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# Investigating ride-pooling use through a mixed methods approach

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## Abstract

Ride-pooling is one of many new on-demand mobility services that have become increasingly popular in recent years. The role these novel services will play in the future is still uncertain. As of today, their share in the modal split is still low. However, in the context of traffic and environmental policy goals, these services could gain significant importance in the next years. Currently, it is often unclear who uses these services and for what purposes. Traditional household surveys are not particularly well-suited for investigating the use of these novel services and their users: the subsample size of users is small, and the number of reported trips is very low. Consequently, the results obtained are not reliable. Using the example of ride-pooling, this paper describes a mixed method study design composed of an online survey with a stated choice experiment and semi-structured interviews to understand ride-pooling use and its users. Special attention is given to the design of the stated choice experiment, which specifically targeted shared on-demand mobility services. A selection of the various results is presented to demonstrate the advantages of combining different methods when investigating new mobility services.

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*Keywords:* mixed-methods approach, semi-structured interviews, stated choice experiment, on-demand, ride-pooling

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## 1. Introduction

The rapid evolution of urban mobility has introduced plenty of new mobility-on-demand (MOD) options, ranging from bike-sharing and e-scooter-sharing to ride-hailing and ride-pooling services. Further, changes through the deployment of autonomous vehicles are expected soon: Waymo already operates its service in the United States, and in Germany, autonomous ride-pooling is currently being tested in different pilots. (Waymo, 2025, MOIA, 2023) Particularly when sharing one vehicle, these innovations promise to revolutionize mobility in cities, offering potential benefits such as reduced traffic congestion, lower emissions, and increased accessibility. However, the successful integration of these new mobility options into existing transportation ecosystems hinges on understanding user behavior and preferences. By understanding emerging usage patterns, we gain insights into how mobility can evolve through these services and how politicians may interfere to achieve the goals of climate and better urban mobility.

Further, examining the user's experience and satisfaction can guide improvements and ensure that the service meets the needs of its clients. Moreover, it helps identifying potential barriers to adoption, such as safety concerns, lack of awareness, or technological challenges.

Since the Amendment of the German Passenger Transport Act in 2021, the number of MOD services has grown significantly in Germany (VDV, 2022). Nevertheless, the framework conditions for these services vary, as do the users and their use cases. Hence, there is still a lot of uncertainty about ride-pooling user profiles, current and future use, and its factors of influence. As ride-pooling services can reduce the number of deadhead trips compared to ride-hailing by bundling similar requests and pooling passengers into one vehicle, they might be particularly relevant for mobility transition strategies in the future. (Henao and Marshall, 2019, Fiedler et al. 2018)

This study investigated the use of ride-pooling service through an extensive case study of MOIA in Hamburg, combining quantitative and qualitative research. MOIA GmbH is a Volkswagen subsidiary operating in Hamburg, Germany, with vehicles specifically designed for the ride-pooling purpose. The spacious vehicles ensure customers' privacy even when sharing a ride with strangers\*. Our research focuses on current users to gain realistic behaviorally grounded insights into service usage. Previous findings from e.g., König et al. (2018) show that MOD experience can alter the importance of service attributes, making active users a crucial reference group for understanding use patterns. Another contribution of the work lies in the mixed-methods study design itself: The combination of established techniques with less common methods in transportation research enables a multi-perspective analysis and thus a more holistic understanding of ride-pooling users.

The paper at hand is structured as follows: First, we describe the methodological background. Second, we give an overview of the online survey's setup, focusing on the stated choice experiment (SCE) design. Next, we outline the approach to customer segmentation and the procedure for the semi-structured interviews. Finally, the key findings are summarized and discussed.

## 2. Background on Mixed Methods Approach

The mixed methods approach describes the combination of different research methods as qualitative and quantitative. While quantitative studies (e.g., surveys) have a long history in travel behavior research, qualitative approaches like interviews or focus groups originate from social sciences and psychology. However, the latter have become increasingly popular in recent decades in travel behavior research to gain a different, more profound understanding (Mars et al., 2016). Also, mixed methods are becoming more popular (see f.i., Gerosa and Cellina, 2024, Tinzado-Aitken et al., 2020).

Mahoney and Goertz (2012) contrast the differences between quantitative and qualitative research traditions, which can be summarized as shown in Table 1. Combining both approaches and their different perspectives on a research object allows for a more comprehensive understanding.

