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FROM ADOPTION BARRIERS TO COLLABORATIVE MODELS
RETHINKING SHARED MOBILITY FOR YOUNG GENERATIONS

The article examines the current adoption of shared mobility alternatives, specifically micromobility and car-based services, by Gen Zers and Millennials in Western and Asian countries, with the intent to understand how to promote these behaviors and facilitate the transition toward more sustainable mobility models. The findings indicate that such services do not replace other modes of transportation; rather, they complement existing means of mobility, playing an integral role in users' multimodal urban journeys. Nonetheless, the price and the risk of finding no available vehicles prevent many potential users from taking advantage of these options. The study provides insights for companies operating in the shared mobility domain on how to reduce costs (and prices) by fostering active collaboration with users, marking a transition from shared to collaborative mobility.

MICROMOBILITY//CAR SHARING//PUBLIC TRANSPORT//RIDE-HAILING//COLLABORATION

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In an era of heightened political and social uncertainty, business leaders and public institutions must look to the future for innovations that improve the well-being of society. In the specific context of the mobility industry, to create impactful innovations, it is crucial to identify not only the trends that are reshaping the value chain, but also the ones that influence how people move. This serves to ascertain which ideas can be scaled up and disseminated.

Over the past two decades, the car sharing market has experienced substantial growth. This is driven in part by tighter restrictions in urban areas on the use of private vehicles, in particular cars that are powered by ICE engines or that fail to meet urban electrification standards (EIT Urban Mobility, 2022). What's more, consumers are becoming more open to sharing

economy models. This new attitude, especially among younger segments of the urban population (with Gen Z at the forefront), represents a concrete opportunity to take a fresh look at car-based mobility not only through environmental lens, but also from economic and industrial perspectives. But on the flip side, current car sharing implementation plans face daunting managerial challenges. This is true both for service providers who must ensure the activity is economically viable and scalable, and public institutions, tasked with governing and regulating these models within the broader urban mobility system.

This article will examine how younger generations are utilizing urban shared mobility services and how a collaborative approach (Cova and Dalli, 2009) could be a positive driver making operations more efficient. The price of shared vehicle services is the biggest hurdle to scaling up this strategy, so collaboration between users and providers might be a way to cut costs, lower prices, and in turn propagate demand. Ultimately, this would have a beneficial impact on the sustainability of urban mobility.

This article draws on the insights from the 2024-2025 quantitative research conducted by the Mobius Lab of SDA Bocconi School of Management. The study was run in five key mobility markets – three in Europe (France, Germany, and the United Kingdom) and two in Asia (China and India) – and involved 6,605 respondents who live in the most densely populated cities of these countries. The research is part of a broader program launched in 2023 by the Mobius Lab designed to explore, via both quantitative and qualitative methodologies, how Gen Z and Millennials experience, interpret, and envision urban mobility.

