

1 **IMPACTS OF A MULTIMODAL MOBILITY SERVICE ON TRAVEL BEHAVIOR AND**  
2 **PREFERENCES: USER INSIGHTS FROM MUNICH'S FIRST MOBILITY STATION**

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**1 ABSTRACT**

2 The City of Munich, in cooperation with the local public transport provider MVG, is testing a  
3 pilot project of a “Mobility Station”, which is a multimodal mobility hub connecting public  
4 transport (PT) and new shared mobility services. The project’s goal is to provide sustainable  
5 mobility options that allow citizens to be mobile without owning a car.

6 To evaluate the acceptance of the Mobility Station, as well as short and long term effects  
7 on mobility behavior, we developed an online user survey in close cooperation with the  
8 stakeholders and experts in the field of shared mobility.

9 The results provide insights on the awareness and perception of the Mobility Station  
10 among users, their mobility patterns, current degree of multimodality, as well as actual and  
11 potential changes on mobility behavior and travel preferences due to the multimodal mobility  
12 service.

13 Most users are young, male, and highly educated individuals with access to multiple  
14 mobility options. PT plays a central role for daily mobility together with the services they were  
15 identified to be customers of. The high share of users that use different mobility services at least  
16 once a month indicates some degree of multimodality.

17 Actual and potential changes in mobility behavior towards multimodality were revealed.  
18 Some users declared to use other mobility services more often. They appreciate the availability  
19 of different mobility options and show interest in other services and intermodal connections  
20 indicating that there is still potential to increase multimodal behavior. Based on previous findings  
21 multimodality can contribute to reduce car use and car ownership.

22  
23

24 *Keywords:* mobility hub, integrated mobility, multimodality, mobility stations, intermodal  
25 mobility, multimodal mobility

## 1 INTRODUCTION

2 In recent years, with the advances of Information and Communication Technologies (ICT) as  
3 well as innovations in vehicle technology, new mobility services such as carsharing, bikesharing  
4 and ridesourcing, among others, have emerged (2). Furthermore, a gradual change in the  
5 consumption culture towards *more using* and *less owning*, as well as the sharing economy  
6 supported by internet platforms and smartphone applications enable easy access to multiple  
7 options for daily mobility, especially in urban environments.

8 An efficient integration of multiple mobility services has the potential to compete against  
9 the flexibility and convenience of private cars by enabling comfortable, cost and time-effective  
10 door-to-door travel (3). Thus, an integrated multimodal mobility service which combines the  
11 advantages of different mobility options has the potential to reduce car trips and the associated  
12 negative impacts of car-based mobility such as congestion, pollution, noise and accidents, among  
13 others (4).

14 Multimodal mobility hubs, commonly known as ‘Mobility Stations’ in Germany, are  
15 multimodal transport nodes that facilitate intermodal transfers by providing different mobility  
16 options in close proximity. Here public transport (PT) plays a central role usually in connection  
17 with an additional shared mobility service. Beyond the concept of Bike and Ride (B+R) or Park  
18 and Ride (P+R), the multimodal mobility service at Mobility Stations is integrated either through  
19 information (multimodal trip planners), marketing, tariffs (mobility packages) and/or access  
20 (multimodal smart cards). (5; 6)

21 The City of Munich, in cooperation with the local PT operator (MVG), is testing a pilot  
22 Mobility Station since November 2014.

23 In order to decide whether or not to invest in additional Mobility Stations, and if so in  
24 which form, the main stakeholders are seeking to understand the public perception and  
25 acceptance of the pilot project as well as its impacts on mobility behavior and car ownership.

26 The Chair of Urban Structure and Transport Planning at the Technical University of  
27 Munich is carrying out the evaluation of this Mobility Station on behalf of the Department of  
28 Public Order (DPO) of the City of Munich. In this paper, we present the results of a user survey  
29 conducted in June and July 2016 which forms an essential part of the evaluation.

## 31 BACKGROUND

32 The City of Munich with 1.4 million inhabitants is the third largest, and the most densely  
33 populated city in Germany with more than 4400 inhabitants per square kilometer (7).

34 The urban PT network consists of 95 km of subway, 75 km of tramway and 456 km of  
35 bus lines. In addition, 442 km of commuter train lines connect the city with the metropolitan  
36 region. Car ownership within the city is relatively low (432 vehicles/1000 inhabitants) compared  
37 to the national average. (7)

38 While other cities in Germany are witnessing a shrinking population, the city of Munich  
39 has seen a significant growth in population in the last decade (15.1% between 2004 and  
40 2014) (8). This places a high pressure on the real estate market and on the transport network (8;  
41 7).

42 Over the last few decades, a number of measures have been implemented to restrict car  
43 traffic (i.e. parking management scheme and environmental zone) and to promote using other  
44 modes (i.e. mobility management, cycling campaign, and investments in PT). According to  
45 mobility surveys, the mode share of cycling trips increased from 10% in 2002 to almost 14% in  
46 2008, and that of car trips reduced from 41% in 2002 to 37% in 2008 (9; 10).

1 Further, the evaluation carried out by the city's cycling campaign in 2011 reported a  
2 share of 18% of cycling trips and 33% of trips by car (11).

