E-Scooter & Bike Share Urban Usage Focus Group

Table of Contents

Figures

Tables

Introduction: current shared mobility trends in Europe

This report acts as a compilation of insights emerging from the E-Scooter & Bike Share Urban Usage Focus Group discussions, which is part of the Focus Group series of the Smart Cities Marketplace project funded by the European Commission.

Shared e-scooter and bike sharing systems in Europe have clearly moved beyond the phase of experimentation. Over the past years, shared services have shifted from a phase of rapid, often fragmented expansion, toward consolidation, stabilisation, and gradual integration into urban mobility systems. These modes are now visible, widely debated, and increasingly embedded in everyday travel patterns. **The central question is no longer whether shared mobility systems belong in cities, but how they should be regulated, integrated, and positioned within the wider transport ecosystem to support a shift away from car-centric urban planning.**

Recent developments show that **the future of shared e-scooters and bike sharing systems are shaped far more by governance choices and policy coherence than by technological limitations**. Across Europe, cities have introduced clearer frameworks for fleet sizes, parking rules, and operator selection, often through tenders and licensing schemes. Together with sector consolidation and mergers, these measures have helped stabilise shared services and improve predictability for both users and cities. At the same time, these services have become more explicitly linked to broader sustainability and urban mobility strategies, increasingly recognised as a tool to reduce car dependency and support climate and liveability objectives. (Zhao et al., 2025; Karami et al., 2025; Altintasi-Yalcinkaya, 2022; Holve et al., 2021)

One visible trend concerns the **oscillation between restriction and integration**. In several cities, shared e-scooters have faced temporary suspensions or bans in response to safety concerns, public pressure, or negative media narratives. Yet empirical experience suggests that prohibitive measures rarely resolve underlying structural challenges. Instead, they often coincide with the growth of privately owned devices, which operate outside managed fleet systems and provide limited access to usage data. This shift may reduce regulatory visibility rather than risk itself, illustrating that restrictive approaches tend to redistribute governance challenges rather than eliminate them (Brousseau et al., 2025; Flores et al., 2025; Sobrino et al., 2023; Gössling, 2020).

A second trend relates to **evolving substitution patterns**. During the COVID-19 pandemic, shared e-scooters frequently substituted public transport due to concerns about crowding and reliability (Zhang et al., 2024). In the post-pandemic period, substitution dynamics have become more context dependent. In car-dominated environments with limited active travel infrastructure, shared services may displace short car trips. In highly walkable urban settings, however, walking substitution effects appear more prominent, although these are strongly mediated by broader structural factors such as street design and overall accessibility (Laa-Leth, 2020; Nikiforiadis et al., 2021; Sanders et al., 2022). These patterns underscore that sustainability and health impacts cannot be assessed independently of urban form and long-term behavioural trajectories.

A third defining development is the **progressive embedding of shared services within multimodal transport ecosystems**. Increasingly, cities experiment with integrated digital platforms, mobility hubs, and coordinated operational frameworks that position shared e-scooters and bike-sharing systems as complementary to public transport rather than peripheral additions (Javadinasr et al., 2025; Brown et al., 2021; Oeschger et al., 2020). As integration deepens, technological maturity, such as geofencing, speed control, and real-time compliance tools, supports more structured governance arrangements. At the same time, circular economy considerations, including durability and fleet longevity, are gaining prominence (Aman et al., 2021; Lim, 2025; Li et al., 2021).

Finally, **user profiles and perceptions are becoming more differentiated**. Although male users continue to dominate in many contexts, participation broadens as infrastructure quality and perceived safety improve. Trip purposes evolve over time, with systems gradually shifting from exploratory or recreational usage toward more routine and commuting-related travel. However, political narratives and media framing remain influential in shaping public acceptance, particularly in relation to shared e-scooters. Isolated incidents are often amplified more strongly than comparable risks in other transport modes, reinforcing polarisation and affecting policy trajectories (Asgharpour et al., 2025; Zhang et al., 2023; Lanza et al., 2022; Fitt-Curl, 2019).

Taken together, **these trends indicate a transition from experimental deployment toward more differentiated**, **data-informed, and institutionally embedded models of shared mobility**. The trajectory is neither linear nor uniform across cities, but it reflects a gradual movement from ad hoc introduction toward structured integration within broader urban mobility systems.

Definitions

Micromobility is widely described as an umbrella term referring to a **relatively new category of transport based primarily on lightweight, electrically powered vehicles intended for short urban trips**. However, there is no universally accepted definition of the term. Literature varies considerably in which vehicle types it includes, and the challenges with this definitional ambiguity was also clearly reflected in the focus group discussions. Participants expressed divergent views on whether electric modes should fall within the scope of micromobility at all, highlighting the variations in conceptual and regulatory consensus.

This lack of clarity has practical implications for policy and integration. While **conventional bicycles** and **EPACs (Electrically Power Assisted Cycles)** operate within long-established and comparatively harmonised regulatory frameworks at both national and European levels, **shared e-scooters** are governed by more fragmented and evolving rules. In many cases, city-level regulations concerning public space use, operational conditions, and technical requirements have developed in a reactive and uneven manner. Although the regulation and classification of emerging electric mobility devices have become an area of increasing interest at the European level, progress toward harmonised standards has been gradual.

As a result, cities often face uncertainty in determining how e-scooters should be categorised, managed, and integrated within existing transport systems. **The definitional ambiguity surrounding micromobility therefore extends beyond a semantic issue; it constitutes a structural governance challenge that directly affects the safe, coherent, and equitable integration of shared e-scooters into urban mobility ecosystems.**

Within this broader landscape, **e-scooters** can be defined as a stand-up, two-wheeled vehicle powered by an electric motor and operated through handlebars, typically designed for short-distance urban travel. By contrast, an EPAC refers to a bicycle equipped with an auxiliary electric motor that provides assistance only while pedalling and is subject to established technical and safety standards in most European jurisdictions. (Christoforou et al., 2021; Aguilera-García et al., 2024).

Unlike privately owned devices, **shared fleets** are subject to speed caps of 20–25 km/h, geofencing, and designated low-speed or no-ride zones, and they undergo regular maintenance and safety checks by operators. Although technical parameters such as weight, speed, or distance thresholds (as reflected in OECD-ITF or EN15194 standards), provide useful reference points for classification and regulation, their effectiveness ultimately depends on how they are embedded within broader governance frameworks and socially accepted norms of public space use. Regulatory coherence and technical compliance alone are insufficient if measures are not perceived as legitimate, proportionate, and responsive to local mobility contexts. Long-term integration therefore requires not only technical standardisation but also public trust, transparency, and alignment with wider societal expectations regarding safety, fairness, and spatial justice. (Sokolowski, 2020; Bozzi-Aguilera, 2021; Szemere et al., 2024).

Methodology

Why a Focus Group?

Focus groups are particularly suitable **for exploring how different stakeholders in the urban mobility ecosystem perceive and react** to emerging shared solutions. Unlike surveys or individual interviews, they allow for interactive discussions, where participants not only share their own perspectives but also respond to each other's (sometimes conflicting) views. This interaction helps uncover underlying attitudes, values, and potential conflicts that might remain hidden in other data collection methods. The format is especially **useful for identifying shared concerns, divergent opinions, and the specific vocabulary different groups use when discussing shared services**. (Babbie, 2013; Malhotra, 2017; Petzoldt et al., 2023)

The **E-Scooter and Bike-Share Urban Usage Focus Group** was launched on 11 December 2024 within the framework of the Smart Cities Marketplace project.

