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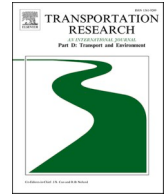
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Rethinking automobility in the suburb: Experiences with carsharing in a Danish suburb

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ABSTRACT

Suburban areas pose challenges for sustainable mobility due to their reliance on private cars. This paper investigates carsharing as a potential strategy to promote sustainability in suburban mobility. Through qualitative analysis of interviews with households in a newly developed suburban area in Denmark, where a subsidized carsharing service was introduced, this paper explores the possibilities and challenges of transitioning to carsharing. Findings are related to experiences from two other carsharing schemes in the area, based on interviews with the operators. The paper concludes that the success of carsharing in suburbs depends on tailoring schemes to the specific material and planning context and integrating them into the local community. Drawing on practice theory, the paper argues that this integration allows residents to change mobility practices. Further, mobility innovation must also question conventional planning truths, such as parking as a public good and mobility as a private matter.

1. Introduction

Reducing greenhouse gas emissions from transport is essential for addressing the climate crisis. This requires the development and implementation of innovative mobility solutions and sustainable transport options. Throughout the Western world, people greatly rely on private cars in their everyday lives, making the transport system a “system of automobility” (Urry, 2004). The organization of everyday life around cars is unsustainable and contributes to making the transport sector one of the most polluting sectors in society, responsible for more than a third of the EU’s CO₂ emissions (European Environment Agency, 2020).

Emissions from the transport sector exhibited a consistent increase from 2013 until the onset of the Covid-19 pandemic, during which emissions from transport decreased by 13.5 % (European Environment Agency, 2023). However, in 2021, these emissions rebounded with an 8.6 % increase, and estimates for 2022 indicate that this upward trajectory persisted, with emissions rising by 2.7 % (ibid). Despite the increasing energy efficiency of cars, the net energy demand for road transportation has increased by 48 % in the past four decades (Freudendal-Pedersen et al., 2020), and car ownership continues to increase in most European countries (Eurostat, 2021). Private cars have grown by about 1.6 % per year (Eurostat, 2022). This heavy reliance on private vehicles has led to increased carbon emissions, environmental pollution, worsening health conditions, congestion, and noise, and is taking up a significant amount of land

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(Crayton & Meier, 2017; Glotz-Richter, 2012).

Suburbs – understood as lower-density settlements situated outside of the administrative borders of big cities – represent a particular challenge for the sustainable mobility transition because suburban mobility relies largely on private cars. After World War II, a massive spread of suburbs in North America and Western Europe happened because of the industrialization of the construction of single-family dwellings, which made a house in the suburbs affordable to many (Gordon, 2016). However, building extensive and low-density suburban housing areas would not have been possible without the spread of private cars and improved road infrastructure. As such, car dependence frames suburban life (Gordon, 2016; Jeekel, 2013). In Denmark, 2.3 million people, equivalent to 40 % of the population, live in suburban areas.¹ To mitigate emissions from transportation, it is important to develop alternatives to automobility that can accommodate more sustainable mobility practices in suburban areas. New ways of thinking, planning, and practicing mobilities in the suburban context are needed.

While not suggesting it to be a “grand solution”, we consider carsharing an interesting strategy for advancing sustainability in suburban mobility practices, especially because it does not require big infrastructural reorganizations. In the research literature, it is widely acknowledged that carsharing presents a more sustainable alternative to current mobility practices which are dominated by private car use (e.g., Hildermeier and Villareal, 2014; Firnkorn and Müller, 2015; Sun et al., 2018; Cohen and Shaheen, 2018; Brand et al., 2021). Carsharing utilizes existing infrastructures, and while this implies that carsharing bears some of the same systemic problems as private car use, research suggests it has the potential to reduce carbon emissions from everyday mobility significantly, with several studies pointing to reduced emissions (Arbeláez Vélez and Plepys, 2021; Becker et al., 2020). For instance, Shaheen and Cohen (2007) observe that European studies document 28 % to 45 % reductions in vehicle kilometers travelled for members of carsharing schemes (compared to a situation in which they owned their cars), whereas smaller reductions were found in Canada and the United States. Martin et al. (2010) find that each station-based shared car removes 9–13 cars from the roads, whereas Kolleck (2021) find each station-based car removes nine cars. Additionally, studies point to the positive spillover effects sharing solutions may have on other sustainable mobilities such as increased use of public transport and active mobility modes (Martin and Shaheen, 2011), supporting the availability of alternatives to the automobile transport system and contributing to improved health conditions in the population.

Yet the benefits of the implementation of carsharing on a large scale in suburban contexts are less well-documented, and it is evident from the extensive literature review of Ferrero et al. (2018) that carsharing schemes are almost exclusively found in areas with high population density (city centers and bigger cities). Among the few studies on carsharing in suburban contexts is Jain et al. (2022), who find that residents in densely populated inner suburbs in Melbourne, Australia, use carsharing to avoid or delay car ownership to a higher extent than residents in suburbs located further away from city centers, who use them to avoid buying a second car. Ye et al. (2022) studied carsharing in Shanghai to understand the relationship between carsharing and other travel modes, which is important knowledge for informing decisions on what role carsharing can play in a more sustainable mobility system. They found that carsharing was mainly used for long-distance trips in suburbs during off-peak hours, and thus generally formed a cooperative relationship with other sustainable travel modes such as public transportation and nonmotorized transportation, supporting the point made also by Martin and Shaheen (2011) that carsharing positively interacts with other sustainable transportation modes and that carsharing can be promoted to substitute private cars.

Carsharing has predominantly flourished in densely populated urban centers to date, and prior research (e.g., Jain et al., 2022) indicates that urban carsharing initiatives may not seamlessly transfer across contexts, necessitating redesign to establish themselves in new locations. This study draws on inspiration from practice theories (Shove et al., 2012; Spurling et al., 2013), and practice theory-oriented mobility studies such as Svennevik (2021), Kent & Dowling (2013), and Christensen et al. (2022), which place social practices – including mobility practices – at the center of the empirical analysis. The paper examines two key questions regarding the integration of carsharing schemes within suburban environments: First, it investigates the alignment of carsharing schemes with prevailing mobility patterns in suburban contexts. Second, it explores avenues for enhancing the adoption of carsharing in suburban areas. Specifically, it addresses the following question: How can the design of carsharing schemes and urban planning strategies be tailored to incentivize the utilization of carsharing as an alternative to private automobile ownership in suburban settings? The paper investigates this issue through 14 semi-structured in-depth interviews with households in a recent suburban development in Denmark, heralded by its developers as the “Suburb of the Future”, which integrates various sustainability measures, including the provision of a fleet-based round-trip carsharing service. While the carsharing service was already established in the area before the research project Sustainable Innovative Mobility Solutions (SIMS, 2019–2023)² was initiated, residents in the suburb were offered a complimentary subscription for a two-year duration, allowing them to pay solely for their usage of the shared cars. This intervention was conducted within the framework of the SIMS project, which explored sustainable mobility solutions across various contexts, including this suburban area. We designate the suburb as a critical case (Flyvbjerg, 2006:230) for examining the potential of carsharing in a suburban milieu, thereby contributing to broader generalizations on carsharing as a strategy for promoting sustainable everyday mobilities in the suburb.

