challenges for Urban and Long-distance Travelling

Bishkek's post-marshrutka transition **has improved environmental performance but exposed significant service gaps,** particularly in peripheral districts. Residents report overcrowded buses, extended waiting times, and the removal of direct routes without adequate substitutes (Kaktus media, 2025). While municipal authorities have announced fleet expansions and route adjustments, delays in implementation and the absence of transitional service models, such as feeder routes, flexible routing, or demand-responsive transport, continue to disadvantage residents of outer neighborhoods, **reinforcing spatial inequalities** in access to mobility (Kaktus media, 2025b).

The regulatory landscape in Kyrgyzstan operates against the backdrop of an **exponentially-growing digital transport market and significant infrastructure overload.** Data from the National Bank, as reported by Akchabar.kg (2025), underscores this challenge: total annual expenditure on taxis across the country reached 4.3 billion soms (~45,3 million Euro) in 2024, marking a substantial increase from 1.2 billion soms (~13,9 million Euro) in 2022. This rapid growth is fueled by increasing reliance on cashless payments and the adoption of taxi services as a utility that substitutes for public or private transport in congested urban environments.

The **fragility of digital innovation** is starkly demonstrated by the failure of multiple platform-based schemes. Beyond the discontinuation of Yandex's shared minibus service (the "Shuttle") in 2023, the city also saw the launch and quick withdrawal of a dockless bike-sharing service. The inability of this service to operate beyond a single season was due to a combination of supply-side failures (the bicycles themselves were heavy, outdated, and challenging to use, particularly given Bishkek's hilly topography and the effort required to pedal uphill) and the critical lack of protected cycling infrastructure and proper curb management.

These challenges extend well beyond the capital. Cities such as Osh, Jalal-Abad, Karakol, and Batken remain heavily dependent on marshrutkas, while smaller towns, including Talas, lack formal municipal public transport altogether. In these contexts, daily mobility relies on informal ride sharing ("poputka"), local taxi dispatchers, and regional minivan operators. Digital platforms such as Maxim, Navi Taxi, and local services such as Taxi360 in Talas, increasingly substitute for absent public systems, effectively privatizing access to mobility and reinforcing market-driven inequalities. Semi-formal commercial services, such as GoBus, have partially filled intercity and peri-urban gaps through app-based ticketing and scheduled routes (e.g., Bishkek-Karakol, Bishkek-Talas, airport transfers, and recreational routes to Ala-Archa).

However, the lack of an institutional framework for integrating such operators into the public transport system has left them vulnerable to displacement once formal municipal routes are introduced (route No153 - to airport, route No1 - to Ala-Archa).

Taken together, these dynamics reveal a structural divide in Kyrgyzstan's mobility system: **low-cost, high-capacity buses on one end and expensive taxis on the other, with no stable mid-tier shared-mobility option.** Informal solutions, including Telegram-based carpooling groups and platform-mediated ride sharing via inDrive, temporarily bridge this gap, but operate in a legislative vacuum raising concerns related to safety, liability, and consumer protection.

Micromobility introduces an additional layer of complexity. Despite the rapid uptake of shared e-scooters, supporting infrastructure remains insufficient. Zhuravlev and Nogoibaeva (2024) indicated that 54% of Bishkek's cycling network overlaps with pedestrian sidewalks, resulting in a substantially higher risk of collisions. Public backlash has been significant, with 7000 residents signing petitions demanding restrictions on scooter use. At the same time, platform data indicates that users collectively traveled 2.4 million kilometers on shared scooters within a single summer season, with a total of 720 thousand rides. This underscores strong latent demand for short-distance mobility options despite unresolved infrastructural and regulatory conflicts (Topnews.kg, 2025).

Long-distance and night time mobility remains particularly constrained. Intercity travel is still dominated by informal poputka networks and regional marshrutkas, while night bus services within Kyrgyzstan are virtually absent, with the exception of the recently-introduced airport route No153 (Aigyrov, 2025). As a result, taxis often remain the only viable night time option, exacerbating affordability and safety concerns. By contrast, residents travelling to neighboring countries frequently rely on alternative cross-border strategies: for example, night buses to Tashkent operate more regularly, while trips to Almaty often involve crossing the border first and continuing by Kazakhstani taxi or marshrutka, as private car travel is slowed by lengthy border procedures. These practices further illustrate how gaps in domestic long-distance and night time transport push users toward informal or transnational mobility solutions.

Policy Responses

Governmental and municipal responses to emerging mobility challenges in Kyrgyzstan remain fragmented but have become increasingly visible over the past decade. Current strategies combine donor-supported modernization, incremental regulatory reforms, fiscal formalization of platform-based services, and sustained pressure from civil society actors.

Transport reforms in Bishkek are closely aligned with donor-supported modernization programs. The Green City Action Plan (GCAP) positions clean public transport, municipal taxi reform, and active mobility as key priorities (Bishkek Municipality, 2024). Recent procurement of CNG and electric buses, financed by ADB, EBRD, and KfW, has accelerated fleet renewal and reduced

local air pollution. Similar Climate Action Plans (CAPs) have now been developed for six cities, while Kyrgyzstan has recently published its updated Nationally Determined Contribution (NDC 3.0), which incorporates the transport sector into national climate mitigation commitments, although without a specific focus on urban mobility (Ministry of Natural Resources, Ecology and Technical Supervision, 2025).

However, implementation remains uneven. While fleet renewal has progressed relatively quickly, commitments related to walking and cycling infrastructure have advanced slowly. Cycling networks remain fragmented, poorly connected to destinations, and weakly integrated into street hierarchies. This imbalance reflects a broader tendency to prioritize technological upgrades over spatial reallocation and behavioral change.

Civil society organizations, including Peshcom, MoveGreen, and trotuar.kg, play a central role in advancing sustainable mobility agendas. Through air-quality monitoring, pedestrian rights advocacy, and mapping of fragmented cycling infrastructure, these groups provide alternative evidence bases and challenge official narratives.

Donor-led policy research has also shaped strategic thinking. A UNECE (2023) study on car sharing and carpooling in Kyrgyzstan frames shared mobility as a complementary transport layer rather than a substitute for public transport. The study cautions against deploying shared mobility to compensate for weak public systems and recommends a phased approach: first establishing legal definitions and basic regulatory principles at the national level, followed by alignment with municipal regulations. Without such sequencing, shared mobility risks reinforcing rather than mitigating congestion and spatial inequality.

Legislative Gaps

Despite recent progress in traffic regulation and fiscal formalization, mobility governance in Kyrgyzstan remains characterized by **reactive policymaking and persistent legislative gaps.** The debate around electric scooters in Bishkek illustrates this tension. In mid-2025, the Police Patrol Service proposed a complete ban on rental scooters, citing rising accident rates and inadequate infrastructure (Kaktus media, 2025c). Official data reported sharp year-on-year increases in scooter- and moped-related crashes, injuries, and fatalities.

Rather than triggering a systemic discussion on street design, speed management, and space allocation, the policy response gravitated toward prohibition. This approach exposes a structural gap between national-level regulation and local implementation. While the 2025 Traffic Code introduced technical standards for IMDs, municipalities lack clear mandates and coordination mechanisms to translate rules into spatial solutions. Responsibility is effectively shifted to law enforcement, which tends to favor restrictive measures over infrastructural or planning-based interventions (Kaktus media, 2025c). The Traffic Code further reinforces this ambiguity through its definition of a pedestrian, which legally equates walking individuals with persons using or

leading bicycles, IMDs, and other small-wheeled types of equipment. While cyclists in motion are treated as participants in traffic, IMD users are conceptually aligned with pedestrians, despite operating at speeds of up to 25 km/h. This definitional overlap blurs responsibility, shifts conflicts into pedestrian space, and partly explains the prevalence of enforcement-based responses rather than infrastructural solutions.

A similar regulatory gap exists in relation to shared car-based mobility. Although carpooling and car sharing are increasingly discussed in donor-supported policy documents, these concepts remain absent from both national and municipal legislation. In practice, carpooling is already widespread in Kyrgyzstan through informal Telegram groups, intercity poputka arrangements, and platform-based features such as inDrive or Yandex Go's shared-ride options, where drivers pick up passengers traveling along the same route. These practices are particularly common for long-distance travel, including trips between Bishkek and Issyk-Kul, Osh, or regional centers. However, because carpooling is not legally defined, such trips operate in a grey zone between private and commercial transport, raising unresolved questions regarding insurance, liability, passenger safety, and taxation.

Digital platforms are increasingly experimenting with shared mobility formats, but the success of these innovations is often hampered by a regulatory vacuum. The discontinuation of Yandex's "Shuttle" option in Bishkek in 2023. Shuttle was an app-based shared fixed-route minibus service launched in 2021. Its discontinuation demonstrates the fragility of such experiments, particularly in the absence of institutional support. The Shuttle was not merely a market experiment – it was a strategic response. Its launch followed a mass strike by marshrutka drivers, aiming to provide a modern, affordable alternative. The service was positioned as a comfortable minivan where a seat could be pre-booked via the app for 20 soms (equivalent to the existing marshrutka fare). It operated on a fixed circular route with a 15-minute interval, pick ups and drop offs were only allowed at bus stops, and with cash payments made directly to the driver.

The primary obstacles to the Shuttle's sustainability were its regulatory deficiency and difficulties with user adoption. The service operated entirely without integration into critical municipal frameworks, lacking official route planning, established curb management protocols, or comprehensive licensing agreements applicable to public transport. This structural isolation was particularly notable given its function as a direct, app-based competitor to the established marshrutka system, a dynamic that highlighted its informal status relative to existing institutional structures. Concurrently, the operational model struggled to gain traction within the mass market, as the novelty of a fixed-route service requiring app-based pre-booking proved difficult to integrate into the daily commuting habits of most users, despite the suitability of the route for some. The official reason cited by «Yandex Go» for its discontinuation was a strategic shift toward promoting alternative, less-demanding features, such as dynamic in-app discounts and the persistent co-riding option, "Together" (Russian: Вместе)(Batishchev, 2023). These features continue to operate successfully because they fall below the threshold of formal regulation, avoiding the institutional friction and adoption barriers that ultimately led to the demise of the more ambitious Shuttle experiment.

Overall, Kyrgyzstan's legislative gaps are less about resistance to innovation than about the absence of an overarching governance model capable of integrating informal practices, platform-based services, and public-transport objectives. The current landscape of the passenger transport sector is characterized by selective legalization, enforcement-heavy responses, and tolerance of informality. It risks entrenching a dual-mobility system rather than guiding the sector toward sustainability, safety, and social equity.

Priority Recommendations

Drawing on the analysis above, several priority interventions can be identified for the Kyrgyz context. First, the legal formalisation of carpooling and car-sharing at the national level is a necessary precondition for regulating practices that are already widespread – as the UNECE (2023) recommends, this should precede rather than follow municipal-level regulation. Second, while the 2025 Traffic Code and Bishkek's urban landscaping rules define physically separated cycling infrastructure, neither document establishes standards for on-carriageway cycling or micromobility lanes marked by road paint alone; filling this gap would give municipalities a practical tool for incrementally expanding micromobility space without requiring costly infrastructure construction. Third, the post-marshrutka transition requires dedicated transitional service models for peripheral districts, including feeder routes and demand-responsive transport, to prevent the reinforcement of spatial inequalities in access. Fourth, the fiscal formalisation of platform-based work should be accompanied by monitoring of its distributional effects on service availability, particularly at peak hours. Finally, semi-formal commercial operators such as GoBus warrant institutional recognition and integration into the public transport framework, rather than displacement once formal municipal routes are introduced.

3.8. Research Agenda Implications

This analysis illuminates several critical research gaps relevant for future mobility planning in Kyrgyzstan. These include gaps in research on: the **social and spatial impacts of marshrutka removal** in Bishkek; **interactions between informal practices and formal platforms;** territorial mobility inequalities across cities; safety and spatial conflicts related to micromobility; and the socio-economic effects of fiscal formalization in the gig economy. Further research is also needed on the feasibility of MaaS models and on institutional coordination between national and municipal authorities.

Taken together, these questions point to a central dilemma: what happens when informal transport disappears from a system deeply dependent on it, and which forms of informality can re-emerge within new shared and platform-based mobility systems?

An essential addition to the current research agenda concerns the role of education and behavioral change. New state standards for driver training have been approved in Kyrgyzstan, providing

for a substantial increase in instructional hours from the 50-60 hours to approximately 400 hours, as well as the introduction of school-level subjects related to motor transport and the basics of driving (Nesterova, 2025; Kaktus Media, 2026). These measures are aimed at improving the quality of driver training and reducing road accidents.

At the same time, from an analytical perspective, such an expansion of car-oriented training may contribute to further entrenching a car-centric model of mobility among the next generation. From the perspective of fostering safe, sustainable, and multi-modal urban mobility, a more strategically-critical research and policy priority is the mandatory integration of the Traffic Code, cycling, and IMD safety education into the educational core curriculum. The absence of such foundational education perpetuates conflicts on the streets and hinders the cultural adaptation necessary to realize the potential of the multi-modal environment created by the legislative reforms of 2025.

3.9. Conclusion

Informal and shared mobility in the cases examined are not marginal or transitional phenomena, but structurally embedded parts of transport systems. Modernization does not eliminate informality, it reshapes it.

Across contexts, formal reforms prioritize fleet renewal, electrification, and regulatory tightening. However, these interventions often fail to address core issues of accessibility, flexibility, and spatial coverage. As a result, informal mobility continues to fill persistent service gaps, particularly in peripheral areas and intercity travel.

Kyrgyzstan illustrates this dynamic clearly. The replacement of marshrutkas in Bishkek has improved vehicle quality and environmental performance, but has not resolved the underlying conditions that sustained informal transport. Peripheral areas remain underserved, and a mid-tier mobility gap persists between public transport and taxis. This gap is increasingly filled by informal and semi-formal practices, including Telegram-based carpooling, intercity poputka, and platform ride-sharing.

What distinguishes Kyrgyzstan is the speed of formalization combined with limited regulatory adaptation. Recent reforms have formalized taxis, introduced definitions for micromobility, and integrated platform workers into the tax system. Yet carpooling remains legally undefined, and municipalities lack the tools to translate regulatory changes into spatial and infrastructural solutions. As a result, enforcement often substitutes for system design.

The key finding is that informal mobility does not disappear under formalization. In Bishkek, it has shifted from street-based systems to digitally mediated ones, becoming less visible but no less essential.

Addressing this requires a shift in approach. Informal and shared mobility should not be treated as separate or opposing categories, but as overlapping and co-evolving elements of the same system. Rather than attempting to eliminate informality, policy should focus on understanding its functions, reducing its risks, and integrating it into more coherent, accessible, and resilient transport systems.

Chapter four: Serbia

Draženko Glavić

Figure 5: Short-term bicycle rental service in Serbia, 2026. Photo by Draženko Glavić

4.1.Abstract

The Serbian academic landscape tends to favour applied research focused on the regulation, acceptance, and feasibility of shared mobility options. Informal mobility receives zero attention in both academic and grey literature. However, expert interviews reveal that informal mobility operates at a substantial scale in terms of ridership and vehicle volume. Despite receiving significant analytical attention, formal shared mobility services, in contrast, remain limited in scope and spatial coverage. This chapter explores the policy and research agenda implications of this imbalance, centre on regulatory frameworks and the pursuit of more descriptive and statistical data regarding both informal and shared mobility services.

4.2. Introduction

The primary objective of this chapter is to provide a structured overview of existing models of informal and shared mobility in Serbia, with particular emphasis on their operational characteristics, legal status, and governance context. A comparative perspective is adopted, with the aim of highlighting common patterns and country-specific differences in how informal and shared mobility services function, the regulatory grey zones in which many such services operate, and the extent to which informal and shared mobility complement or substitute formal transport systems. This chapter contributes to a more evidence-based understanding of informal and shared mobility in Southeast Europe, with particular relevance for Serbia, and informs both future research agendas and policy discussions on integration, regulation, and sustainable mobility transitions.

The first section of the chapter provides an overview of relevant academic literature, including available official statistics, as well as key structural insights into the concept of shared mobility, user attitudes, and market development in Serbia and Southeast Europe. The next section draws on grey literature, including legislation, municipal decisions, official platform information, and project reports, to systematise existing models of informal and shared mobility in Serbia and their legal status. This is followed by a review of current research activities in the Republic of Serbia. Building on the findings of these sections, the subsequent section discusses key policy implications, drawing on expert interviews to identify major challenges and implementation gaps. The final section presents the implications for future research, highlighting key gaps and outlining directions for further investigation, while synthesizing the main findings of the chapter.