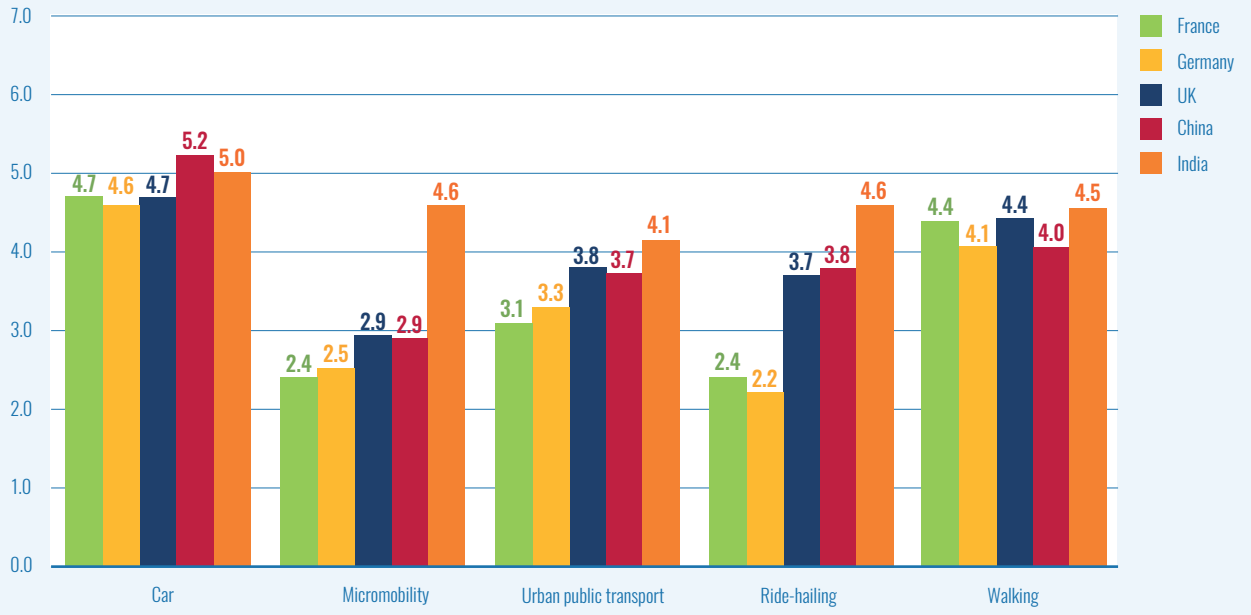
DAILY URBAN MOBILITY PATTERNS AND ALTERNATIVE MOBILITY

In today's large cities, private cars are still the most common modes of transportation, but "first best solution" status in urban mobility is up for debate. The latest findings from the Mobius Lab (2025) reveal that although the private car continues to dominate commuting patterns among both Gen Z and Millennials, it is closely followed by a heterogeneous array of other mobility options. These include public transportation (such as metro systems, buses, and trams where available) alongside micromobility solutions like two-wheelers (bicycles, motorbikes, and kick scooters), ride-hailing services (encompassing both traditional taxis and digital platforms such as Uber, or even tuk-tuks in India) and last but not least, walking (Figure 1)[1].

Industry reports further confirm that individuals are increasingly open to using alternative forms of transportation beyond their own cars, even after the pandemic (McKinsey, 2021; Boston Consulting Group, 2022). Urban mobility is progressively evolving toward access-based models; in other words, ownership can be substituted by on-demand access. In this domain, shared mobility services have a prominent role. This is a transportation strategy that allows users to access vehicles (such as cars, scooters, bicycles, and kick scooters) for short periods on an "as-needed basis" (Shaheen et al., 2020); this means they can choose the most appropriate mobility option for a specific need, time, or context. Globally, demand for shared mobility continues to escalate, a trend that can be easily observed by examining the upsurge in user numbers between 2021 and 2024 of these types of services (Statista, 2025). During this period, two-wheeler sharing services ballooned worldwide by approximately 21%, with especially intense growth in specific segments: kick scooter sharing skyrocketed by 40%, bicycle sharing by 20%, and scooter sharing by 29%. Car-based services have seen steady expansion as well: The number of car sharers jumped by 19%, and ride-hailing services by 14% over the same period. The latter are derivative and offer the same core service of as a taxi, yet this last option saw a decline of 7.3% (Statista, 2025).

1 The graph displays the average score of responses regarding the frequency of usage for each mode of transportation, measured on an anchored Likert scale ranging from 1 (never) to 7 (every day). The scores are adjusted for the availability of the transportation mode in the respondent's city.

FIGURE 1. AGGREGATE USAGE OF URBAN MOBILITY MODES, AS STATED BY RESPONDENTS



To better understand the upward trend in shared mobility, the study investigated the penetration of both micromobility and car-based sharing services, examining not only the main motivations that prompt individuals to adopt or reject these alternatives, but also their willingness to collaborate with service providers through incentive-based mechanisms. The research also aims to offer firms and policymakers actionable insights into how these services are perceived by end users, and to provide guidance on how to better align mobility offerings with user behaviors and expectations. This is particularly crucial given that one of the main challenges for mobility innovators is to champion initiatives that are not only capable of delivering measurable environmental and social impact, but that are also economically scalable.