Sessions

The session discussions were structured around **nine interconnected 'hot topics' that together provided a comprehensive picture of shared e-scooters and bike sharing systems** in the current urban mobility ecosystem. The dialogue took form through a series of monthly sessions, held on the second Wednesday of each month, enabling insights to build progressively across themes. All discussions were conducted online via Microsoft Teams, lasting approximately sixty minutes, and were transcribed with the informed consent of participants, ensuring transparency and enabling structured synthesis.

Participants were **guided by a moderator** and engaged in a range of interactive qualitative methods designed to stimulate reflection and debate. These included brainstorming and association tasks supported by digital whiteboards, guided thematic discussions on benefits, risks, and regulatory challenges, as well as collaborative table-based exercises exploring user diversity and equity. To **identify priorities and trade-offs**, the sessions also incorporated ranking and voting exercises, while technology-focused discussions combined collective prioritisation with individual assessments of existing and missing features. Several discussions were grounded in visual material, such as images of urban streets or accident data, to support place-based reflection on infrastructure, safety, and spatial conflicts.

Overall, the methodological approach emphasized **co-creation and shared interpretation**, drawing on professional experience from cities, academic researchers, civil society, and industry. The online format further enabled the inclusion of stakeholders from diverse European contexts, facilitating exchange across geographies without physical barriers.

Participants

The participants in the focus group were identified through the EIT Urban Mobility network, with the objective of ensuring a **broad and representative spectrum of relevant stakeholders** (see Table 1 - *Focus Group participants according to categories* from across the mobility sector. Attention was given to securing the involvement of **local authorities, private service providers, and local and regional organisations** to capture the diversity of perspectives necessary for a comprehensive discussion.

The session brought together twelve participants representing the following organisations:

Table 1 - Focus Group participants according to categories

Private service providers	Local Authorities	Regional thematic organisations	Local thematic organisations	Research Organisations
BIRD	Oslo Kommune	European Cyclists' Federation	RedBici (Spanish Cities and Regions Network for Cycling)	VTT Technical Research Centre of Finland
Dott		Cycling Industries Europe	Federación Española de Vehículos de Movilidad Personal (Spanish Federation of Private Micromobility)	
		European Passengers' Federation	Clúster de Innovación para la Micromovilidad Eléctrica (Cluster for Innovation of Electric Micromobility)	
		International Federation of Pedestrians		
		Micro-Mobility for Europe		

The composition of the group ensured that the focus group benefited from a balanced exchange of expertise and viewpoints, spanning policymaking, service provision, research, and user representation, which in turn fostered collaboration across diverse stakeholders.

Desired outcomes

The overall objective of the focus group sessions was **to gain a comprehensive understanding of how different stakeholder groups perceive shared e-scooters and bike sharing systems and their integration into urban transport systems**. The discussions were intended not only to highlight common challenges but also to reveal areas of divergence that are crucial for designing balanced and inclusive policies.

By capturing these perspectives, the Focus Group provides a foundation for **policy recommendations that can support European cities** in managing the rapid growth of shared services. At the same time, the results will contribute to the development of a scientific paper that situates stakeholder perspectives within the broader discourse on sustainable urban mobility.

Shared services in transition: topics, trends, and turning points in urban contexts

Foundations and experiences with shared e-scooters and bike sharing systems

Figure 1 - Key features and functions regarding e-scooters and e-bikes

Participants associated e-scooters and e-bikes primarily with **flexibility, speed, convenience, and accessibility**, as illustrated in Figure 1 - Key features and functions regarding e-scooters and e-bikes. Several participants emphasised positive personal experiences, noting that these devices allowed them to travel faster in urban environments and made everyday trips more **enjoyable and fun**. Importantly, most participants reported no personal involvement in accidents when using these services.

At the same time, negative associations were strongly present at a perceptual level, particularly in relation to e-scooters. These concerns were mainly linked to **accidents and unsafe behaviour**, which participants perceived as consequences of unclear or insufficient regulation, especially regarding road and space usage. Thus, **safety issues** emerged not primarily from direct user experiences, but from broader societal narratives and observed conflicts in urban space.

Shared services and sustainability

Participants agreed that the sustainability of shared e-scooters or e-bikes cannot be assessed through a single dimension. Instead, it requires a **holistic perspective** that considers the entire lifecycle of vehicles alongside broader social impacts. On the positive side**, shared mobility was associated with reduced local emissions, lower noise pollution, decreased congestion, and potential public health benefits** when effectively integrated into urban transport systems. At the same time, a series of environmental and operational trade-offs emerged, as summarised in Table 2 - The benefits and challenges of shared e-scooters

Several critical challenges were highlighted, primarily in relation to shared e-scooters. A major concern centred on the **environmental footprint of batteries**, including production, replacement, recycling, and transport, which significantly affects overall sustainability performance. Participants also noted that, in certain contexts, these devices may **divert users from active travel modes** such as walking or conventional cycling, potentially reducing associated health benefits. Overall, sustainability was understood not solely as an environmental issue, but also as a social and behavioural one, closely linked to public health, travel habits, and the allocation of urban space.

Table 2 - The benefits and challenges of shared e-scooters

Benefits (in comparison to cars)	Challenges
Zero local emissions – no tailpipe pollutants at the point of use	**Life-cycle emissions** (production, battery manufacturing, transport, and disposal)
Reduced CO₂ emissions	**Battery safety risks, predominantly associated with privately owned devices** (fires, improper charging)
Reduced noise pollution	**Low acoustic detectability**, increasing collision risks in shared spaces
Lower urban heat island effect	**Production and transport impacts** of vehicles and components
Reduced traffic congestion	**Congestion benefits depend on substitution effects;** limited impact if replacing walking or public transport instead of car trips
Lower public space occupation	**Insufficient parking management**
Better access to public transport (first/last mile connectivity)	**Use and abuse of pavements**, linked to a lack of safe infrastructure and a lack of designated parking zones (riding and parking)
More affordable	**Usage-based pricing models may disadvantage frequent or low-income users compared to private ownership**
Supports multimodality and flexible travel	**Public space reallocation conflicts**
Health co-benefits	**Substitution of active travel** (e.g. walking, cycling)
Reduced dependence on private modes of transport	**Regulatory fragmentation and national prohibitions**

Governance and regulatory issues

A recurring theme across discussions was the **lack of a clear and consistent definition of e-scooters, which was identified as a root cause of fragmented and sometimes contradictory regulations**. Participants noted that regulatory distinctions between e-scooters and e-bikes often extend beyond actual risk profiles. While e-bikes are widely recognised as an active mode with well-established regulatory definitions and standards, e-scooters occupy a more ambiguous position, with regulatory frameworks still evolving. This mismatch was seen to result in inconsistent and sometimes illogical requirements.

Regulatory fragmentation emerged as a major challenge regarding e-scooters. Participants pointed to cases where city-level rules on public space use and service provision for shared e-scooters were introduced quickly and with limited evidence, shifting the debate from transport planning to political positioning. While delegating regulatory power to local authorities was seen as beneficial for large cities with sufficient capacity,

it was also reported to disadvantage smaller municipalities, which often lack the resources to design and enforce effective rules.