The following table sums up modes and examples of Informal and Shared Mobility in Serbia

Domains	Models	Examples	Legal status	Remarks
Informal	Unlicensed taxis	"Illegal" taxi drivers near bus and train stations operating without permits, taximeters, or fiscal receipts	Illegal (tolerated)	Taxi services without a valid local license operate outside the legal framework, particularly in areas with high passenger demand and insufficient public transport alternatives.
	Private vans/ minibuses;	Informal van operators on intercity and cross-border routes, often advertising per-seat transport	Illegal / grey zone (tolerated)	Vehicles with up to nine seats (M1 category) may legally operate only as licensed taxis, limousine services (pre-contracted rides), or transport for own needs. Per-seat sales on domestic and international routes fall outside the legal framework and are considered informal mobility.
Vehicle sharing	Car sharing	Anygo (Beograd)	Grey zone	Car sharing is not formally regulated. Operates under rent-a-car rules.
	Bike sharing	NS Bike (Novi Sad), SUBike (Subotica)	Allowed	Regulated locally.
Ride sharing	Carpooling	BlaBlaCar, FB/Viber groups	Grey zone	Carpooling is not formally regulated. Allowed if only fuel/toll costs are shared. Illegal if driver profits.
	Ride hailing	CarGO, Maxim, Bolt/ Yandex GO	Grey zone	CarGo – association model "innovative road assistance" (membership-based). Maxim – legally framed as limousine service. Bolt – legally framed as limousine service. Yandex Go – operates within the licensed-taxi framework.

Table 4: Models of informal and shared mobility in Serbia

4.3. Academic Literature Review

Academic research on shared and informal mobility in Serbia is still relatively limited, but has gained increasing attention in recent years. Existing studies primarily focus on emerging mobility services such as ride-sharing, car-sharing, and micro-mobility, with a strong emphasis on user behaviour, acceptance, and intention-based analyses. In addition, a growing body of research addresses regulatory challenges and market development in the context of early-stage adoption. Overall, the literature reflects an exploratory phase, characterized by fragmented approaches and a lack of comprehensive system-level analyses.

The authors of the paper "Shared mobility – transport service or digital platform?" (Živanović et al., 2018) analyse the characteristics of mobility-sharing services and their regulatory framework in the Republic of Serbia, addressing whether these systems should be treated as transport companies or digital platforms. They conclude that ride-sharing services represent a hybrid of both and should therefore meet market access conditions, including appropriate licensing. The authors emphasize the need for a regulatory framework that protects users and providers while supporting innovation, as well as requirements for data sharing to support transport planning. They also highlight the importance of cooperation between traditional operators and new service providers. Overall, the regulation of ride-sharing in Serbia is characterized by ad hoc adjustments, often driven by emerging challenges, without systematic integration into the broader public transport system or alignment with the needs of residents. The ultimate goal should be the development of a high-quality, integrated public mobility service acceptable to all key stakeholders.

The subject of the PhD thesis "Models for supporting development of mobility in line with the sharing economy concept" (Parezanovic, 2019) is the analysis of ride-sharing and car-sharing **potentials and ways to achieve their broader implementation in markets where these mobility options have not yet taken root**. The author of this dissertation performs analyses using responses to questionnaire surveys, descriptive statistical analysis, original demand modelling, and a policy evaluation model applied within a case study framework. Original models were developed to predict demand for mobility-sharing services based on user behaviour and interactions **among users**, as well as a model for evaluating measures that encourage the ride-sharing concept. Students from the University of Belgrade were selected as the target group for predicting demand for car-sharing services. Another model was used for evaluating measures that would encourage the broader implementation of ride-sharing subsystems, In this case study, three measures stood out that demonstrated good results and a favourable impact on meeting employees' stated requirements, and therefore on the implementation of carpooling: flexible working hours; ride-matching technologies among employees; and a guaranteed ride home. These three measures, in the example provided, led to the best results with respect to introducing carpooling in the observed company.

In a paper titled "*Preferences for car sharing service attributes among university students: Evidence from an emerging market,*" the authors present an ex ante analysis with the aim of revealing how students in an area where car sharing is underdeveloped perceive this option (Bojković et al., 2019). Preferences for particular service attributes were explored using stated preference survey and Choice-Based Conjoint analysis, while further preference-based segmentation was obtained using the Partitioning Around Medoids method. This work delivered findings regarding an emerging car-sharing market where there was very little research on user profiles. Similarities and differences between students in an emerging market and their counterparts in more developed countries are outlined in the paper. The authors found that the student population is homogeneous regarding critical aspects of service adoption, such as cost, distance to vehicles, and parking convenience.

Observations regarding the status of the collaborative economy and sharing economy in Serbia were presented in the book chapter "Serbia: Sharing Economy as a New Market Trend and Business Model" (Ćirić et al., 2021). Chapters on Albania, Bosnia and Herzegovina, and North Macedonia were also included in the book. It is noted in the chapter on Serbia that the sharing economy in Serbia has not been sufficiently explored in official reports or academic literature. On the other hand, in practice, several collaborative platforms are already in use by consumers. The chapter highlights factors that stimulate or restrict the development of the sharing economy and presents the legislative framework that directly and indirectly regulates this area. The survey was conducted on a sample of 500 respondents aged 20 to 35 in Belgrade (the capital) and Novi Sad. These are the largest cities in Serbia. When asked whether they had ever rented a car, bicycle, or taxi service using a mobile app or online platform, 25.92% of respondents answered yes. In the area of transport, 10.2% of respondents saw opportunities for developing the sharing economy.

The paper *"Anticipating the Impact of Sharing Economy Drivers on Consumer Intention for Using a Sharing Economy Service"* (Živojinović & Zornić, 2022) explores trust, interaction, and experience. These factors were combined in a functional model to examine their synergistic effects on consumer interest. The theoretical contribution of the paper was the design of an original simulation model for predicting the number of potential sharing-economy service users. A small-scale experiment was conducted in Belgrade with 197 university students, focusing on peer-to-peer car sharing in a market where such services are still at an early stage of development. The authors focused their analysis intentionally on consumer intentions and behavioural drivers, and the experiment was not linked to the current size of existing service fleets. Given the lack of reliable and systematically collected data for P2P sharing services in Serbia, no market size indicators are reported in the study.

The project "Setting foundations for capacity building of a sharing community in Serbia – PANACEA" was implemented by a team of researchers from three faculties of the University of Belgrade: the Faculty of Organizational Sciences; the Faculty of Transport and Traffic Engineering; and the Faculty of Economics. The project was implemented during the period 2022–2025, and was funded by the Science Fund of the Republic of Serbia under the "IDEAS" program. Under this project, the topic of the sharing economy was analysed in detail, with particular emphasis on the transport sector. One of the key outputs of the project was the report "Mapping the Sharing Economy Community in Serbia: Users, Platforms, and Providers" (PANACEA tim, 2022). Based on Eurostat data, a comparative analysis of the use of shared transport services in Serbia and European countries in 2019 was conducted. The results show that the share of individuals using online platforms for booking transport services in Serbia was comparable to, and in some cases higher than, that recorded in several EU-27 countries. In Serbia, the use of such services increased from 6% in 2017 to 8% in 2019, indicating a modest but clear upward trend. Although the overall level of adoption remains relatively low, the growing use of platform-based services such as ride-hailing and carpooling suggests increasing acceptance of shared mobility in Serbia.

The paper "*User's willingness to accept the shared dockless e-scooter system: Belgrade case study*" examined the extent to which introducing a dockless shared e-scooter system, improv-

ing the infrastructure and defining the legislation for this group of users, would contribute to reduced traffic congestion in Belgrade (Milenkovic et al., 2023a). In the hypothetical situation which includes built bicycle infrastructure, defined legislation for e-scooter users and shared e-scooters implementation, in the case of the lowest price, the authors expect passenger car usage to decrease by 7.44% and 11.39% for commuting trips and trips with other purposes, respectively. In the case of the lowest service price, 5.08% of respondents would be expected to use a shared e-scooter for commuting trips, while 7.63% would use for the trips with other purposes. In the case of the highest service price these values are significantly lower (1.69% and 4.24% of respondents, respectively).

In the paper "*Influence of Dockless Shared E-Scooters on Urban Mobility: WTP and Modal Shift*" the authors analysed users' willingness to pay for dockless e-scooter sharing (Glavić et al., 2023a). A survey was carried out in Belgrade, examining participants' readiness to use this transport mode for commuting and trips with other purposes under different rental price levels. The valid sample used in the analysis consisted of 508 respondents. The findings indicate that cost is a key factor shaping the likelihood of e-scooter adoption. The authors of the study developed mathematical models linking rental price to the share of users willing to accept shared dockless e-scooters. Results from such models can assist policymakers and operators in designing pricing strategies aimed at maximizing rental revenues, while also encouraging a modal shift away from car-dependent travel.

In the paper *"Unlocking the wheels of change: Perceptions and participation of Serbian Gen Z in ride-sharing,"* the authors explored the behaviour of Generation Z residents in Serbia related to their attitudes toward shared transportation, with a focus on ride-sharing services (Maričić et al., 2024). They examined socio-demographic factors shaping adoption of or abstention from shared-mobility modes, alongside perceptions and attitudes toward such services. The authors surveyed 449 students (mostly female, living with their families in Belgrade) regarding their actual and willingness to use shared mobility services. The responses indicated that affordability and speed were key motivators for using shared mobility services while distrust in providers was a deterrent. Overall, the findings highlight both potential and barriers to expanding the use of shared-mobility modes among young people, offering insights for strategies to enhance sustainable urban transport in Serbia and other emerging markets. (Maričić et al., 2024).

In the paper "Segmentation of ride-sharing consumers: The case of BlaBlaCar users from the Republic of Serbia," the authors categorize Serbian BlaBlaCar users based on behaviour, experience, and satisfaction (Golubović et al., 2024). Data were collected through a survey (May–December 2023) of 116 participants, mostly women (67.2%), younger, educated, and urban-based, of which 78.4% were from Belgrade. Using k-means clustering, three user groups emerged: Trusting Enthusiasts, who value safety but worry about data misuse; Apprehensive Skeptics, concerned about safety and pricing; and Satisfied Advocates (the largest group), highly positive across all aspects. Findings highlight the **importance of addressing safety concerns, improving pricing transparency, and strengthening user trust.** These insights can help BlaBlaCar and

similar platforms refine services, target marketing strategies, and support sustainable development of shared mobility (Golubović et al., 2024).

In the paper *"Unveiling Crucial Factors Shaping Ridesharing Usage Intention: Insights from Serbia"* the authors aimed to identify factors influencing **the intention to use** ridesharing services (Živojinović et al., 2024). A survey of students at the University of Belgrade – Faculty of Organizational Sciences, containing 325 questions, provided data analysed using a Random Forest Classifier. The study assessed the respondents' perceptions of risks, economic benefits, social reputation, enjoyment, social and media influence, and electronic word-of-mouth (eWOM) information. Findings highlight the key role of social influences—especially word-of-mouth information and enjoyment—in shaping adoption intentions, while negative perceptions of complexity and safety were major barriers. These insights are highly relevant for emerging shared mobility providers, pointing to the **need for clear communication strategies** to build trust, enhance perceived ease and safety, and align market strategies with user expectations (Živojinović et al., 2024).

Overall, the reviewed studies indicate that shared mobility in Serbia is still in an early stage of development, characterized by low usage levels but a growing presence of platform-based services. The existing literature is strongly user-oriented, with a predominant focus on behavioural intentions, perceptions, and acceptance, often based on student populations. Despite differences in methodological approaches, the findings are highly consistent, highlighting trust, cost, convenience, and social influence as key drivers, while safety concerns and regulatory uncertainty remain major barriers. At the same time, the literature reveals a clear gap between practice and research, as the number of active platforms continues to grow despite the limited and fragmented nature of academic studies. Although recent research demonstrates a shift toward more advanced analytical methods, there is still a lack of integrated, system-level and policy-oriented analyses. This suggests that future research should move beyond individual-level perspectives and contribute more directly to the design of regulatory frameworks and the strategic development of shared mobility systems in Serbia.

4.4. Current Research Activities

According to available information, work is ongoing on the development of a national transport strategy in Serbia, supported by international institutions, including the World Bank. There are also indications of ongoing discussions regarding amendments to the Law on Passenger Transport, although publicly available information remains limited. The methodology for collecting data on informal and shared mobility requires revision in order to better capture these services. Furthermore, despite significant limitations related to data availability, regulatory ambiguity, and the early stage of market development, existing studies indicate a growing interest within the academic and professional community in informal and shared mobility. This reflects an increasing recognition of the potential of the sharing economy in the transport sector. While the overall volume of research remains limited, valuable insights have been generated, and there is con-

siderable scope for further analysis, particularly given that vehicle- and ride-sharing systems in Serbia are still in their infancy.

4.5. Research Agenda Implications

The current body of knowledge on shared and informal mobility in Serbia highlights both important progress and notable research gaps. Recent projects and articles described in the Academic literature section of this chapter have enriched understanding of user attitudes, service attributes, and market potential. However, the **absence of official statistical monitoring** by the Statistical Office of Serbia limits evidence-based policymaking. Future research should prioritize systematic data collection, deeper exploration of user trust and behavioural dynamics, and cross-national comparisons that situate Serbia within the broader European context.

A first priority for further study is the **development of systematic methodologies** for capturing data on informal and shared mobility. Integrating such data into official statistics alongside conventional modes of passenger transport would provide reliable indicators for tracking adoption rates, service quality, and socio-economic impacts, based on a combination of survey data, platform-generated data, administrative records, and official transport statistics. Closely connected to this is the need for research on the regulatory and policy impacts of current frameworks. Having in mind that many shared-mobility services are not regulated in a way that reflects their actual functioning, further studies should assess how such regulations affect innovation, competition, and consumer welfare, and compare Serbian practice with policy solutions in EU member states.

Equally important is a stronger focus on user behaviour. While existing research has revealed valuable insights into students' and younger generations' preferences, broader demographic groups remain understudied. Future work should therefore extend to rural populations, older citizens, and marginalized communities, to capture differences in access, trust, and motivation. At the same time, lessons from bus transport point to high market concentration and excessive user costs. Research should investigate whether similar patterns exist in shared mobility, particularly regarding competition dynamics, pricing transparency, and the role of digital platforms.

Another promising direction is the study of integration between flexible/shared services and institutional public transport, especially within the framework of MaaS. Pilot projects and simulations could shed light on potential synergies between these systems, user adoption patterns, and likely impacts on congestion and emissions of greenhouse gases and local air pollutants. Research should also address the technological dimension of shared mobility, particularly how platform design, data protection, and digital literacy shape user trust. In parallel, studies should evaluate how shared-mobility innovations influence modal shifts and broader sustainability goals.

Finally, comparative cross-regional and international research is needed. Systematic comparisons with Western Balkan neighbors and EU-27 countries would help contextualize Serbia's

development trajectory, identifying both specific local barriers and transferable solutions. Such analyses are essential for aligning Serbia's transport strategy with European sustainability and smart-mobility objectives.

4.6. Grey Literature Review

This section is based on a review of national legislation, municipal decisions, official platform information, project reports, and publicly-available grey literature. Existing models of informal and shared mobility in Serbia are presented in Table 4.

Car sharing in Serbia is still in its early stage of development. Currently, the only active service is Anygo. Anygo operates in Belgrade through a free-floating model, where vehicles can be picked up and returned anywhere within the designated service zone using a mobile app (Anygo, official website). **Car sharing is neither explicitly prohibited nor directly defined** in Serbian legislation. It is considered permissible only when operated within the existing rent-a-car legal framework. Company-based car sharing in Serbia falls under the rent-a-car framework regulated by the Law on Tourism (Official Gazette of RS; Paragraf.rs). Providers must operate as registered businesses, ensure proper vehicle insurance, and fulfil tax obligations. In contrast, P2P car sharing, where private individuals rent out their own vehicles, is not regulated. The absence of specific provisions—especially regarding liability and insurance—places the P2P model in a legal grey zone. This explains why international P2P carsharing platforms **(**for example, Turo, Getaround) are absent from the Serbian market.

Bike sharing in Serbia is still limited. The only fully-operational public systems are NS Bike in Novi Sad and a smaller network in Subotica (SUBike). Both are municipally supported and dock-based (City of Novi Sad; City of Subotica, official websites). In Belgrade and other cities, bike-sharing is limited to **tourist rentals and small pilot initiatives.** In 2021, Belgrade announced a public-private partnership to establish a comprehensive citywide bike-sharing scheme, but the project has not been implemented (City of Belgrade, Secretariat for Transport, 2021). Compared to Novi Sad and Subotica, Belgrade lacks a functioning public system, underscoring the gap between the capital and other regional centres in adopting shared-mobility solutions. Based on available sources, the difficulties in implementing a bike-sharing system in Belgrade stem from: an unclear policy definition of the role of bike sharing within the public transport system; underdeveloped and fragmented cycling infrastructure; an affordability model misaligned with local socio-economic conditions; insufficient public support and integration with existing public transport; and an imbalanced public–private partnership framework that places implementation risks primarily on the city. In this context, it can be concluded that the regulatory framework for shared bicycle systems in Serbia remains fragmented and limited in scope, with a primary focus on local-level operational aspects rather than comprehensive system integration and long-term policy development. Local ordinances mainly address operational and contractual aspects, such as concession arrangements, service areas, fleet size, and pricing, while broader issues related

to legal classification, liability, insurance, system integration, and long-term policy objectives remain largely unregulated.