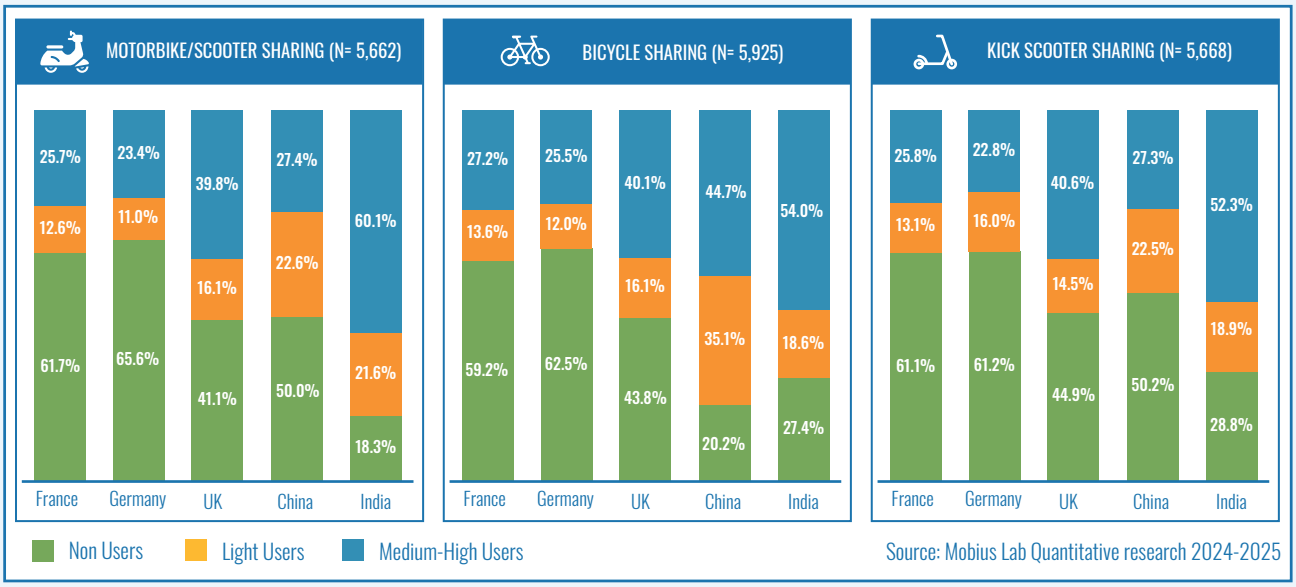
MICROMOBILITY SHARING

In the literature, shared micromobility (SμM) is commonly understood as "a publicly or privately-owned mobility service wherein users can rent, for short periods of time, micromobility devices, as defined by the UNECE[2], dispersed throughout a service area" (Ghaffar et al., 2023). Under this definition, the SμM umbrella covers shared bicycles, e-motorbikes, and kick scooters, which can be found either in specific stations or as free-floating fleets across urban areas.

Data suggest that shared micromobility services are more widely adopted in India and China compared to most European countries, with the exception of the UK, which has a greater number of both light and medium-high users (Figure 2). Examining in detail the different micromobility services, we can observe the following:

2 The UNECE (United Nations Economic Commission for Europe) defines micromobility as vehicles that: a) have an unladen mass of no more than 350 kg; b) reach a maximum speed of 45 km/h; c) operate with a power rating not exceeding 4 kW; and d) have no more than four wheels.

FIGURE 2. USER DISTRIBUTION OF SHARED MICROMOBILITY BY COUNTRY[3]



- For motorbike sharing, Germany, France, and China show the highest concentration of non-users[4]. In contrast, India (followed closely by the UK) has the biggest share of medium-high users.
- When it comes to bicycle sharing, Germany and France again see a majority of non-users, while the UK emerges as the leading Western country in terms of medium-high usage. China stands out with the top overall usage rate at 79.8%, and India has the most medium-high users, percentage wise.
- In the case of kick scooter sharing, Germany, France, and China once again report the highest concentration of non-users. India and the UK, conversely, show the strongest engagement, with India leading in the percentage of medium-high users.

Findings confirm what the transportation literature highlights: Shared micromobility alternatives are generally perceived as faster and cheaper than traveling by car and/or public transport (Wan and Bendavid, 2024). Data show that users mostly value the possibility of bypassing traffic congestion (which makes two-wheeler sharing a convenient solution) and the clear economic advantage of lower costs relative to other modes. (Both these motivations remain consistent across the five surveyed countries.)

3 To assess their stated usage, participants were asked how frequently they use each sharing service, responding on a 7-point Likert scale, ranging from 1 (never) to 7 (every day). To facilitate comparative analysis and generate clearer insights, the Lab applied the same categorization framework across all shared mobility services. To ensure consistency and analytical coherence, responses were grouped into three categories:
- *Non-users* selected 1, indicating that the service is available in their city, but they choose not to use it.
- *Light users* selected 2 or 3, stating that they rely on the service rarely or occasionally.
- *Medium-high users* scored from 4 to 7, reflecting more regular use ranging from *sometimes to every day.*

4 The UNECE (United Nations Economic Commission for Europe) defines micromobility as vehicles that: a) have an unladen mass of no more than 350 kg; b) reach a maximum speed of 45 km/h; c) operate with a power rating not exceeding 4 kW; and d) have no more than four wheels.

