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Can Public Bike Sharing Systems Encourage Migrant Women to Use Bicycles?

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Die **Reihe Soziologie** bietet Einblick in die soziologische Forschungsarbeit am IHS und verfolgt das Ziel, abteilungsinterne Diskussionsbeiträge einer breiteren fachinternen Öffentlichkeit zugänglich zu machen. Die inhaltliche Verantwortung für die veröffentlichten Beiträge liegt bei den Autoren und Autorinnen.

Abstract

To increase the number of cyclists more detailed knowledge about potential user groups is required. This article provides empirical results on one such potential user group: migrant women who did not learn to cycle in their childhood but then trained in adult cycling courses. We argue that many of these migrant women interested in cycling will not own bikes even after successfully finishing the course. This article considers whether and how the use of public bike schemes (PBS) can bridge this gap between (re-)starting cycling and owning a bike. In an experimental setting, a PBS-training-module was tested and a survey among migrant cycling course participants was conducted.

Keywords

Cycling, public bike sharing, PBS, migrant, women

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1. Introduction

Recently, cycling has become a rising trend in modern mobility. There are many reasons for this trend as well as many obstacles. First, in order to achieve the Paris climate goals all European countries need to reduce their climate-damaging emissions. Therefore, they need to reduce traffic as well as to switch from the so far dominating motorised individual mobility mode to motorised and non-motorised eco-modes. Without any doubt, cycling is an important part of this eco-mode mobility (EU 2011, Massink et al. 2011).

Second, modern urban lifestyles are changing towards active and healthy mobility, including cycling and walking (Oja et al. 2011, Goetz/Ohnmacht 2011). Therefore, grassroots organisations or movements have been growing in several cities. These groups put pressure on transport policy to enhance cycling-friendly infrastructure and services (see e.g. Volksentscheid Fahrrad Berlin). They are rooted in urban milieus where cycling is not only beneficial but somehow also a sign of delimitation from outdated mobilities (Dangschat/Segert 2011).

Third, the sustainable mobility modes' potential is increasingly considered in some regional transport policies not only as a mode to improve effective transport but also as a way to enhance the quality of life, people's health and to develop real smart cities (Pucher/Buehler 2010). Therefore, cycling measures were put on the table, including public bike sharing schemes (PBS). PBS have been conceptualised and offered as a link to public traffic, car sharing and other innovative services, to make *'last mile'* more sustainable and to provide quickly accessible means of transport for short and very short distances in urban centres (ECF 2017, BMLFUW/klimaaktivmobil 2015, Stadt Wien 2014). PBS is regarded as a useful supplement to public traffic and they are addressing young cyclists in particular, fostering active mobility (Liu et al. 2012, Buehler/Hamre 2015).

However, there are also several obstacles on the way to rising number of cyclists, including PBS-user, such as the persistent automotive culture in daily life, vehicle production and traffic policy (Urry 2007). Other obstacle is the lack of knowledge about the different mobility needs of several (potential) user groups of new mobility forms such as cycling and using PBS. Therefore, to enhance the number of cyclists in general and the users of PBS in particular, more profound research of the specific barriers for active and healthy mobility of specific groups needs to be undertaken (Harms 2007, Welsch et al. 2014, Van der Kloof 2014).

One of such (potential) groups includes people with migrant background[1], women and men. People with migrant background are in many respects still on the margins of mobility

[1] We follow the common Austrian definition of persons with migrant background: persons with foreign-born parents, regardless of current citizenship. Therefore, Austrian citizens with foreign-born parents

research (Asum et al. 2011, Segert et al. 2017). There are many good reasons to investigate migrants' obstacles when it comes to cycling and their chances for (more) cycling (Wixey et al. 2005, Uteng 2009). First, people with migrant background are a big and growing population group in many countries. For example, in Austria, migrants make up a 22% (and expanding) share of the population (Statistik Austria 2017). Thus, this expending group has - or better - could have an increasing impact on spreading active and sustainable forms of mobility. As migrants mostly settle in urban centres, they particularly influence the mobility in these regions and could play an important role in further spreading sustainable mobility. For example, in comparison with Austria's other provinces, Vienna has the highest share of people with migrant background. 38% of Vienna's population have a migrant background (Stadt Wien 2017, 69[2]). Up to 55% of Viennese migrants are between 20 and 39 years.

Additionally, one must note that, migrants, just like every native-born population, are heterogeneous in relation to their socio-demographic and economic status such as gender, age, education, origin, employment etc. Therefore, it is reasonable to investigate not only cycling migrants as a statistical ethnic group but to conduct case studies, for example, on migrant women. One case in point: in Vienna 51% of migrants are women and these migrant women make up nearly 20% of Vienna's population. To be more specific, 208,000 Viennese migrant women come from non-European countries and 150,000 women from other European Union countries (Stadt Wien 2017, 66). Listed by numbers, the first place is taken by migrant women with Serbian/Montenegrin background and the second place by those with Turkish background (ibid, 69).

Among this heterogenic group of migrants, migrant women from non-European Union countries in particular often encounter specific mobility barriers and need specific support to gain access to bikes and cycling (Segert et al. 2015). Many of them were not able to learn cycling in their childhood for several reasons. Some did but their parents did not allow practicing it after puberty. Some of these women grew up in poor families with no resources to buy a bike. Some other families had limited money and they bought a bike only for male family members. Additionally, migrant women often suffer from language barriers, which also impede self-reliant mobility (Assum et al. 2011).