E-scooter sharing does not yet exist in Serbia in the form of an official, publicly-accessible system. Current use is limited to tourist rentals and private ownership. The **absence of clear rules for operators, together with insufficient infrastructure** such as a lack of cycling lanes (paths) and the variable condition of road surfaces and cycling facilities, prevents the launch of large-scale platforms. The Road Traffic Safety Act (ZOBS) was amended in 2023 to include electric scooters, giving users a defined legal status in traffic (Official Gazette of RS, 2023). However, these amendments only regulate individual use, not the sharing business model. As with bike sharing, the regulation of e-scooter sharing in Serbia appears to be primarily shaped at the local level, through municipal frameworks and decisions, although a comprehensive and clearly defined regulatory approach has yet to be established.

Carpooling in Serbia is not regulated. The Law on Passenger Transport in Road Traffic governs public transport (including taxi/limousine services) and "transport for own needs" (for legal entities), but it does not explicitly recognize carpooling (i.e., non-commercial cost-sharing arrangements between private individuals traveling together) (Official Gazette of RS). Consequently, app-mediated carpooling, in practice, remains in **a legal grey zone** and may be treated as unauthorized taxi services if performed for profit. In Serbia, carpooling primarily occurs via BlaBlaCar, a widely used and trusted app. Platforms such as CarpoolWorld and BeBeep exist but with limited engagement**, as indicated by their low visibility, infrequent use, and marginal presence in everyday travel practices.** Many people also rely on local Facebook groups or classifieds to arrange shared rides informally. BlaBlaCar.rs has been present in the Republic of Serbia since March 2015 (BlaBlaCar Serbia, official website).

Ride hailing in Serbia is not separately regulated in a dedicated legislative basis. After the 2020 amendments to the Law on Passenger Transport, rid -hailing was not introduced as a distinct category (Official Gazette of RS). The law provides only for taxi services and "vehicles hired with a driver" (limousine service), while apps are permitted solely as IT/dispatch support for licensed carriers. In Serbia CarGo, Bolt, and Maxim are legally classified under the category of "vehicles with a driver" (limousine service). However, since this legal framework was not designed for ride-hailing but rather for traditional chauffeur-driven rentals (e.g., limousines for weddings), their actual business model (ride-hailing) does not align with the intended scope of the regulation. Therefore, while they are legally defined as "limousine services," in practice they operate within a **regulatory grey zone.** In contrast, Yandex Go legally operates as a dispatch system for taxi drivers, which is permitted. However, since the application controls pricing and ride allocation (functions not typically performed by traditional dispatchers), uncertainties arise regarding its regulatory compliance, though to a lesser extent than in the case of CarGo, Bolt, and Maxim.

One of the main ride-hailing services in Serbia is CarGo. It originated in Belgrade in 2015. Thanks to an efficient and reliable matching system and initially-lower prices compared with taxi services, this service quickly positioned itself on Belgrade's transport market. In 2019 it expanded its

operations to the territory of Novi Sad. From the outset, the development of the CarGo platform in the Republic of Serbia has been accompanied by numerous challenges, driven primarily by frequent protests of taxi associations regarding the conduct and registration of the activity, i.e., the unclear understanding of the provider's status and the conditions their competitors must meet. **These disputes between CarGo and taxi associations resulted in regulatory changes, specifically amendments to the Law on Passenger Transport in Road Traffic. These amendments were adopted in October 2018 and entered into force in November 2018, imposing restrictions on digitally coordinated transport services.** As a consequence of adapting to these regulatory changes, in 2019 CarGo switched to a citizens'-association model (a membership model) and labelled its service as "innovative road assistance" available only to members, asserting that it does not provide a taxi service. In May 2020, the Misdemeanor Court in Belgrade issued an acquittal in one case, finding that CarGo is "not a taxi" and that members of the association were not performing illegal taxi activity. However, this did not constitute a general legalization (Belgrade Misdemeanor Court, 2020; media reports).

In certain cities and municipalities in Serbia, especially where official public transport services are underdeveloped or infrequent, there are cases where individuals or unregistered operators provide passenger transport services without licenses (Table 1). For example:

- "Illegal" taxi drivers – commonly found near bus and train stations (e.g., in Belgrade, Novi Sad), operating without permits, not issuing fiscal accounting, and driving without taximeters.
- Private van operators – transport passengers between smaller towns and cities (e.g., villages in Šumadija, Vojvodina, or southern Serbia) without formal registration or licenses for scheduled transport.
- Arranged rides – people organize group rides to work, markets, or towns, often compensating the driver informally. These also fall into the category of the informal economy.

According to the Law on Passenger Transport in Road Traffic (Official Gazette of RS, no. 68/2015, 41/2018, 44/2018, 83/2018, 31/2019 and 9/2020 amendments), vehicles with up to nine seats including the driver (M1 category) are legally classified as passenger cars. Such vehicles cannot perform regular or occasional public transport of passengers under the regulations prescribed for buses (M2/M3 category). In domestic transport, M1 vehicles may only operate as licensed taxi services if they hold a valid local taxi license. They may operate as licensed limousine services if they hold a local license for limousine transport, where each ride must be pre-contracted and the price agreed in advance. They are considered transport for own needs when companies or organizations transport their employees or members without offering the service publicly.

In international transport, M1 vehicles may be used for private trips or for pre-contracted transfers (limousine service), but they are not permitted to sell tickets per seat. This regime is reserved for buses (M2/M3 category) operating under international passenger transport licenses. Public advertisements offering "per-seat van transport" (e.g., Belgrade–Vienna, €55 per person)

therefore fall outside the legal framework and are typically considered **informal mobility services, as they operate outside the licensing and regulatory framework defined by law.**

The introduction in 2024 of free public transport in the capital city of Belgrade has created significant social and environmental benefits by reducing individual car use. However, it has simultaneously limited the economic viability of sharing services, leaving them relevant mostly for intercity travel. **While the introduction of free public transport strengthens the public sector, it narrows the space for private mobility innovation, thereby slowing the development of a more diverse, multimodal transport ecosystem.**

Additionally, in the official reports of the Statistical Office of the Republic of Serbia (SORS), data are recorded separately for domestic passenger transport (urban, suburban, and intercity) and international bus transport. The data mainly quantify the number of passengers carried, passenger-kilometers achieved, volume of work, transport revenues, and provide information on the vehicle fleet. Data on informal and shared mobility in Serbia are not included in the SORS reports.

4.7. Expert Interviews

To gain an understanding of the market and to derive rough estimates related to system performance, key challenges, and initial measures for implementing informal- and shared-mobility policies, a series of in-person and online expert interviews were conducted. The interviews were necessitated by the absence of official data on informal and shared mobility. The questionnaire included questions addressing system performance, the key reasons underlying the current state of informal and shared mobility in Serbia, the main challenges related to informal and shared mobility, the key gaps in existing research, and initial policy measures regarding informal and shared mobility. Most questions were open-ended, allowing experts to provide responses in a manner they considered most appropriate. The exception was questions in which experts were asked to express their level of agreement with specific statements using a 7-point Likert scale.

The assessment of system performance included questions related to fleet size (i.e., the number of vehicles operating within informal and shared mobility), the annual number of passengers transported using informal mobility services, and the annual number of shared-mobility users in Serbia. Experts were also asked to identify three key challenges related to informal and shared mobility in Serbia, to highlight the main gaps in existing research in this field, and finally to propose initial measures for the implementation of informal and shared mobility policies. A guide was used to structure the expert interviews (see Appendix C).

The interviews involved experts from both academia and public transport institutions in Serbia. Five experts participated: two professors from the University of Belgrade, Faculty of Transport and Traffic Engineering (E1 and E2), one professor from the University of Novi Sad, Faculty of Technical Sciences (E3), the Director of a Public Passenger Transport Company (E4), and a Sec-

retary at the Belgrade Secretariat for Transport (E5). Details of the experts' interview responses are presented in Appendices D, E and F.

Expert Interview Results: Rough Estimates of Informal and Shared Mobility Performance

The experts' estimated assessments of the performance indicators used to analyse the role of informal and shared mobility in providing passenger transport services in Serbia are presented in Table 5. The final column presents the range of responses for each analysed item, based on all recorded expert responses.

After conducting the interviews, it was established that the experts generally found it very **difficult to estimate the scale and performance of informal- and shared-mobility systems.** This difficulty primarily stems from the fact that data on informal mobility are not systematically recorded, while publicly available information on the number of registered vehicles within the formal mobility sector is also limited. In particular, data on the number of registered taxi vehicles, minivans, and other relevant vehicle subcategories are not publicly available, which further constrains expert assessments. For example, the Statistical Office of the Republic of Serbia (RZS) publishes data on the total number of registered road motor vehicles, disaggregated into broad categories such as mopeds, motorcycles, passenger cars, buses, goods vehicles, trailers, and special-purpose vehicles. However, this level of aggregation does not allow for the identification of specific vehicle sub-categories within these general groups. Similarly, RZS provides general statistics on the number of passengers transported by road, rail, and air, while the number of passengers transported by individual sub-categories can only be inferred indirectly. Given these limitations, the experts agreed that the resulting estimates are rough and should be interpreted with caution.

The results presented in Table 5 indicate that informal transport services—particularly illegal taxi and minivan operations—involve a substantial number of vehicles and users, with annual passenger volumes reaching several tens of millions. In contrast, shared-mobility services are significantly smaller in scale, reflecting their early stage of market development and limited spatial coverage. Among shared-mobility modes, ride-hailing services exhibit the largest footprint in terms of both fleet size and annual users, while car sharing and public shared-micromobility systems (e-scooters) remain marginal, with fleets and user bases limited to several hundred vehicles and a few thousand users annually. Carpooling occupies an intermediate position, with a relatively large number of users but lower operational intensity compared to informal taxi services.

Rough estimate	E1	E2	E3	E4	E5	Overall assessment
No. of minivans operating informally in Serbia	600	500	20%	3.000	500	500-3.000
No. of taxis operating informally in Serbia	2.000	2.000	15 %	4.000	over 1.000	1.000-4.000
No. of passengers illegally transported by minivans in Serbia per year	4.000.000	3.000.000	20%	20.000.000	over 1.000.000	1.000.000-20.000.000
No. of passengers illegally transported by taxis in Serbia per year	10.000.000	5.000.000	10%	50.000.000	over 2.000.000	2.000.000-50.000.000
No. of car-sharing vehicles in Serbia	150	200	1%	300	100-150	100-300
No. of ride-hailing vehicles in Serbia	1.500	1.000	3%	5.000	over 1000	1.000-5.000
No. of shared (e)scooters in Serbia	500	500	0.2%	800	500-600	500-800
No. of car-sharing users in Serbia per year	10.000	5.000	2%	50.000	5.000-10.000	5.000-10.000
No. of carpooling users in Serbia per year	150.000	100.000	10%	200.000	over 50.000	50.000-200.000
No. of ride-hailing users in Serbia per year	1.500.000	500.000	10%	1.500.000	over 500.000	500.000-1.500.000
No. of shared (e) scooter users in Serbia per year	10.000	10.000	0.02%	15.000	10.000-15.000	5.000-15.000

Table 5: Experts' rough estimates of informal and shared mobility system performance in Serbia[2]

2 Expert 3 found it difficult to express their assessment using absolute values and therefore chose to present it in percentage terms as a more intuitive way of conveying their view. Despite the inconsistency in the format of their responses, we consider it preferable to retain these inputs rather than exclude them entirely, as they still provide valuable insight

The results of the interview questions where experts were asked to indicate the extent to which they agreed with specific statements (on a scale from 1 to 7 where 1 = strongly disagree and 7 = strongly agree) are presented in Table 6. There was a high level of expert agreement with statements regarding the key drivers behind the prevalence of informal mobility and the underdevelopment of shared mobility in Serbia. The highest levels of agreement were observed for statements related to economic motives and the pronounced demand for low-cost transport options (average score 6.8), as well as for the need to revise and align the regulatory framework with market requirements and prevailing European trends (average score 6.6). In addition, the experts largely recognize market-related factors—such as the insufficient supply of formal public transport services and the monopolization of passenger transport routes—as significant drivers of informal mobility.

Conversely, moderately high average scores point to the existence of systemic barriers to the development of shared mobility, including regulatory ambiguity, low visibility and limited user awareness, as well as a strong car-ownership culture. Relatively lower, yet still positive, levels of agreement were associated with issues of institutional support and oversight, suggesting that **governance-related shortcomings are widely acknowledged,** although their intensity and manifestation differ across segments of the mobility system. These responses further imply that while regulatory reform is broadly supported, its effectiveness will depend on parallel improvements in enforcement capacity and institutional coordination. Overall, the findings confirm that regulatory, market, and infrastructural factors are central to understanding the current state and future potential of informal and shared mobility in Serbia.

	Statements:	E1	E2	E3	E4	E5	Average
1	The prevalence of informal passenger transport remains substantial, largely due to a rigid, ambiguous, and incomplete regulatory framework.	6	4	5	5	6	5.2
2	In Serbia, informal passenger transport persists at significant levels due to economic motives and pronounced demand for low-cost mobility.	7	7	7	6	7	6.8
3	In Serbia, informal passenger transport constitutes a considerable share of the overall passenger transport market due to market-related factors such as the insufficient supply of formal public transport services and the monopolization of passenger transport lines.	7	6	7	6	6	6.4
4	In Serbia, adequate (systematic) regulatory and inspection oversight is not carried out.	6	7	4	6	6	5.8
5	In Serbia, shared mobility remains underdeveloped due to a rigid, ambiguous, and incomplete regulatory framework.	5	5	5	6	5	5.2
6	In Serbia, there is low visibility (limited user awareness) and insufficient trust in new mobility models.	5	6	6	6	6	5.8
7	In Serbia, shared mobility remains underdeveloped due to the high level of motorization and a strong car-ownership culture.	6	5	5	6	5	5.4
8	In Serbia, there is a strong culture of comfort and privacy, which reduces the acceptance of shared mobility models.	5	6	5	5	6	5.4
9	In Serbia, corporate support for shared mobility models is weak.	6	6	7	6	5	6.0
10	In Serbia, the potential of shared mobility would be considerably greater if suitable policy incentives for its development were established.	6	6	5	6	7	6.0
11	In Serbia, infrastructure-related incentives (such as dedicated lanes, priority parking, and designated zones) would substantially contribute to the development of shared mobility.	5	6	5	6	7	5.8
12	In Serbia, the regulatory framework needs to be revised and aligned with market requirements and prevailing trends in the region and across Europe.	7	6	7	6	7	6.6

Table 6: Experts' levels of agreement with specific statements about informal and shared mobility in Serbia

Top 3 Challenges Related to Informal and Shared Mobility

The general conclusion is that experts identify **lack of a clear and harmonized regulatory framework** as the primary challenge to developing informal and shared mobility in Serbia. This challenge leads to regulatory uncertainty, grey zones, and unfair competition. It is further compounded by **weak enforcement, limited institutional coordination, and the absence of systematic data collection,** which constrains evidence-based policymaking. Additional barriers include underdeveloped infrastructure, insufficient incentives, low public awareness, limited user trust, and a strong reliance on private cars, all of which hinder the wider adoption of shared mobility solutions.

Main Research Gaps in the Field of Informal and Shared Mobility

Experts highlight significant research gaps related to the lack of reliable and comprehensive empirical data on the scale, users, and characteristics of informal and shared mobility in Serbia. Insufficient attention has been given to the integration of these mobility modes with formal public transport, as well as to their environmental, economic, safety, and social impacts. Additional gaps include limited city-level and intercity analyses, inadequate examination of regulatory and institutional frameworks, weak understanding of user behavior and public attitudes, and a lack of comparative studies with regional and EU contexts. Together, these gaps constrain evidence-based policymaking and hinder the strategic development of informal and shared mobility systems.

First Policy measures Addressing Informal and Shared Mobility

Experts highlight the need for a coherent regulatory and institutional framework, supported by systematic data collection, as a prerequisite for the effective implementation of informal and shared mobility policy. Key measures include the development of national guidelines, regulatory reform with clear licensing and compliance requirements, and the strengthening of enforcement and inspection capacities. These actions should be informed by pilot projects and integrated with public transport, designed to produce improvements in infrastructure and market conditions, and complemented by the introduction of targeted incentives. Public awareness and education campaigns are also identified as essential for building user trust, clarifying legal frameworks, and promoting the safe and responsible use of shared mobility services.

4.8. Policy Implications

The analysis of informal and shared mobility in Serbia, based on evidence from academic and grey literature as well as expert interviews, reveals both opportunities and challenges for their integration into the broader mobility system. Informal and shared mobility play an increasingly important role in filling service gaps left by traditional public transport, yet current regulation and institutional responses by public authorities, including legislative amendments, local-level policy decisions, and enforcement practices, remain fragmented and reactive. These findings provide the basis for the following policy recommendations. To ensure sustainable, efficient, and inclusive mobility, policymakers must adopt a proactive and adaptable approach.