To shed further light on the generalizability of our findings and the variability of experiences with carsharing observed in the suburban context, we also incorporate interview data obtained from carsharing operators in two surrounding suburban areas. We

¹ Suburban areas are here defined as spatial entities outside the administrative borders of big cities. These areas are not as densely populated as an inner city, yet more densely populated than the countryside. Suburban areas typically consist of single-family houses with high land consumption per citizen. Figures are the authors' calculations based on data from Statistics Denmark: <https://www.dst.dk>.

² See <https://www.sims.aau.dk>.

juxtapose our findings from the inhabitant interviews with operator experiences from neighboring areas to contextualize our results and enrich our understanding of carsharing dynamics in suburban settings, facilitating broader insights applicable to analogous contexts. In the following, we will first present the theoretical approach. Then, we describe the methods and empirical material, and present findings related to material and social preconditions for existing mobility practices and carsharing in the suburban planning context, experiences with carsharing and key insights from two other carsharing schemes in suburbia. Through the lens of practice theories, our discussion analyses the potentials and challenges of promoting carsharing in suburban settings, focusing on the material/planning context, implementation, skills and social learning, and meanings and understandings of suburban everyday life and mobilities. Here, we utilize research on intervention frameworks for practice change (Spurling et al., 2013) to assess the prospects and challenges of transitioning suburban car practices towards carsharing practices. Finally, we conclude by elucidating key takeaways that can inform efforts to promote carsharing in suburban areas and offering recommendations for future endeavors in this domain.

2. Theoretical approach

Applying a practice perspective means taking social practices as the unit of analysis and viewing individual behaviors, including transport behaviors, as performances of social practices (Shove et al., 2012; Spurling et al., 2013). Shove et al. (2012) conceptualize social practices as consisting of three types of elements: materials, competences, and meanings. Materials are, for example, physical objects, tools, and infrastructures. Competences comprise – but are not limited to – knowledge and embodied skills. Finally, meanings refer to phenomena such as cultural conventions, expectations, and shared cultural values. The practice of carsharing, for example, activates materials such as the car itself, a key tag for opening the car, the parking space, roads, traffic lights and often also technologies such as navigation systems and booking systems (for car booking). To successfully perform carsharing practices, one also needs the competencies of driving a car, handling the key tag, and planning and booking the car in advance. The meanings involved in carsharing are, for example, the belief that it is ecologically beneficial and economically feasible, but also the conviction that a car is needed for weekend trips, shopping trips, etc. Importantly, social practices interlock and form larger patterns of social activity. Practices of transportation interconnect with, for example, practices of working, shopping, holidaying, socializing, and parenting, and as such, mobility activities interlock with many other activities in everyday life to form larger patterns of social activity.

Repeatedly activating the materials, meanings, and competences that constitute specific practices reproduces those practices (Shove et al., 2012). The fate of a practice thus depends on its enactment and re-enactment. Spurling et al. (2013) have developed the following three framings for intervention in consumption practices, describing different ways that practices can change: 1) recrafting practices, 2) substituting practices, and 3) changing how practices interlock. The three framings differ in terms of the level of ambition, institutional scale, and type of policy activated. Whereas the first involves changing one or more elements involved in a practice, e.g., replacing a combustion engine vehicle with an electric vehicle, the second involves substituting a practice altogether, e.g., shifting from private car driving to carsharing. The third, changing how practices interlock, means targeting the larger pattern of social practices, for example, by planning new residential areas and their infrastructures with a focus on locality and accessibility, so that e.g. practices of shopping and going to school can be conducted locally, e.g. by foot, rather than in ways that create a need for automobility. This last intervention framework focuses on “bundling”, that is, how different practices connect or interlock in time and space. Unlike in the first two less radical intervention frameworks, the current amount of mobility is not taken as a given here (Spurling et al., 2014). Instead, the negotiability of the “needed” mobility comes to the forefront. Changing how practices interlock thus involves focusing on “(...) the practices that are currently dependent on some form of mobility to change the level, scale and character of current need or demand”, so that “(...) rather than focusing on mobility practices in their own right, the focus shifts to recrafting those interlocking practices, such as how households are provisioned, where children go to school, and how work and leisure are organized” (Spurling et al., 2014: 81). These three types of interventions in practices will be used as a framework for discussing carsharing as sustainability intervention: what kind of intervention did we aim for and what did we achieve, and what can we learn about the prospects of carsharing for changing suburban mobility practices by relating our findings to perspectives and experiences from other carsharing stakeholders operating in suburbia?

3. Methods and materials

3.1. Case

The suburb is a recently developed urban area situated near a train station and a town with approximately 14,000 residents. Initially rural, the town has become part of the Greater Copenhagen area due to urbanization. At the time of data collection, the suburb housed around 2,500 inhabitants, with plans to accommodate up to 8,000 residents upon completion. It benefits from excellent road and rail connections, with two major highways passing nearby, and a train journey of less than 30 min to reach central Copenhagen. A green corridor traverses the area, beginning at the train station and passing by essential amenities such as playgrounds, a school, a community center, and a grocery store. Consequently, many daily necessities are conveniently located within the area, accessible by walking or biking from all residences, facilitating active and sustainable everyday mobility. The planning of the area deviates from traditional automobile-centric suburban norms, notably allocating less space for car parking compared to other Danish suburban areas with only one parking space per dwelling and with approximately 60 % of parking located in central parking garages at a distance from the dwellings.

This paper investigates carsharing in the suburb based on 14 residing families' experiences with living in a suburb focusing on promoting sustainable mobility, including carsharing. Since the carsharing solution was envisaged from the outset by the developers,

all 14 families had access to carsharing upon moving to the area (hereafter referred to as The Suburb). The developer of the area subsidized the carsharing scheme from the outset to ensure residents had access to the service from the day they moved in. Additionally, as part of the SIMS research project, 5 of these families were provided with reduced-cost access to carsharing from 2020 to 2021. Throughout this intervention, residents of The Suburb were granted complimentary membership to the carsharing scheme (hereafter referred to as The Scheme), which typically incurred a monthly fee of 66 euros, thus enabling them to solely pay for their usage. The hourly rental rate stood at 5.37 euros, while the daily rental rate was 68 euros.