Safety concerns were primarily linked to infrastructure gaps, enforcement deficits, and interactions between different traffic streams rather than to shared e-scooters themselves. Participants repeatedly emphasised that **overregulation** measures are not supported by empirical evidence (e.g. blanket helmet mandates or restrictions on public transport access), and may reduce usage without addressing the underlying sources of risk. For example, the suspension of e-scooters from public transport in cities such as Madrid, justified by concerns over battery safety, was cited as a case where precautionary restrictions may have outweighed demonstrated risk levels.

At the same time, **underregulation** was also viewed as problematic. In contexts where speed limits, parking rules, and enforcement mechanisms were weak or inconsistently applied, visible disorder and conflicts in public space contributed to safety incidents and reputational damage.

Concerns related to **battery safety**, including fire risks and storage standards, were also raised, highlighting the need for clear technical requirements. Similarly, rules governing user behaviour, such as prohibitions on **double riding** and **riding under the influence of alcohol**, were widely regarded as essential safeguards aimed at protecting all road users, not only e-scooter riders.

Participants noted that the **European Commission has been working for several years toward clearer and more harmonised regulatory frameworks for emerging light electric vehicles**. However, progress has been gradual and largely reactive, reflecting the challenge of regulating rapidly evolving technologies. While this incremental approach may appear slow, it was also seen as allowing regulation to be informed by accumulating evidence and practical experience rather than by premature standardisation.

Overall, these dynamics point to a **regulatory landscape characterised by asymmetries and institutional misalignment**, as systematically mapped in Table 3 - Shared e-scooter regulations and best practices**. Excessive restrictions, lack of coherence between local and EU frameworks, and enforcement** deficits can all undermine safe and equitable integration, underscoring the need for proportionate, adaptive, and evidence-based governance structures.

Table 3 - Shared e-scooter regulations and best practices

Key issues in current NATIONAL regulations	Key issues in current EU regulations	Best practice examples	Aspects to be incorporated in regulations
Lack of clear or comprehensive e-scooter regulations in some countries (e.g. no usage rules, only insurance)	Fragmented and inconsistent regulatory framework across Member States	Local speed limits (e.g. 20–30 km/h) adapted to the urban context	Clear legal definition of e-scooter based on functional characteristics
Overly detailed or rushed local rules introduced without sufficient evidence	Absence of harmonised EU-level guidance on where and how e-scooters should operate	City-level power to regulate fleet size, parking, and speed	Risk-based regulation aligned with speed, weight, and stability
Inconsistent differentiation between e-scooters and e-bikes (e.g. helmet rules, access rights)	Different treatment of similar vehicle types across countries	Mandatory parking rules supported by geofencing	Harmonisation of rules for similar-risk vehicles whilst addressing differences
Lack of enforcement capacity at the local level	Limited EU guidance on enforcement mechanisms	Local alcohol limits and night-time restrictions	Stronger enforcement provisions at the local level
Insufficient or unclear parking regulations	No common EU approach to parking and public space use	Designated parking zones integrated into public space	Clearly designated parking zones not encroaching on pavements
Limited consideration of infrastructure availability	Regulatory focus often detached from street design realities	Reduced car parking to free space for micromobility	Link regulation explicitly to infrastructure conditions
Political sensitivity and public backlash influencing local rules	Regulation becoming politicised rather than evidence-based	Local experimentation with temporary measures (sandboxes)	Evidence-based, adaptable regulatory frameworks
Lack of data access for cities	No standard EU requirements for operator data-sharing	Data-sharing agreements between operators and cities	Mandatory, standardised data-sharing for planning and enforcement
Weak handling of user behaviour issues	Limited EU guidance on behaviour-related risks	Fines and sanctions for misuse (e.g. improper parking)	Clear rules on user behaviour (speed, parking, alcohol, age)
Overregulation risking decline in use	Risk of discouraging shared systems while private use grows	Balanced rules avoiding bans	Avoid bans; prioritise managed shared systems
Lack of clarity on age limits	Inconsistent age-related rules across countries	Minimum age requirements enforced locally	Clear age restrictions and verification mechanisms
Poor coordination between transport modes	No integrated EU approach to multimodal integration	Integration into city mobility strategies	Integration with public transport and SUMPs

Urban design and re-design

Participants consistently highlighted that the **allocation of urban space** – particularly the dominance of cars – **plays a decisive role in shaping the safety and usability of e-scooters**. A key challenge identified was **the lack of clarity in traffic hierarchy**, especially where cars, buses, trams, cyclists, and e-scooter users are required to share limited space and compete for it, as illustrated in Figure 2 - Inadequate allocation of urban space in Budapest, which shows one of Budapest's busiest boulevards[1].

Figure 2 - Inadequate allocation of urban space in Budapest

Several issues were linked to **speed management** and **lane design**. Participants stressed that without clearly defined speed limits and an understanding of traffic intensity, infrastructure solutions remain ineffective. In lower-speed environments (e.g. 30 km/h zones), physical separation was seen as less critical, while in busier or faster streets, the absence of separation significantly increased perceived risk.

Pavement-related concerns were raised primarily in relation to shared e-scooters rather than bike-sharing systems or e-bikes, which are more firmly embedded within established cycling regulations. Cluttered pavements, delivery activities, and informal parking were identified as contributing factors, yet participants emphasised that conflicts with pedestrians are closely linked to broader infrastructure constraints and car-dominated street design.

A recurrent theme was that **e-scooters should not routinely use pavements**, as even with speed caps they typically travel considerably faster than pedestrians. Instead, participants suggested an approach like existing cycling regulations: e-scooters should primarily operate on the roadway or in designated lanes, with

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[1] Photo taken by the Chair of the Focus Group.

13

pavement access permitted only in exceptional circumstances – such as where no safe alternative exists or where a designated route explicitly leads across pedestrian space.

In this framing, pavement conflicts were understood less as intrinsic failures of shared e-scooter services and more as symptoms of **insufficient space allocation**, **inadequate parking management**, and the **lack of coherent infrastructure** for emerging light electric vehicles.

Across discussions, it became clear that **technical solutions alone are insufficient**. The range of design-related challenges and corresponding improvement areas identified by participants is summarised in Table 4 - Challenges, areas of improvement and best practice examples of shared e-scooters and bike sharing systems integration in urban design. While light **infrastructure elements** (e.g. raised curbs, flexible separators) and dense, well-marked parking were seen important, participants repeatedly emphasised that the **overall volume of car traffic is the "elephant in the room"**.