Insights from expert interviews further support these policy directions, highlighting that the persistence of informal mobility is primarily driven by economic incentives, strong demand for low-cost transport options, and market distortions, including insufficient supply of formal public transport and monopolization of passenger transport services. At the same time, the underdevelopment of shared mobility is associated with regulatory ambiguity, weak institutional coordination, limited enforcement capacity, low public awareness, and a strong car-ownership culture. Experts also emphasized significant data and knowledge gaps, which constrain evidence-based policymaking and highlight the need for systematic data collection and improved analytical support.

The crucial step is the recognition and, where appropriate, the integration of informal transport services and transport-related sharing-economy services into the formal mobility system. This recommendation is grounded in the finding that these services play a significant role in addressing gaps in formal public transport provision, particularly in contexts of limited service coverage. However, integration should not be understood as full formalization in all cases, but rather as a context-sensitive approach that seeks to improve service quality, safety, and coordination while preserving the flexibility that makes such services responsive to user needs. These services often act as complementary and, in certain contexts, alternative modes of transport, particularly in cities where institutional public transport is weak or absent. Coordinated planning that links informal and shared mobility with traditional formal systems could significantly enhance accessibility and improve service quality. Alongside this, regulatory frameworks must move beyond rigid, one-size-fits-all approaches. Given the diversity of informal and shared mobility services, regulations should be tailored to local market conditions, safeguarding consumer protection and service quality while avoiding overly-restrictive classifications that risk stifling innovation.

Another priority lies in establishing robust monitoring and consumer protection mechanisms. **Clear standards** for vehicles, drivers, and service providers would strengthen user trust and ensure safety, while systematic monitoring would ensure that registered services comply with established rules. To further improve transport planning, legislators should require service providers to share operational data. Such transparency would facilitate evidence-based decision-making and enable the development of integrated MaaS ecosystems.

In addition, stronger cooperation between traditional operators—such as public transit and taxis—and new service providers should be encouraged. Rather than only fostering competition, policy should promote synergies that **support multimodal systems** capable of meeting diverse mobility needs. Expert involvement in policy design is equally essential. Professionals and researchers can offer the technical and organizational expertise required to craft policies that are forward-looking and responsive to rapid technological and social changes.

The final goal is to develop fair competition in the market that does not hinder innovation. Policymakers must prevent unfair practices that disadvantage traditional operators, while also ensuring that regulatory frameworks do not impose excessive burdens that could discourage innovation. A long-term vision is also needed. Serbia currently lacks a coherent national mobility strategy. However, a new mobility strategy is being developed with support from the World Bank, which provides an opportunity to embed principles of sustainability, smart mobility, and the integration of informal and shared modes into future planning.

Finally, promoting sustainable mobility should be central to any regulatory framework. By encouraging environmentally-friendly, flexible, and efficient mobility solutions, and by leveraging smart infrastructure and technologies, Serbia could shift from a fragmented "stand-alone" system toward an integrated subsystem at the city and state levels. Such a transformation would align mobility planning with broader sustainable development goals, ensuring accessibility, inclusivity, and resilience in the long term.

4.9. Conclusions

This report provides a structured and comprehensive overview of existing models of informal and shared mobility in Serbia, complemented by a comparative perspective on selected neighboring countries in Southeast Europe. By integrating evidence from official statistics, academic and grey literature, and expert interviews, the analysis clarifies the operational characteristics, legal positioning, and governance conditions shaping informal and shared mobility systems.

The findings confirm that **informal mobility remains a structurally-significant component** of passenger transport in Serbia. Illegal taxi services and informal minivan operations continue to play an important role in compensating for gaps in formal public transport provision, particularly in intercity travel and in areas with limited service coverage. Their persistence is closely linked to strong demand for affordable and flexible mobility options, as well as to broader market distortions, including limited competition, monopolization of passenger transport services, and insufficient regulatory oversight. In contrast, shared-mobility services remain limited in scale and spatial reach, reflecting their early stage of development and the absence of a coherent regulatory and institutional framework supporting their growth.

One of the central findings of this report is the **prevalence of regulatory and governance ambiguity.** Several shared-mobility services operate in legal grey zones due to the absence

of clear legal definitions and appropriately designed regulatory categories addressing liability, insurance, data-sharing obligations, and functional integration with public transport. In practice, some operators formally align their activities with existing legal frameworks that were not originally intended for such services, resulting in regulatory misclassification and persistent legal uncertainty. This situation creates uneven competitive conditions, complicates enforcement, and constrains the strategic integration of shared mobility into transport planning processes.

Insights from the expert interviews further reinforce these conclusions. The experts consistently emphasized that shared mobility has not been adequately recognized by public authorities as a strategically relevant component of the passenger transport system. According to their assessments, institutional support remains weak, coordination among competent authorities is limited, and shared mobility is largely absent from strategic planning and investment priorities. At the same time, the experts identified economic incentives, strong demand for low-cost transport options, and market distortions—such as insufficient supply of formal public transport and monopolization of passenger transport routes—as the key drivers behind the persistence of informal mobility. The underdevelopment of shared mobility was further attributed to regulatory ambiguity, limited enforcement capacity, low public awareness, and a strong car-ownership culture.

The interviews also revealed significant research gaps, particularly related to the lack of reliable system-level data, user characteristics, integration with public transport, and the environmental, economic, and safety impacts of both informal and shared mobility. These limitations constrain evidence-based policymaking and hinder the strategic development of the mobility system.

Taken together, the findings suggest that informal and shared mobility should be understood as integral components of contemporary mobility systems rather than as marginal or transitional phenomena. Addressing the identified challenges will require greater regulatory clarity, improved institutional coordination, and a clearer strategic recognition of the role that **shared-mobility services can play alongside public transit.**

Ultimately, the findings on Serbia underscore the need to **move beyond ad hoc and reactive policy responses** toward a more coherent and forward-looking framework. Aligning legal classifications with actual service characteristics, strengthening institutional capacities, and systematically incorporating informal and shared mobility into transport planning would enable more effective governance and facilitate their operational integration into the transport system. Such an approach would support the development of more accessible, efficient, and sustainable mobility systems in Serbia and the wider region.

In summary, the key findings of this chapter are:

- Informal mobility represents a structurally significant component of passenger transport in Serbia, compensating for gaps in formal public transport provision.
- Shared mobility services remain limited in scale and spatial coverage, reflecting their early stage of development and insufficient regulatory and institutional support.
- Regulatory ambiguity and governance fragmentation create legal grey zones, uneven competition, and barriers to the integration of shared mobility into the transport system.
- Economic incentives, strong demand for affordable transport, and gaps in the formal transport system are the key drivers behind the persistence of informal mobility.
- The lack of reliable and systematic data on informal and shared mobility significantly constrains evidence-based policymaking and strategic development.

Chapter Five: Uzbekistan

Ilya Sogolov

Figure 6: Marshrutka in Samarkand, 2023. Photo by Egor Muleev

5.1. Abstract

The chapter on Uzbekistan provides crucial insight into the close connection between informal and shared mobility options, particularly regarding their competition for customers. While numerous studies have been done on both topics, they offer only scarce descriptions of the diverse travel options available in Uzbekistan. This chapter relies heavily on references from the local press due to a significant lack of attention from local academics and specialists. Looking forward, several avenues for further research are identified, ranging from regulatory frameworks to anthropological studies.

5.2. Introduction

Uzbekistan, like its neighboring countries in Central Asia, has undergone profound post-socialist transformations since the dissolution of the Soviet Union. These transformations have left a "layered legacy" (Rohner, 2021), where Soviet-era structures and planning interact with post-Soviet policy and global capitalist dynamics (Sgibnev & Tuvikene, 2024). This dynamic interplay has significantly reshaped urban and long-distance mobility patterns, resulting in

a complex and often hybrid transportation system. While formal public-transport infrastructure existed and was further developed in the Soviet era to cater to the masses (Crouch, 1979; Tuvikene et al., 2020), the post-independence period has seen a **dramatic rise in and persistence of informal and shared mobility options alongside mass motorization** (Sgibnev & Tuvikene, 2017). The desire for individual mobility (e.g., car ownership) has grown while public transport systems have faced challenges (Tuvikene et al., 2020).

This chapter aims to provide a comprehensive overview of informal and shared mobility in Uzbekistan, focusing on its status, inherent challenges, and potential opportunities. It explores the evolution of public transport in cities like Tashkent and Urgench, examines the proliferation of shuttle taxis (known as *marshrutkas* across the post-Soviet space), and delves into the broader socio-economic and policy contexts that shape these forms of mobility. Drawing on academic and grey literature, this work identifies key trends, highlights existing research efforts, and critically pinpoints significant gaps in the current understanding of Uzbekistan's mobility landscape.

Historical Context of Urban Transport in Uzbekistan

Before 1991, the public-transport system of Tashkent and other Uzbek cities was characterized by centrally-organized public transport, electric trams, trolleybuses, and the metro, much like other Soviet cities (Akimov & Banister, 2011). The Soviet system prioritized catering to the masses, with detailed long-range planning (Tuvikene et al., 2020). In the 1990s, the governance structure of Tashkent's public transport began to shift. In 1992, supervisory duties over the Tashkent Metro were transferred from the Ministry for Rail Transport to the State Association of Passenger Transport Enterprises: TashGorPassTrans (Akimov & Banister, 2011, p. 731). A significant development was the construction of a third metro line, with six stations, which was opened in 2001. However, work on this line was discontinued due to a lack of funding from the national budget, leaving three stations unbuilt and the primary goal of linking the Yunousabad district with the city center only partially realized (Akimov & Banister, 2011, p. 731).

Car ownership in Tashkent reached 197 vehicles per 1,000 residents in 2023, reflecting an 8.4% annual increase nationwide (Mukhiddinov & Vogel, 2025, p. 4). This was still below the levels in neighbouring Kazakhstan. The existing transport infrastructure in Tashkent is primarily designed for motor vehicles, necessitating substantial investment and reconstruction to accommodate micromobility users (Khalmukhamedov et al., 2024). The practice of offering paid rides in private cars, though present in large Soviet cities, became a "survival strategy" across the former Soviet Union in the early 1990s, pushed by adverse socio-economic conditions during the transition to a market economy (Johnson et al., 1998).

The Rise of Informal and Shared Mobility: Marshrutkas

Unlike other public transport services, taxis were privatized relatively early in the 1990s in Uzbekistan. However, like in other countries, this led to the establishment of a "shadow" fleet of vehicles competing with bus and tram services and undermining them (Akimov & Banister, 2011, p. 742). These shuttle taxis (locally called *marshrutkas*) and defined as a form of paratransit (Arndt & Sogolov, 2025; Gauthier & Weinstock, 2010) quickly filled gaps left by the formal system, driven by considerable demand and loose regulation, leading to lower barriers to entry. Anecdotal evidence from Tashkent suggests that "just raising your hand would cause a few cars to stop and offer taxi services" (Akimov & Banister, 2011, p. 744). These informal drivers operated somewhat like taxis (except when the destinations of the driver and the passengers conflicted entirely), while marshrutkas follow previously-defined formally-approved routes, making only minor modifications. Fares for such services were unregulated, based solely on individual agreement, and often competitive, making it cheaper for multiple individuals to take a taxi than to use public transport. Some taxi operators later began using call centres to find passengers, and small private companies entered the market (ibid.). Paratransit operators thus stood in direct competition with municipal public transport operators, significantly lowering their revenue.

The post-1991 era in Uzbekistan has seen the proliferation of marshrutkas, which is also characterized by a unique **paradox in private car ownership:** despite being a car-producing nation, Uzbekistan has one of the lowest car-ownership levels globally, with only 87 cars per 1000 people in 2022 (stat.uz, 2022). This figure is low even for the post-Soviet region. This scarcity of cars stems from the state-owned car manufacturer, UzAvtosanoat (later UzAuto), holding a pure **monopoly, guided by a 'self-reliance' policy** and a drive for a positive trade balance, prioritizing exports and implementing strict import substitution measures, making foreign-made cars near unaffordable (Olma, 2022).

The post-communist transition in Tashkent was characterized by a dramatic shift in the composition of the vehicle fleet that was providing passenger transportation services. Since independence, the number of vehicles has more than tripled, as public transportation fleets shifted from high-capacity public vehicles to low-capacity private operators (Akimov & Banister, 2011, p. 732). Thus, larger **buses, trams, and trolleybuses gave way to shuttle and regular taxis** on the roads of the capital (Akimov & Banister, 2011, p. 732). As a result, the total capacity of passenger transport in Tashkent has risen by about 33% in the decades following independence (from approximately 122,295 in 1990 to 163,110 seats in 2009) (Akimov & Banister, 2011, p. 733). Considering the stable population in the city, the urban transport supply has improved, and the quality and comfort of vehicles have potentially improved with technological progress (ibid., 2011, p. 732). However, there is no evidence of improvements in the speed and safety of public transport in the city.

In Uzbekistan, a 7-seat minibus named Damas is commonly in use. In certain small villages it was formalized as the main public transport carrier, due to its flexibility (Mukhiddinov & Vogel, 2025).

Such small buses were prohibited as taxis in some urban areas, resulting in police raids on the vehicles, as reported regarding a 2020 case in Samarkand (kunu.uz, 2020). The vehicles gained notoriety for their dangerous and uncomfortable conditions (Podrobno.uz, 2018). The Damas is even explicitly mentioned in legislation, alongside other vans, as "prohibited from engaging in non-route taxi activity" (lex.uz, 2025).

Public transport in Uzbekistan has recovered from the pandemic shocks and exceeded 2019 ridership figures (Saburbayevich, 2025). In recent years, Uzbek municipal bus companies improved fleet quality by applying "concessional credit lines but continued to struggle with off-peak occupancy" (Saburbayevich, 2025, p. 102). Despite efforts to eliminate marshrutkas and the lack of statistical data on the scope of the phenomenon, such service providers still exist. As gazeta.uz (2025) has reported, "illegal carriers" still operate in the vicinity of the Tashkent international airport. Passengers also use these services from a suburban train station near Tashkent, which was closed in 2024 (gazeta.uz, 2025c). The marshrutkas sector was further reduced by the **formalization of ride-hailing services** offered by large service platforms (Saburbayevich, 2025). Yandex dominates shared mobility in Uzbekistan, primarily through its Yandex Go app, offering taxi-hailing and delivery services in Tashkent and at least nine other urban centers, with an estimated 86% market share and over 80,000 registered drivers as of 2023 (raqobat.gov.uz, 2023). Saburbayevich estimated "the app-based taxi market in UZS 5.89 trillion in 2024 and the share of Yandex Go as 52% of it, followed by inDriver and MyTaxi" (2025, p. 101). It is plausible to assume that many formerly informal providers have been forced, or perhaps tempted, to become drivers on popular ride-hailing platforms as regulation and large business models expand ever further from city centres.

Samarkand has recently undergone significant reforms in its public transport sector, which have led to the large-scale expulsion and replacement of marshrutkas with modern electric buses and a new contract-based service model. Local authorities have implemented a policy aimed at **phasing out informal, privately-operated marshrutkas** in favour of state-supported, ecologically safer buses manufactured by Yuong (uza.uz, 2023). According to official project announcements from Uzbek and Russian-language news sources, at least 100 new electric buses were expected to be operating in the city by the end of 2025, with further expansion anticipated. The city has also introduced electronic payment systems for approximately 40 bus lines (gazeta.uz, 2025a). Additional buses were introduced in Nukus.

Authorities estimate that approximately one million passenger vehicles move around in the capital every day, and another 300,000 cars commute daily in and out of the metropolis (Tashkent Senate, 2025). The Tashkent Senate has recently taken measures to strengthen its public transport system. A total of 1,004 buses were purchased for the capital, including 304 electric buses, 500 12-meter buses, and 200 18-meter buses. This brings the capital's total fleet to 1,847 units (ibid.). The bus route network was overhauled, introducing 164 routes of four types: 99 connecting routes, 14 loop routes, 11 main routes, and 40 feeder routes (ibid.). This network overhaul is expected to further reduce the operating space of marshrutkas. According to the Ministry of Transport, the daily number of passengers carried by buses has increased 2.2-fold, reaching 1.4

million (the Ministry of Transport did not specify the period of comparison). As a result, the MoT estimates that approximately 142,000 people stopped using private cars and taxis. Separate bus lanes have been created on 31 streets, totalling 79.4 km in length, ensuring regular traffic on 142 routes that utilize these lanes. The Senate is planning to extend lines toward the suburbs and towns surrounding Tashkent and introduce night buses (ibid.).

Micromobility and Other Shared Modes

Bike sharing schemes in Uzbekistan are **still largely experimental** (Khalmukhamedov et al., 2024), with no official or large-scale urban bike-sharing services operating across the country. Yandex has also issued bikes that are available to food-delivery workers in Tashkent (pro.yandex, 2025), who serve as cycling pioneers in cities where this mode is still a rarity. Yandex shared scooters appeared in the capital in 2024 (afisha.uz, 2024). However, Yandex is far from being the only provider of shared mobility services, as this market is highly heterogeneous (I. Soliev, personal communication). Jet and Kicker also operate in the Uzbekistan shared-mobility space, with Jet involved in pilot bike-sharing and e-scooter projects, and Kicker (a kick-scooter sharing service; k-sharing.uz, 2025) recognized as part of the rising generation of platforms, though their market footprints and consumer offerings are much smaller and less visible than Yandex's (Mukhiddinov & Vogel, 2025). Shared e-scooters in Tashkent encounter the common problems of this mode, namely, often being parked in suboptimal places from the standpoint of pedestrians, even on newly-made pedestrian-friendly streets (gazeta.uz, 2025f). The lack of bike sharing and the prevalence of scooter sharing were confirmed in an expert interview with Urban Designer Iskandar Soliev (I. Soliev, personal communication).