The service was a “round-trip” carsharing service, meaning the cars should be returned to a designated parking spot by the end of a trip. Two combustion-engine family-sized cars were placed centrally in the area. Operation and maintenance of the cars were managed by a large Danish carsharing operator, which was established in 2007 and owned partly by a foundation and partly by a group of private investors. Initially, the reduced-cost offer was designed to last a year, but due to the onset of the coronavirus three months into the intervention period, subsequent lockdowns, and significantly reduced mobility, the period was extended until the end of 2021, when all restrictions were lifted, and all businesses and schools were reopened for at least six months. For a discussion of the impact of the lockdown on the case study see [Christensen et al. \(2023\)](#). Also, [Lindberg et al. \(2022\)](#) discuss the impact of the pandemic on sustainable mobility change taking the SIMS project as a point of departure.

3.2. Methods and data

The paper relies on 14 in-depth semi-structured qualitative interviews ([Brinkmann and Kvale, 2015](#)) with households in The Suburb and two semi-structured qualitative interviews with representatives from other carsharing schemes operating in similar and neighboring suburban contexts. Of the 14 household interviews, 9 semi-structured household interviews were conducted in 2019, where carsharing was offered in the area at normal costs for residents. We interviewed residents about their experiences of moving to a

Table 1

Key details of the interviewed households and carsharing stakeholders.

ID	Interview type	Participants	Pseudonym(s)	Mobility practices
1	Household interview	Couple in their thirties with small child (0 years)	Patricia and Peter	Own a car. The man works as a craftsman and uses the car for work, the woman uses public transportation and electric bike for everyday transportation.
2	Household interview	Couple in their thirties with small child (0 years)	Andrea and Andy	Own two cars. Utilize them for commuting. Their workplaces are located outside of Copenhagen city center.
3	Household interview	Man in his twenties	Caspar	Does not own a car. Uses public transportation for commuting. Occasionally gets a lift from parents.
4	Household interview	Woman in her forties	Erica	Owens a car and uses it for everyday transport.
5	Household interview	Man in his thirties	Frank	Does not own a car. Uses public transportation for commuting. Occasionally uses carsharing, a free-floating electric vehicle-based scheme.
6	Household interview	Couple in their sixties	Greta and Gert	Owens a hybrid car. Both primarily use public transportation and electric bike. One is retired.
7	Household interview	Woman in her sixties	Irma	Does not own a car. Uses public transportation for commuting.
8	Household interview	Woman in her seventies	Jensine	Own a car. Is retired and uses public transportation, bike, and car for everyday transport.
9	Household interview	Woman in her seventies	Lara	Does not own a car. Is retired and uses public transport and bike for everyday transportation.
10	Household interview, reduced-cost intervention participant	Couple around 30 without children	Danny and Daniel	Do not own a car. Rely on public transportation and occasionally use a motor bike to commute to their workplaces in Copenhagen. For transporting larger items or spontaneous outings, they utilize shared cars 1–2 times per week.
11	Household interview, reduced-cost intervention participant	Family with small children (1 and 4 years)	Krista and Kristopher	Sold their own car after moving to the Suburb. Use bike and public transport for commuting to work. Walk to daycare institutions (in the area). Use the shared car for longer trips, e.g. visiting family and going to the zoo.
12	Household interview, reduced-cost intervention participant	Couple in their thirties without children	Rinah and Rasmus	Do not own a car for economic reasons but would like to. Use public transport and electric bikes for commuting or getting around the area. Use shared cars 1–2 times per month, often for transporting larger items.
13	Household interview, reduced-cost intervention participant	Single woman with small child (4 years)	Hannah	Own a car and uses it for most transport needs. But sometimes it makes better economically sense for her to use the shared cars due to the discount offered as part of the intervention.
14	Household interview, reduced-cost intervention participant	Single woman with two small children (3 and 6 years)	Solveig	Does not own a car. Commutes to work in Copenhagen using public transport. Uses bike to pick up children from daycare. Uses the shared cars occasionally.
15	Operator interview	Local operator of a housing community carsharing scheme, employed as social caretaker	Benny	–
16	Operator interview	Chairman of member-based carsharing association rooted in eco-village	Paul	–

suburb that emphasized sustainable mobility, including offering a carsharing solution. We explored how their mobility patterns have changed since moving and whether there have been any shifts in mobility practices. Participants were recruited through the community representative of the urban development company. The interview guide was developed collaboratively by the research team and covered the following themes: everyday life and place, mobility patterns and modes of transport, community, climate and health, shared mobility, and background information about the family. For a deeper understanding of the theory and methodology behind the interviews and the interview guide, see Lindberg et al. (2023), which also discusses the strengths and weaknesses of this approach and the applied interview guide specifically.

The remaining 5 qualitative household interviews were conducted in late 2021 or early 2022, right before or after the reduced cost offer came to an end. These interviews were conducted with households who had actively made use of the carsharing offer in the period and were recruited through the carsharing scheme. The interviews were based on the same interview guide as the first 9, however, they also enquired about the residents' practical encounters with carsharing, motivations for joining the carsharing scheme, and thoughts on future use.

Altogether, the 14 interviews inform the analysis of the material conditions and existing mobility practices in a suburban context where carsharing is accessible. The last 5 interviews add further details on the residents' practical experiences with carsharing when potential economic barriers are removed. The following analysis is based on all 14 interviews, all contributing to highlighting the conditions and (im)possibilities for car-sharing in the suburbs. Together, they provide insight into mobility practices and their everyday context, which forms the basis for the discussion on shared mobility in the suburbs.

Additionally, to provide context and facilitate contextualizing discussions, we draw on two semi-structured qualitative interviews with representatives from other carsharing solutions operating in the same and in a neighboring suburb, respectively. These interviews were centered around the characteristics of the location, the carsharing solution's history, its status, user feedback, what aspects are functioning well, and what challenges are being faced. An overview of the material appears in Table 1.