Table 4 - Challenges, areas of improvement and best practice examples of shared e-scooters and bike sharing systems integration in urban design

Challenges in current urban design	Areas of improvement	Best practice examples
High traffic volumes and dominance of private cars	Reducing overall car traffic in dense urban areas	Barcelona: reordering street hierarchy (pedestrian → bike → public transport → car)
Shared lanes between cars and buses create unsafe conditions	Clear separation of functions where traffic volumes are high	Oslo: removal of on-street car parking in the city centre
Safe shared infrastructure that is separated from cars	Introduction of light infrastructure (raised curbs, flexible separators)	Leuven: car-free zones and traffic redirected to ring roads
Pavement clutter and conflicts with pedestrians	Reallocation of space from cars, not pedestrians	Madrid (Calle Mayor): street pacification and clearer separation
Temptation for riders to use pavements due to unsafe road conditions	Clear pavement protection and continuous dedicated routes	Barcelona Superblocks: network-level approach rather than isolated streets
Infrastructure conflicts between public transport and shared e-scooters	Reordering street layouts to minimise conflict points	Oslo: e-scooter parking integrated between tram and car lanes
Delivery vehicles blocking bike lanes	Reorganisation of urban logistics (time-based deliveries)	Night-time logistics in Spanish cities
Narrow car lanes are forcing unsafe overtaking	Traffic calming and speed reduction	30 km/h zones in mixed traffic environments
Lack of dedicated parking for shared e-scooters and bike-sharing systems	Dense, clearly marked parking every short walking distance	Replacing car parking spaces with dedicated parking for shared mobility services
Fragmented street-level solutions	Planning streets as part of a wider network	Network-based design approaches (Superblocks, ring roads)
Over-engineered solutions in a limited space	Simpler, flexible design adapted to context	Use of plastic bollards and modular separators
Behavioural conflicts between users	Education and clear visual cues	Combined design + behavioural measures

Technology: apps and user interfaces

A prioritisation exercise during this topic's session asked participants to adopt a user perspective and identify the core functionalities they would consider essential when using shared mobility applications. As shown in Table 5 - Key functional requirements of shared mobility applications, strong consensus emerged around **real-time vehicle availability**, **clear zoning information**, **intuitive navigation**, **visible battery levels**, and **safety-related prompts**. These features were framed as basic expectations rather than added value.

Safety concerns – particularly in relation to shared e-scooters – were closely linked to specific in-app functionalities, such as **speed reminders**, **traffic rule notifications**, and **contextual safety prompts**. **Ease of use**, **clarity of information**, and **transparent guidance** were repeatedly highlighted as critical for ensuring both compliance and a positive user experience.

Table 5 - Key functional requirements of shared mobility applications

Essential (Core features)	Supporting (Governance & management)
Real-time vehicle availability with accurate location	Issue reporting (damaged vehicles, parking problems)
Clear zoning information (no-parking, slow-speed areas)	Safe route suggestions (bike/e-scooter friendly routes, safer intersections)
Intuitive, user-friendly interface	User feedback after ride (ratings, quick input)
In-app navigation	Ride preferences (avoid hills, prioritise bike lanes)
Battery level is clearly visible	Monitoring tools for compliance and enforcement
Fast and reliable unlocking process	Secure authentication and system reliability monitoring
Safety prompts (speed limits, traffic rules, helmet reminders)	Management dashboards supporting planning
Localisation (language, units, cultural adaptation)	Integration with broader transport systems

At the same time, the discussion revealed that most existing app functionalities remain predominantly commercial and user-oriented, with limited emphasis on supporting the management of public space and urban transport systems. This points to a **structural gap between applications as consumer-facing products and their potential role as instruments of urban mobility governance**.

While **governance-related features**, such as **data reporting**, **management dashboards**, and **system integration**, were recognised as important, they were not perceived as core user-facing requirements. Yet participants noted that the extensive datasets generated by shared mobility operations, when accessed under appropriate legal and data protection frameworks, could substantially strengthen data-driven transport planning. **Aggregated and anonymised information on frequently used routes**, **high-demand parking locations**, and **peak usage periods** could support more responsive **infrastructure design**, better allocation of **street space**, and targeted **safety interventions**.

For example, identifying corridors with consistently high e-scooter volumes could inform signage adjustments, speed management measures, or intersection redesign. Similarly, **geofencing and AI-assisted tools** were seen as promising across modes; however, their effectiveness ultimately depends on robust legal frameworks, clear data-sharing agreements, and sufficient institutional capacity within public authorities. In this sense, the governance potential of shared mobility data remains only partially realised.

Beyond planning and safety considerations, participants also highlighted the **importance of closer collaboration between public authorities and operators** in addressing social barriers to access. The predominantly smartphone-based design of shared mobility services may unintentionally exclude individuals without stable internet access, digital literacy, bank accounts, or compatible devices. Jointly developed solutions – such as **alternative payment mechanisms, integration with public transport cards, offline access options**, or **targeted service provision in underserved areas** – could help reduce such barriers. When embedded within appropriate regulatory safeguards, these measures would allow shared mobility systems to contribute not only to transport efficiency and safety, but also to broader objectives of social inclusion and equitable access.

Shared e-scooters and safety

Safety concerns were consistently framed during the session as a systemic issue rather than the result of individual misuse alone. Strong agreement emerged that **the most significant risks stem from interactions between different transport modes sharing the same road space**, especially at intersections where speed differentials and complex traffic dynamics increase conflict potential. The most frequently cited risk factors are summarised in Table 6 - The most common road risks regarding e-scooters (based on the discussions), illustrating that **infrastructure deficits and mixed-traffic conditions** were perceived as more consequential for safety outcomes than the intrinsic characteristics of the vehicles themselves. The discussion also highlighted that **near-misses, perceived disorder, and everyday conflicts** occur far more frequently than officially recorded crashes; nevertheless, these experiences play a decisive role in shaping public perceptions and, in turn, political and regulatory responses.

Table 6 - The most common road risks regarding e-scooters (based on the discussions)

conflicts with cars and larger vehicles, especially at intersections
poor road surface quality (potholes, uneven pavement, gravel)
lack of dedicated, safe lanes
aggressive driver behaviour (e.g. close passing, honking)
pedestrian conflicts, particularly on pavements and in shared spaces
unclear or missing traffic signage and rules for e-scooters
improperly parked vehicles and devices
inexperienced or reckless users, including tourists and first-time riders
adverse weather conditions, which disproportionately affect e-scooters

Several risks were identified as mode-specific during the discussion. **Poor surface quality** and **adverse weather conditions** were consistently described as particularly challenging for e-scooters due to their smaller wheels, while privately owned e-scooters were associated with higher risk levels. This was attributed to weaker regulatory oversight, limited enforceability, and a greater likelihood of speed manipulation and unsafe battery practices. **Battery-related fire incidents** received considerable attention; however, these

were repeatedly contextualised relative to overall traffic risk, especially when compared to car-related fire incidents, highlighting the need for proportional risk assessment. From a risk-management perspective, this distinction carries clear policy relevance, as managed shared mobility systems were seen to provide cities with substantially greater control over speed, maintenance, and compliance than privately owned devices, making them a more governable option in urban environments.