It is important to note that while significant material exists, there are identifiable gaps which this chapter will acknowledge, particularly concerning in-depth ethnographic data specifically for Uzbekistan, detailed insights from local-language publications, and comprehensive coverage of newer, formalized shared-mobility models within the country. These areas represent crucial avenues for future research to enrich the understanding of Uzbekistan's transport realities.

5.3. Academic Literature Review

The chapter aligns with a broader academic interest in understanding informality in transport, acknowledging its deep embeddedness in social-cultural institutions and its role in providing critical mobility services (Rekhviashvili & Sgibnev, 2020). It also intersects with discussions of modernity, freedom, and citizenship (Tuvikene, 2018). The analysis presented will provide a foundation for future research and policy development, aiming to foster a more nuanced understanding of the variety of informal and shared mobility modes in Uzbekistan.

The academic literature provides critical insights into the historical trajectory and current characteristics of urban transport in Uzbekistan, with a particular focus on Tashkent. The academic

landscape concerning urban mobility in Uzbekistan is characterized by a notable scarcity of publications compared to both the Global North and neighbouring regions like the South Caucasus (Behrens et al., 2021). While the volume of research is modest, the existing corpus is analytically robust, focusing primarily on post-socialist transitions and historical institutionalism. Research is heavily weighted toward the capital, Tashkent, leaving a significant regional gap in the study of secondary cities (Akimov & Banister, 2011).

Twelve papers dealt directly with Uzbekistan and particular case studies within it. Of these, only one paper was written in the Uzbek language and the rest in English. Additional academic papers have dealt with Central Asia as a region, but have not dedicated special attention to Uzbekistan and its regions. Other studies scrutinize the region as part of a post-Soviet world and pay little attention to the nuanced development in Uzbekistan. Methodology: most papers rely on discussion only. Few papers have used mixed methods or quantitative analysis; these were not adequately described to enable reproduction studies. Consequently, a research gap for spatial analyses of accessibility and participatory studies is left.

Research Methods and Theoretical Frameworks

Academic research on Uzbekistan utilizes either historical and institutional Analysis or socio-spatial and anthropological approaches. Foundational works, such as Akimov and Banister (2011) or Rohner (2021), employ a policy-review framework and quantitative data from state agencies to trace the evolution of transport modes from the Soviet era through the challenges of independence. These studies treat transport systems as products of executive structures and economic shifts. A more recent "epistemic shift" is evident in the work of scholars like Olma (2022) and Sgibnev and Tuvikene (2024), who utilize ethnographic and qualitative methods. These authors apply concepts such as "assemblages of mobility" (Sgibnev & Vozyanov, 2016) and "infrastructuring" (Tuvikene et al., 2020) to analyze how everyday practices and material legacies shape movement. This stream reframes mobility not just as a technical problem, but as a site of power, politics, and social diversity.

Key Findings

A dominant finding is that Uzbekistan's mobility is defined by a "layered legacy" where Soviet-era planning structures interact dynamically with post-Soviet reforms and global capitalist dynamics (Rohner, 2021). Research highlights that car ownership in Uzbekistan persists as a symbol of status and wealth, a perception reinforced by the "shortage economy" legacies of the car industry, which have created access inequalities and debt (Mukhiddinov & Vogel, 2025; Olma, 2022). Academic work on the marshrutka phenomenon across Central Asia (with transferability to the Uzbek context) identifies these services as a "survival strategy" deeply embedded in local socio-cultural institutions (Rekhviashvili & Sgibnev, 2020). Rather than being a mere "gap-filler" for failing

municipal systems, informal transport is viewed as a major economic sector where one in ten families draws income (Sgibnev & Vozyanov, 2016).

The academic literature provides robust frameworks for understanding the phenomenon of marshrutkas across Central Asia. This form of transport provides urban and intercity services. Sgibnev and Vozyanov (2016) highlight that marshrutka-based transport, alongside bazaar trade, represented a major sector of the Central Asian economy at the time, with estimates suggesting that one in ten families drew income from it. The topics of paratransit and bazaar trade are often interlinked in the literature as well (Berdiyorov et al, 2021).

5.4. Current Research Activities

Recent and ongoing research activities touching on Uzbekistan's mobility are multifaceted, drawing from both direct country-specific studies and broader regional analyses that offer transferable insights. A study by Mukhiddinov and Vogel (2025) analyses how cities in Uzbekistan (especially Tashkent) can integrate micromobility (e-scooters, bicycles, e-bikes) to address congestion and enhance sustainability. This project addresses public attitudes, regulatory barriers, pilot studies, and the practicality of integrating micromobility with existing transit, using both stakeholder interviews and empirical surveys.

Further research activities concerning the transition toward sustainable, shared, and human-scale mobility in Uzbekistan have been strongly supported by two projects coordinated by the Technische Universität Berlin. The Sustainable Urban Mobility Research in Central Asia (SUMRICA) project was funded by the Volkswagen Foundation and included an article about "Tourist Use of Transport Infrastructure in Khorezm Region, Uzbekistan" (Arndt & Sogolov, 2025). Building directly on this project, the ongoing RISMUz project is dedicated explicitly to Integrated Sustainable Mobility in Uzbekistan (TU Berlin, 2024). Its activities are highly relevant to addressing the gaps in formalized, shared, and human-scale mobility models within Uzbekistan. Key efforts include the development of a Smart-Sustainable-Mobility (SSM) concept for neighbourhoods, which involves evaluating global best practices such as the 15-Minute City, Superblock, and MaaS concepts for adaptation to Central Asian contexts. RISMUz selected the "Nurli Hayot" Mahalla in Urgench as a specific pilot area for detailed analysis, producing initial investigation reports covering critical aspects of shared and human-scale mobility, including Active Mode, Public transport, Parking, Traffic Safety, and Road design. These localized, concept-driven research efforts contribute significantly to developing necessary granular data and formalized models that are currently lacking in Uzbekistan's shared-mobility literature.

Mariya Petrova, a researcher at the Leibniz Institute of Regional Geography in Leipzig, Germany, has made another important contribution: Her PhD thesis applies anthropological research to the topic of mobility transitions, focusing specifically on the transfer of tram infrastructure and rolling stock from Tashkent to Samarkand. The current operation of the tram in Samarkand bears many similarities with the revenue-oriented governance model of marshrutkas.

5.5. Research Agenda Implications

Despite the depth of conceptual frameworks on informal and shared mobility in Uzbekistan, significant "blank spots" remain. There is a critical absence of content from academic publications in Uzbek or Russian languages within global databases, despite their paramount importance for a localized understanding.

Research relies on often inconsistent and unverified data (World Bank, 2020, p. 526). Furthermore, there is a pronounced lack of Uzbekistan-specific ethnographic data as much of the existing micro-level analysis of driver-passenger interactions is extrapolated from studies in Bishkek or Tbilisi.

The impact of formalised shared mobility such as ride-hailing aggregators, bike-sharing, and e-scooters is largely missing from the academic literature, which remains focused on traditional informal shuttle taxis. Explicit research on gendered mobility experiences and STS-inspired actor mapping for Uzbekistan's specific systems are currently absent from the scholarly record.

The following list outlines identified gaps and blank spots in ISM-related research in the region.

- **Local Language Publications**: A critical and acknowledged gap is the absence of direct content from publications in Uzbek or Russian languages, despite their paramount importance. Current research activities would benefit immensely from the integration of this literature. For the purpose of this research, only one example of academic (as opposed to grey) literature was found, namely an article by Alimardonov (2023) that addressed the informal economy, in general and across sectors, in Uzbekistan. Some potential local expertise may be found in the hands of local NGOs. Such is the case of Peshcom; a civil organization that struggles to improve sustainable urban mobility in Bishkek and produces regular studies in Russian or Kyrgyz (peshcom.org, 2024).
- **In-depth Ethnographic Data for Uzbekistan**: While ethnographic studies on marshrutkas exist for neighboring countries, there is a lack of specific, granular ethnographic data for informal/shared mobility services within Uzbekistan, detailing driver-passenger interactions, social embeddedness, and daily operational dynamics. Informal modes can improve access for marginalized groups, but may also reinforce spatial and social inequalities if not properly managed. Little information is currently available on the equity and accessibility of informal and shared mobility in the country.
- **Diverse Formalized Shared Mobility Models in Uzbekistan**: Current research activities provide limited detail on the presence or impact of newer, formalized shared-mobility services (e.g., ride-hailing apps beyond general comparisons, and car-sharing and bike-sharing initiatives) specific to Uzbekistan. The lack of precise data on passenger streams and users of informal mobility adds to the challenge of understanding informal mobility and its development over time.

- **STS-Inspired Actor Mapping for Uzbekistan**: While the conceptual basis for STS (Science, Technology and Society)-inspired actor mapping exists (Sgibnev & Vozyanov, 2016, p. 276), concrete examples or methodologies for generating these visualizations specifically for Uzbekistan's mobility systems are not present in the current literature.
- **Gendered Mobility Experiences in Uzbekistan**: Explicit, detailed research focusing on gendered experiences, challenges, and opportunities within Uzbekistan's informal and shared mobility sectors is a noted gap (Turdalieva & Weicker, 2019, p. 504).
- **Logistics and informality:** Informality in logistics is an understudied area. Consequently, it is very difficult to find any literature on the topic in Uzbekistan. Bazaars and their legacy are a promising area for future research, in particular if focused on the informal economy and its logistics.

All in all, while there is a strong foundation for understanding Uzbekistan's formal transport sector and conceptualizing informal mobility within the broader Central Asian context, more targeted, localized, and granular research is needed to adequately address the complexities of informal and shared mobility in Uzbekistan and to fill the abovementioned knowledge gaps.

5.6. Grey Literature Review

Grey literature, particularly policy papers and reports from international organizations, offers valuable, detailed insights into Uzbekistan's transport and logistics sector. Sources consist of government websites and national databases, the Tashkent Senate website, an OECD methodology report, and a World Bank policy paper. Most of these sources reflect a top-down, technocratic approach to transport governance. While the volume of policy papers has increased significantly since the onset of the 2019 modernization agenda, the scope remains narrow, primarily focusing on macro-level structural reforms, infrastructure financing, and institutional restructuring.

A significant portion of the grey corpus consists of Presidential decrees and Cabinet of Ministers' resolutions, which serve as legislative roadmaps for the road and railway sectors. These documents prioritize formalization through licensing, digital tracking, and the integration of aggregators into state tax systems. The methodologies employed in the grey literature are largely economistic and analytical, often following a "predict and provide" logic oriented toward problem-solving. The foundational work for current strategies is the World Bank's (2020) policy paper, which utilizes sectoral performance indicators, fiscal analysis, and gravity models to map freight flows and identify logistics bottlenecks. This approach treats the transport system as a product of executive structures and economic shifts.

The World Bank's 2020 "Uzbekistan: Building Blocks for Integrated Transport and Logistics Development Policy Paper" (World Bank Group, 2020) provides an extensive overview of the country's transport sector. It highlights a significant shift in institutional frameworks, with the establish-

ment of the Ministry of Transport (MoT) in 2019, integrating previously fragmented sectoral entities to facilitate multimodal planning (World Bank, 2020). The MoT is now responsible for policy formulation, strategic planning, and regulation across all transport modes (ibid).

Uzbekistan has embarked on an **ambitious reform agenda,** supported by numerous presidential decrees and resolutions aimed at improving passenger and cargo transportation, customs administration, and road-industry reform (World Bank Group, 2020, p. 88). These documents outline a high-level vision for addressing existing difficulties and challenges (World Bank Group, 2020, p. 88). The government is working on changing the financing revenue model of fleets from "a daily revenue plan" to "funds... allocated to carriers depending on the distance covered by the bus and passenger satisfaction with the quality of service" (president.uz, 2023). The country also aims to develop into a popular tourist destination. However, tourists perceive Uzbekistan's transport facilities as substandard (Saidmamatov et al., 2020).

Policy Reports Key Findings

A central finding across reports is the critical importance of the 2019 establishment of the Ministry of Transport (MoT), which integrated previously fragmented sectoral entities to facilitate multimodal planning (World Bank, 2020). Policy documents emphasize that modernizing Uzbekistan's aging infrastructure requires Public-Private Partnerships (PPPs) and "asset recycling" to attract private capital into state-owned enterprises such as Uzbekistan Railways (UTY) and Uzbekistan Airways. The World Bank has specifically emphasized the maintenance of road assets, which are noted to be in good condition both on the municipal and national levels (World Bank, 2020). Recent strategies have begun to explicitly link transport modernization to Uzbekistan's Nationally Determined Contributions (NDCs), targeting a reduction in GHG emissions through environmental certification of vehicles and the investigation of carbon pricing (Sabyrbekov et al., 2023).

Much of the national grey literature on the legal framework and new regulation of informal and shared mobility modes is initially sourced through the local media. Reference tracing eventually had led to the government decisions and decrees in Uzbek. These are mostly legislation on the regulation of taxis operated by self-employed workers. These policies address taxing and reporting and vehicle conditions but usually neglect questions of working conditions and the internal structures of platform economies.

Despite the high level of detail on formal sector transitions, significant "blank spots" remain. The national and international grey literature often neglects the lived experience of residents. There is a critical lack of data on the outcomes of local consultations regarding proposed transport reforms or tariff changes, leaving a gap in understanding how these shifts affect families. Policy reports and government documents typically frame informal transport (e.g., marshrutkas) as a regulatory problem to be fixed or eliminated, rather than acknowledging its role as a vital social institution providing critical mobility services. There is an acknowledged challenge regarding scarce, inconsistent, and unverified transport data on informal and shared mobility

modes, which limits the effectiveness of evidence-based planning outside the capital (World Bank, 2020). As in the academic literature, information on informality in logistics, particularly the legacy and operation of bazaars, is almost entirely missing from the current grey literature.

Financing and Public-Private Partnerships (PPPs)

Shared and informal modes of transport demand only a fraction of the resources required to implement and operate formalized and centralized public transport and national infrastructure projects. Nonetheless, public transport modes have the potential to provide local and sustainable mobility solutions. Hence, relatively small investments can have a large impact on transport emissions, accessibility, and community cohesion. The government has an "ambitious agenda to attract PPPs in transport," has created a PPP agency under the Ministry of Finance (MoF), and approved a PPP law (World Bank Group, 2020, p. 67). PPPs are seen as an effective mechanism for leveraging private-sector financing and operational efficiency to deliver infrastructure (ibid., p. 67).

Attempting to quantify the performance of informal mobility in Uzbekistan is like estimating the depth of a lake by measuring the height of the waves on the surface. Statistical information on the legal taxi market in Uzbekistan can help provide information on the informal part of that sector (gazeta.uz, 2025d; soliq.uz, 2025). Almost 320 million trips were performed in 2024, yielding 5.89 trillion TZS (417.5 million Euro), with an average check of 18,456 UZS (1.3 Euro) per trip. Of these, 23.7% were paid by card. Passengers are mainly transported by Nexia, Cobalt, and Lacetti cars. The established role of private companies in urban mobility innovations is evident in the **rise of shared-mobility platforms** such as Yandex, Jet, and Kicker in Uzbekistan (Mukhiddinov & Vogel, 2025).

The number of taxi associations rose from 142 in 2024 to 155 in 2025 (soliq.uz, 2025). About 498,000 self-employed drivers are engaged in transporting passengers through associations in the country. More than half of the drivers (57%) are between the ages of 30 and 50, 36% are under the age of 30. The number of female drivers increased almost fourfold from 1,053 in 2024 to 4,124 in 2025. (ibid). The Tax Committee clarified that some drivers are not working full-time, but can provide a taxi service once a week (raqobat.gov.uz, 2023). Following a recent change in the legal framework, freelancers are allowed to provide taxi services in the country (president.uz, 2025). Regulations prohibit the operation of taxi vehicles that are more than 15 years old on urban routes. Most taxis in service (almost 57%) are more than 10 years old (lex.uz, 2025). Most taxi trips were registered in Tashkent (51.6%), while the share of other regions is noticeably smaller (under 8% each)(soliq.uz, 2025). This suggests that informal taxi services provide a larger share of taxi services in the provincial regions. In 2024, taxi associations paid 156.8 billion UZS (11 million Euro) in taxes, 66.2 billion soms (4.7 million Euro) of which were VAT (ibid.).