All interviews were conducted on-site to immerse the interviewers in the local environment and better understand the material surroundings that influence everyday mobility practices. The interviews were transcribed and analyzed using an abductive strategy (Blaike, 1993). This involved researchers, each with interdisciplinary backgrounds in mobility but varying educational expertise, alternately reading transcripts, discussing notable themes and quotes, and comparing them to insights from previous research projects and literature. Through this abductive process, key themes relevant to the research question were identified, and the material was coded according to these themes. The themes encompass everyday mobility patterns, the material infrastructure, social ties and community, reasons for moving to the suburb, reasons for (not) using carsharing, positive experiences, challenging experiences, knowledge and skills, meanings and understandings, and future use. Even being based on a modest sample size of 14 households, we reached saturation in the material as the same patterns and themes emerged across interviews despite diversity in household types, occupation, age etc. (Brinkmann and Kvale, 2015). Due to the in-depth nature of the interviews, our study offers nuanced insights into the specific challenges of carsharing in this type of setting, and with the limitations stated in the discussion.

4. Results

In this section, we first give an overview of the interviewed residents' daily mobility practices. Second, we present findings on how the planning context more specifically influences the everyday mobility practices of the residents. Third, we present user experiences with The Scheme and interpret the residents' use of carsharing in the context of their broader mobility patterns within the suburban context. Fourth, we briefly present two other local carsharing schemes, which will inform the later discussion by contextualizing the findings from our study of suburban mobility patterns and potentials for carsharing based on residing families in The Suburb and their experiences with The Scheme.

4.1. Existing mobility practices in The Suburb

General characteristics of daily mobility patterns observed among the 14 interviewed households are outlined in Table 1. Families with children and residents working elsewhere than locally or in Copenhagen were the most reliant on car usage. Conversely, many individuals living alone did not own a car and tended to utilize a mix of transportation modes. Similarly, seniors exhibited limited car usage, with several either not owning a car or considering abandoning car ownership.

Of the 14 interviewed households, six owned cars. Interestingly, three households reported discarding their cars upon moving to The Suburb and one sold their second car after moving. Conversely, only one household mentioned acquiring a car after moving to The Suburb. Moreover, four households cited the ability to live in The Suburb without a car as a motivating factor for their decision to move there, none of whom owned a car before relocating.

All interviewees emphasized the importance of having good physical mobility options when deciding to move to The Suburb. Danny and Daniel expressed this sentiment by stating: *"It had to be relatively easy for us to still get into Copenhagen, etc. Yeah, and then it landed on this."* For some, access to shared cars played a role in this decision. Rhina, who relocated to The Suburb from an inner-city neighborhood, explained, *"That was certainly something I was very excited about. And I still am. I mean, it's really cool that I have that option."* However, the most emphasized qualities were good public transport and car infrastructure. Nearly all interviewees view the proximity to both car and train transit options as a significant asset of The Suburb, fostering a perception of hypermobility (Cohen & Gössling, 2015), with easy access to Greater Copenhagen and other parts of Denmark.

Many residents, such as Andy and Andrea, chose to relocate to The Suburb precisely because of its strategic location facilitating their commutes to workplaces located in different parts of Zealand: *"There are a lot of traffic junctions here – there are two highways on*

either side...". For them, the presence of multiple transportation hubs and easy access to highways were decisive factors. They explain that they need two cars because of the distance to their work and for bringing and picking up their daughter from her daycare 3 km away from The Suburb. Time efficiency in daily life is important to this couple, and their cars are vehicles to save time. Other interviewees value the convenient train links, especially to Copenhagen. For instance, Frank, who does not possess a car, mentioned that he selected The Suburb because it offered proximity to the station and seamless access to Copenhagen, where he is employed.

Interestingly in the context of carsharing, a portion of the residents' mobility was already facilitated through informal social networks within the community, independent of the carsharing solution. For instance, some of the senior residents' mobility needs, for example Lara's, are met through informal networks, such as carpooling or getting rides to pick up larger items, organized through direct conversations with neighbors or via social media platforms like Facebook:

When I must go and buy some paint... For instance, if I need to paint the walls... It's hard when you must go on a bus and bike and [carry] paint buckets etc... But my sweet neighbor she said: "I'm going to Bauhaus [a DIY centre] today, do you want to go with me." Then I can do my shopping that way... Or [...] if it's bigger things, I can just call them [daughter and son-in-law] and say that I need to either borrow their car or if they will drive for me.

Lara's story underscores the significance of social and informal networks as resources for efficiently organizing daily mobility without relying solely on car ownership. We encounter similar narratives among other residents. For instance, Irma borrows her neighbor's car when she needs to go to the DIY center, while Caspar often receives rides from his father, who frequently passes through The Suburb on his way home from work. These examples highlight the existing practices of sharing resources and rides within the community, suggesting a receptivity towards collaborative mobility solutions like carsharing. However, in line with the question posed by Ye et al. (2021), this might also raise a question on competition or cooperation between carsharing and other collaborative mobility modes.

Overall, among the households that did not use The Scheme, only one household (Frank) occasionally uses another carsharing scheme (based in a bigger city about 20 km from The Suburb) or rents a car, e.g. for transporting bigger items. Among the car owners, carsharing where generally associated with inflexibility and less freedom compared to having one's own car, although two households (Patricia & Peter; Greta & Gert) could see the benefit in carsharing complementing their own car. For instance, Gert mentions that if it is raining, and Greta is using their own car, it could be more comfortable for him to use a shared car instead of biking or using public transport.

4.2. Materialities and mobility: The impact of the planning context on everyday mobility practices

As described in Section 3.1, the planning of The Suburb incorporates several features that diverge from the traditional automobile-centric suburban planning model. In addition to the train station proximity and attractive paths for walking and biking within the area, the space for car parking is lower compared to other Danish suburban areas and about 60 % of the parking is situated in car parks in the periphery of The Suburb. This approach effectively restricts the number of cars within the area and necessitates that many residents walk a certain distance to access their vehicles, which in principle should accommodate sustainable mobility practices materially, e.g., by levelling the playing field between private cars and shared cars, as neither of them is parked in the driveway.

Interestingly, however, none of the 6 car-owning households interviewed mentioned the physical constraints of parking availability in their descriptions of daily mobility routines or saw it as a significant challenge in their daily lives. Erica, who bought a car for her daily commuting upon moving to The Suburb, even describes the neighborhood as designed for car ownership when asked if she had considered using the local carsharing scheme:

No. Because I bought my own (car). And also because it (the area) is based on that every household has a car. There are being established enough parking places and car parks. (...) (the urban developers or planners) have given up the idea that one should be able to live in this neighborhood without having a car....

Our findings indicate that the parking limitations have a minimal impact on the residents' daily mobility practices, suggesting that planners and developers might reconsider their reluctance to challenge the accessibility of private parking in newly constructed areas.