### 3 4 *Shared mobility services*

5 Carsharing started in Munich in 1992 in the form of Station Based Carsharing (SBCS). Today  
6 there are seven SBCS providers, of which the following two are the most important:  
7 *STATAUTO* with a fleet of approximately 450 vehicles distributed across 115 stations and  
8 *Flinkster* with 135 vehicles available in 63 parking zones within the city. (12–16)

9 With the roll out of *DriveNow* and *car2go* in 2011 and 2013 respectively, free-floating  
10 carsharing (FFCS) services were introduced. In contrast to SBCS, FFCS vehicles are not station-  
11 bound, allowing for a greater flexibility for one-way trips within the service area. Both the city's  
12 FFCS providers have similar business models and share similar service areas (extended  
13 downtown area and Munich airport) with about 680 and 500 vehicles respectively. (17–20).

14 In addition there are three private (*peer-to-peer*) carsharing platforms (12) and one  
15 scooter sharing provider with a less significant market (21).

16 Two bikesharing systems operate in Munich: *Call a Bike* is a free-floating service  
17 offered by Deutsche Bahn (German railways) and has been operating since 2000 with 1,200  
18 bikes (22; 23). *MVG Rad* is a hybrid service (free-floating and 125 docking stations within a  
19 service area) with 1,200 bikes provided by MVG since October 2015. A ten-minute incentive is  
20 provided when the bikes are returned at a station (24; 25).

### 21 *Impacts of carsharing in Munich*

22 A recent survey among carsharing users in Munich revealed that 12% relinquished a car in their  
23 households, 40% abstained from buying a car and 27% considered giving up a car in the  
24 upcoming year. About half of the respondents indicated that carsharing played an important role  
25 in these decisions. It is estimated that the total vehicle kilometers traveled by the households that  
26 relinquished a car is on average 50% lower than those households that did not (26).

27 The most prominent reasons for the use of carsharing as revealed by the respondents  
28 include cost savings, affordability, flexibility in combining with PT, and the perception that it is a  
29 modern and environmentally friendly service. Another attitudinal observation is that owning a  
30 car is no longer considered a status symbol (26).

31 Approximately 80% of the respondents were men, almost half of them were between 26  
32 and 35 years old, and a further 25% were between 36 and 45 years old (26).

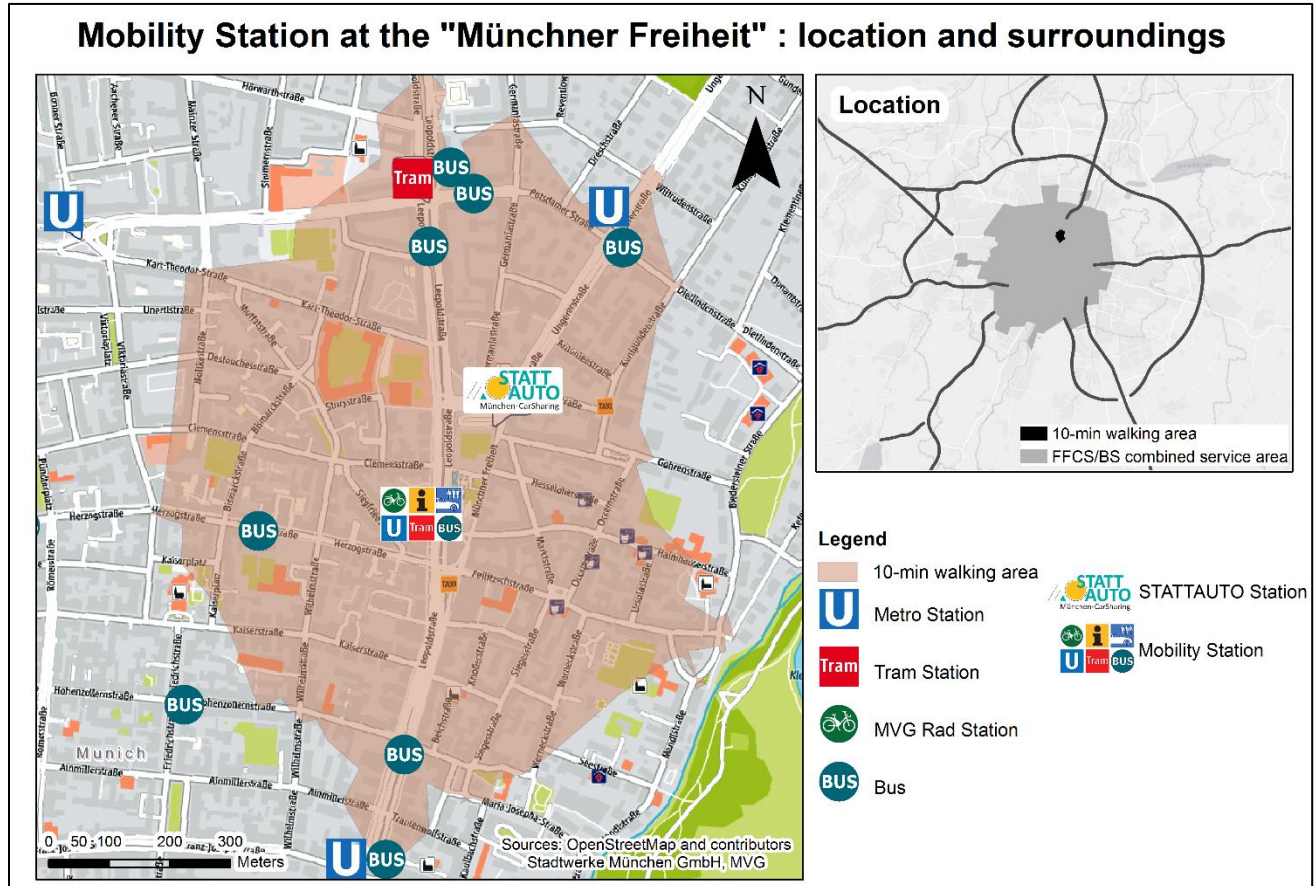
### 33 34 **The Mobility Station**

35 The first Mobility Station in Munich is a pilot project led by the City of Munich in cooperation  
36 with Munich City Utilities (SWM) and MVG. The goal of this pilot project is to offer sustainable  
37 mobility options to the citizens “from a single source” so that they can abstain from their private  
38 cars. The technical, legal and operational aspects of the pilot station are being tested and further  
39 stations are planned if the model proves successful. (27)