Non-route taxis must enable payment acceptance via an aggregator or electronic payment systems. Further, they must be equipped with devices (e.g., mobile phones, tablets) that provide

taximeter functions (lex.uz, 2025). Following a new regulation, taxi drivers earning more than 100 million UZS within a given tax period will pay taxes by means of withholding the taxes owed by the platform or association to which the drivers belong (lex.uz, 2025). The resolution further announced an experiment in Tashkent. This experiment permits self-employed drivers to conduct non-route taxi activity using high-comfort vehicles with more than four but no more than eight passenger seats (excluding the driver). The regulations limit taxi drivers' licensing to a specific zone (lex.uz, 2025). This way, drivers from the provinces can't operate legally in the capital. This could impede the efforts of domestic migrants to earn a living.

Regulations for drivers on ride-hailing platforms are established through a **yearly digital license.** The prerequisites for obtaining such a license are the ability to work as a freelancer, a driver's license, and a medical examination (gazeta.uz, 2025e). Unlike in the case of full-time marshrutkas drivers with long shifts, ride-hailing platforms are open to regular commuters looking to earn some additional income on the way to or from their day jobs. Such drivers complete 3 - 4 registered rides per day, while full-time platform drivers complete 20-25 rides per day if they use the platform as their main source of income. Drivers of both types typically own their vehicles, unlike marshrutkas drivers who may lease a minibus on a daily or weekly basis (ibid.; Sgibnev & Vozyanov, 2016).

5.7. Expert Interviews

To supplement the limited academic and grey literature, complementary interviews and consultations were conducted with local urban planning specialists, legal consultants, and transport policy experts. These discussions provide a real-time perspective on the rapid changes occurring in Uzbekistan's mobility sector, particularly in Tashkent. Four experts have provided useful complementary information to the materials at hand.

There is a consensus among local experts that the shared mobility sector in Uzbekistan is currently experiencing significant growth. Abdulaziz Janturaev characterizes the current state of the industry as a "boom," though he notes that this rapid expansion simultaneously creates numerous regulatory questions and operational challenges (A. Janturaev, personal communication). The area likely to be "booming" is the expansion of online platforms for sharing services, most prominently for taxis.

On the streets of the capital, this growth is visible through the proliferation of electric scooters. Iskandar Soliev confirms that while several scooter-sharing operators are now active in Tashkent, bike-sharing systems have not yet been introduced. Despite the popularity and wide usage of these scooters, Soliev highlights a critical barrier to sustainable adoption: the necessary physical infrastructure to support these modes is still largely lacking (I. Soliev, personal communication).

One of the primary challenges identified in the literature is the scarcity of verified data on informal transport. Expert consultations attempted to provide "proxy" estimates for the scale of these services. Bobur Siradjev estimates that the current modal share for paratransit modes, specifically marshrutkas and the ubiquitous Damas minibuses, is approximately 20% to 30% (B. Siradjev, personal communication). However, obtaining precise figures remains difficult due to fragmented data management. Laylo Mirdjalilova acknowledges the lack of official data but suggests that more precise datasets, including mobility charts and maps, may exist within governmental bodies like the Road Traffic Management Centre (L. Mirdjalilova, personal communication). These expert insights reinforce the need for better institutional coordination to bridge the "black box" of informal transport statistics in Uzbekistan.

5.8. Policy Implications

The main policy challenges related to informal and shared mobility in Uzbekistan are precarious, unregulated employment for drivers; vehicle safety and quality; a lack of last-mile and micromobility infrastructure; and a lack of integration among transportation modes. The ideas presented in this section are based on the thoughts of authors cited in this work, as well as conclusions that have arisen as a result of aggregating the information collected above. They touch upon the topic of informal public transportation and its formalization, and on urban micromobility.

Marshrutkas, Taxis, and Their Integration in the Transport System

The Uzbek authorities' ambivalent stance toward informal taxis and marshrutkas stems from the understanding that the practice provides essential employment to thousands of rural-urban labour migrants, and that harsher regulatory pressure would lead to increased unemployment (Olma, 2021, pp. 135, 144). Recommended policies for informal mobility for Uzbekistan include, above all, planned integration instead of abolition. Given the significant role of shuttle taxis and the livelihoods they support, a **policy of phasing out informal providers must be carefully measured to minimize negative impacts on the welfare of families** dependent on this income (Sogolov et al., 2025, p. 118). Instead of abrupt elimination, a stepwise, conflict-avoiding course for reorganizing marshrutka services towards a feeder system, as suggested for Bishkek, is advisable (ibid., p. 127).

Policies should consider tender procedures for specific routes with fixed guaranteed payments and minimum standards to formalize paratransit operators (ibid., p. 128). This would help address issues of vehicle quality, safety, and driver working conditions, which often suffer from a lack of vertical regulation (Rekhviashvili & Sgibnev, 2018, p. 74). Both Sogolov et al. (2025) and Alimardonov (2023) see formalization and ease of regulatory access as key to alleviating the precarious working conditions of drivers in the informal transport sector.

While formalization is needed, policymakers should acknowledge that the demand-responsiveness of marshrutkas stems from their "visible and tangible local social embeddedness" (Rekhviashvili & Sgibnev, 2020, p. 274). Reforms should seek to understand and potentially formalize aspects of this horizontal embeddedness (e.g., driver collectives, mutual support networks) to maintain flexibility and social safety nets, rather than completely dismantling them. Policies aimed at formalizing shared mobility or increasing market competition must consider the deep-rooted informal practices and patronage networks evident in processes like car acquisition (Olma, 2021), where non-economic social considerations and informal payments often mediate economic exchange. Despite existing regulations, many informal taxi drivers have connected to ride-hailing platforms like YandexTaxi, which offers opportunities to increase daily income and bypass fare negotiations, though they still do not provide stable income, social security, or insurance (Olma, 2021, pp. 148 - 151). PPPs are a key recommendation across the grey literature. Structuring projects to fit their context, clearly allocating risk, and leveraging private financing for substantial value-for-money are the key recommendations in the literature (World Bank Group, 2020, p. 67). Ensuring the PPP agency under the Ministry of Finance is **adequately staffed and resourced** for project screening, preparation, procurement, and delivery is critical to the success of this process (ibid., p. 68).

Public transport operators can benefit from implementing carefully-designed tariff systems based on robust studies of end-user quantity and type, ability, and willingness to pay, as well as close consultation with communities (ibid., p. 74). This should also ensure equitable access for the poorest populations through appropriate provisions, and consider cross-subsidization where more profitable assets can support less financially viable but necessary services. The transition to user funding should be incremental and well-planned to mitigate opposition (ibid., p. 74). Incentives or subsidies for paratransit services may be unavoidable, especially in areas of lower accessibility. Such investments in a reliable transport service may, in turn, attract private or foreign investment in other economic activities.

The World Bank Group report (2020) also recommends developing strategies for human resources. This entails defining required skills and competencies and establishing training programs for regulated professions in the transport sector. This is crucial when formalizing a previously informal sector, such as marshrutkas, and retraining drivers for the formal public transport sector. User charges, or tariffs, should be based on the ability and willingness of end users to pay, with provisions for equitable access for the poorest populations (ibid., p. 74). Pricing should reflect both quality and quantity of use, with potential for cross-subsidization where profitable assets (e.g., large airports) support less financially viable but necessary developments (e.g., smaller regional airports). Any transition to user funding should be incremental and well-planned, involving close consultation with affected communities to mitigate opposition (World Bank Group, 2020, p. 74). The Automated Transport Payment System Operator (ATTO) is currently available in only three of Uzbekistan's twelve regions (Tashkent, Samarkand, and Urgench), and its nationwide expansion is crucial for a seamless and cohesive transportation network (Mukhiddinov & Vogel, 2025, p. 10).

Given the wide roads in most medium- and large-sized cities, BRT systems could be created overnight in Uzbekistan by designating priority lanes. Access to such lanes can be granted or denied to marshrutkas, taxis, and cars with high occupancy, in accordance with the most suitable policy for each city and region. Over time, physical barriers could be added to such lanes to avoid violations by private vehicles (Mukhiddinov & Vogel, 2025; Sogolov et al., 2025).

The **formalisation and taxation** of self-employed taxi drivers (gov.uz, 2025) is an important step toward bridging the gap between formal and informal mobility. The accountability of large aggregator platforms should be clearly defined and strictly enforced to make sure the rights of workers and passengers are not infringed upon. Compliance with the platforms and their regulations is already planned to be rewarded with the right to use otherwise-inaccessible service zones for picking up passengers. Similarly, access to priority lanes, parking, and train stations can be granted. A future step toward integration may include a national MaaS app, which includes shared modes. Such a system could establish appropriate rewards for the users of sustainable modes and for shared transport operators. An Aggregator Joint Liability insurance policy covering passengers' life, health, or property in case the aggregator used an unlicensed carrier is still under development by Uzbek authorities. Until this project is completed, a legal gap remains. While the current regulatory focus primarily addresses the formalization of non-route taxis (private cars and minivans), a coordinated strategy for the broader informal transport sector (shuttle taxis/marshrutkas) is still needed.

Micromobility and Last-Mile Solutions

Targeted investment in infrastructure ought to dedicate funding to transform vehicle-centric infrastructure so that it supports micromobility users. This must involve actively solving the "last mile" connectivity problem by designating and developing "Mobility Points" adjacent to metro stations and bus stops, particularly in underserved residential and commercial districts in peripheral areas of cities like Tashkent (Mukhiddinov & Vogel, 2025). Such investment must include walkable streets and cycling lanes, as well as other measures in favor of active modes.

Bike sharing has not been introduced in Uzbekistan, despite the initial development of cycling infrastructure in Tashkent (gazeta.uz, 2025f) and the potential for its development in other cities. Shared or private bikes are not widely used in urban settings, partly due to the perception of bicycles as entertainment rather than everyday transport vehicles (Sogolov, 2022). This may be a mere hypothesis at this stage, but research findings point to the need to integrate cycling in the local culture to achieve the acceptance of users and authorities alike (Aldred & Jungnickel, 2014).

5.9. Conclusions

To address infrastructural constraints and environmental considerations (e.g., higher air pollution induced by older vehicles), the city managers' agenda should include restricting the number of private vehicles in the city and actively promoting public transport use as well as active modes (Sogolov et al., 2025, p. 124). This should be done by push measures such as parking management, alongside the development of cycling and walking infrastructure.

Berdiyorov et al. (2021) listed "Four categories of solutions" that "will drive the major transformations in mobility: vehicle electrification, shared mobility, autonomous vehicles, and connectivity," referring specifically to Uzbekistan. The World Bank (2020, p. xiii) recommended the restructuring of Uzbekistan Railways (UTY) by separating railway-sector governance from UTY corporate governance and transferring policy and regulatory functions entirely to the MoT. This process must include refocusing UTY on core railway operations, by spinning off ancillary/non-core businesses, such as nature reserves and coal mines, to appropriate government bodies. In addition, further integration between marshrutka and micromobility services will enable effective feeder services to the railway and will enhance its service and revenue. As for the use of public transport infrastructure, existing rail and tramways, as well as trolleybuses, must be maintained and used wherever possible. Such systems can be rebranded and perceived as modern as more recent systems, such as electric buses, if they are reliable and prioritized for speed and right of way. Policy actions must be explicitly geared toward fulfilling national climate commitments and reversing high local pollution trends. This means aligning transport policy explicitly with Uzbekistan's Nationally Determined Contribution (NDC) target to reduce GHG emissions per unit of GDP by 35% by 2030 and accelerate the shift toward renewable energy sources (Sabyrbekov et al., 2023). This requires a reduction in fossil-fuel subsidies and pricing carbon and carbon-equivalent emissions. Regulation of fleets will enable adherence to international air-pollution standards, such as those enacted in the EU (Arndt & Sogolov, 2025).

The **significant challenge of scarce, inconsistent, and unverified transport data** on informal and shared mobility should be addressed (World Bank Group, 2020, p. 526). Research projects on sustainable mobility in the region are scarce. Uzbekistan would benefit from transdisciplinary research on mobility, and in particular from pilot projects or living labs. Such research methods can shed light on informal transport modes and identify new ways to enhance their sustainability and profitability. Pilot projects and light-touch regulatory interventions can also help to identify mobility gaps and expand equitable access, especially for less-mobile communities and population groups.

The ATTO smart ticketing system must be extended nationwide, moving beyond its current availability in only three regions (Tashkent, Samarkand, and Urgench), to establish a truly seamless and cohesive transportation network across Uzbekistan (Mukhiddinov & Vogel, 2025). This integrated system should be extended to formally link newer shared micromobility platforms (such as Yandex, Jet, and Kicker) with existing public transport systems (Zuniga-Garcia et al., 2021).

These comprehensive additions to Uzbekistan's passenger transport policy, regulatory and infrastructure landscape would contribute to building a multi-layered framework that directly addresses the challenges of rapid motorization, informality, and environmental stress in Uzbekistan, by linking high-level institutional reform with practical measures for technology and infrastructure integration. The new regulations on the informal mobility sector are yet to stand the test of time and prove that enforcement capacities are sufficient to ensure compliance. Above all, a coherent and long-term vision for the development of sustainable mobility as a strategy is still missing in the country, both as a detailed plan and as a legislative anchor.

Chapter Six: Neighbouring Countries Briefs

6.1. Southeast Europe

Draženko Glavić, Egor Muleev, Yannis Paraskevopoulos

Across Southeast Europe, the intersection of shared and informal mobility reflects the interplay between structural transport gaps, post-socialist urban legacies, and emerging sustainability agendas. Although data availability remains uneven, recent academic literature and grey sources reveal contrasting yet complementary dynamics across countries in the region.

In **Albania,** shared and informal mobility systems operate primarily outside consolidated regulatory frameworks, reflecting broader governance constraints across the Western Balkans. Informal mobility is widespread and includes several forms that operate outside the official regulatory framework. The most common are unlicensed minibuses and vans (furgons) that provide intercity and regional passenger transport. They usually depart from informal terminals or roadside gathering points rather than official bus stations. Urban and intercity mobility relies heavily on informal minibuses, shared taxis, and other paratransit services that function as de facto public transport, particularly where formal provision is limited or unreliable (World Bank, 2024). Unlicensed taxis are present in urban areas, offering cheaper rides compared to regulated operators. These forms of transport persist because they are flexible, frequent, and affordable, filling the gaps left by underdeveloped formal public transport networks. They are illegal, yet tolerated due to high demand and insufficient enforcement.

The Western Balkans Green Growth Transport Narrative (World Bank, 2023) highlights weak enforcement capacity, poor inter-modality, and a structural dependence on informal operators across the region, despite increasing policy attention to green growth and shared mobility solutions. While shared mobility initiatives, such as bike-sharing pilots and app-based ride-hailing, have emerged in Tirana, they remain fragmented, small-scale, and weakly regulated. Informal minibuses coexist with locally-rooted initiatives such as the Ecovolis bicycle-sharing program in Tirana, which is one of the few sustained examples of community-based shared mobility in the Western Balkans. Overall, the coexistence of emergent shared mobility and entrenched informal transport illustrates how adaptive, low-regulation systems continue to fill structural accessibility gaps amid uneven reform and implementation (World Bank, 2023; World Bank, 2024).

In **Bosnia and Herzegovina**, shared mobility is primarily represented by public bike-sharing systems, most notably the Nextbike networks operating in Banja Luka, Mostar, and Sarajevo, which are supported through municipal initiatives and public-private partnerships (Nextbike, official website). In addition, many cities offer rent-a-bike and tourist bicycle rental services, though these are not part of public systems. , There is growing interest in e-scooters and rental services exist, but a comprehensive regulatory framework for shared use has not been developed. Current rules are fragmented and depend on local authorities, while a national legal framework explicitly defining shared systems (bicycles, e-scooters) has not been adopted. Car-sharing

is currently available in Sarajevo through the e-GO service, but in the absence of specific regulation it functions under the general vehicle-rental regime. Carpooling exists mostly through informal arrangements (e.g., BlaBlaCar routes and ride sharing organized via social networks), whereas no registered ride-hailing service operates outside traditional taxi applications. In other words, rides ordered via apps are always regular licensed taxis. The current legal framework governing road passenger transport explicitly recognizes only traditional taxi services, bus operators, limousine services, and rental-car businesses. Therefore, informal transport in Bosnia and Herzegovina most often includes unlicensed taxis and vans/minibuses on intercity and international routes, which operate outside the legal framework yet persist due to high demand and the limited availability of alternative mobility options.

In **Bulgaria**, the mobility system combines emerging shared-mobility services with long-standing informal transport modes. In urban centres such as Sofia and Plovdiv, shared mobility has expanded through initiatives including SPARK electric car-sharing, HELLO e-scooters, and smaller bike-sharing systems. These initiatives are supported by the country's updated National Energy and Climate Plan 2021–2030, which promotes low-emission and shared transport options (Republic of Bulgaria, 2023). Recent studies further indicate that shared mobility and carpooling practices in Bulgaria remain socially selective and spatially uneven, with greater uptake among higher-income and digitally-literate groups, whereas collective commuting remains limited in everyday practice (Molina et al., 2020). Nevertheless, informal marshrutka minibus services remain integral to daily travel, particularly in smaller municipalities and peri-urban areas. These operate within a grey regulatory zone, offering flexibility and affordability while lacking standardised safety and emissions oversight. Qualitative research from Sofia further illustrates how informal mobility practices (e.g., ad hoc carpooling, shared lifts among co-workers, and socially negotiated commuting arrangements) emerge within and alongside formal transport systems, reinforcing informality as a relational and everyday practice rather than a strictly legal category (Plyushteva, 2019). Empirical studies on commuting patterns highlight that informal transport fills persistent accessibility gaps between residential areas and workplaces, especially where formal public transport coverage is weak (Ilieva, 2024). This dual structure (digitalised shared services for urban elites and informal paratransit for lower-income or peripheral communities) reflects persistent spatial and social inequalities. The endurance of marshrutkas and unlicensed operators underscores the embeddedness of informality within Bulgaria's transport governance, aligning with broader post-socialist patterns in which market-driven reforms coexist with self-organised, socially embedded mobility systems.