While the decreased access to private parking was not identified as a concern in the interviews, the convenient access to amenities such as shopping, schools, playgrounds, sports facilities, and daycares was indeed highlighted as a crucial attribute of the area, significantly influencing residents' everyday mobility practices. For instance, when moving out of Copenhagen, Solveig was pleasantly surprised by the fact that the suburb had many of the same characteristics that she appreciated in the city:

I could get all the same [as in Copenhagen] and avoid dropping off the kids by car in the morning. Everything is within walking distance. I didn't believe you could get this if you moved out of the city (...) that you could have playgrounds within walking distance.

The Suburb encompasses a comprehensive integration of amenities, with schools and shopping facilities either located within the area or nearby. This sets The Suburb apart from most other Danish suburban regions, as it offers a wide range of public and commercial services — including a train station — as well as recreational areas within walking distance. Many interviewees specifically praised the accessibility of these services and expressed that they frequently walk or bike to shops and school with their children. Much of their daily routine activities are being conducted within The Suburb on foot or by bike. Consequently, during weekdays, cars or public transportation are predominantly utilized for commuting purposes, whereas residents, as Solveig explained above, tend to remain within the neighborhood in the afternoons and evenings, relying on walking or biking for local mobility.

4.3. Offering carsharing in the Suburb of the Future: Positive user experiences, but limited uptake

Overall, the five interviewed households participating in the reduced-cost intervention viewed The Scheme as a practical and cost-

effective means of accessing a car for specific purposes. Few expressed significant environmental concerns as a primary factor influencing their decision to opt for carsharing. Remarkably, one family with children announced that they had sold their car, relying instead on trains, walking, biking and carsharing to meet their transportation needs. This challenges the conventional notion that owning a car is a necessity when raising children (Freudendal-Pedersen, 2009). Another conventional notion called into question was the concept of private car ownership being synonymous with mobility freedom (ibid). The sense of freedom and the ability to travel wherever and whenever desired may also be associated with using a shared car, as illustrated by this quote from carsharing user Danny:

I think it's brilliant with the carsharing, because it just gives us another freedom in terms of achieving certain things. Partly, when you must transport something yourself or go on those slightly unusual trips. For example, a few weeks ago I had to go somewhere in Slagelse where my motorcycle is in winter storage, and then Daniel drove afterwards in the car, and then we just went. Instead of me having to take a train home, etc.

This sense of freedom is reinforced by the residents' general perception that it is easy to access a car when needed, even on short notice. Supply anxiety is thus not something that residents can relate to when it comes to the carsharing solution. This again might in our case have to do with the varying usage frequency among residents, with some using the shared cars as infrequently as once a month and others as often as eight times a month. The residents generally considered carsharing a supplement to the train and bike, which were their most used modes of transport (except for one, who also had a private car). The shared cars were mostly used for the following three types of trips: transporting heavy loads; travelling to destinations a long way from the home and/or not close to stations with a direct connection with the local train station; travelling to several destinations in the same trip such as going to the Zoo in Copenhagen and afterwards visiting family outside Copenhagen, before returning home in the evening.

While many residents appreciate having access to carsharing and the flexibility it offers, we also identify challenges with possible implications for the design and organization of carsharing schemes in suburbs. These will be detailed in the following three subsections.

4.3.1. Physical distances

The distance between the home and the car emerged as a significant factor for the interviewed carsharing users. Rinah and Rasmus had read about carsharing on the developer's website before relocating. Upon moving in, they discovered that the car was conveniently located near their home, which made the carsharing solution even more appealing. Rinah expressed, "*There's like ... (...) 40 steps or something... So that also makes it very attractive for us because it's like having our own car...*". The proximity of the car to their residence gives them a sense of ownership over it.

Other interviewees residing further away from the shared cars expressed that the distance was challenging, highlighting that two shared cars in one place may not be sufficient to serve an area of 65 ha. This is particularly inconvenient for parents with young children who find it challenging to transport children and safety seats between the cars and their homes. As illustrated by Solveig, a single mother with two children, who said: "*Even if the cars are close by, two safety seats still have to be brought to the car together with the kids.*".

4.3.2. Awareness and familiarity

Despite being aligned with the overarching vision of The Suburb as a sustainable suburban community, the carsharing scheme's presence was not widely communicated. In our interviews, residents describe how they primarily learned about it through the website or newsletters from the urban developer, or by noticing the shared cars on the streets. The family that decided to dispose of their private car learned about the carsharing service through other parents from the daycare. Kristopher explains:

[It was] someone [a parent of a child in the daycare] who said that you can get such an offer via [The Scheme]. And then we thought like... Then my girlfriend looked into it, and then we thought it was quite clever [in the sense of being convenient].

This indicates the potential for spreading awareness about carsharing and attracting new participants through the informal social networks in suburbs, which already play a role in shaping mobility patterns, as mentioned earlier. However, in this specific instance, that potential was not fully realized. Instead, residents had to actively seek out information to become aware of the carsharing scheme and to understand that it was subsidized by the developer, making it available at a relatively low cost compared to inner-city carsharing options. Furthermore, if residents opted to try out the solution, they were largely left to develop familiarity with it on their own.

The limited opportunities for learning about the carsharing service and receiving support in acquiring familiarity with it, as well as being guided in learning the necessary skills, appear to have had consequences for the scheme's success in recruiting members. Being recruited to the social practice of carsharing involves acquiring skills such as planning and booking the car in advance through the booking system, as well as knowing how to use the key tags to unlock the cars. Acquiring these skills is challenging when there is no one available to introduce the scheme or explain how it works. This was the situation when the scheme was introduced in The Suburb, where a door-to-door distributed flyer and the neighborhood newsletter were the only local sources of support.

4.3.3. Price structure and awareness of costs

As mentioned, the residing families who participated in the reduced-cost intervention did not have to pay a subscription fee. Instead, they only pay for their actual usage. In contrast to the 9 families who did not take part in the reduced-cost intervention, this made the carsharing scheme economically more attractive to households only occasionally in need of a car compared to owning a car with high fixed costs. However, and paradoxically, the price structure with payment per use seems to make the carsharing scheme appear less attractive than private car ownership in the eyes of residents. A mother of two (Solveig) who participated in the intervention reflects:

So, it feels more expensive to have to pay for using a car on the weekends, compared to if I paid a fixed amount every month. (...) It's not like I'm swimming in money at all... So it becomes an extra expense, but I try not to see it as an extra expense but as a smaller expense than the alternative. We're going to Legoland [Danish amusement park] in two weeks and there's, of course, some railway constructions [causing trains to be delayed], very unfortunate... Where I started thinking well, it'll be expensive if it costs like 1000 DKK [134 euro] to rent a car for that trip. Whereas if I had a car, I wouldn't feel like it was so expensive to take the car to Billund... Where I think, well, I would pay that many times more [than for the shared car], but it sometimes feels cheaper with a fixed expense that you don't have to think about or pay for usage...".