Table 1: Differences between quantitative and qualitative research approaches (Goertz and Mahoney, 2012)

|                      | Quantitative                                 | Qualitative  |
|----------------------|--|--|
| Explanatory approach | General                                      | Context-specific                                   |
| Concept of causation | Statistical causation, multivariate analysis | Complex causal relationship, in-depth case studies |
| Case selection       | Random sampling                              | Purposive, to select cases of special interest     |
| Lack of Fit          | Addressed through model adjustments          | Exploring the reasons behind anomalies             |
| Concepts             | Often relies on redefined concepts           | Developed inductively during research              |

\* See <https://www.moia.io/en/passengers> for further information

### 2.1. Online surveys in travel behavior research

Online surveys have become an essential tool in travel behavior research due to their efficiency, flexibility, and ability to reach a broad audience with relatively little effort. Data is automatically collected and stored digitally, eliminating the need for manual data entry. Questionnaires can follow different paths, ensuring that respondents only see relevant questions, e.g., when differentiating between users and non-users. Further, online surveys allow for real-time plausibility checks during the completion process, enhancing the quality of the collected data. Additionally, costs associated with printing and sending questionnaires or paying interview fees are eliminated, enabling much larger sample sizes than other formats.

Researchers typically differentiate between revealed preferences (RP) and stated preferences (SP) data when examining travel behavior. RP data is based on decisions made in the past and associated actions taken, usually collected through travel diaries or GPS tracking. In contrast, SP data comes from hypothetical decisions made in surveys. Both have advantages and disadvantages: While RP data is very valid, information on non-chosen alternatives is missing. Further, only options available in the real world can be studied. SP data, in contrast, can be biased, as no consequence follows the decision for an option. However, researchers can explicitly define all alternatives including their attributes and investigate potential future scenarios before they are deployed or available to the public. (Hess et al. 2007) With the help of this data, discrete choice models can be estimated. As a formal representation of the decision process these models clarify the relevance of the transport modes' characteristics and specific trip attributes when deciding on a mode for a trip. Moreover, they can be used in agent-based simulations to conduct scenario-analysis.

### 2.2. Persona Method

Cooper (1998) first mentioned the Persona Method, which is particularly used in design thinking, product design, and UX research. The idea is to think about a fictional person representing a typical group of customers. According to Tomlin (2018), one can differentiate between three types of Personas:

- Design Personas, for whom critical tasks are identified
- Marketing Personas (Buyer Personas), based on demographic data with specific needs
- Proto-Personas, similar to Design Personas but made without field research

To better understand the needs of a customer, the Persona is humanized by demographic characteristics such as gender, age, family, and employment status. Its typical characteristics and behavior is analyzed through field research. Next, their needs are identified. Subsequently, products or processes (improvements) that meet the specific needs of the Persona are thought of.

### 2.3. Semi-structured interviews

Semi-structured or guided interviews are a qualitative research method that uses a predefined set of questions as a guideline, while allowing for a natural conversation, including follow-up questions or changing the order of the questions based on the interviewee's responses. Due to their flexibility, they are very well suited for an explorative approach, and the collection of rich, detailed data as interviewees can elaborate their perspectives and give in-depth insights. Its advantage is the comprehensive view through the interview, allowing researchers to uncover complex behaviors, motivations and attitudes. Moreover, thanks to the natural conversations, interviewees usually feel more at ease than in stricter formats. (Magaldi and Berler 2020)

## 3. Study Design

The present study followed a multi-step approach illustrated in Figure 1. First, the online survey, including a stated choice experiment (SCE), was designed and conducted. Second, the data was checked for plausibility and analyzed using statistical methods. A complex mode choice model (nested Logit) was estimated to understand decisions for or against MOD services better. Third, we applied the Persona Method to segment the customers and better understand the variety of user profiles, their characteristics, and the associated behavior patterns and needs. Subsequently, we

decided on groups of special interest that we wanted to study in the semi-structured interviews. We developed suitable questionnaires and conducted the interviews. After data processing, we analyzed the interview material. Concluding,



Figure 1: Multi-step analysis approach combining different methods

all the results were brought together to create a holistic picture. Every step will be described in detail in the following.