In **Kosovo,** shared and informal mobility systems operate primarily outside consolidated regulatory frameworks, reflecting broader governance constraints across the Western Balkans. Urban mobility relies heavily on informal minibuses, shared taxis, and other paratransit services that function as de facto public transport, particularly where formal provision is limited or unreliable (World Bank, 2024). The Western Balkans Green Growth Transport Narrative (World Bank, 2023) highlights weak enforcement capacity, poor intermodality, and a structural dependence on informal operators across the region, despite increasing policy attention to green growth

and shared mobility solutions. While shared mobility initiatives, such as bike-sharing pilots and app-based ride-hailing, have emerged in Pristina, they remain fragmented, small-scale, and weakly regulated. Informality is closely linked to post-conflict institutional fragility and limited municipal capacity, with privately-operated minibuses and shared taxis constituting the backbone of everyday mobility. Overall, Kosovo illustrates how adaptive, low-regulation mobility systems continue to fill structural accessibility gaps amid uneven reform and implementation (World Bank, 2023; World Bank, 2024).

In **Montenegro**, shared mobility remains underdeveloped and is mostly visible through tourist-oriented bicycle rentals in coastal towns such as Budva, Kotor, and Herceg Novi, while there are no fully-operational public bike-sharing systems comparable to those in some neighboring countries (municipal sources). Private ownership of e-scooters is growing and small-scale tourist rentals exist, but there is no comprehensive regulatory framework for shared e-scooter platforms, and their operation depends largely on local rules. Car-sharing services have not yet been introduced in Montenegro. Carpooling exists informally, mainly through private arrangements or platforms like BlaBlaCar, but remains outside formal regulation. Ride-hailing services such as Uber/Bolt, are not available, while rides ordered via apps connect only to licensed taxi operators. The current legal framework governing road passenger transport explicitly recognizes only traditional taxi services, bus operators, limousine services, and rental-car businesses. Informal transport persists in the form of unlicensed taxis and vans/minibuses on intercity and international routes, many of which operate outside the legal framework by offering per-seat sales, whereas vans with up to nine seats can legally operate only as part of licensed limousine services with pre-arranged rides and fares.

In **North Macedonia**, shared mobility is still at an early stage of development. Public bike-sharing exists in Skopje through the city-supported Nextbike system, but its scope is limited compared to larger European cities. In other towns, bike-sharing is absent and services are mostly limited to tourist-oriented rentals (Nextbike Skopje; City of Skopje). Private use of e-scooters has expanded rapidly in recent years, and small rental services are available in Skopje and some tourist areas. However, there is no dedicated regulatory framework for shared e-scooter platforms, and their operation depends largely on municipal rules. Car-sharing services have not yet been introduced, while carpooling takes place informally, mainly through private arrangements or BlaBlaCar routes, but without explicit legal recognition. Ride-hailing platforms such as Uber and Bolt are not present, and rides ordered via apps connect only to licensed taxi operators. The legal framework governing road passenger transport explicitly recognizes only traditional taxi services, bus operators, limousine services, and rental-car businesses. Finally, informal transport remains widespread, including unlicensed taxis and vans/minibuses on intercity and cross-border routes. They operate outside the legal framework but continue due to high demand and insufficient development of formal public transport alternatives.

In **Romania**, shared mobility has grown rapidly in major cities, driven by private and foreign operators offering ride-hailing, bike-sharing, and e-scooter services. Companies such as Lime and Bolt dominate the micromobility landscape in Bucharest and Cluj-Napoca, where high smartphone

penetration and rising environmental awareness support adoption. Academic case studies from secondary cities such as Timișoara and Bacău document municipally-managed bike-sharing systems and ICT-based carpooling pilots, highlighting strong technical optimisation and environmental ambitions, but limited evidence of long-term scaling or behavioural shifts beyond project lifecycles (Nechita et al., 2016; Ruset et al., 2021). Modelling studies from medium-sized cities such as Iași demonstrate that e-scooters are primarily used for leisure and first- and last-mile trips, with limited viability for daily commuting due to pricing and limited integration with public transport (Harpalete, 2023). However, outside metropolitan areas, shared mobility remains minimal, and many communities continue to rely on informal minibus systems that bridge the gap between limited public transport and private car use. Survey-based evidence on Romanian Generation Z mobility preferences further suggests that a high reliance on private cars, combined with walking and public transport for local trips, reflects the limited availability of integrated, reliable formal transport options, particularly beyond major cities. These conditions indirectly sustain demand for informal and semi-formal mobility solutions (Ivasciuc et al., 2025). Post-1990 analyses of Romanian maxi-taxis show how these services emerged as adaptive responses to the collapse of centrally planned transport provision, operating as de facto public transport despite weak institutional recognition (Vozyanov, 2018). The Romanian National Recovery and Resilience Plan highlights commitments to sustainable and integrated transport infrastructure. Still, it pays limited attention to informal modes that persist as de facto public transport in smaller towns (European Commission, 2023). This tension between EU-driven formalisation and locally adaptive informal practices reflects Romania's uneven modernisation, where shared mobility is technologically advanced but spatially concentrated, while informal mobility remains essential to accessibility and affordability.

In **Slovenia and Croatia,** several types of rental services may be found (long-term, short-term and peer-to-peer; cars, bicycles and e-scooters) available across both countries. In addition to BlaBlaCar, national equivalents exist. Community car-based services for the elderly operate on a non-profit basis in rural areas. Big cities face negative consequences of e-scooters and are trying to address the issue by establishing regulations, such as raising the minimum age for riding an electric scooter from 12 to 15 years. Carpooling services can have a similar international presence (such as BlaBlaCar), but they can also take place informally via social-media groups and messaging apps. In 2023, the Digital Platform Workers' Trade Union organized a protest involving 2,000 taxi drivers against a two-week delay in Uber payments. In tourist areas during the high season, some illegal taxi services were identified.

Country	Domain	Models	Examples	Legal status	Remarks
Bosnia and Herzegovina	Informal mobility	Unlicensed taxis, vans/minibuses	Intercity & international routes	Illegal (tolerated)	Persist due to high demand and limited alternatives
	Vehicle sharing	Car sharing	e-GO (Sarajevo)	Grey zone	Operates under general rent-a-car rules. No specific regulation
		Bike sharing	Nextbike (Banja Luka, Sarajevo, Mostar)	Allowed	Public systems; regulated locally; no national framework
	Ride sharing	Carpooling	BlaBlaCar, social networks	Grey zone	Informal cost-sharing. No explicit legal recognition
Montenegro	Informal mobility	Unlicensed taxis, vans/minibuses	Intercity & international routes	Illegal (tolerated)	Vans up to nine seats legal only as licensed limousine services
	Ride sharing	Carpooling	BlaBlaCar, private arrangements	Grey zone	Informal. Outside formal regulation
North Macedonia	Informal mobility	Unlicensed taxis, vans/minibuses	Intercity & cross-border routes	Illegal (tolerated)	Persist due to insufficient public transport
	Vehicle sharing	Bike sharing	Nextbike (Skopje)	Allowed	City-supported; limited scope;
	Ride sharing	Carpooling	BlaBlaCar, private arrangements	Grey zone	Informal. No explicit legal recognition
Albania*	Informal mobility	Minibuses / vans (furgons)	Intercity & regional routes	Illegal (tolerated)	Operate from informal terminals
		Unlicensed taxis	Urban areas	Illegal (tolerated)	Cheaper than licensed taxis

Table 7: Informal and Shared Mobility in selected Southeast Europe countries[3]

3 For Albania, only informal mobility is referred to. Bulgaria, Croatia, Kosovo, Romania, Slovenia not included.

The comparative overview indicates that similar patterns are present across the region. Informal transport is frequently tolerated in practice due to high demand and limited enforcement capacity, while shared mobility develops unevenly under fragmented and predominantly local regulatory arrangements. This suggests that the challenges identified in Serbia and Greece are not isolated, but rather reflect broader structural and institutional characteristics of passenger-transport systems in Southeast Europe.

6.2. Central Asia

Altynai Nogoibaeva, Wladimir Sgibnev, Ilya Sogolov

Kazakhstan's transport sector is intricately linked to Uzbekistan's, through international transport corridors that both countries aim to upgrade (World Bank Group, 2020, p. 47). In Kazakhstani cities like Almaty, the increased use of informal transport (paratransit) to fill gaps in public transport also contributes to increasing congestion, due to low capacity (Sogolov et al., 2025).

Over the past decade, transport sharing has evolved from an experimental innovation into a core component of urban mobility. High levels of digitalization and the rapid development of national fintech ecosystems have enabled a seamless transition to a sharing economy. Today, the market encompasses four main segments: ride-hailing (taxis), kicksharing (e-scooters), car-sharing, and bike-sharing services. Their development trajectories, however, are uneven and strongly dependent on regulatory adaptation to technological change.

The most profound legal transformation has occurred in the kicksharing sector. Amendments to Kazakhstan's Traffic Code adopted on 31 August 2023 formally recognized electric scooters with a maximum design speed of 25 km/h as vehicles (Ministry of Internal Affairs of Republic of Kazakhstan, 2023). The legislation introduced a strict spatial hierarchy: unrestricted movement on bicycle lanes, a speed limit of 6 km/h on sidewalks and pedestrian paths, and conditional access to the roadway only for users aged 18+, holding a valid driver's license of any category and wearing a helmet. A user retains pedestrian status only when walking the scooter rather than riding it, effectively separating riding behaviour from pedestrian rights within traffic regulation.

At the operational level, Almaty's micromobility market is dominated by three major operators: Jet (since 2021), Whoosh (since 2022), and Yandex Scooters (since 2023). These services have introduced preventive safety systems based on geofencing technologies, automatically limiting speeds to 10-15 km/h in parks and public spaces and to 6 km/h on sidewalks, in line with national regulations. The sector has also adopted technological standards such as a ban on passenger carriage and diversified pricing models, ranging from per-minute tariffs to daily passes and subscription plans (Filonenko, 2025). Features such as short-term reservation and multi-rental confirm the transition of e-scooters from recreational devices to a mass last-mile transport mode embedded in everyday urban logistics. Usage data support this shift: according to Yandex Go analytics for the 2025 season, more than 90% of shared e-scooter trips in Kazakhstan were

transport-oriented, primarily serving commuting, education, and first- or last-mile connections to public transport (Omarova, 2025). Nearly one fifth of users (19.5%), approximately 100,000 people nationwide, completed more than ten trips per season, indicating regular rather than occasional use.

A new phase of institutionalization followed legislative amendments adopted in late 2025 (Shashkina, 2025a). In response to rising accident rates, the state introduced mandatory registration of shared scooters with unique identification numbers and required civil liability insurance for operators. Platforms were also obliged to integrate with government databases to verify user eligibility, including the possession of a valid driving license and the absence of legal restrictions. These regulatory changes coincide with evidence of intensive and routine usage patterns: over 70% of active users rely on two to three stable routes, and 12.4% of all trips occur after the closure of public transport services, suggesting that shared scooters increasingly substitute for other late-evening mobility options (Bekzhanov, 2025). These measures shift responsibility for safety from individual users to service providers, strengthening market oversight and filtering non-compliant operators.

In contrast, the Almaty Bike project illustrates an institutional crisis of a municipal bike-sharing model. Launched in 2016 with public investments of approximately 3.7 million USD, the system was officially discontinued in 2024 due to technical degradation and governance failures (Grigoryants, 2025). By 2022, only 56% of the originally-procured bicycles remained operational, while demand declined sharply under competition from private kicksharing services. The city's current strategy envisages a transition toward a free-floating electric bicycle system, emphasizing flexibility and reduced maintenance costs (Loginova, 2025).

Ride-hailing was fully formalized on 1 September 2024, when digital aggregators acquired the status of tax agents (State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan, 2024). The reform primarily affected the country's dominant platforms, Yandex Go (operating under a centralized fare-setting model), inDrive (which relies on peer-to-peer price negotiation), and Maxim (widely used in regional cities). By shifting tax and social-contribution obligations from individual drivers to platforms, the state introduced a simplified and scalable compliance mechanism for a sector previously characterized by widespread informality. From 2026, platform-based drivers will no longer be classified as individual entrepreneurs but will be registered as natural persons, while platforms retain their role as tax agents (Shashkina, 2025b). Together, these measures mark the completion of the sector's shift from fragmented self-employment toward regulated, platform-mediated integration within the urban economy, positioning Kazakhstan among the regional leaders in the formal governance of ride-hailing and gig-based mobility services.

Car-sharing remains a smaller but stable segment, primarily represented by the Moscow-originated Anytime service which has operated in Almaty since 2018. With a fleet exceeding 800 vehicles and a free-floating model with four zones that differ with respect to pricing and conditions like parking and waiting time, the service provides an alternative to private car ownership. However, its growth is constrained by high capital and maintenance costs compared to micromobility services.

Overall, Kazakhstan's approach to regulating shared mobility is evolving from a liberal framework toward a model of digital oversight. The tightening of requirements related to registration, insurance, and user verification reflects the state's intent to integrate sharing platforms into broader public-safety and governance systems. This experience offers a valuable potential case for academic analysis, as an example of rapid regulatory response to the expansion of individual and shared-mobility technologies in a middle-income economy.

Recommendations for Almaty include developing convenient bicycle infrastructure, providing excellent, low-cost public transport, ensuring safe licensed taxi services, and controlling taxis with proper licenses (Arndt & Sogolov, 2025, p. 44; Sogolov et al., 2025, p. 120). Beyond mobility, scholarly work in Kazakhstan addresses themes relevant to understanding institutional and societal transformations. Kassen (2017) examines open data initiatives in Kazakhstan, noting their potential to boost civic engagement and e-participation, but also highlighting that they do not fundamentally alter the political system.

Urban mobility in **Tajikistan** presents a contrasting yet instructive case for understanding informal and shared mobility across Central Asia. Dushanbe, the country's capital, has a relatively well-developed formal public transport system consisting of buses, e-buses, double-decker buses and trolleybuses. However, the formal network is heavily supplemented, and in many districts dominated, by a large marshrutka system operated by multiple private companies (e.g., Sorbon 14 LLC, Makhin Sair LLC). As of August 2025, Dushanbe had approximately 1000 marshrutkas, with municipal plans to increase this fleet by an additional 20% (Alizoda, 2025a). As in Kyrgyzstan, marshrutkas are popular due to their high frequency, flexible stopping patterns, and dense coverage. A university student interviewed for this study (Ulugbek, personal communication) described marshrutkas as "faster, more frequent, and stopping exactly where needed," highlighting their continued role as the most responsive and accessible mode of transport. Fares remain low (2.5 TJS, ~0.25 USD), which makes the system affordable for lower- and middle-income users.

A significant institutional shift began in mid-2025 as the Dushanbe municipality mandated a transition to fully-cashless payments across the entire marshrutka fleet, requiring the installation of point-of-sale terminals or validators by mid-September 2025. This digitalization drive, managed by the private operator "Citycard," imposes a substantial financial burden on individual drivers, who are forced to purchase card reading devices for 2800 TJS (~300 USD) and pay a daily service fee of 30 TJS (~3.5 USD), regardless of their daily revenue. Despite the presence of formal bus and trolleybus services, Dushanbe's marshrutka network fills crucial spatial and

temporal gaps. However, the requirement of cashless systems has met with significant resistance from drivers, who argue that the new system, combined with high daily operating costs and discounted digital fares for students, threatens the economic viability of the traditional informal model (Alizoda, 2025b). This tension illustrates a broader regional trend, where municipalities use digital payment infrastructure as a tool for top-down formalization, often at the expense of the precarious workers who sustain the transport network. Failure to comply with these digital requirements results in immediate exclusion from transport cooperatives, highlighting the coercive nature of mobility governance in the capital. Dushanbe also maintains one of the most regulated and rapidly-electrifying taxi sectors in the region. According to municipal regulations, there are only four licensed companies: Eco-Taxi, Koviyon, Olucha Taxi, and Safo-Taxi. These companies are permitted to provide taxi services within city limits, with each company allowed up to 3,000 vehicles, totaling an operational fleet of around 10,500 taxis in Dushanbe (Alizoda, 2025). A distinctive policy feature is the requirement that all licensed taxis must be electric vehicles: a directive by the Mayor of Dushanbe obliged taxi operators to fully transition to EVs by 1 September 2025. To operate legally, taxis must display two types of plates: green EV plates and additional yellow plates issued through the State Service for Control and Regulation in the Transport Sector (Asia-Plus, 2025). However, this electrification mandate coincides with significant electricity supply constraints. Due to recurring power shortages, time limits for vehicle charging have been introduced, restricting charging from 6PM to 10PM (Asia-Plus, 2025). As a result, many EV taxi drivers report experiencing difficulty in accessing charging infrastructure before and after work, with stations often fully occupied. This complicates daily operations and reduces system efficiency.