### 40 41 *Location and context*

42 The Mobility Station at Münchner Freiheit is located in “Schwabing” a densely populated district  
43 (12,800 inhabitants/km<sup>2</sup>) of Munich (28). This is a wealthy, young and dynamic urban area with  
44 attractive residential locations and jobs as well as multiple cultural, shopping and recreational  
45 destinations. The immediate surroundings of the Mobility Station are characterized by a mixed

1 land-use with housing, business, retail, and leisure activities. Around 18,000 persons live in a  
 2 walking distance of 10 minutes from the Mobility Station. This area is well served by PT  
 3 services and lies within the service area of free-floating carsharing and bikesharing services.  
 4 Figure 1.  
 5



6  
 7  
 8 **FIGURE 1. Location of the Mobility Station and surroundings (own elaboration and**  
 9 **analysis)**

10  
 11 In addition to free-floating carsharing and bikesharing vehicles, which are usually  
 12 available in this area, a STATT AUTO carsharing station with 10 vehicles is about 300 meters  
 13 away from the Mobility Station, while the next MVG Rad station is beyond the 10-minute  
 14 walking distance.  
 15

16 *Components of the Mobility Station*

17 The PT station “Münchner Freiheit“ consists of subway, tram, and bus services, as well as a taxi  
 18 stand and private bike parking facilities.

19 Since November 2014 six parking places are reserved for carsharing vehicles of three  
 20 different providers.

21 Since October 2015, there is an MVG Rad bikesharing station with 20 docks. Since  
 22 then, the Mobility Station is in “full operation” (Figure 2).  
 23





1            *Park and Ride GmbH* is the organization responsible for the maintenance and control of  
2 the reserved parking places.

#### 3 4 *Initial response*

5 The Mobility Station has registered an increasing use since its roll-out in November 2014. FFCS  
6 trips starting and ending at the station increased steadily from 164 to over 500 between  
7 November 2014 and June 2016. Bikesharing trips also increased from 265 to over 800 between  
8 October 2015 and June 2016, only showing a slight decrease during the winter months when  
9 only 186 trips were registered. The only SBCS vehicle provided at the Mobility Station is used in  
10 average six times per month. The company attributes this low use rate to the availability of ten  
11 vehicles at the other STATTAUTO station nearby.

### 12 13 **METHODOLOGY**

14 To evaluate the immediate and potential effects of the first Mobility Station on urban mobility we  
15 employ several methods.

16            First, we carried out interviews with the main stakeholders of the Mobility Station to  
17 consider their goals and interests as well as their experiences as providers of the respective  
18 services. Based on findings from the interviews and in agreement with the stakeholders we  
19 designed two surveys.

20            The first survey aims to find out about the perception, acceptance and experiences when  
21 using the Mobility Station as well as actual and potential changes in travel behavior among users.  
22 The second survey focuses on those PT users that have never used the additional mobility  
23 services at the Mobility Station. Its aim is to learn the reasons for not using the service and  
24 factors that may persuade them. Finally, by means of focus groups we aim to examine further the  
25 findings of both surveys.

26            This paper focuses on the design, implementation and results of the first survey,  
27 hereinafter referred to as the “user survey”.

#### 28 29 **Target group**

30 *Users* are defined as customers of the new shared mobility services who have rented or returned  
31 a carsharing vehicle or an MVG Rad bike at least once at the Mobility Station.

#### 32 33 **Main aspects to be investigated**

34 In agreement with the stakeholders, we identified four main aspects to be investigated by means  
35 of the user survey.

- 36  
37            1. **Awareness and perception:** Does the physical presence of the Mobility Station play a  
38            role in attracting new customers to the individual mobility services and increasing its  
39            use?  
40  
41            2. **Users’s mobility patterns and degree of multimodality:** Which mobility services are  
42            most used and for what purposes? Does the Mobility Station support multimodal  
43            behavior and offer added value for mobility? Which components and which intermodal  
44            connections are more important for the users? Does the Mobility Station influence  
45            mobility behaviour in the short and long term?

- 1
- 2 3. **Operation:** What problems and barriers have users experienced and what are their
- 3 suggestions for improvement?
- 4
- 5 4. **Interaction with the immediate surroundings:** Does the Mobility Station have an
- 6 influence on the urban functions of the surroundings? Does the quality of the urban
- 7 environment have an impact on the use of the Mobility Station?

### 8 **Design of user survey**

9 The user questionnaire was built upon a questionnaire previously used to evaluate the impacts of  
10 carsharing in Munich (26). The original questionnaire was adapted in order to address the above-  
11 mentioned questions related to the multimodal character of the Mobility Station and explore  
12 specific aspects interesting for the stakeholders.

13 The online questionnaire consisted of three main parts:

- 14
- 15 1. **General questions** aimed to give insights on the main aspects mentioned above
- 16 (acceptance, awareness, perception, adaptation of mobility behaviour, travel preferences).
- 17
- 18 2. Questions about the **last trip** that started or ended at the Mobility Station aimed to
- 19 identify important reasons for using the station, trip characteristics, the mode of transport
- 20 replaced by the shared service, and the mode of transport used
- 21 a. *to reach the mobility station before renting* a vehicle or bike;
- 22 b. *to reach their destination after returning* a vehicle or bike.
- 23
- 24 3. Questions about the **user** such as age, gender, and education as well as access to and use
- 25 of different modes of transport.