The main deterrents to adoption are the same across countries. First is a preference for owning a personal two-wheeler, which guarantees immediate availability. As for the second and third, they relate more to the nature of two-wheelers than to the concept of sharing the vehicle. Specifically, we're referring to exposure to adverse weather (as the lack of protection discourages people from relying on two-wheelers), and the perceived crash risk and poor street lighting, which reduce usage, underscoring safety as a crucial demand lever (as also confirmed by Aguilera-García et al. (2024). Interestingly, while a preference for ownership is one of the primary deterrents to shared micromobility, recent research suggests a more complex relationship between ownership and sharing. In fact, as Van Audenhove et al. (2024) point out, "*Sharing services are also often considered a gateway to ownership of personal mobility devices.*" This would suggest that "trial through sharing" could act as an onboarding mechanism, lowering entry barriers and ultimately encouraging users to invest in their own vehicles once they have ascertained the value and convenience. Young individuals seem to embrace this prospective behavior, as highlighted in the following quote from one of the in-depth interviews:

> *"If I was brave enough, I would drive a moped in the city, maybe starting with a shared one and then moving to an owned one."* (Female, 24, Italian)

This is just one of the verbatim quotes from the qualitative research[5] of Mobius Lab, which shows that two-wheeler sharing could serve as a way to take trial run before eventual ownership. This outcome aligns well with the findings from the quantitative study, which show that ownership of a two-wheeler is the primary deterrent of micromobility sharing in every country in the survey.

This observation is a salient on for both public administrations and firms. In fact, by making bicycle sharing services widely available, cities allow residents to experience the benefits of two-wheelers at a fraction of the purchase price and maintenance costs. Once people learn they can navigate the city's streets efficiently with a shared two-wheeled vehicle, they may be more likely to consider buying one for themselves. This can be beneficial both for manufacturers and city administrations. Producers could sell/rent their fleets to municipalities or collaborate with regional authorities to deploy their vehicles in shared-mobility schemes, securing immediate revenue while helping cities promote sustainable travel. In the long run, shared fleets function as rolling showrooms: Once riders experience the convenience of micromobility, many may decide to purchase the vehicles themselves. In this way, for manufacturers, access-based services become a customer-acquisition channel, turning trial users into eventual buyers.

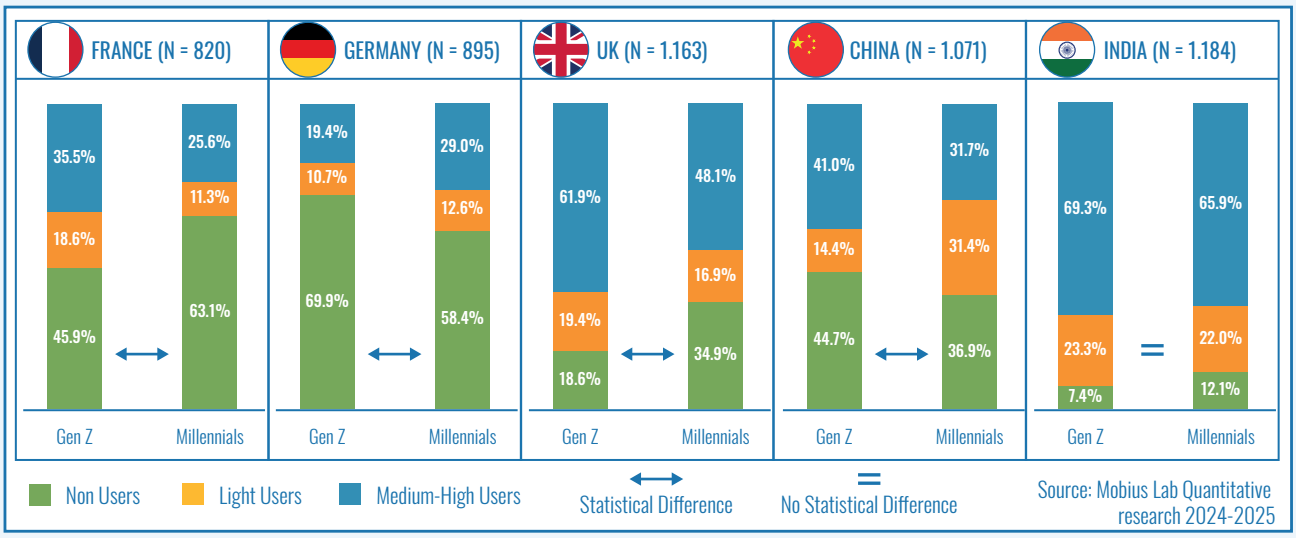
CAR SHARING

The following charts present the distribution of car sharing across the five countries in our survey, adopting the same categorization previously used for micromobility. However, since in this case there are generational differences between Gen Z and Millennials, the distributions are shown in each country, broken down by generation (see Figure 3).

Similar to what we've seen for two-wheeled options, Germany and France show the highest concentration of non-users, while the opposite is true in the United Kingdom and India. Across all countries (with the sole exception of Germany, where the trend is reversed), members of Gen Z are statistically more likely than Millennials to belong

5 The first phase of the qualitative research program was conducted between March and October 2023 and combined online in-depth interviews with in-person focus groups. This phase involved 42 participants (27 females and 15 males) from over 40 cities, primarily in Europe, representing 15 different nationalities. The second phase, started in May 2024 and ended in June of the same year; it consisted of interviews with 26 respondents (18 females and 8 males) from East Asia, specifically China, Singapore, Hong Kong, Taiwan, and South Korea. All interviews and focus groups were video-recorded and fully transcribed, resulting in a corpus of 1,152 pages of qualitative material.