### 3.1. Online Survey

The main goal of the online survey was to understand who the customers of the ride-pooling service are, how they can be characterized, and how ride-pooling fits into existing mobility routines. When setting up the survey, questions concerning sociodemographics and everyday mobility were designed comparably to the German national household survey MID (Nobis and Kuhnimof, 2018). Some additional questions regarding MOD services were added. Further, we complemented the survey with attitudinal questions following Hunecke et al. (2022), which we supplemented with statements regarding taxi and ride-pooling use. All respondents with prior ride-pooling experience faced questions concerning their behavior, reasons for using ride-pooling, and a service evaluation. Those without experience were introduced to the service in detail and asked for reasons for non-use and about potential future use. To better understand mode choice, we integrated a stated choice experiment (SCE) focusing on MOD services, as understanding the interactions of ride-pooling with classical modes and other MOD services seemed crucial to us. Further insights, on the survey's questions and structure can be found in Kostorz et al. (2021).

Morency and Verrault (2023) emphasize that no respondent group should be systematically excluded through the recruitment channel choice and that combining different recruitment methods raises the possibility to reduce bias. Particularly older people have the risk to be excluded from online surveys, as they might have less access to computers or internet or feel less confident using this technology. However, since the ride-pooling service investigated is only available via the MOIA app, for which one has to register with its email address, it could be assumed that the whole customer base is reached by email and sufficiently digitally experienced. Non-user perspectives were valuable but not in the focus of the study.

### 3.2. Stated Choice Experiment

Stated choice experiments (SCE) are a common way to understand choice behavior, particularly the relevance of different trip and mode attributes. When the study started, the latest national household survey in Germany was conducted in 2017. Back then, the use of MOD services was rare, or the services have not yet been available. (Nobis and Kuhnimhof, 2018) Hence, we put effort into designing a choice experiment where as much information on MOD services could be collected while still providing a realistic scenario. In total, ten different modes were potential options: walking, bicycle, car as driver, car as passenger, public transport, taxi, bike-sharing, car-sharing, e-scooter-sharing, MOIA ride-pooling. However, a maximum of six options were displayed at the same time (see Table 2 and Figure 2). Every choice situation was described by a trip purpose. The participants faced two different trip purposes in total, each presented in five different choice situations, resulting in ten choices per person. Trip purposes were drawn at random with the restriction that commuting, business and education trips were only taken into account for those with a suitable employment status. Overall, commuting, education, business, leisure, shopping for daily needs, other shopping and pick-up and drop-off were considered trip purposes.

Pivoting is a common method to generate more realistic SP scenarios (f.i., Rose et al. 2008). In our example, all respondents indicated the mode they used most frequently for the randomly drawn trip purpose before the SCE started. The reference and all MOD services were available in every choice situation, with the limitation that car-sharing was only shown to people who had previously indicated that they had a driver's license. Car as driver was only shown to

those with a driver's license who could use a car in everyday life. All other traditional modes rotated and were only displayed once (see Table 2).

Table 2: Design of Alternatives in DCE, if Public Transport was chosen as most frequent mode for specific trip purpose and Car and Driving License were reported as available.