26 We created three versions of the same questionnaire with slight differences for users of  
27 the three different mobility services (MVG Rad, FFCS and SBCS).

### 28 **Contact approach**

29 Based on booking data, the providers identified those clients that used the Mobility Station  
30 during one week and invited them via e-mail to participate in the survey. The providers chose an  
31 on-line survey as the most convenient way to contact their clients since they are already used to  
32 this way of communication.

33 We decided to contact users within the period of one week to facilitate recollection of  
34 the last trip. To avoid duplication, users were contacted only once regardless of frequency of use.

35 Literature suggests a response rate of 10-20% without incentives for such surveys (26;  
36 29). However, this rate seemed optimistic considering that Munich's carsharing users have been  
37 overwhelmed with questionnaires due to recurring studies in the past years (30; 31; 26). To  
38 ensure a reasonable response rate, the City of Munich offered an unusual incentive of 10 euro per  
39 completed questionnaire. Typically, such surveys in Germany offer monetary incentives in the  
40 form of draws (sources) (30; 32; 33).

41 It was not necessary to send reminders because the response rate was higher than  
42



1 expected (above 60%). We believe that this has to do with the incentive that the respondents  
2 received in form of credit (2 free hours for BS users and 30 free minutes for FFCS users).

#### 4 **RESULTS AND ANALYSIS**

5 The user survey took place in June and July 2016. Users of three types of mobility services  
6 participated in this questionnaire. We concentrate our analysis on the two most represented  
7 groups: MVG Rad (BS) users (69%) and FFCS users (29%).

8 By means of focus groups in a later stage, we aim to examine further the findings of the  
9 user's survey, including those related to the underrepresented SBCS users' group.

10 About 87% of FFCS users and 96% of BS users remembered their last trip by which  
11 they rented or returned a vehicle or bike at the Mobility Station. This is likely due to the short  
12 time period between using the shared service and receiving an invitation email to the online  
13 survey. For both services, rentals (70%) were more common than returns (30%).

#### 15 **Understanding the demand for the Mobility Station**

16 To understand the demand for the Mobility Station, we analyze the demographic characteristics  
17 of the users including their access to different mobility options, as well as the frequency and the  
18 purpose of using them at this node.

19 We explore the acceptance and perception of the multimodal service by looking into  
20 their awareness of the Mobility Station as well as the reasons for using the services there instead  
21 of somewhere else. In order to derive recommendations for the design of further stations, we  
22 asked which modes are used to access and egress the Mobility Station and how important the  
23 different components and intermodal connections are to the users.

#### 25 *User profile*

26 Highly educated, young males make up the big majority of respondents from both BS users and  
27 FFCS users. About 60% of FFCS users and 71% of BS users have some kind of PT subscription  
28 (weekly, monthly or yearly pass) and most of them have at least one bicycle in their households.  
29 Respondents of both groups reported to know and have used other shared services in addition to  
30 those they were identified to be customers of. (Table 1).