FIGURE 3. USER DISTRIBUTION OF CAR SHARING BY COUNTRY AND GENERATION



to the "medium-high users" category; only in India there were no significant generational differences.

Regarding the primary reasons that push individuals to adopt car sharing, in China and Germany Gen Z users see car sharing primarily as a means to reach areas that are poorly served by public transport - highlighting the functional value of the service. For French and Indian Gen Zers, the number one motivation was freedom to access low-emission zones, which are often restricted to electric or hybrid vehicles, making car sharing a useful workaround for regulatory barriers. Their British peers prioritize the lower cost of car sharing versus taxis, especially for short trips inside city limits. Compared to Gen Z, Millennials show more homogeneous motivations across countries and identify the perceived lower cost as the main reason for relying on car sharing (Figure 4).

To summarize, comparing the two generations, there is a clear distinction in terms of the reason why they use car sharing. For Millennials, it's the lower cost of car sharing compared with similar individual mobility solutions (e.g., taxis); for Gen Z it's the possibility to access restricted city areas and reach destinations that are not covered by public transport. What's more, the younger cohort seems to be more familiar with car sharing, considering it a complementary option that has advantages in specific contexts, alongside other transportation modes.

Interestingly, car sharers are likely to rely on carpooling and public transportation as well; the same applies to micromobility sharers. This suggests that shared-mobility users are not replacing one form of transport with another; they're integrating multiple sustainable options into their travel behavior (Figure 5). In other words, they don't rely exclusively on a single mode, but instead they demonstrate a high propensity to combine different mobility solutions in a flexible, adaptive way. In this sense, sustainable mobility modes are mutually complementary.

This implies that, alongside the other means of transportation, sharing solutions can play a major role in optimizing mobility flows across the urban system. In fact, by improving access to public transport hubs and encouraging multimodal travel behaviors, sharing services help distribute mobility demand more efficiently, alleviating pressure on any single mode of transport (Figure 6).