Paying per use can create the experience of carsharing being an expensive option compared to owning/leasing a car, where you pay a fixed expense but not directly based on usage, because the pricing structure of this specific service highlights the costs of the individual trip, which would otherwise remain backgrounded and masked in account postings. This suggests that implementing alternative pricing structures with more uniform payments could impact whether carsharing is perceived as the cheaper or more expensive option. Despite being the most economical choice for households with only occasional use of car, it is evident that it is not perceived as such.

4.4. Insights from two other suburban carsharing schemes

To contextualize our findings from The Suburb within the broader framework of suburban mobility and explore their implications for carsharing in suburban areas overall (including potential strategies for addressing specific challenges related to the specific location, organization, and structure of the carsharing scheme), we will now present insights from interviews conducted with operators of two other carsharing schemes operating in the area. These findings will inform the later discussion of our results on carsharing in the suburban context.

4.4.1. Housing community scheme

The first carsharing scheme has been operating since 2017, also in The Suburb, but in collaboration with a housing developer focused on creating rental housing communities in Denmark. These communities feature a housing concept where a "social caretaker" is employed to foster community engagement among residents through various social activities and events. Additionally, a traditional caretaker handles physical maintenance tasks and assists residents with practical matters. The carsharing scheme is restricted to members in the housing community, and membership is included in the housing rent, but usage costs 12.08 euro/hour (or 66 euro per day). One of these housing communities was established in The Suburb. From our interview with the caretaker at this community, he appears to play a pivotal role in introducing the carsharing scheme to new residents and providing support for any inquiries or issues that may arise. To encourage resident participation, all new residents receive a complimentary hour of driving upon moving in, incentivizing them to download the scheme's smartphone application. This app is utilized for booking, unlocking cars, and making payments for driving services. The interviewed caretaker says that so far, only about 10 % of the residents in the housing community are active users of the carsharing scheme and the overall usage of the two electric cars is low. Eventually, the scheme is at risk of being closed if the frequency of use does not increase. Thus, this housing community scheme faces some of the same challenges as The Scheme, which covers the entire neighborhood.

4.4.2. Eco-village scheme

The second carsharing scheme operates not in The Suburb, but in a neighboring suburban area. This scheme was established in 2000, originally as part of an eco-village. The scheme is organized as a member-based carsharing association, which was initiated alongside the development of the eco-village as an alternative to individual car ownership, aligning with the vision of sustainable living within the eco-village. By the mid-2000 s, residents from surrounding suburban neighborhoods were also made eligible for membership of the carsharing association to expand membership and increase the number of available cars to enhance service reliability. Presently, the eco-village carsharing scheme have 165 members with a waiting list for new applicants. About 70 of the members live in the eco-village, corresponding to approx. 40 % of its adult residents. This remarkably high membership rate at a neighborhood level is the result of the historically close connection between the scheme and the eco-village. The monthly membership fee is 14 euro, and the usage is paid by duration and distance driven (2.42–3.09 euro/hour plus 0.28–0.36 euro/km, depending on type of membership). The costs (and prices) of the scheme are kept relatively low thanks to the involvement of volunteers residing in the community. The scheme's success is largely attributed to this voluntary contribution, which stems from its roots as an integral part of the eco-village community. However, the interviewed chairman of the carsharing association believes that the scheme has reached its maximum capacity under its current volunteer-based model, suggesting that further growth would require a fundamentally different organizational approach. The scheme includes 15 cars (9 electric vehicles, 1 plug-in hybrid, 5 combustion-engine cars).

The chairman explains that the cars are booked mainly on weekends and during holidays, which shows that the carsharing scheme is mainly used for spare time activities. The chairman estimates that about half of the members also have a private car and, therefore, use the shared car as their second car. This has similarities with the Australian study by Jain et al. (2022), which shows that residents in less densely populated areas typically use carsharing to avoid purchasing an additional car, whereas residents in inner city areas more often avoid buying their first car.

5. Discussion

5.1. The role of the planning context for changing practices

As highlighted previously, attempts have been made in The Suburb by urban planners and developers to (moderately) redefine the mobility of suburban living and the emphasis on private automobility. This has been done through the design of the urban layout with a below-average number of car spaces and car parks located on the periphery of the area (albeit the practical effect on the residents' mobility practices appears limited according to our interviews). Previous studies indicate that restricting car usage and car parking positively influences the adoption of carsharing as well as contributes to less car-centric mobility practices (e.g., [Cohen et al., 2008](#); [Christiansen et al., 2017](#); [Johansson et al., 2022](#); [Millard-Ball et al., 2020](#)), although these studies typically focus on high-density neighborhoods ([Ferrero et al., 2018](#)). In addition, the newly built neighborhood is presented as a “green suburb” of the future. In this way, the changes to the material conditions are coupled with changes to other elements in practices such as changed meanings around driving private cars. In addition to physical measures, the developer of The Suburb has promoted a narrative positioning the neighborhood as “the living and green suburb of the future.” This environmentally conscious vision for the area resonated with residents, who often cited it as a positive factor that attracted them to the area. Consequently, The Suburb became associated with meanings and narratives of sustainability and the future of mobility, at least from the perspective of the developers and planners.

Thus, both the meanings attached to the neighborhood and its physical attributes—two crucial elements in mobility practices—seem to favor private automobility less than typical in suburban areas, potentially fostering the emergence of carsharing practices as substitutes for less sustainable mobility practices. The planning context challenges, to some extent, the material and meaning elements associated with private car driving in suburban areas, which can be considered as a way of recrafting the practice of private car automobility. Furthermore, the urban developer has financially supported the establishment of a carsharing scheme and communicated it within the area to promote this as an alternative to private car ownership. This resembles [Spurling et al.'s \(2013\)](#) second type of intervention for which the goal is to substitute the mobility practice of driving private cars altogether.

These elements of substituting practices have similarities with the eco-village carsharing scheme, which was established as a closely integrated part of the vision of sustainable housing and living in the eco-village and, therefore, did not only recraft the practice of car driving but also promoted carsharing as an alternative to private cars. Almost half of the eco-village residents are members of the carsharing scheme, demonstrating that this was a rather successful strategy. In comparison, less than 10 % of the residents, who were covered by the carsharing scheme in the housing community, actively made use of it. Despite all places promoting an environmentally friendly and community-oriented way of living, the uptake of carsharing is only high in the eco-village. However, when the eco-village scheme was expanded into the surrounding neighborhoods, similar low membership rates were found. This indicates that the remarkably high uptake of the scheme among the eco-village residents is a result of the specific characteristics of the eco-village as a community and place.