Uncertainty surrounding local traffic rules and the **absence of clear guidance** on whether e-scooters should operate on the roadway or the pavement were described as systemic drivers of unsafe behaviour. **Pavement riding** was frequently interpreted as a response to perceived danger in **mixed-traffic conditions** rather than intentional non-compliance. In this context, the importance of clear and consistent rules, supported by effective enforcement, was repeatedly underlined as a means of **reducing ambiguity** and **unsafe practices** such as **double riding**. The prominence of infrastructure, enforcement, and speed management in the discussions is also reflected in the distribution of terms shown in Figure 3.
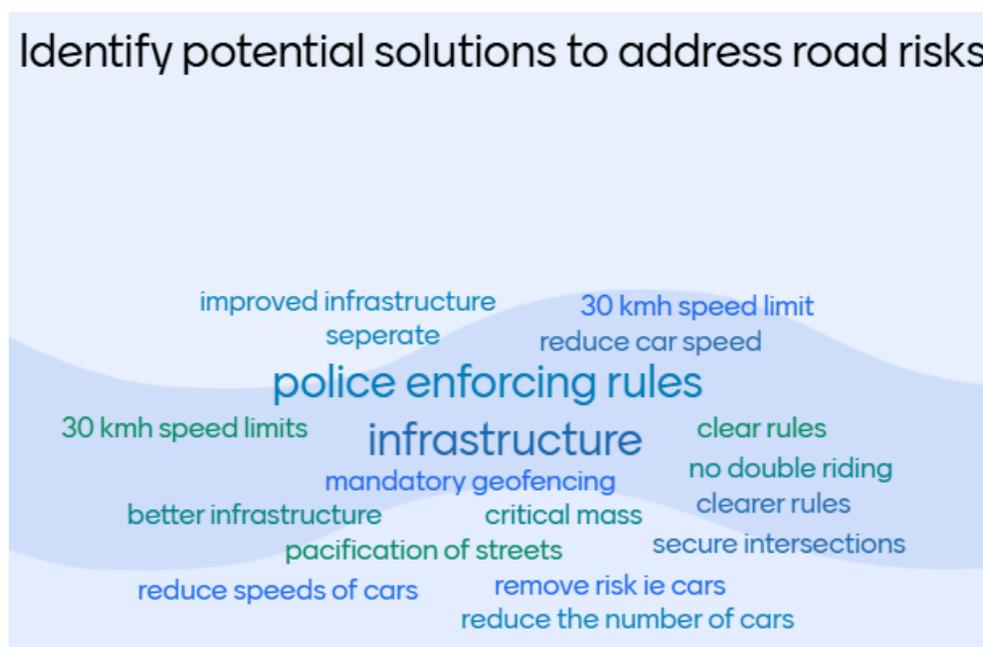

Figure 3 - Potential solutions to address road risks

Safety risks were further linked to **infrastructure deficiencies**, **including poor surface quality** and **fragmented networks**, reinforcing the need for higher-quality, continuous, and – where feasible – physically separated infrastructure, as well as safer intersection design. More broadly, street-level measures such as **lower speed limits**, **traffic calming**, and the **reduction of car dominance** were described as critical for improving perceived safety. Taken together, **coherent regulation, improved infrastructure**, and **people-centred street design** were framed as mutually reinforcing elements for **mitigating road risks** and enabling safer e-scooter usage.

Shared e-scooter and bike-sharing system users through a social lens

From a societal perspective, the **relevance of low-emission operation** was primarily linked to **improved air quality**, **reducing exposure to air pollution** in dense urban areas and thereby **supporting public health**. Similarly, **reduced noise emissions** were associated with **quieter streets** and **lower ambient stress levels**, contributing to **improved everyday living conditions** and perceived urban liveability.

These interrelated dimensions – environmental, psychosocial, spatial, and systemic – form the broader constellation of benefits mapped in Figure 4 - Societal benefits of shared e-scooters and bike sharing systemsgure 4.

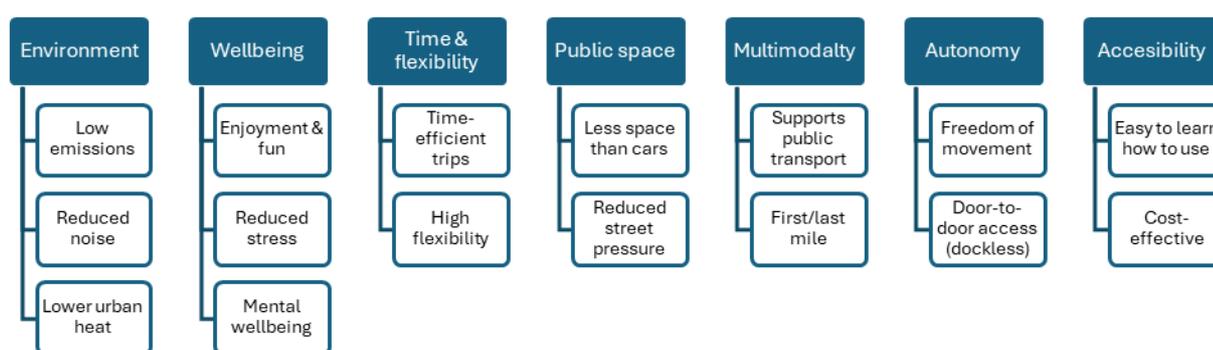| Environment	Wellbeing	Time & flexibility	Public space	Multimodalty	Autonomy	Accesibility
Low emissions	Enjoyment & fun	Time-efficient trips	Less space than cars	Supports public transport	Freedom of movement	Easy to learn how to use
Reduced noise	Reduced stress	High flexibility	Reduced street pressure	First/last mile	Door-to-door access (dockless)	Cost-effective
Lower urban heat	Mental wellbeing					

Figure 4 - Societal benefits of shared e-scooters and bike sharing systems

Beyond **environmental** considerations, strong emphasis was placed on **psychosocial and behavioural societal benefits**. A sense of **autonomy and freedom of movement** – particularly the ability to travel independently, spontaneously, and door-to-door – was repeatedly highlighted, alongside **time efficiency and flexibility** for short urban trips. These characteristics were described as reducing everyday time pressure and increasing perceived control over daily mobility, which participants associated with lower stress levels and improved mental well-being.

Although **shared e-scooters** represent a predominantly **passive mode of travel**, they were also seen as **enabling car-free mobility for individuals** who may not be able to cycle due to age, physical limitations, health-related constraints, or lack of cycling skills. Compared to cycling, e-scooters were perceived as **easier to learn** and more immediately **accessible**, **lowering entry barriers** to outdoor, non-car-based travel. In this sense, their contribution to sustainable mobility was not framed solely in terms of physical activity, but also in terms of **expanding practical access to urban movement without reliance on private cars**.

The **perceived ease and enjoyment** associated with shared services – particularly among young people and tourists – further reinforced their **wellbeing-related benefits** and contributed to making sustainable mobility options appear attractive rather than restrictive.

Structural **societal benefits related to urban space** and **system integration** also featured prominently. Compared to private car use, **shared e-scooters** were perceived to **require substantially less public space for movement and parking**, contributing to **less congested streets** and enabling **alternative uses of public space**. Improved **first- and last-mile connectivity** emerged as another core benefit, **strengthening access to public transport** and reducing reliance on private vehicles.

Economic accessibility was likewise emphasised. Shared services were described as offering **a lower financial threshold** compared to private car ownership, which involves significant upfront costs as well as ongoing expenses such as maintenance, insurance, and taxation. By contrast, shared e-scooter use typically **requires only small, usage-based payments**, making occasional or flexible mobility more affordable for individuals who may not be able or willing to bear the fixed costs associated with car ownership.

In this broader context, **accessibility and affordability** were framed as enabling **societal benefits**. By supporting multimodality and reducing structural dependence on private cars, shared e-scooters were seen as **enhancing the overall resilience and flexibility of urban transport systems**, facilitating more efficient and potentially more **sustainable travel patterns** at the city scale.

At the same time, discussions highlighted several **societal risks**, raised primarily in relation to shared e-scooters rather than bike-sharing systems. As synthesised in Table 7 - The potential societal risks of shared e-scooters, these risks were not framed as uniform, but as unevenly distributed across social groups and governance actors.