FIGURE 4. MAIN MOTIVATION TO RELY ON CAR SHARING

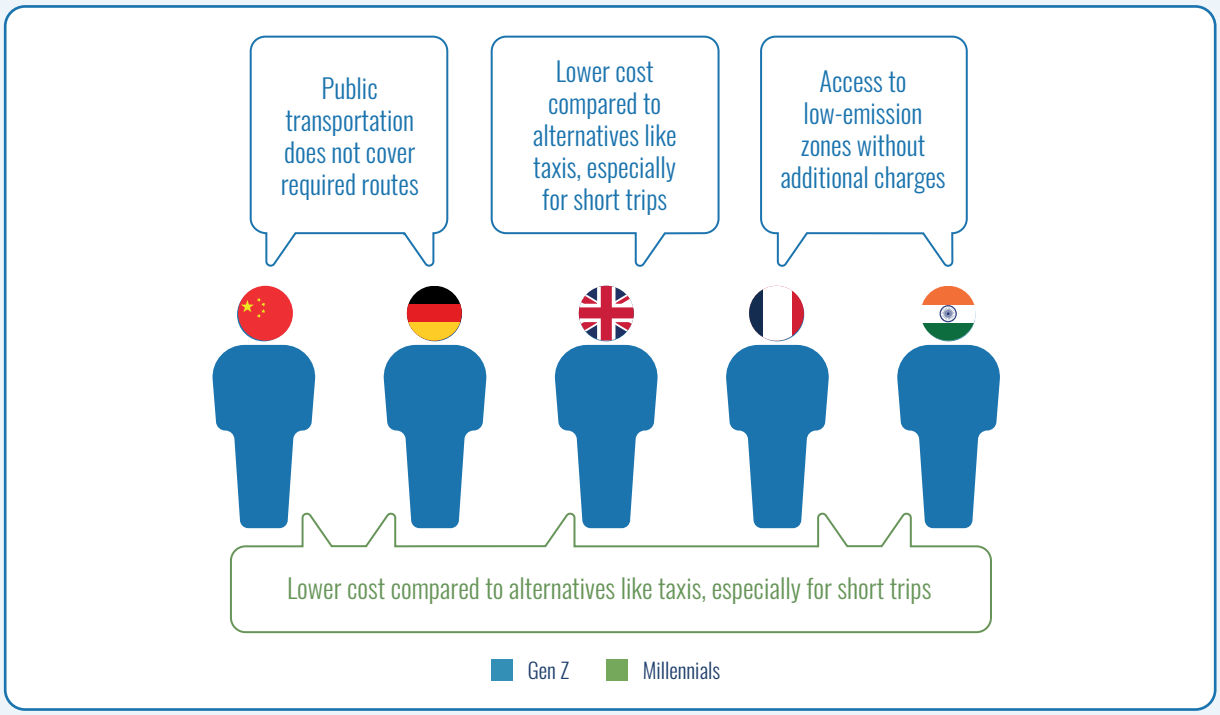
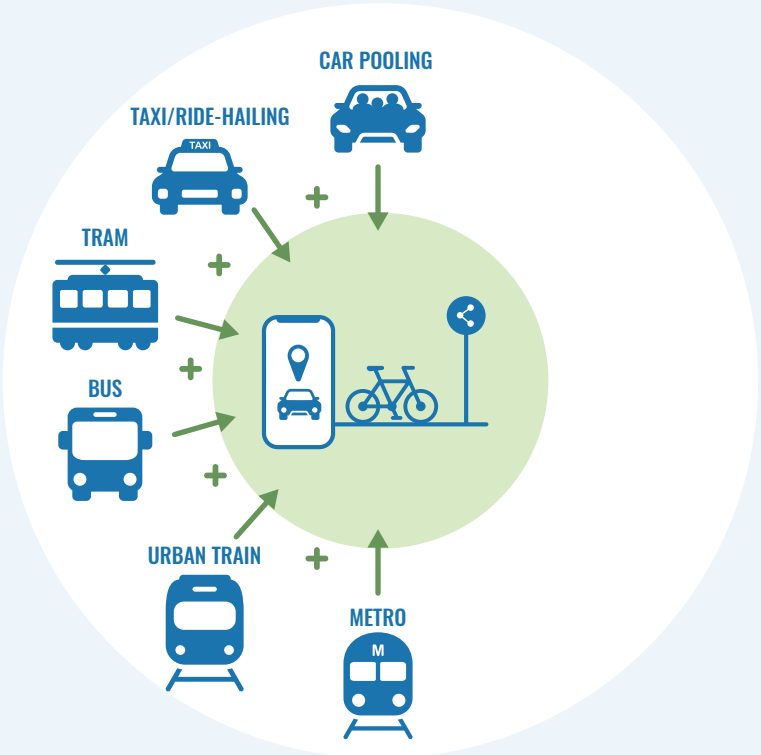
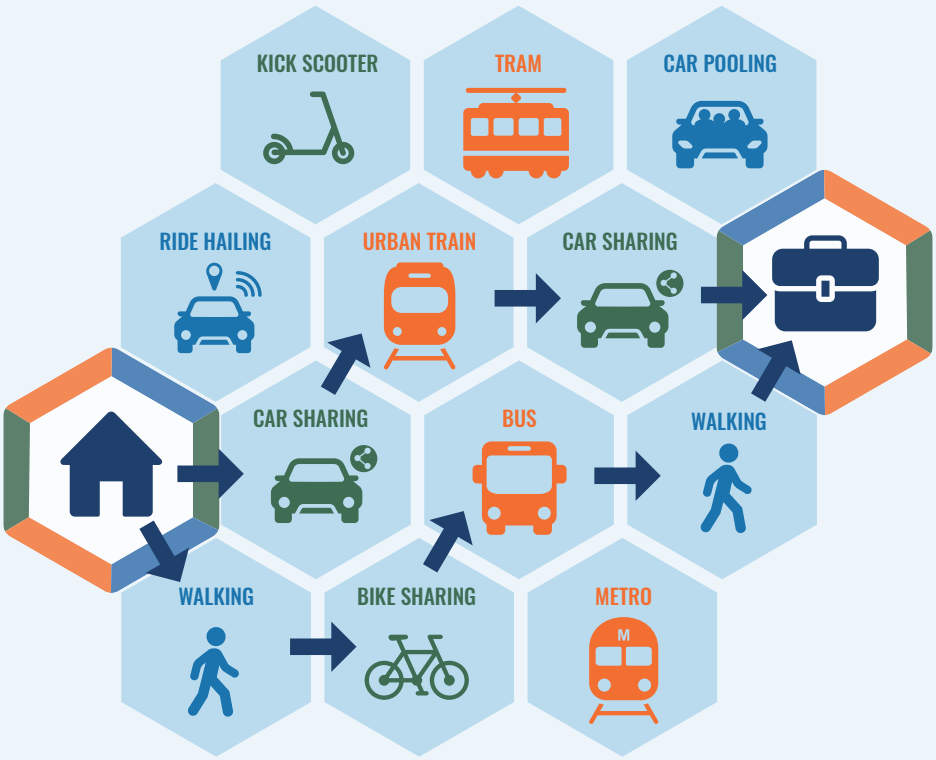