Tajikistan's taxi digitalization is also accelerating. The ride-hailing platform Jura, launched in August 2025, has already recorded more than 1.6 million rides in Dushanbe (Sultonov, 2025). The platform operates similarly to Yandex Go with a user-rating system, fare transparency, and trip-type options (e.g., travelling with a child, luggage transport, driver assistance). One interviewee (Manizha, personal communication) noted, however, that the Jura application functions inconsistently in practice: some drivers are unfamiliar with or reluctant to use the app, GPS tracking is unreliable, and waiting times via the application can be long. As a result, passengers often prefer curb-based hailing, which remains faster and more predictable. Users with foreign mobile numbers (e.g., Kyrgyz numbers) report difficulties registering. Despite the growth of Jura, street-hailing remains deeply embedded in Dushanbe's mobility culture. During fieldwork to support this study, taxis were easily hailed from the curb and passengers commonly requested that drivers use the in-app taximeter. Standard fares typically begin at 10 TJS (~ 1.1 USD) for the first 3 km, with additional distance charged at approximately 3-4 TJS (~ 0.4 USD) per kilometre.

Alongside formal EV taxis, an informal taxi-marshrutka hybrid mode has emerged. Drivers of electric taxis sometimes place a paper route number in their windshield and follow the trajectory of a formal bus line, collecting a fixed marshrutka-style fare (e.g., 10 TJS). Although officially prohibited, this practice reflects the adaptability of drivers and the unmet demand for fixed-route, larger-capacity public transport services during peak hours (Timur, personal communication).

Attempts to introduce micromobility in Dushanbe have faced significant challenges. A pilot e-scooter-sharing service (Parastu.tj) was launched in 2020 but discontinued operations shortly thereafter. Interviews with residents (e.g., Manizha, personal communication) indicate that inadequate micromobility infrastructure, high traffic risks, and low perceived safety prevented the service from becoming mainstream. Despite aligning with global micromobility trends, the infrastructural conditions—like limited bike lanes, sidewalk obstructions, and insufficient traffic calming—were insufficient to enable long-term adoption.

Outside the capital, mobility patterns shift markedly. In Khujand, Tajikistan's second-largest city, municipal buses once operated but were gradually discontinued (Nilufar, personal communication). Today, residents rely predominantly on marshrutkas and taxi services. Among digital services, Maxim dominates and is valued for pricing transparency. An interview partner expressed that "you always know the price upfront," which reduces uncertainty (Nilufar, personal communication). Micromobility pilots have begun to appear. In July 2023, an e-scooter rental service called Electron was launched, but adoption remains modest. Cycling potential is constrained by topography. Interviewees highlighted that while cycling is desirable, the city center lies in a valley with a river, whereas many residential areas are located on elevated slopes, making uphill cycling home physically-demanding and discouraging.

On the whole, Tajikistan demonstrates a transport ecosystem where formal systems exist but remain overshadowed by low-cost, flexible informal modes, especially marshrutkas and curb-based taxis. Dushanbe's strong regulatory push for the electrification of taxis represents a unique regional experiment, while Khujand's emerging micromobility services suggest gradual diversification of urban mobility options. However, infrastructural limitations, persistent informality, and topographical constraints indicate that the country's mobility modes are likely to remain hybrid in the medium term, combining formal public transport, robust marshrutka networks, and a rapidly-evolving yet uneven digital taxi market.

Due to data scarcity being characteristic for **Turkmenistan,** no substantial information on the situation in the country can be provided. Evidence suggests that marshrutkas form the backbone of public transport outside of the capital Ashgabat. Its trolleybus system has been out of service since 2012. A monorail system was opened in the Olympic Village in 2017, but has recently been taken out of service. Chinese-built Yutong e-buses reportedly operate in Ashgabat and Arkadag. Official news reports indicate that a state-sponsored ride-hailing app was rolled out in 2022 (Altyn Asyr 2022).

In conclusion, ISM in Central Asia does not necessarily adhere to the widespread decline and deficiency narratives that cling to the region's infrastructure provision. The surprising continuity of Soviet-era public transport priorities throughout the 1990s, the glimpses of (unsustainable) investment in the early 2000s, the massive capital-focused investment programmes of the late 2010 and early 2020s are all together telling of national and local state capacities and ambitions. Political systems have changed since independence and diverge across five Central Asian countries. Authorities are increasingly willing to shoulder investments and pursue legal innovations

in terms of ISM regulations. The memory of a lost Soviet-era public transport modernity is being contrasted with the all-marshrutkas 1990s. These informal transport solutions are, in turn, under pressure from two sides: consultants and development agencies, with own green and sustainable public transport agendas on the drawing board; and political leaders vying for modernised infrastructures marking their ambitions to be part of a global modernity project – one, which is not on the agenda for most citizens, all the more in peripheral regions.

Appendices

Appendix A: PRISMA Framework

The literature review for Greece was performed using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Page et al., 2021). PRISMA is not a software tool, but a methodological guideline designed to ensure transparency and replicability in systematic and scoping reviews. In this study, PRISMA principles were applied to structure the identification, screening, eligibility assessment, and inclusion of academic publications. The process included sequential screening of titles, abstracts, and full texts, as well as the use of explicit inclusion and exclusion criteria tailored to the Greek context and the thematic focus on shared and informal mobility. The PRISMA-informed approach was implemented during the academic literature review phase (Scopus search and screening), supporting systematic documentation of search results and selection decisions. Given the exploratory and context-sensitive nature of informal mobility research in Greece, the review was designed as a qualitative scoping review rather than a full PRISMA systematic review or meta-analysis.

Appendix B: Survey Respondents in Greece, by Affiliation

1. **Municipal Transport Policy Expert:** Advisor on transport policy for the City of Athens, with a focus on the regulation of Light Personal Electric Vehicles (LPEVs); member of the Executive Board of the Hellenic Association of Transportation Engineers; PhD in Transport Planning.
2. **Senior Researcher in Shared Urban Mobility:** Researcher involved in the *SUM – Seamless Shared Urban Mobility* project and Adjunct Lecturer at the National Technical University of Athens; PhD in Urban and Transport Planning.
3. **Transport Planning Researcher (NTUA)**: Associate Researcher at the Laboratory of Transportation Engineering, National Technical University of Athens, and Adjunct Lecturer at the University of West Attica; PhD in Transport Planning.
4. **Sustainable Mobility Researcher**: Associate Researcher at the Sustainable Mobility Unit of the National Technical University of Athens and Adjunct Lecturer at the University of West Attica; PhD in Transport Planning.
5. **Transport Analytics Researcher**: Postdoctoral Researcher at the Laboratory of Transportation Engineering, National Technical University of Athens, and Senior Researcher at Transform Transport; PhD in Transport Analytics.

Appendix C: Interview Guidelines in Serbia

Structure of the expert interview guide in Serbia

1.1) Please provide a rough estimate of:								
a) the number of **minivans operating informally** in Serbia:								
b) the number of **taxi vehicles operating informally** in Serbia:								
c) the annual number of passengers illegally transported by minivans in Serbia:								
d) the annual number of passengers illegally transported by taxis in Serbia:								
e) the **number of carsharing vehicles** in Serbia:								
f) the **number of on-demand vehicles** in Serbia:								
g) the **number of shared (e)bicycles** in Serbia:								
h) the **annual number of carsharing users** in Serbia:								
i) the **annual number of carpooling users** in Serbia:								
j) the **annual number of ride-sharing users** in Serbia:								
k) the **annual number of shared (e)bicycle users** in Serbia:								
1.2) Using a 7-point Likert scale, please indicate the extent to which you agree with the following statements (1 = Strongly disagree, 7 = Strongly agree).								
1	In Serbia, the prevalence of informal passenger transport remains substantial, largely due to a **rigid, ambiguous, and incomplete regulatory framework.**	1	2	3	4	5	6	7
2	In Serbia, informal passenger transport persists at significant levels due to **economic motives and pronounced demand for low-cost mobility**.	1	2	3	4	5	6	7
3	In Serbia, informal passenger transport constitutes a considerable share due to market-related factors such as the insufficient supply of formal public transport services and the monopolization of passenger transport lines.	1	2	3	4	5	6	7
4	In Serbia, adequate (systematic) regulatory and inspection oversight is not carried out.	1	2	3	4	5	6	7
5	In Serbia, shared mobility remains underdeveloped due to a rigid, ambiguous, and incomplete regulatory framework.	1	2	3	4	5	6	7
6	In Serbia, there is low visibility (limited user awareness) and insufficient trust in new mobility models.	1	2	3	4	5	6	7
7	In Serbia, shared mobility remains underdeveloped due to the **high level of motorization and a strong car-ownership culture**.	1	2	3	4	5	6	7
8	In Serbia, there is a strong culture of comfort and privacy, which reduces the acceptance of shared mobility models.	1	2	3	4	5	6	7

9	In Serbia, corporate support for shared mobility models is weak.	1	2	3	4	5	6	7
10	In Serbia, the potential of shared mobility would be considerably greater if **suitable policy incentives for its development were established**.	1	2	3	4	5	6	7
11	In Serbia, infrastructure-related incentives (such as dedicated lanes, priority parking, and designated zones) would substantially contribute to the development of shared mobility.	1	2	3	4	5	6	7
12	In Serbia, the regulatory framework needs to be revised and aligned with market requirements and prevailing trends in the region and across Europe.	1	2	3	4	5	6	7

2. Please specify three key challenges related to informal and shared mobility in Serbia.

3. Please outline the main research gaps in the field of informal and shared mobility in Serbia.

4. Please suggest initial measures for the implementation of informal and shared mobility policies in Serbia.

Appendix D: Top 3 ISM Challenges in Serbia

Top 3 challenges related to informal and shared mobility in Serbia according to expert interviews.

Expert 1:

1. The absence of a clear and consistent regulatory framework for shared mobility models, resulting in regulatory uncertainty and grey zones.
2. Weak institutional and political support, limiting coordination among competent authorities in the planning and development of shared mobility services.
3. The lack of an integrated and transparent system for data collection, processing, and sharing, which is essential for the formulation of evidence-based, consistent, and effective policies.

Expert 2:

1. Insufficient promotion of shared mobility and a low level of public awareness of this transport mode.
2. Underdeveloped infrastructure and a lack of legal incentives, such as access to dedicated bus lanes, coupled with the need for strict enforcement and severe penalties for improper use of bus lanes, in order to ensure that compliant users perceive such access as a tangible benefit.
3. An insufficiently-defined regulatory framework, which enables the persistence of the grey economy and unfair competition.

Expert 3:

1. The absence of an adequate regulatory framework.
2. A lack of oversight with respect to fares, safety standards, and related aspects.
3. Unequal accessibility across different areas.

Expert 4:

1. Rigid and poorly-harmonized regulations.
2. Economic pressures and unfair competition.
3. Low levels of public awareness, limited institutional support, and low user trust.

Expert 5:

1. Insufficient control and sanctions targeting illegal transport operators.
2. Inadequate public awareness of shared-mobility options.
3. A strong reliance on private car usage.

Appendix E: Main ISM Research Gaps in Serbia

Main research gaps in the field of informal and shared mobility in Serbia according to expert interviews:

Expert 1:

- There is a lack of comprehensive empirical data on the scale of use and the socio-demographic characteristics of users of informal and shared mobility services.
- Systematic studies analyzing the functional integration between formal public transport and informal and shared mobility modes are lacking.
- Analyses quantifying the environmental, economic, and social impacts of shared and informal mobility in Serbia are missing.
- There is a need for a detailed analysis of the current passenger transport supply, including fleet structure, tariff models, and service availability, to enable a reliable assessment of the potential of informal and shared mobility forms.
- The intercity segment of shared mobility in Serbia remains a significant research gap, despite its potentially important role in passenger mobility.
- Analyses of the long-term effects of the introduction of free public transport in Belgrade on the market for private and shared mobility services are lacking.

Expert 2:

- The absence of comprehensive databases on the number of shared mobility users, as well as on their socio-demographic characteristics and the features of the systems they use.
- A lack of city-level analyses examining demand for and public acceptability of shared mobility across major urban areas.
- Insufficient research on the economic benefits, environmental protection benefits, impacts on congestion reduction, and related effects.

- Limited research focusing on intercity shared-mobility services and their role within the wider passenger transport system.
- A lack of studies addressing safety issues affecting both users and service providers.

Expert 3:

- Comprehensive empirical evidence on both the scale of use and the socio-demographic profiles of users of informal and shared mobility services remains limited.
- Systematic studies analyzing the functional integration between formal public transport and informal and shared mobility modes are lacking.
- Research examining the effects of establishing a regulatory framework and legalizing these transport services on the passenger transport market is lacking.

Expert 4:

- The role of local governments in transport and mobility planning.
- Insufficient research on the impacts of regulation and institutional frameworks on mobility development.
- The need for comparative analyses with countries from the region and the European Union.
- A lack of reliable data on the scale of informal transport, including the number of vehicles and passengers.

Expert 5:

- There is a lack of in-depth analysis of the user profiles of illegal transport services, including the socio-demographic characteristics of users and the underlying factors influencing their choice of such services.
- The impacts of illegal transport on traffic safety and economic outcomes remain insufficiently examined.
- Empirical research on public attitudes toward emerging mobility models, such as car sharing and e-bicycle systems, is largely absent.

Appendix F: Main ISM Policy Measures in Serbia.

The most urgent policy measures addressing informal and shared mobility in Serbia according to expert interviews:

Expert 1:

- Establish a national framework for the systematic collection of data on shared and informal mobility. Introduce standardized methodologies and procedures within the Statistica lOffice of the Republic of Serbia and local governments for collecting data on shared-mobility services and informal transport modes. This framework should encompass data on travel volumes, fleet size and structure, user profiles, pricing schemes, and performance indicators, thereby ensuring a robust analytical basis for transport planning and policymaking.
- Develop a clear, up to date, and comprehensive regulatory framework for new mobility services. Adopt precise legal definitions and operational requirements for shared mobility services. The regulatory framework should explicitly address licensing, insurance, taxation, and data-sharing obligations in order to eliminate existing grey zones and ensure transparent and fair operation of these services within the transport system.
- Support pilot projects in the field of shared and multimodal mobility. Implement pilot projects in urban shared mobility, integrated with existing transport systems and accompanied by systematic monitoring of key impact indicators. In parallel, initiate pilot models in intercity shared mobility to assess their potential to enhance transport accessibility and efficiency.
- Introduce coordinated governance mechanisms and strategic planning instruments. Develop national guidelines or a strategic document for shared mobility development to harmonize local regulations and establish frameworks for effective cooperation among municipalities, service providers, and state institutions. The strategic document should include protocols for data exchange with digital platforms, safety standards, and mechanisms ensuring transparent and fair market competition with traditional transport services.
- Improve infrastructural and market conditions for the development of shared mobility. Ensure adequate infrastructure to support the development and sustainable implementation of shared-mobility models, while simultaneously fostering a competitive and geographically-accessible shared-mobility market that is functionally integrated with the public transport system.
- Implement public awareness campaigns aimed at promoting shared-mobility models and encouraging their safe and responsible use. Such campaigns should highlight the benefits of shared-mobility services, strengthen user trust, improve understanding of usage conditions and safety protocols, and educate the public about the risks associated with informal and unregulated transport modes.

Expert 2:

- Preparation of a national-level baseline study on key data related to shared mobility
- Analysis and presentation of international best practices, accompanied by the implementation of a pilot project in a selected city.
- Development of a modern and comprehensive regulatory framework based on collected evidence and research findings.
- Establishment of necessary infrastructural preconditions and the introduction of incentive measures.
- Implementation of public awareness campaigns communicating study results and highlighting the benefits of shared mobility for individual users.

Expert 3:

- Establishment of regulatory frameworks clearly defining the role of this transport mode, including obligations related to service registration, operational requirements, and compliance responsibilities.
- Integration with the existing public passenger-transport system.

Expert 4:

- Establishment of a registry and licensing system for all transport operators (e.g., as practiced in the railway sector).
- Regulatory reform, including the clarification of the legal status of shared mobility and the tightening of enforcement measures and sanctions.
- Strengthening inspection and enforcement capacities through the recruitment of additional inspectors and enhanced supervisory oversight.
- Education initiatives and measures aimed at encouraging corporate participation, among other actions.

Expert 5:

- Implementation of public-awareness campaigns and educational initiatives clarifying which transport services are legal and which are not.
- Increasing the number of inspections and strengthening enforcement through stricter penalties.
- Introduction of incentives to encourage the use of shared-mobility services (e.g., free usage hours, designated parking zones).

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