Table 7 - The potential societal risks of shared e-scooters

Risks	Who is most affected?
Injury and safety risks (falls, collisions, poor pavement quality)	Vulnerable road users
Reduced physical activity (especially linked to e-bike use)	People shifting away from walking or cycling
Environmental and sustainability concerns (battery lifecycle, waste)	Local communities in low- and high-density urban areas
Misuse and criminal activity (mainly linked to private devices)	Public authorities and enforcement bodies
Uneven distribution of risks across social groups	Vulnerable road users

A central concern related to the predominantly **passive character of e-scooter use**, which in some contexts may **substitute active modes** such as walking or conventional cycling. Considering broader public health challenges, including **rising obesity rates** and **sedentary lifestyles**, participants questioned whether replacing even short active trips with electrically assisted travel may carry unintended long-term health implications. In this respect, **reduced physical activity** was seen as affecting the wider population, particularly where substitution effects are significant.

Safety concerns were likewise framed in public health terms, especially regarding **head and facial injuries** and, in rare cases, **fatalities**. While comparable or higher risks exist across other transport modes, incidents involving e-scooters were perceived as receiving **disproportionate media attention**, amplifying social tensions. **Vulnerable road users** – particularly elderly pedestrians – were identified as disproportionately affected in shared or poorly regulated spaces.

Environmental and lifecycle-related concerns, including **battery production, disposal**, and **waste management**, were described as **affecting local communities** across both high- and low-density urban areas. In parallel, **misuse and criminal activity** – more frequently associated with privately owned devices – were seen to place an additional burden on public authorities and enforcement bodies.

At the same time, participants emphasised that **shared e-scooters** may **mitigate mobility poverty and transport disadvantage**. In neighbourhoods with limited public transport provision, they can function as first- and last-mile connectors, enabling access to employment, education, and essential services. In some contexts, **economically marginalised** or **migrant communities** were described as relying on these services to **bridge structural gaps** in the transport network. Restrictive measures that fail to account for these access functions may therefore risk disproportionately affecting groups already facing mobility constraints.

Taken together, these perspectives suggest that the societal impacts of shared e-scooters extend beyond isolated risk categories and must be interpreted within broader public health, equity, and urban accessibility frameworks.

Defining the ideal user profile

The discussion revealed **substantial variation in user profiles** across mobility modes, with access strongly shaped by infrastructure quality, affordability, and storage conditions. **Private e-scooters** were most associated with **male users, including migrant workers** and **individuals with non-standard working hours**, particularly in **contexts characterised by limited public transport coverage**. Their ease of learning and relatively low upfront cost were identified as key advantages, although safety concerns – especially in settings lacking adequate infrastructure – were consistently raised.

Private e-bikes, by contrast, were perceived as more demanding in terms of **storage space** and **parking requirements**, effectively **limiting access to users with sufficient home infrastructure**. This was described as creating an implicit **accessibility barrier**, particularly **in dense urban environments**. **Shared services** were generally regarded as **more inclusive** in principle; however, **challenges related to tourism pressure**, **parking availability**, and **local regulatory constraints** were frequently highlighted. **Gender differences** were evident across modes: **women** were consistently associated with higher **sensitivity to perceived safety and infrastructure quality**, while **men** were **overrepresented among e-scooter users**. The **role of young people** also emerged, with shared e-scooters described as a **social activity for teenagers**, accompanied by a clear need for guidance and education to support safe and responsible use.

Importantly, participants consistently **rejected the notion of a single "ideal" user of shared services**. Rather than being defined by socio-demographic characteristics, user suitability was framed primarily in behavioural and situational terms. An **appropriate user** was described as someone who is familiar with basic traffic rules, uses the service as intended, avoids riding under the influence of alcohol or drugs, and has the physical ability to control and manoeuvre the vehicle safely. **Responsible behaviour** – such as cautious use, adapting speed to the surrounding context, and respecting other road users – was emphasised as a minimum requirement. Overall, these perspectives suggest that the **safe and inclusive use of these services depends less on identifying specific user groups** and **more on fostering rule awareness**, **situational judgement**, and **supportive environments** that enable safe behaviour across diverse users.

Shaping the future of shared services: best practices and policy pathways

Shared e-scooters and bike sharing systems are most effective when approached as a distinct component of urban transport, informed by real-world experience rather than abstract assumptions. Early experience consistently indicates that both positive and negative perceptions are shaped less by the vehicles themselves and more by factors such as political visibility, regulatory clarity, and infrastructure quality.

Clear definitions from the outset regarding where, how, and for what purposes these services are used help to align deployment with concrete objectives, including congestion reduction, improved first- and last-mile connectivity, and better access to services.

From a sustainability perspective, meaningful evaluation requires moving **beyond local emissions toward a full lifecycle view**, encompassing vehicle durability, battery production, replacement and recycling, operational practices, and end-of-life management. The broader role of these services is best understood within the wider mobility ecosystem, particularly in relation to public transport and active travel. Experience suggests that they perform best when complementing walking and cycling while offering a credible alternative to short car trips.

Clear and enforceable regulatory frameworks underpin successful implementation. **Treating e-scooter as a separate category** – and regulating it based on functional characteristics such as maximum speed, weight, and vehicle stability rather than labels alone – supports proportional and consistent rules. This approach is reflected in several European countries. In **Belgium**, e-scooters are addressed through dedicated provisions that define where and how they may operate, with cities such as **Brussels** complementing national-level rules with local measures on parking and public-space management. Similarly, **Denmark** introduced a distinct regulatory framework for e-scooters with clear operational requirements and speed-related rules, and cities such as **Copenhagen** have combined these with practical enforcement and designated parking solutions to reduce clutter and improve compliance. Across these cases, the shared best practice is the alignment of (i) clear category definitions, (ii) operational rules that are straightforward to enforce, and (iii) local public-space management tools – together enabling safer integration of shared e-scooters into urban transport systems.

Access to anonymised data on usage, parking behaviour, and speed compliance has proven essential for planning and enforcement, while technological solutions such as **geofencing and AI-assisted safety features** can add value when embedded within realistic legal and governance frameworks. In this context, technology works best as a supporting instrument, not a substitute for regulation or enforcement.

Urban design remains one of the most decisive factors for integration. Given financial and spatial constraints, experience points to the effectiveness of incremental and creative solutions over large-scale reconstruction. **Light infrastructure elements** – such as raised curbs, flexible separators, and visual lane markings – combined with dense and clearly marked parking can deliver tangible short-term improvements, as illustrated in Figure 5 - Designated parking space for shared e-scooters and bikes in Budapest

Figure 5 - Designated parking space for shared e-scooters and bikes in Budapest

At the same time, **successful integration depends on addressing the structural dominance of cars**. As illustrated in Table 4 - Challenges, areas of improvement and best practice examples of shared e-scooters and bike sharing systems integration in urban design, best practices from cities such as Barcelona, Oslo, and Leuven show that reducing car dominance, reorganising street functions, and treating streets as part of a wider network rather than in isolation are key to long-term success. From a planning perspective, street layouts should minimise speed differentials and spatial conflicts and reduce interaction points between buses, cars, cyclists, and e-scooter users.

Safety challenges were identified primarily in relation to shared e-scooters rather than bike-sharing systems, which operate within long-established regulatory frameworks. This distinction underscores the need for differentiated governance approaches across modes. Experience suggests that targeted, risk-based measures – time-based operational restrictions during late-night hours, infrastructure improvements addressing speed differentials and high-conflict intersections – are more effective than blanket bans or symbolic restrictions. The introduction of night-time rental bans in cities such as Oslo illustrates how context-specific interventions can address high-risk usage patterns without broadly limiting daytime access.