FIGURE 5. RELATIONSHIP BETWEEN SHARING MOBILITY USAGE AND SUSTAINABLE MEANS OF TRANSPORTATION



Source: Mobius Lab 2024-2025

FIGURE 6. HYPOTHETICAL MULTIMODAL URBAN JOURNEYS FROM HOME TO WORK



THE PRICE OF CAR SHARING

The majority of car sharing service providers rely on pay-per-minute pricing, including both driving and parking time (Perboli et al., 2018). This billing methodology mirrors what happens with traditional taxis, whose market share has declined with the rise of ride-hailing platforms such as Uber and Bolt (Statista, 2025). These providers offer the same core service as taxis, but their pricing model is fundamentally different. With ride-hailing, users are generally informed *ex ante* of the exact fare they will pay before confirming their ride. This is possible thanks to dynamic pricing algorithms, which calculate the cost based on multiple real-time factors, like the time of day, demand surges, traffic conditions, and most importantly distance. This pricing methodology is highly valued by users, as it eliminates the stress of watching the meter run, particularly in heavy traffic (MIT Sloan, 2018).

In the Mobius Lab research, respondents were asked about their billing preferences, placing on one end a mostly pay-per-minute pricing model and, on the other, pay-per-kilometer pricing, where the cost is primarily based on the distance traveled. The results revealed a clear overall preference for the distance-based billing method across all surveyed countries, with no appreciable generational differences. This may stem from a greater sense of control: Users perceive the pay-per-kilometer model as more predictable, as it transforms a variable cost (affected by traffic conditions and travel time) into one that is more stable, equating to the distance of the journey. This type of pricing in theory reduces the psychological burden of time pressure and allows users to plan their expenses more effectively. Nevertheless, a complete shift to distance-based pricing appears to be a challenging proposition for service providers, mainly because it would require them to absorb a greater share of the cost

burden. Unlike time-based models (where pricing scales directly to the duration of the trip and helps offset idle time or traffic-related inefficiencies), distance-based models may limit revenue potential, particularly in congested urban areas where short distances often involve long travel times.

BOOSTING THE REACH OF CAR SHARING

Data from the research show a multifaceted situation. Indeed, car sharing users underline the cost advantage of this mobility solution, when compared to alternative individual options such as ride hailing or taxis. On the other hand, the reach is limited by the perception of a high-price service: Price remains the major deterrent for European non-users[6], jointly with the perceived unavailability of vehicles in the city. These two deterrents trigger a vicious cycle: the availability of cars depends on the profitability of the service, which is contingent on the volume of users; at the same time, the volume of users is limited by the price, which is high due to the limited current demand. Since at present there are few users (compared to the potential number), it may be difficult to find a car when and where you need one. But clearly if there were fleets of thousands of cars, availability wouldn't likely be a problem.

In the current situation, vehicle-sharing providers are bearing huge costs for moving vehicles from one area to another to meet predicted demand, which sharply impacts the final price. One way to mitigate these costs might be to rely on user cooperation. *What if car sharing users were willing to alter their routes slightly in exchange for rewards – either monetary or non-monetary?* To assess this possibility, respondents were asked to indicate, on a scale from 1 (not willing at all) to 7 (very willing), whether they would consider changing their final destination in order to park the vehicle in an area predetermined by the service provider (typically near a strategic node in the urban network) in return for an incentive, such as a discount on the ride, loyalty points, or credits (Figure 7).