Changing mobilities through changing how practices *interlock*, the third of [Spurling et al.'s](#) practice interventions, focuses on how everyday practices are interrelated and co-dependent. [Spurling et al. \(2013\)](#) mention examples of this, such as how households are provisioned, how work and leisure are organized and where children go to school. This relates to the planning context, and here, our interviews in The Suburb indicate that ensuring access to key public, commercial and recreational services within (safe) biking or walking distance of homes is a prerequisite for establishing everyday practices that are not dependent on private car driving. For instance, by placing the train station, daycare, and school close to each other, the residents can integrate the practice of delivering their children into their trip to the station for their daily commuting practices.

Overall, we find that The Scheme is used as a supplement to other means of transport such as biking or public transport (a similar usage pattern was reported by the chairman of the eco-village carsharing association). That carsharing is not a stand-alone mobility practice is in line with [Costain et al. \(2012\)](#) and [Ye et al. \(2021\)](#) who also find that carsharers use public transportation more frequently than other groups. This makes carsharing a mobility practice that not only interlocks with other everyday practices ([Spurling & McMeekin, 2014](#)), but also always appears in bundles with other mobility practices, such as biking or using public transport. From a practice intervention perspective, it is interesting that – at least in our material – carsharing practices never appear independently but is always bundled with other mobility practices. This makes implementing carsharing challenging in suburban areas with no or few mobility alternatives to bundle up with. However, in suburban areas with mobility alternatives – e.g., access to public transportation – an important ingredient for promoting carsharing is met.

5.2. Competences and their transferal

While the discussion above has focused on how meanings and materialities associated with the planning context of The Suburb influence the mobility practices of the residents in terms of recrafting practices or changing their interlocking, this subsection analyses the role of competences in shaping practices of carsharing. The competence element is not specifically associated with the planning context, but our empirical findings indicate they are important for carsharing.

The low uptake of members in The Scheme (and the housing community carsharing scheme) compared to the eco-village scheme suggests that differences in operational structure have implications for the success of carsharing schemes in recruiting members. Joining a carsharing scheme requires acquiring specific skills, such as booking cars in advance, unlocking vehicles, and refueling or charging. However, acquiring these skills can be challenging without proper guidance and support. As mentioned, carsharing was introduced through limited local outreach efforts in The Suburb, such as distributing flyers and newsletters. In contrast, the other two schemes have a more robust infrastructure for introducing new members and facilitating skill acquisition. In the housing community

scheme, the caretaker assists residents in understanding and utilizing the carsharing scheme, while in the eco-village scheme, the close-knit community provides support and guidance.

The high number of members of the eco-village scheme indicates that this scheme has been more successful in transferring skills related to carsharing to new residents, and here, the community support networks appear to play a crucial role in helping residents acquiring the necessary skills. Therefore, establishing effective channels for skill transfer seems essential for the viability and effectiveness of carsharing in suburban contexts, and here, the existing informal social networks in suburban communities are a relevant place to start. However, the low uptake of the housing community scheme among the housing community residents shows the challenges related to establishing such channels.

5.2.1. Contesting notions of public and private goods

On a more general level, our study problematizes how cities are planned, designed, and built, and how well-established notions and practices reflect the fact that automobility has become a given in modern societies. Even if the planning context of The Suburb partly challenges traditional suburban planning through its physical design and associated meanings, e.g. reduced car parking, car parking is still free of charge. In other words, car parking continues to be approached as a public good and the costs associated with establishing and maintaining the car parking are covered collectively by all residents through the homeowners' association of The Suburb. In contrast, the subsidizing of carsharing, The Scheme, was only temporary. This makes it clear how some types of mobility provision (such as parking facilities for private cars) are regarded as a common good that all residents must have access to and pay for (regardless of whether they have a car), while other types of mobility provision (such as carsharing) are regarded as a non-common good that has to be paid only by the users themselves and needs to operate on market terms.

A similar distinction between private and public goods were found in the housing community scheme. Being a rental home development with a strong emphasis on residential communities, the development includes a variety of social and communal services that are all financed by the residents through their rent. These services include shared workshops, shared guest rooms, a shared kitchen and dining room and the employment of a social caretaker, who facilitates social events and activities for the residents. However, it is evident that the carsharing scheme, subsidized by the housing community at the time of study, will be discontinued eventually if it fails to break even within a few years. This shows that the housing developer distinguishes between social activities and amenities, such as the social caretaker, which is seen as part of a common good in the community, and the provision of shared mobilities, which is seen as a non-common good. At the same time, access to car parking (some of this being ground-level parking) is provided to all residents and paid through the residents' rent.

This illustrates that the provision of parking spaces is still, to a large degree, considered a necessary and public good, which reflects the fact that the private car and automobility thinking is still central to the planning and design of new suburbs even in the "sustainable suburb of the future", as The Suburb has been branded. It is, therefore, not surprising that it can be difficult to establish carsharing schemes in such areas as they are – albeit to differing degrees – designed for the use of private cars. If the hegemony of automobility in suburban contexts is going to be challenged, strategies for sustainable mobility must also address these embedded and seldomly contested understandings and (planning) practices.

5.2.2. Recommendations for promoting carsharing in suburban contexts

Based on the above analysis, it is possible to point out several elements that appear to be essential for promoting carsharing within suburban contexts. First, the materials of mobility practices should be changed by limiting access to (close-to-front-door) private car parking, as already pointed out by other research, as referenced earlier, and in line with the findings of [Svennevik et al. \(2021\)](#) and [Engel-Yan & Passmore \(2013\)](#). Similarly, providing easier access to shared cars (close to homes) as a residential strategy has potential, which is supported by the findings of [Cantelmo et al. \(2022\)](#). This study also underscores the importance of ensuring a good public transport service (especially for commuting) and placing public, commercial and recreational services within biking/walking distance and ideally in connection with central public mobility hubs (see also [Kumar, 2021](#)), to ensure other mobility practices that carsharing can bundle up with. Secondly, when it comes to adopting the skills needed for carsharing practices, our findings indicate that local social networks can be key elements in transferring such skills to new suburban users. Carsharing can benefit from utilizing local social networks as a way of transferring skills, as it was for example done by the volunteers of the eco-village scheme. Thirdly, there are indications in our data that creating a broader vision about a green transition and shared mobilities as an alternative to private car ownership can help facilitate change in mobility practices by ascribing meaning to the initiatives and how they are interrelated. Furthermore, as revealed in the interviews with users of The Scheme, positive meanings are associated with carsharing such as having access to a car and the flexibility this provides in situations such as visiting friends who live far away.