User profiles underline that there is no single "ideal" e-scooter user. Usage patterns vary by gender, age, income, and urban context, with safety perceptions and infrastructure quality playing a particularly important role for women. **Vehicle design features** such as **stability**, **wheel size**, and **centre of gravity contribute to broader usability**, while well-designed parking arrangements support predictability, safety, and social acceptance.

These findings align closely with recent EU-level policy frameworks on **user-centred and people-centred mobility**, which emphasise that transport systems should be designed around diverse users and everyday constraints rather than standardised or idealised profiles. In this context, **equity in mobility** emerges as a key

22

consideration. Access to shared services is not only shaped by physical infrastructure, but also by **affordability and spatial coverage**, which can disproportionately disadvantage lower-income users and residents of peripheral or underserved urban areas. In response, several cities have begun to experiment with **equity-oriented measures**, such as **discounted tariffs or targeted access schemes for low-income residents**, often implemented through **agreements between municipalities and service providers**. Together, these approaches highlight that inclusive mobility policies require the combined consideration of user diversity, vehicle design, pricing structures, and local governance arrangements to ensure that these services contribute to more equitable urban mobility systems.

Treating shared mobility as an integrated element of multimodal transport systems, with **links to public transport through integrated platforms**, **journey planning**, and **unified ticketing**, strengthens its role in everyday mobility. For example, the **Île-de-France Mobilités app** brings together multiple transport modes – including trains, metros, buses, trams, shared bikes, and car-share services – within a single planning and ticketing platform, facilitating seamless multimodal journeys. Similarly, **Madrid Mobility 360** offers a multimodal planner and payment interface that connects public transport with shared mobility options. These examples illustrate how **coordinated digital and operational integration can support more consistent and convenient use of shared services as part of sustainable urban mobility systems**.

Education emerges as a critical enabler, shaping behavioural patterns across different stages of life. **Early traffic socialisation** - often taking place in family settings (see Figure 6 - Children's traffic education park, Budapest's 21st district[2]) and supported by environments such as children's traffic education parks - plays a fundamental role in **forming attitudes toward mobility**, **rule compliance**, and **interactions with other road users**. These early experiences influence not only individual safety awareness but also broader behavioural norms in shared urban space.

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[2] Photo taken by the Chair of the Focus Group.

Figure 6 - Children's traffic education park, Budapest's 21st district

This foundational learning is subsequently reinforced through formal education, including **school-based traffic training** and **awareness programmes**, which help standardise knowledge and promote responsible conduct. In later stages of life, additional mechanisms - such as **driving courses** - can further refine user competencies. Complementing these offline forms of education, digital tools, including **mandatory in-app guidance prior to first use,** represent an increasingly important channel for delivering targeted, **context-specific information to users**.

References

Aguilera-García, Á. et al. (2024) "Which factors influence the use of shared and privately-owned e-scooters in the city of Madrid? Implications for urban mobility," Cities, 147, p. 104785. Available at: https://doi.org/10.1016/j.cities.2023.104785.

Altintasi, O. and Yalcinkaya, S. (2022) "Siting charging stations and identifying safe and convenient routes for environmentally sustainable e-scooter systems," Sustainable Cities and Society, 84, p. 104020. Available at: doi.org/10.1016/j.scs.2022.104020.

Aman, J.J.C., Smith-Colin, J. and Zhang, W. (2021) "Listen to E-scooter riders: Mining rider satisfaction factors from app store reviews," Transportation Research Part D: Transport and Environment, 95, p. 102856. Available at: doi.org/10.1016/j.trd.2021.102856.

Asgharpour, S. et al. (2025) "E-scooter safety: How attitudinal factors influence risky behavior among shared e-scooter riders," Transportation Research Part F: Traffic Psychology and Behaviour, 114, pp. 758–779. Available at: doi.org/10.1016/j.trf.2025.06.015.

Babbie, R. (2013) *The Basics of Social Research*. Belmont, CA: Cengage Learning. Available at: books.google.hu/books?id=LRCrMgEACAAJ.

Badia, H. and Jenelius, E. (2023) "Shared e-scooter micromobility: review of use patterns, perceptions and environmental impacts," Transport Reviews, pp. 1–27. Available at: doi.org/10.1080/01441647.2023.2171500.

Bozzi, A.D. and Aguilera, A. (2021) "Shared E-Scooters: A Review of Uses, Health and Environmental Impacts, and Policy Implications of a New Micro-Mobility Service," Sustainability, 13(16), p. 8676. Available at: doi.org/10.3390/su13168676.

Brousseau, E. et al. (2025) "Harmonizing dockless E-scooters: insights from Paris," Transportation Research Part A: Policy and Practice, 202, p. 104702. Available at: doi.org/10.1016/j.tra.2025.104702.

Brown, A., Klein, N.J. and Thigpen, C. (2021) "Can you park your scooter there? Why scooter riders mispark and what to do about it," *Findings*, February, p. 19537. Available at: https://doi.org/10.32866/001c.19537.

Christoforou, Z. et al. (2021) "Who is using e-scooters and how? Evidence from Paris," Transportation Research Part D: Transport and Environment, 92, p. 102708. Available at: doi.org/10.1016/j.trd.2021.102708.

Félix, R., Orozco-Fontalvo, M. and Moura, F. (2023) "Socio-economic assessment of shared e-scooters: Do the benefits overcome the externalities?," *Transportation Research Part D: Transport and Environment*, 118, p. 103714. Available at: doi.org/10.1016/j.trd.2023.103714

Flores, P.J. et al. (2026) "To own or share e-scooters? Factors in ownership and sharing of e-scooters," Research in Transportation Business & Management, 64, p. 101520. Available at: doi.org/10.1016/j.rtbm.2025.101520.

Gössling, S. (2020) "Integrating e-scooters in urban transportation: Problems, policies, and the prospect of system change," Transportation Research Part D: Transport and Environment, 79, p. 102230. Available at: doi.org/10.1016/j.trd.2020.102230.

Javadinasr, M., Asgharpour, S. and Mohammadian, A.K. (2025) "E-scooters as transit feeders: insights from revealed preferences of shared e-scooter users," *Transportation Letters*, 17(10), pp. 1–18. Available at: doi.org/10.1080/19427867.2025.2496455.

Karami, A., Allahviranloo, M. and Samadzad, M. (2025) "The impacts of personality traits on the acceptance of shared e-scooters: Evidence from Tehran," Cities, 158, p. 105633. Available at: doi.org/10.1016/j.cities.2024.105633.

Lanza, K., Burford, K. and Ganzar, L.A. (2022) "Who travels where: Behavior of pedestrians and micromobility users on transportation infrastructure," Journal of Transport Geography, 98, p. 103269. Available at: doi.org/10.1016/j.jtrangeo.2021.103269.

Li, L. et al. (2021) "IT-enabled sustainable development in electric scooter sharing platforms: focusing on the privacy concerns for traceable information," Information Technology for Development, 27(4), pp. 736–759. Available at: doi.org/10.1080/02681102.2021.1882366.

Malhotra, N.K. (2010) *Marketing Research: An Applied Orientation*. 6th ed. Upper Saddle River, NJ: Pearson Education. Available at: books.google.com/books/about/Marketing_Research.html?id=VLwVPwAACAAJ.

Nikiforiadis, A. et al. (2021) "Analysis of attitudes and engagement of shared e-scooter users," Transportation Research Part D: Transport and Environment, 94, p. 102790. Available at: doi.org/10.1016/j.trd.2021.102790.