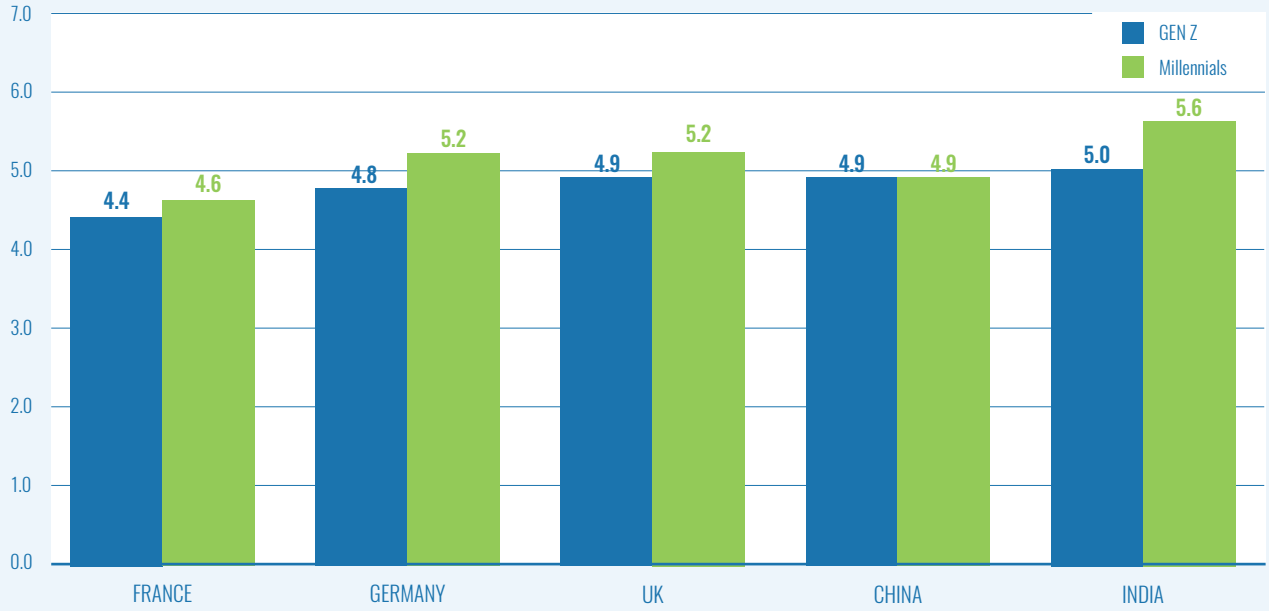
The findings reveal an appreciable openness to this idea across all countries, indicating that users broadly speaking are willing to collaborate in this way. Specifically, in Europe, Millennials in particular are very disposed to modifying their journeys; in Asia, this tendency is especially pronounced among Indian Millennials, who demonstrate greater flexibility than their Gen Z counterparts. These insights suggest that platform/user collaboration could be a valuable tool to address some of the operational challenges of car sharing. By encouraging users to park near strategic areas (such as locations where another user has scheduled a future booking) or close to public transportation hubs, service providers could enhance the perceived availability of the fleet and improve operational efficiency. At the same time, they would compensate their customers through targeted incentives, which in turn encourages the desired conduct.

CONCLUSIONS AND MANAGERIAL TAKEAWAYS

Drawing on analyses conducted by the Mobius Lab, this article investigated how urban dwellers adopt shared micromobility and car-based services, with a focus on generational differences between Gen Z and Millennials in Europe (France, Germany, UK) and Asia (China, India). The results show how shared mobility is progressively gaining ground not so much as an alternative to traditional modes of transport, but rather as a complementary component in multimodal mobility journeys. In particular, both services are valued for the benefits they offer: specifically micromobility for its speed, and car sharing for its flexibility in accessing restricted traffic zones in urban areas and its ability to reach areas poorly served by public transport. However, despite the perceived benefits, there are still sizeable barriers hindering the dissemination of sharing

6 In the Asian countries in our survey, the main deterrents of use were the cleanliness and the safety of the shared vehicle, rather than the perceived high cost.

FIGURE 7. WILLINGNESS TO ADAPT CAR SHARING JOURNEY BY COUNTRY AND GENERATION



services, so they have yet to reach their full potential in terms of adoption and systemic impact.

With micromobility, service providers, manufacturers, and policy makers should consider shared mobility as a possible path to ownership. Indeed, by allowing users to get a taste of a kick scooter, bicycle, or motorbike thanks to shared services, barriers to purchasing personal vehicles may lower, opening up long-term customer acquisition opportunities for manufacturers while supporting public objectives of sustainable urban mobility. For car sharing, to encourage people to take advantage of this option (even those who currently exclude it due to economic issues or perceived insufficient service coverage in urban areas), companies could adopt mechanisms to promote active collaboration with users. As outlined above, one strategy aimed to augment the perceived availability of vehicles could be to incentivize users to park cars near strategic points in the city. This could be accomplished by providing targeted incentives to reward virtuous behavior.

In parallel, it would be advisable to reflect on current billing models, evaluating the introduction of hybrid formulas combining pay-per-minute with pay-per-kilometer/mile. Such solutions could enhance users' perceived predictability and control over their spending, reducing the perception of high cost and encouraging people to try out the service. This would ultimately contribute to its wider adoption. Moreover, the impact of sharing mobility on the accessibility and use of urban spaces could be even greater if data were circulated along the entire value chain of the mobility industry, while fully respecting privacy regulations. If service providers, public authorities, and infrastructure operators had access to integrated data on user mobility, transport ecosystems could be jointly designed that are more responsive, efficient, and centered on citizens' needs. In synergy with the strategies outlined above, our hope with this article is to offer ideas on how to facilitate the transition to more sustainable forms of mobility, promoting the development of resilient, functional, and society-oriented urban environments.

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