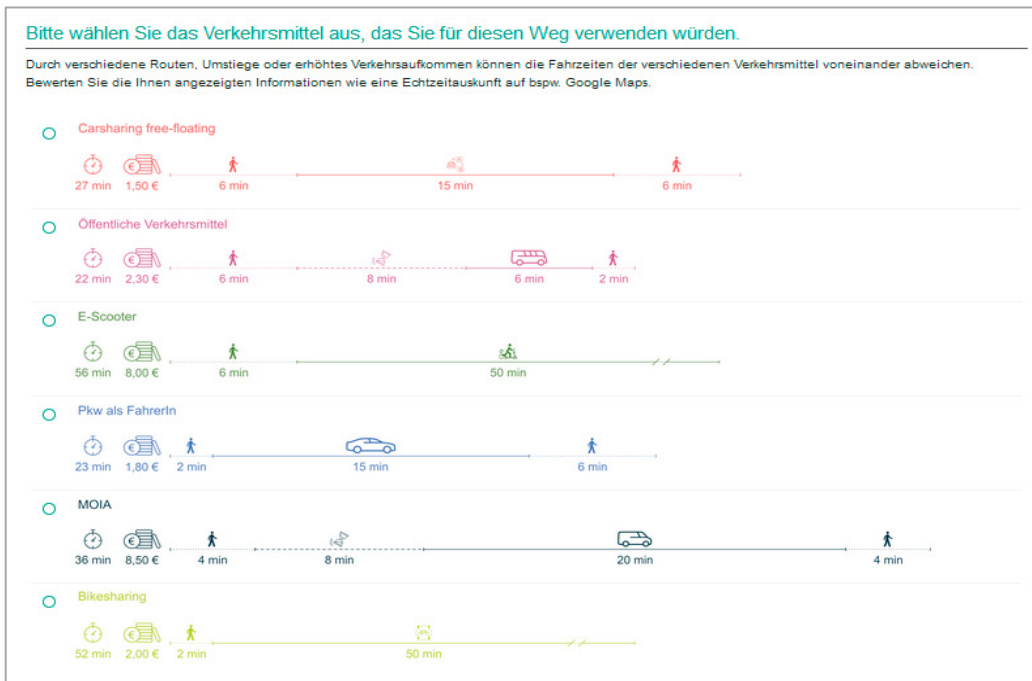


Figure 2: Exemplary visualization of one SCE question in the online survey corresponding to situation 3 in Table 2

|                   | Options          | Situation 1 | Situation 2 | Situation 3 | Situation 4 | Situation 5 |
|-------------------|------------------|-------------|-------------|-------------|-------------|-------------|
| Traditional modes | Walking          | x           |             |             |             |             |
|                   | Bicycle          |             | x           |             |             |             |
|                   | Car as Driver    |             |             | x           |             |             |
|                   | Car as Passenger |             |             |             | x           |             |
|                   | Public Transport | x           | x           | x           | x           | x           |
|                   | Taxi             |             |             |             |             | x           |

|                 |                     |   |   |   |   |   |
|-----------------|---------------------|---|---|---|---|---|
| MOD<br>Services | Bike-sharing        | x | x | x | x | x |
|                 | Car-sharing         | x | x | x | x | x |
|                 | E-Scooter-sharing   | x | x | x | x | x |
|                 | Ride-pooling (MOIA) | x | x | x | x | x |

Potential attribute levels were determined using google maps information for two types of trips in Hamburg: shorter trips with approx. 2 km and longer with 6-8 km for all modes. The final design was done using NGENE (ChoiceMetrics, 2024) in a two-step procedure. First, all potential combinations of choice situations were designed separately (f.i., #1 public transport + walking + MOD, #2 public transport + bicycle + MOD, etc.). Second, a candidate set - combining all these previously determined situations - was processed to block them. However, to guarantee consistency within the rotation approach (showing all modes to every person) some manual adjustments had to be made. No rules on trip length within the blocks were defined, resulting in mixed trip lengths within every block. The final candidate set was composed of 100 choice situations divided into 20 blocks of five choice situations each. Blocking situations is beneficial during the conception of choice experiments as it allows, on one hand, the researcher to investigate large choice sets and hence multiple attribute combinations and reduces, on the other hand, the burden of cognitive overload on the participant as the number of choices can be restricted. (ChoiceMetrics, 2024).

When generating SCEs based on reported trips by respondents, the quality of the reference trip (incl. information on cost and travel time) is highly dependent on exact memory and subject recall bias may lead to inaccurate choices. Moreover, the variability across the data cannot be controlled and dynamic scenarios (e.g., +10 % costs or -20 % travel time) can lead to loss of statistical efficiency. In our case, we only used the mode as reference. We still could not control the precise outcome, nevertheless, the choice sets themselves were not relying on a specific trip reported.

After designing the choice situation in terms of pairing all attribute levels, all alternatives were visualized (see Figure 2). In contrast to many other SCEs, we did not choose a tabular display but depicted trip chains. Every alternative had its color to provide orientation within the choice situation, as the options changed and the displayed order was randomized in the different choice situations. The information given in Figure 2 is described from left to right: First (clock icon): the total trip time was displayed in minutes, adding up all the different stages of a trip like that were available (access, waiting, drive, egress). Second (coin icon), the total costs for the trip were indicated. Third, the different stages of the trip chain were depicted, incl. walking for access and egress, driving and waiting times, as these attributes become highly relevant for shared MOD services that are not necessarily available at the doorstep. To ensure that all icons could be well recognized also while using mobile devices like smartphones, we cut back parts of a trip chain lasting longer than 25 minutes (see, e.g. "in/ on vehicle time" for e-scooter-sharing or MOIA ride-pooling in Figure 2).