Oeschger, G., Carroll, P. and Caulfield, B. (2020) "Micromobility and public transport integration: The current state of knowledge," Transportation Research Part D: Transport and Environment, 89, p. 102628. Available at: doi.org/10.1016/j.trd.2020.102628.

Petzoldt, T. et al. (2023) "Owners (& Frequent Users) of E-Scooters – Who Are They?," in H. Krömker (ed.) HCI in Mobility, Transport, and Automotive Systems. Cham: Springer Nature Switzerland, pp. 428–437. Available at: doi.org/10.1007/978-3-031-35678-0_29.

Roig-Costa, O., Marquet, O., Arranz-López, A., Miralles-Guasch, C. and Van Acker, V. (2024) "Understanding multimodal mobility patterns of micromobility users in urban environments: insights from Barcelona," *Transportation*. Available at: doi.org/10.1007/s11116-024-10531-3.

Roig-Costa, O., Miralles-Guasch, C. and Marquet, O. (2024) "Disrupted intermodality: Examining adaptation strategies to public transport e-scooter bans in Barcelona," *International Journal of Sustainable Transportation*, 18(12), pp. 1072–1085. Available at: doi.org/10.1080/15568318.2024.2434881.

Roig-Costa, O., Miralles-Guasch, C. and Marquet, O. (2025) "Affective geographies of e-scooter travel: Infrastructure, emotions, and adaptive strategies," *Emotion, Space and Society*, p. 101124. Available at: doi.org/10.1016/j.emospa.2025.101124.

Roig-Costa, O., Miralles-Guasch, C. and Marquet, O. (2025) "Unpacking the docked bike-sharing experience. A bike-along study on the infrastructural constraints and determinants of everyday bike-sharing use," *Journal of Transport Geography*, p. 104184. Available at: doi.org/10.1016/j.jtrangeo.2025.104184.

Sanders, R.L., Da Silva Brum-Bastos, V. and Nelson, T.A. (2022) "Insights from a pilot investigating the impacts of shared E-scooter use on physical activity using a single-case design methodology," Journal of Transport & Health, 25, p. 101379. Available at: doi.org/10.1016/j.jth.2022.101379.

Sobrino, N. et al. (2023) "Regulation of shared electric kick scooters in urban areas: Key drivers from expert stakeholders," Transport Policy, 134, pp. 1–18. Available at: doi.org/10.1016/j.tranpol.2023.02.009.

Sokołowski, M.M. (2020) "Laws and Policies on Electric Scooters in the European Union: A Ride to the Micromobility Directive?," *European Energy and Environmental Law Review*, 29(4), pp. 127–140. Available at: doi.org/10.54648/EELR2020036.

Szemere, D., Iványi, T. and Surman, V. (2024) "Exploring electric scooter regulations and user perspectives: A comprehensive study in Hungary," Case Studies on Transport Policy, 15, p. 101135. Available at: doi.org/10.1016/j.cstp.2023.101135.

Teh, D. and Simsekoglu, Ö. (2026) "Factors steering use behaviour of shared micro-mobility services (SMSs) in Norway: Extended UTAUT 2 with intrinsic motivation," Journal of Cycling and Micromobility Research, 7, p. 100098. Available at: doi.org/10.1016/j.jcmr.2025.100098.

Zhang, Y. et al. (2024) "International experiences on active travel planning: Impact of the COVID-19 pandemic," Transportation Research Interdisciplinary Perspectives, 28, p. 101259. Available at: doi.org/10.1016/j.trip.2024.101259.

Zhao, C., Xue, M. and Hamidi, Z. (2025) "Shared e-scooters as a mode for commuting: evidence based on Malmö, Sweden," Case Studies on Transport Policy, p. 101695. Available at: doi.org/10.1016/j.cstp.2025.101695.

Links to publications/reports[3]

CIVITAS (2023) "SUMP Topic Guide: Micromobility devices," *CIVITAS*. Available at: civitas.eu/sites/default/files/sump_topic_guide_micromobility_devices.pdf.

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (European Commission) (2024) "Study on the need for harmonised rules to support the safe use of personal mobility devices (PMDs)," *Publications Office of the European Union*. Available at: doi.org/10.2873/8572224.

European Consumer Centre Germany (2025) "Country overview: E-scooter regulations in Europe," *European Consumer Centre Germany (ECC Germany)*, April 1. Available at: evz.de/en/travelling-motor-vehicles/e-mobility/two-wheelers/e-scooter-regulations.html.

European Institute for Gender Equality (EIGE) (2020) "Urban mobility. Gender-sensitive infrastructure," *Gender Mainstreaming*, pp. 1–6. Available at: doi.org/10.2839/44663.

European Platform on Sustainable Urban Mobility Plans (2019) "Overview of policy relating to e-scooters in European countries," *EU Urban Mobility Observatory (Case study)*, March 8. Available at: urban-mobility-observatory.transport.ec.europa.eu/resources/case-studies/overview-policy-relating-e-scooters-european-countries_en.

Freehafer, L. (2024) "Despite Volatility, Micromobility Thrives in European Cities," *TheCityFix*. Available at: thecityfix.com/blog/despite-volatility-micromobility-thrives-in-european-cities/.

Holve, V. (2021) "Topic Guide: Safe use of micromobility devices in urban areas," *CIVITAS*, December 14 (with contributions from S. Borgato and S. Bosetti). Available at: civitas.eu/sites/default/files/sump_topic_guide_micromobility_devices.pdf.

HUDU Planning for Health (2017) "Healthy Urban Planning Checklist (Third Edition)," pp. 1–29. Available at: healthyurbandevelopment.nhs.uk/wp-content/uploads/2017/05/Healthy-Urban-Planning-Checklist-3rd-edition-April-2017.pdf.

Insurance Europe (2026) "Road safety: e-scooters national rules," *Insurance Europe*. Available at: insuranceeurope.eu/road-safety-e-scooters.

Micro-mobility for Europe (2024) "Technical requirements for e-scooters," *Micro-mobility for Europe (News)*, March. Available at: micromobilityforeurope.eu/technical-requirements-for-e-scooters.

Morgan, O. (2025) "Are E-Scooters Legal in My Country - The EU Guide 2025," *Bo (Articles)*, July 1. Available at: bo.world/blogs/articles/are-e-scooters-legal-in-my-country-the-eu-guide-2025.

POLIS Network (2025) "Careful what you wish for: New POLIS report explores challenges of shared micromobility regulations," *POLIS Network (News)*. Available at: polisnetwork.eu/news/careful-what-you-wish-for-new-polis-report-explores-challenges-of-shared-micromobility-regulations/.

---

[3] Including those from organisations that participants represent.

Walker, J., Schwartz, S., Rehorova, J.L. and Vlcek, J. (2019) "Promoting Mobility Behaviour Change: Practical guidance for inspiring more walking, cycling and public transport and minimising car use," *Partnership for Urban Mobility*. Available at:
ec.europa.eu/futurium/en/system/files/ged/promoting_behaviour_change.pdf.

Way To Go and University of Antwerp (2025) "The impact of shared bicycles and scooters: Report Belgium 2025," *Way To Go*. Available at: waytogo.be/files/Publicaties/The-impact-of-shared-bicycles-and-scooters-Report-Belgium-2025-Way-To-Go.pdf.

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