1 **TABLE 1. Demographics of the respondents.**  
2

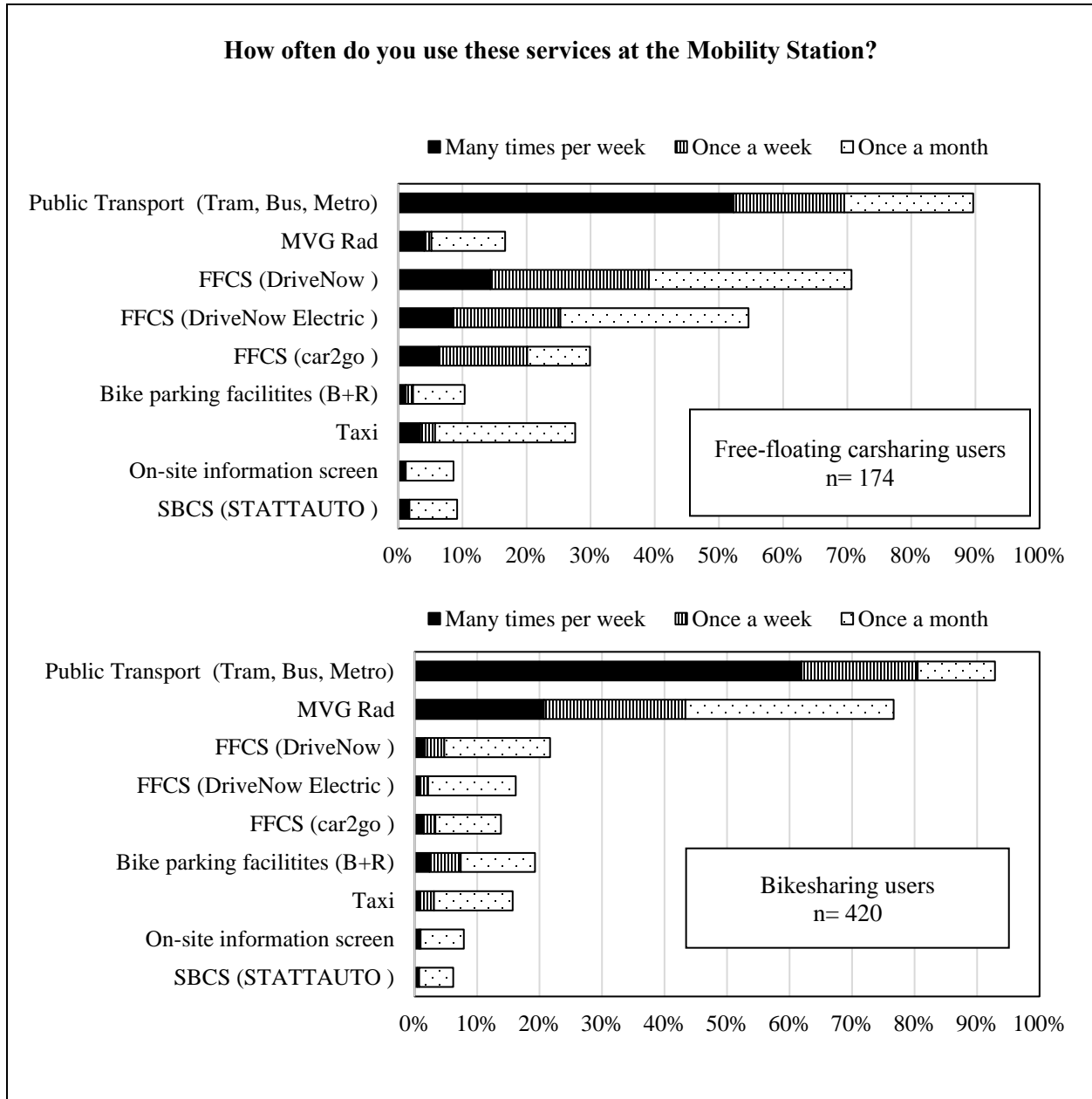
		Total (incl. SBCS)	FFCS	BS
N		611	174	420
Percentage of sample		100	29	69
Gender of respondents (%)	Male	76	83	73
	Female	22	16	25
Age group of respondents (%)	18-29	50	41	56
	30- 39	27	34	26
	40-49	15	16	13
	50-59	5	6	3
Respondents with a bachelor's degree and higher (%)		64	62	64
Average number of household members per household		2.1	2.0	2.1
Average number of vehicles available per household		0.76	0.71	0.8
Respondents with car availability (%)	Always	37	36	38
	some times	30	31	30
	No	33	33	32
Households with access to at least one bike (%)		89	90	89
Respondents with PT subscription (%)		67	60	71
Respondents that use shared mobility services (%)	MVG Rad	73	19	100
	DriveNow	61	96	46
	car2go	22	36	17
	STATTAUTO	5	3	2
	Call a Bike (other bikesharing)	20	20	21
	other carsharing	4	2	5

3  
4 The share of MVG Rad users that use FFCS is higher than the share of FFCS users that  
5 use MVG Rad. This is in part because MVG Rad has been on the market for a shorter period  
6 (less than one year) than FFCS services have been (3-5 years).

7 The demographic characteristics of the sample are very similar to those of the 2015  
8 survey of carsharing users in Munich (26) which in part validates our results.  
9