### 3.3. Semi-structured Interviews

After the survey data analysis and persona identification, we decided to use the semi-structured interviews to better understand the behavior and the motivation of three groups: heavy users, elderly users, and users from outside Hamburg (hoping for information on intermodal use). All of these were currently minor user groups that differed from the typical user. However, they were important customer groups that should be expanded in the future. We developed the interview guideline based on the online survey results. All of them aimed to answer the following questions, each broken down into several detailed questions in the interview:

- How is the service perceived compared to existing transportation modes, and how important is the pooling aspect?
- What role does the ride-pooling service play in everyday life? How is it discussed in the social environment?
- How often and under which circumstances is the service used? Which modes are substituted? How do users behave during the ride?
- What potential for improvement do the customers see?
- What do their daily lives and living situations look like? How do they get around? How relevant are lifestyle and innovations?

Further, each group had specific research questions

- Which factors lead to above-average use frequencies? How important is integrating the service to other platforms? (heavy user)
- How did older people find out about MOIA? Is there an access barrier to the digital offering? Will the requirements on mobility change in the next years? (older users)
- How do tourists/visitors find out about the ride-pooling service? What are the needs of people who cannot use their own car or are unfamiliar with Hamburg? Does combining ride-pooling and other transport modes work well? (users from outside)

The ride-pooling provider conducted a small market research panel where people could voluntarily register for surveys, prototype testing, etc. During the registration process, age, gender, and place of residence were requested and linked to the customer account. This information was used to recruit adequate interviewees via mail.

## 4. Results

As the focus of the conference is on methods, the results are only outlined to prove that the study was successful in design and that a variety of methods ensures a comprehensive perspective on the use of ride-pooling.

### 4.1. Online survey incl. Discrete Choice Experiment

The invitation to the online survey was distributed via the service provider's newsletter and promoted on social media. However, the latter promoting channel gained only limited attention. Participation was voluntary and not incentivized. To gain insights from people without previous experience, we collaborated with an online access panel provider and bought a sample of 1,000 people in Hamburg. Table 3 summarizes the survey's key figures.

Table 3: Key figures for the online survey conducted

| Key figures                                     |           |
|---|-----------|
| Total number of participants                    | 12,076    |
| Recruited via online access panel               | 1,086     |
| Recruited via newsletter                        | 10,990    |
| Number of people who received the newsletter    | ~ 100.000 |
| Completion Rate of those who started the survey | 63 %      |
| Sample size after plausibility checking         | 11,372    |
| Respondents living in Hamburg                   | 8,012     |
| With previous ride-pooling experience           | 6,417     |
| Average time to complete the survey (median)    | 17 min    |

We found the typical ride-pooling user is between 30 and 49 years old, works full-time, and uses the service occasionally (one to three times per month). Moreover, the customers are very multimodal, and ride-pooling is only one of many mobility options available to them. Hence, their mode choice is flexible and firmly based on circumstances. Besides, ride-pooling is predominantly used in the evening or at night and for leisure trips. All in all, the customers are delighted with the service. For more details and a classic sample description the reader is referred to Kistorz et. al (2021). As we followed an explorative approach to analyze the user base and no other information on the users' characteristics was given beforehand, we could not apply any weighting procedures.

The mode choice model was estimated using Apollo in R (Hess and Palma, 2019). Together with data from the national household survey of Hamburg and its surroundings (Nobis and Kuhnimhof, 2018), over 150,000 trip decisions were analyzed. To reproduce substitutional behavior well in future simulations, we decided on a cross-nested logit model to assign ride-pooling to various nests (see Figure 3). The data obtained through the online survey permitted us to estimate different allocation parameters for frequent users (booking ride-pooling at least 1-3 times per month) and others. As illustrated in Figure 3, ride-pooling could be integrated into all nests (apart from walking) for both groups. However, the share of belonging is different: Frequent users are more likely to switch to public transport