At the same time, car sharing is in principle more economical compared to car ownership, partly because costs related to maintaining a car can be avoided (see also [Christensen et al., 2022](#)). However, we find indications that the principle of paying per use makes it difficult for the carsharing users to compare the real costs of carsharing with the total costs of private car ownership (including fixed costs). A similar paradox was identified by [Catulli \(2012\)](#), who relates this to the more general problem for users of product-service systems to estimate costs over the life cycle of products and advocates for a better education of users in understanding such costs. Based on our studies, we can add that a subscription arrangement, possibly linked to rent payment, and/or the option to contribute voluntary labor to keep costs down, could be other ways to move forward here. Finally, our study points to the relevance of reconsidering distinctions between public and private goods in connection with the planning contexts of suburban areas.

5.2.3. B2C versus P2P schemes

In this paper, we have focused solely on fleet-based and operator-owned carsharing schemes, similar to what is often termed

business-to-consumer (B2C) services (although the schemes studied in this paper are all not-for-profit businesses). In recent years, peer-to-peer (P2P) services have gained ground where private car owners can rent out their cars to others who can book and pay for the use of the cars through online services (Jain et al., 2022; Julsrud and Uteng, 2021). Compared to B2C services, the investment costs in connection with establishing shared cars in a neighborhood are minimal for P2P services. This removes the investment risks associated with carsharing in suburban areas, and in this way, P2P could enable “the potential to expand the range of geographic environments (e. g., suburbs) for shared-use vehicle services” (Shaheen et al., 2012: 75). Similarly, Jain et al. (2022) argue that P2P carsharing could be a more feasible solution to low-density areas than B2C schemes. However, as our own as well as others’ studies indicate, distance from home to a shared car has a significant influence on people’s inclination to use carsharing, and as suburban areas are characterized by a low population density, it might be a challenge to reach the critical volume of private car providers needed to make P2P carsharing an attractive alternative to private car ownership.

5.2.4. Limitations of the study

The findings and discussions presented in this study are based on 14 semi-structured household interviews with families who have settled in a newly developed area branded as the “Suburb of the Future”. While all interviewed households had access to carsharing from the day they moved in, a significant limitation of this study is that only 5 families, who took part in the carsharing at reduced-cost offer, were interviewed. The limited number of interviews was due to a combination of relatively low adoption of the carsharing scheme, resulting in a smaller pool of potential interview participants, and resource and time limitations of the project. However, by including also interviews with other residents in the area, making the total number of household interviews 14, it has been possible to establish a thorough understanding of the existing mobility practices and the residents’ reception and adaptation to the local planning context of the neighborhood and reach a state of saturation (Brinkmann and Kvale, 2015), with clear patterns emerging across interviews, and the same themes reoccurring across interviews with both reduced-cost users and non-users. This has enabled us to contextualize the findings from the interviews with carsharing users and render visible how suburban carsharing practices are related to and conditioned by site-specific elements related to the physical design (planning context) of suburban areas as well as the meanings ascribed to such sites. To further strengthen this contextualization, we also included interviews with two neighboring suburban carsharing operators. This study offers nuanced insights into the specific challenges of carsharing in this type of setting, as the depth and richness of the qualitative material provide a solid foundation for our analysis and recommendations. Still, the limited number of interviews with carsharing users puts limitations on the generalizability of the study, and future research should aim to include a larger and more representative sample of carsharing users. Additionally, longitudinal studies tracking carsharing adoption and usage over time could provide deeper insights into the evolving dynamics of carsharing within different communities.

6. Conclusion

Investigating the potential expansion of carsharing solutions beyond densely populated areas is vital for comprehending its role as a strategic element in the broader transition towards sustainable mobility. This paper adopted a social practice theoretical framework to analyze carsharing in a newly developed suburban setting, branded as the “Suburb of the Future”. We aimed to uncover the challenges and potentials associated with introducing carsharing as a sustainable mobility strategy in suburban areas and to delineate strategies for supporting such initiatives.

Summarizing the primary findings and offering overarching recommendations for future carsharing schemes, we have made several insights. Firstly, we emphasize the importance of aligning the design of carsharing schemes with the specific planning context of the suburban area, considering factors such as the local mobility landscape and public transport infrastructure. Successful integration often requires challenging traditional suburban automobile planning paradigms. Material and infrastructural changes can make a difference in making carsharing an attractive alternative to private car ownership.

One would think that an element in making carsharing attractive would also be the lower price associated with accessing a car through a carsharing scheme compared to owning and covering all expenses oneself. However, our study showed that the price structure, which reveals the cost of each trip, paradoxically has the opposite effect. Carsharing is perceived as expensive because the costs are visible and not disguised by fixed transfers, as with private ownership. Therefore, it makes sense to consider other pricing structures than the one tested in The Suburb. Contrasting The Scheme with two other carsharing schemes suggests that a closer integration into the local community will create better anchoring and broader uptake, and it may also be a solution to link payment and community closer together, as has been done in other schemes where costs for shared cars are covered through rent.

Furthermore, the establishment of carsharing schemes in suburbs necessitates strong integration with social networks and community dynamics. It is essential to recognize that new sharing practices do not naturally evolve; instead, they rely on social ties within local communities to facilitate the transmission of necessary skills and knowledge. In newly developed settlements, early conceptualization of carsharing schemes can facilitate their integration into the community fabric from the outset. This approach can also support residents migrating from urban centers in adopting less car-dependent mobility practices. Additionally, creating a “green narrative” linking the suburban environment with carsharing as a means of fostering shared social meanings around sustainable mobility practices appears important.

While acknowledging that carsharing is not a panacea and recognizing the challenges faced by the schemes studied, we contend that it remains a compelling strategy for promoting sustainable suburban mobility. However, it is imperative to tailor these initiatives to the specific planning context and community dynamics, rather than adopting a one-size-fits-all approach. Moreover, to challenge the hegemony of automobility in suburban contexts, strategies for sustainable mobility must also address entrenched planning paradigms and reevaluate prevailing notions of public goods and market dynamics.

Author Statement

During the preparation of this work the authors used ChatGPT in order to nuance the language in selected places. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

CRedit authorship contribution statement

Malene Rudolf Lindberg: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Toke Haunstrup Christensen:** Writing – review & editing, Writing – original draft, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Thomas Skou Grindsted:** Resources, Investigation. **Freja Friis:** Resources, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

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