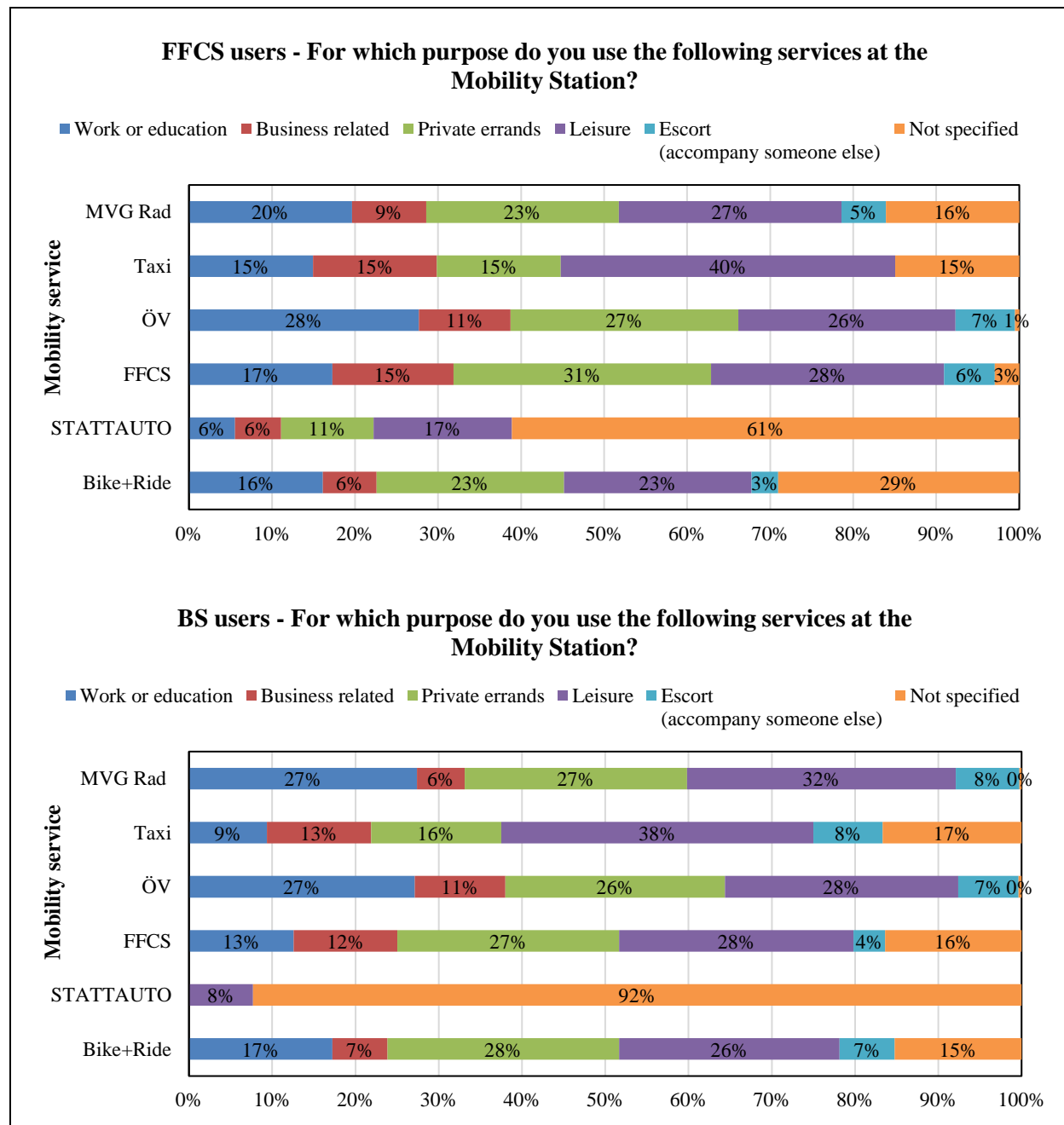
### 10 *Frequency of use and purpose*

11 A significant majority of respondents use PT at least once a week at the Mobility Station,  
12 showing that PT plays a central role for mobility among both BS and FFCS users. The high share  
13 of BS and FFCS users that use different mobility services more than once a month indicates  
14 some degree of multimodality. (Figure 3).



1  
 2 **FIGURE 3. Frequency of use of the different mobility services at the Mobility Station by**  
 3 **a) FFCS users and b) BS users.**  
 4

5 We asked users who declared to use a mobility service at least once a month for what  
 6 different purposes they do so. The different mobility services are used for a variety of purposes  
 7 (Figure 4).



1  
 2 **FIGURE 4. Purposes for using the mobility services at the Mobility Station by a) FFCS**  
 3 **users, and b) BS users.**  
 4

5 There are no significant differences between the responses of the two user groups except  
 6 for the use of STATAUTO and Taxi where small differences can be seen.  
 7

8 *Awareness*

9 About 60% of the users indicated that they were aware that the “Mobility Station offers bundled  
 10 and easy to combine alternatives to private cars”. About half of these users learnt about the

1 Mobility Station by chance while walking past. This highlights the importance of the physical  
2 presence of the multimodal service in public space.

3 Other equally important sources of information, are advertisement from stakeholders  
4 (24%), smartphone and internet (24%), as well as the on-site information screen (20%).  
5

### 6 *Reasons to use the Mobility Station*

7 Among other reasons, 73% of FFCS users and 58% of BS users decided to rent from the  
8 Mobility Station because it offered the closest available vehicle. Another important reason is that  
9 the station is conveniently located on their way. Accessibility by PT and the high probability to  
10 find a bike was important for 34% and 22% of BS users respectively. Other reasons include the  
11 availability of electric carsharing cars, which was a decisive factor for 23% of FFCS users.

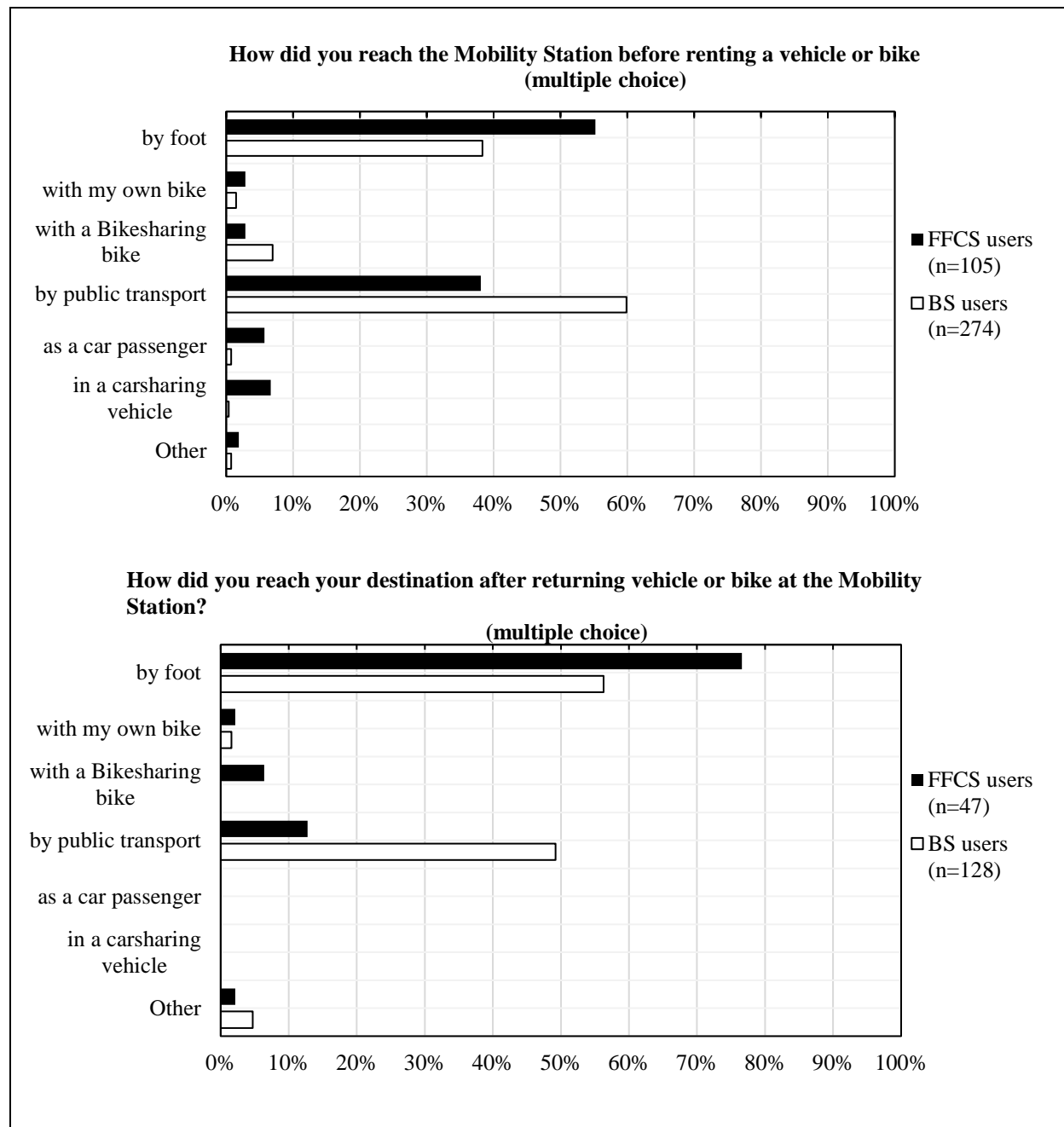
12 Users who ended their rental at the station report that the proximity to their final  
13 destination was the most common reason to use the Mobility Station (75% of FFCS users and  
14 56% of BS users). BS users appreciate the direct connection to PT (45%) and the 10-minute  
15 incentive for returning the bike at the station (49%). FFCS users also appreciate the availability  
16 of an electric charging point (28%) and the high chance of availability of a parking space (28%).