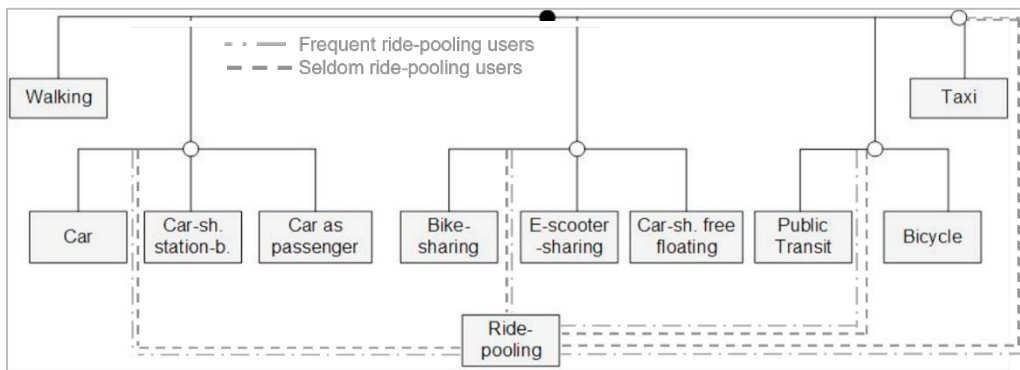


Figure 3: Structure of the cross-nested logit mode choice model considering different nest allocations for heavy users and other users (Kostorz-Weiss et al., 2025)

or bicycles when ride-pooling offerings change. Seldom users shift more likely to other MOD services. This indicates that frequent users consider ride-pooling as a real alternative to classical modes. In contrast, seldom users see ride-pooling currently more as one of the exciting novel MOD services, which is not yet integrated into daily routines. In terms of travel time perception, we found that one additional minute of waiting time for a ride-pooling vehicle is assessed as three extra minutes in the vehicle. An additional minute walk corresponds to about 1.5 minutes of waiting time. This model could be implemented in an agent-based travel demand simulation, more details can be found in Kostorz-Weiss et al. (preprint).

#### 4.2. Persona Method

For further analysis, we grouped the user data from the online survey by filtering specific characteristics and applied the Persona Method. Table 4 contains the essential extracts for the user profiles, the segmentation variables used for classification (socio-demographic or trip-related), and their share among the sample. We analyzed their age and gender distribution, their travel routines with but also apart from ride-pooling and their service evaluation. Based on these findings, we identified potential service improvements that might be particularly beneficial for each group respectively (see Fraedrich et al., 2021 for further details). By now, some have been implemented by the operating company, e.g., the barrier-free vehicle and pre-booking or express options (see www.moia.io).

Table 4: User profiles developed through Persona Method (Fraedrich et al., 2021)

| Persona                 | Share | Segmentation Attributes                             | Potential Service Improvements                             |
|-------------------------|-------|---|--|
| The businessman (m)     | 9%    | HH resident, business related trip                  | scheduled booking, exclusive rides                         |
| The commuter (m)        | 10%   | HH resident, commuting to work                      | pre-booking, guaranteed ride, loyalty prog.                |
| The intermodal commuter | 0%    | HH catchment area, commuting to work                | Subscription model, guaranteed connection                  |
| The young parent (m)    | 13%   | HH resident and at least one child <6 years         | Extended service area, children's service                  |
| The traveler (m)        | 12%   | HH resident, trips from / to airport, train station | Pre-booking, guaranteed connection, reserved luggage space |

|                           |     |  |   |
|---------------------------|-----|--|---|
| The visitor               | 2%  | outside HH <1.5 h driving distance                   | Integration to other mobility-apps                      |
| The tourist               | 11% | outside HH at least 1.5h driving distance            | Integration to other mobility-apps                      |
| The night-owl (f)         | 24% | HH resident, leisure trip between 9pm-4am on Thu-Sat | Women-only rides, coupons for destinations with poor PT |
| The mobility-impaired (f) | 4%  | indicated mobility impairment                        | Door-to-door service, barrier-free vehicle              |
| The student (f)           | 7%  | HH resident, in education                            | Extended service area, women-only rides                 |
| The heavy-user (m)        | 9%  | HH resident and at least 1-3x per week               | Loyalty program, subscription models                    |