17 The possibility to rent electric vehicles and charge them at the Mobility Station seem to  
18 offer an added value to FFCS users. We know from the interviews with stakeholders that electric  
19 vehicles are more popular than conventional ones among their clients.  
20

### 21 *Connecting mode to and from the Mobility Station*

22 FFCS users use PT (38%) or walk (55%) to rent a vehicle at the Mobility Station (Figure  
23 5a). This differs from shares reported for accessing a randomly located FFCS vehicle (80% walk  
24 and less than 10% PT) (26), indicating that the Mobility Station encourages intermodal transfers.

25 Interestingly, BS users seem to use more PT and less walking than FFCS users to access  
26 vehicles at the Mobility Station.



1  
 2 **FIGURE 5. Mode of transport used a) to reach the Mobility Station before a rental and**  
 3 **b) to reach destination after ending a rental at the Mobility Station.**  
 4  
 5 After returning a bike, BS users either walked or took PT to continue their trips. Most of  
 6 FFCS users walked and only few took PT to their destinations. Intermodal connections that  
 7 combine BS and FFCS do not seem to play an important role yet. However, 6% of FFCS users  
 8 continue their trip with a shared bicycle after returning a vehicle (Figure 5b).  
 9  
 10

### 1 *Importance of intermodal connections*

2 One of the most important features of the Mobility Station for both BS and FFCS users is  
3 the connection with PT. BS users rated the connection of PT and MVG Rad as very important  
4 (75%) or important (19%); and FFCS users rated the connection of PT and FFCS as very  
5 important (45%) or important (33%).

6 Other intermodal connections are also important to both FFCS and BS users. About a  
7 third of FFCS users rate the intermodal connections of PT and MVG Rad as well as FFCS and  
8 MVG Rad as important. About 30% of BS users rate the intermodal connections of PT and FFCS  
9 as well as FFCS and MVG Rad as important.

10

### 11 *Importance of individual components*

12 More than 83% of FFCS users and more than 93% of BS users confirm the importance of the  
13 connection to PT.

14 As expected, a big majority of FFCS users rated components related to the use of  
15 carsharing – availability of carsharing vehicles (96%), reserved parking places (86%) and the  
16 possibility to use electric carsharing (65%) – as important.

17 Similarly, BS users rate components related to the use of MVG Rad – availability of  
18 bikes (98%) and parking spaces for MVG Rad (84%) - as important.

19 However, an important amount of BS users (35%) rated components related to the use of  
20 carsharing as important. A smaller, but significant share of FFCS users (25%) rated components  
21 related to the use of MVG Rad as important.

22 The on-site information screen is important only for 10% FFCS and 17% BS users.

23

### 24 *Demand for more Mobility Stations*

25 The majority of users (70%) wants more Mobility Stations in Munich and only 2.5% disagree  
26 (the rest are undecided). Preferable locations for more Mobility Stations are:

27

- 28 • Central places in the city center,
- 29 • Public transport nodes along high-capacity public transport axes, and
- 30 • Residential areas, both in central districts and in the suburbs.

### 31 **Impacts of the Mobility Station on mobility behavior and travel preferences**

32 Important questions about the use of integrated multimodal services are if and how they  
33 influence mobility behavior in the short and long term.

34 We asked users which mode of transport would they have used for their last trip starting  
35 or ending at the Mobility Station with a carsharing vehicle or MVG Rad in case the service were  
36 not available.

37 Further, we explored potential changes in mobility behavior by asking users how the  
38 multimodal service influences their perception and use of different mobility services.

39

### 40 *Impacts on mobility behavior*

41 Using the Mobility Station contributes to changes in mobility behavior towards more  
42 multimodality. Respondents indicated that, since they use the Mobility Station they also use  
43 other mobility services more often:

44

- 45 • 26% of MVG Rad users and 20% of FFCS users travel more often by PT;



- 1       • 12% of FFCS users indicated that they use MVG Rad more often, and 18% of MVG Rad  
2 users indicated that they use carsharing more often.

3           The Mobility Station increases awareness and patronage of shared mobility services.  
4 Because of the Mobility Station –

- 5  
6       • 18% of FFCS users and about 31% of MVG Rad joined the respective service;  
7       • 9% FFCS users joined MVG Rad; and  
8       • 36% of FFCS and 21% of BS users are considering joining a/another carsharing provider.

9           Long term effects on travel preferences can be expected. Based on previous findings on  
10 the impacts of carsharing in Munich (26) we know that carsharing contributes to reduce car  
11 ownership and total vehicle kilometers traveled.

12          About 80% of respondents of both user groups agree that by means of the Mobility  
13 Station, they can always find the right mode of transport for them and about 75% think that it  
14 contributes to make private cars unnecessary.

15  
16 *Modes replaced by the use of shared mobility services*

17 We asked users which mode of transport they would probably have used for their last trip instead  
18 of carsharing or MVG Rad.

19          Around 70% of FFCS and BS users would have used PT. FFCS users would have used  
20 Taxi (11%) or their own car (9%) and BS users would have walked (13%) or used their own bike  
21 (8%).

22          It is important to note that these responses refer only to one specific trip and do not  
23 necessarily suggest an actual replacement of transport modes for daily mobility.

24          Based on the responses from the users regarding their last trip on the connecting mode  
25 to and from the Mobility Station we could argue that that shared mobility services complement  
26 other services, especially public transport, instead of completely replacing them. However,  
27 additional surveys are necessary to have better answers to this matter.

## 28 29 **CONCLUSIONS**

30 In order to understand the impacts on mobility behavior in the short and long term of the  
31 Mobility Station in Munich, as well as its acceptance and perception we carried out a survey  
32 among users of the shared mobility services added to public transport (PT) at this node.

33          The big majority of users are highly educated young men with access to different modes  
34 of transport and experience in using shared mobility services.

35          Public Transport plays a central role for more than 75% of users. Most users might still  
36 be using only the mobility service that they were identified to be customers of (in addition to PT)  
37 with a weekly frequency. However, the high share of bikesharing and FFCS users that use  
38 different mobility services more than once a month indicates some degree of multimodality  
39 among the users.

40          The share of bikesharing users that rate intermodal connections with carsharing and  
41 carsharing components as important, is higher than the share of bikesharing users that currently  
42 use carsharing. Similarly, the share of carsharing users that rate intermodal connections with  
43 bikesharing and bikesharing components as important, is higher than the share of carsharing  
44 users that currently use bikesharing. These findings indicate potential for future changes in

1 mobility behavior towards more multimodality.

2 Actual changes in mobility behavior and travel preferences were also revealed. Users of  
3 the shared mobility services indicated that they joined and/or used other mobility services more  
4 often because of the Mobility Station.

5 About a third of the respondents learnt about the Mobility Station by chance while  
6 walking past. Walking is also one of the most frequently used modes to use the station. This  
7 highlights the importance of the physical presence of a multimodal mobility service in public  
8 space and the quality of the urban environment. Our findings indicate a higher use of PT to  
9 access FFCS vehicles at the Mobility Station in comparison to those randomly located within the  
10 service area. This indicates that the Mobility Station encourages intermodal connections between  
11 PT and FFCS. The high share of PT use in combination with bikesharing underlines the  
12 relevance of bikesharing for first- and last mile trips.

13 The on-site information screen is one of the least used services and the least rated as  
14 important. Nevertheless 35% of respondents indicated it to be the source of information by  
15 which they became aware of the Mobility Station. This indicates that this component is an  
16 important eye-catcher but the information provided is not very relevant for the use of mobility  
17 services.

18 Most users of shared mobility services already have access to information through a  
19 smartphone. Although the *MVG More* smartphone application provides information on the  
20 location and availability of the different mobility services, further tariff integration in the form of  
21 mobility packages and marketing might be necessary to further promote multimodality. The  
22 current partial tariff integration is not enough.

23 The majority of respondents show interest in having more mobility stations at other PT  
24 nodes, and in residential areas. The possibility to use alternative fueled vehicles (electric  
25 carsharing), seems to be an important factor for the users and should be included in other  
26 mobility stations.

27 The user's survey was developed in close cooperation with the stakeholders and experts  
28 in the field of shared mobility. The results obtained so far are providing important insights on the  
29 awareness and perception of the Mobility Station as well as actual and potential changes on  
30 mobility behavior towards multimodality. These insights can be useful in the design of further  
31 Mobility Stations in Munich.

32 Nevertheless, our findings are limited due to the unique and small sample of users and the  
33 fact that only one user survey was carried out so far. More user surveys or panel studies would  
34 be necessary to better understand the impacts of a multimodal mobility service on mobility  
35 behavior in the short and long term as well as its implications for urban and transport planning.

36 Also the particular context where this pilot project is inserted with a high population  
37 density, mixed land-used and high availability of different types of (shared) mobility services  
38 must be taken in account as well as the implications for upscaling the multimodal mobility  
39 service in other parts of the city with different transport supply and land-use characteristics.

40 Further investigation on these aspects by means of face-to-face interviews with non-users  
41 and focus groups to both users and non-users is being done as part of the evaluation of this  
42 project. In a later stage, the results of the overall evaluation shall provide more robust  
43 conclusions.

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