### 4.3. Semi-structured Interviews

Based on age, place of residence and ride-pooling use frequencies suitable customers were contacted via the service provider. The other segmentation variables (e.g. trip purposes or impairment) were not available in the data base. Hence, we could not identify people representing exact profiles but focused on people deviating from the typical user. We aimed for 15 interviewees (5 per group), however, in total 13 (6 heavy users, 4 older users, 3 from outside of Hamburg) interview partners were recruited. As we could not access to the database of registered users, we do not know how many people were contacted in total and how many potential candidates per group existed. The interviewees decided whether the interview was conducted by phone or video call. Successful participation was incentivized with a little merchandise package and a voucher. The conversations were recorded with the interviewees' consent and transcribed using Amberscript (<https://app.amberscript.com/>). Subsequently, the interview material was paraphrased and analyzed following Mayring (2019). The interviewees emphasized that being a MOIA user comes with a particular image for the customers. While the survey already stressed the customers' satisfaction in general, the interviews reveal the dimensions of comfort, (*"It is a very pleasant possibility to get from A to B relatively quickly [...] in a beautiful vehicle. [...] I feel insanely comfortable in it."*) sustainability, and luxury associated with the service (*"When I want to treat myself somehow, I prefer to order a MOIA."*). Some people became emotional when answering the questions, like in storytelling. Further, the interviewees stood out due to their conscious reflection of their mobility. In their everyday lives, they were multimodal and very concerned about possible alternatives when choosing transportation modes. (*"Because I also like to think up routes and consider "What is the cheapest route?" [...] And then [I] compare the distances with each other."*). Particularly older users showed that they were proud of their tech-savviness (*"It is a cool service and sustainable. [...] it is hip, it is comfortable, the people are friendly. [...] because I am one of these people who adapts these things early."*). Moreover, they did not worry about future mobility due to the many alternatives that Hamburg offers them. However, they highlighted the difference to people living in the countryside. For more details on the results, the reader is referred to Kostorz-Weiss et al. (2022).

We deduced customers identify strongly with their use of ride-pooling, comparable to a new kind of status symbol and that a combination of social, functional and emotional motives drives this user experience. Ride-pooling is perceived as a valuable addition to the personal mobility portfolio, recognizing that it is not the best choice for ad-hoc use or when one cannot plan a buffer.

## 5. Discussion and Conclusion

This paper presents a multi-stage approach to investigate ride-pooling users combining qualitative and quantitative methods. The large sample size of the online survey (N>8,000) allowed for a very detailed user analysis. The SCE provided valuable insights into mode choice for MOD services and differences between frequent and seldom users. The results could be implemented into a microscopic travel demand model for a simulation study representing mode choice for ride-pooling adequately (Kagerbauer et al., 2021). Many different user profiles were identified using the persona method. These personas simplify the understanding of customers' needs and help to improve the service according to their requirements. Moreover, we conducted an interview study with users that deviate from the typical occasional late-time user. We recruited from three groups (heavy-users, older than 55 years or living outside Hamburg) that currently account for only a small share but could become particularly important customer groups in the future to understand their behavior and motives better. The interviews confirmed many findings of the survey. However, the

semi-structured interviews with “only” 13 people revealed the relevance of emotional motives, that had not been considered and therefore not analyzed in the survey. These results go well with the different motives for car use from Steg (2005), showing that also not using a car and being a member of MOD services can serve as a status symbol nowadays.

We must emphasize that the large sample size could only be reached through collaboration with the operator, as the user base could be contacted directly. The limited data available is a major difficulty when studying new mobility options. With random sample selection, it is much harder to find the right people as users of on-demand options are still a minority. Additionally, there is a risk that early adopters of new offerings or people registered at a company’s panel may not represent the broader population, leading to skewed insights. Further research should also focus on non-users who were only examined rudimentarily in the current study. In particular, attention should be given to groups of people who lack access to apps or are not represented in online access panels. Furthermore, the rapid pace of technological advancements necessitates continuous monitoring of further developments.

The results presented come from a user-based study investigating a metropolitan, fully app-based ride-pooling service with special-purpose vehicles and a fare based on distance and system capacity. Many German on-demand services operate under very different conditions: services with smaller vehicles, deployed in rural or sub-urban areas as a flexible complement to traditional public transport, these services can often be used with traditional public transport tickets or a small surcharge. Consequently, user characteristics and their behavior may vary due to differing framework conditions. The methodological approach can also be transferred to smaller samples and will still be beneficial. It is further possible to use interviews or other qualitative methods before conducting a study as an explorative search for the most important subjects when designing the survey. We are currently working in another research project with on-demand users, where we implemented - based on the findings from this study- “straight forward questions” on the importance of trends, sustainability, lifestyle and status in life. Next, we will investigate if current ride-pooling users will attach importance to these aspects in general through an online survey. Further research should will also investigate whether the results also apply to autonomous ride-pooling.

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