In fact, migrant women do not only suffer obstacles, they also are agents of change. A qualitative case study on migrant women in Vienna revealed *'latent cycling needs'* among migrant women regardless of their origin. However, the public and the sponsor organisations have not sufficiently taken in account these needs so far. We define *'latent cycling needs'* as resulting from varied social, economic and cultural conditions that have limited a person's

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are *'second-generation migrants'*. Twenty-five percent of Austrian migrants are *'second-generation migrants'*.

[2] Depending on definition of migrant background, one can find other data from 43% to *'every second'* (Statistik Austria/ÖAW 2016, Stadt Wien).

opportunity to learn to cycle and to practice this mobility autonomously. Many migrant women have a secret wish to use bicycles. Thus, when the social climate begins to change in the host country, and sometimes also in the country of origin, it influences the mobility climate in the migrant families. Additionally, when more women have more peers, who openly start to cycle, and can find more offered cycling courses, than these latent cycling wishes take up a more prominent space in women's consciousness. Under these circumstances, many migrant women in fact do decide to (re-)learn and to (re-)start cycling. The long waiting lists for courses reveal unsatisfied interest in training (Radlobby Wien 2017). Such waiting lists exist also in other European cycling schools like those in Amsterdam, Montreuil, and Clichy.

Migrant women play an important role in their families for teaching their children to adopt new mobility practices or even to stick to old habits. Therefore, they can become social key agents to increase the number of cyclists among the group of migrants in general. Not only do they look for their own new mobility chances but also for those of the next generation. Mothers using bicycles are role models for their daughters and enable them to learn cycling during childhood. Both ecological and social reasons trigger the study of migrant women's potentials for cycling, and force us to understand how to improve conditions to facilitate them to use a bicycle.

This also touches the question about the PBS' impact on migrant women's (potential) cycling practices. In recent research on bike sharing schemes most scholars see PBS as a sustainable transport service (DeMaio 2009, Fishman 2016). They identify various positive impacts on the environment and on society (Shaheen et al. 2013). For example, PBS foster cycling and multimodality by solving the last-mile problem and increase access to as well as the range of public transport (Liu et al. 2012, Buehler/Hamre 2015). Some mention its impact on health (Woodcock et al. 2009, Dill 2009 and Reynolds et al. 2010). Finally, scholars emphasise use of PBS strengthens the new sharing economy favoured by those living in young urban milieus. Therefore, many analysts have high expectations for strongly positive results from the further development of PBS (Midgley 2009, Jäppinen et al. 2013). Many scholars expect PBS to help increase use of emission-free mobility and to offer access to affordable mobility for all people.

However, currently research on PBS focuses on issues of secure and efficient providers, the advantages and disadvantages of public programmes versus public-private partnerships, solutions for balancing demand for and supply of bikes and efficient density of PBS-stations.[3] It mostly reflects the political interest in efficient and sustainable services and the private providers seeking return on investments (Raviv/Kolka 2013, Fricker/Gast 2016, Kaltenbrunner et al. 2010, and Faghih-Imani et al. 2017). Therefore, the majority of scholars use a technical perspective.

[3] We carried out our research before new international providers started (like Ofo or O-bike).

In contrast, from the perspective of various users completely different issues emerge. Their concerns range from easy access to affordable, comfortable and attractive means for transport and leisure offered via a good network of stations and bikes (Van der Kloof 2003, Segert et. all 2015). We need to interlink these different interests of different stakeholders (municipalities, providers, users) involved with PBS for study purposes. This interlinked research perspective requires a much more detailed knowledge about the access to and the obstacles for the use of PBSs among several (potential) user groups. Based on this knowledge municipalities and PBS providers can efficiently conceptualise user-friendly designs of rental bike systems for all. That means for all groups with different backgrounds and habits. They can also implement target-group-specific information channels and languages.

Against this background, this paper provides research results of a case study on migrant women, who did not learn cycling in their childhood but are nevertheless interested in cycling and therefore have participated in a cycling course for adults. Because many of these female cycling-course-participants do not have their own bike, we investigated if and how with the help of an innovative measure it is possible to overcome this obstacle. This innovative measure was a *'Training Module for the Use of Public Bike Sharing Systems'*.

This paper addresses three research questions:

1. What do migrant women need to (re-)start cycling?
2. Can using PBS bridge the gap between *'(re-)starting cycling'* and *'buying her own bike'*?
3. Can using PBS, therefore, foster migrant women's cycling and if so, under which conditions?

In other words, the paper comprises a case study, which tested and surveyed the use of the local public bike sharing service in Vienna for a completely different aim than that for which it had initially been conceptualised. We did not investigate the usual PBS concept: to support traveling short distances. Instead, we wanted to learn how to support the practical learning processes of adult cycling (re-)starters by using existing infrastructure.

2. Research Approach and Methodes

The empirical investigations follow a practice-theoretical concept. We conceptualise the increase of migrant women's share in cycling as a *'(re-)starting practice'* by building on the work of Schatzki (2014) and Jonas et al. (2017). Within this theoretical framework, we define *'(re-)starting cycling'* and *'use of PBS'* not as an outcome of individual choices. We rather define it as a social learning practice on a specific physical mobility belonging to a bundle of other mobility practices. This bundle of mobility practices is in itself linked to group-specific daily routines and lifestyles. Moreover, it is linked to political and administrative practices more or less facilitating sustainable mobility practices (Larsen 2017). Furthermore, all these

mobility practices facilitate the access to the necessary places, means and stakeholders of daily routines usually separated in modern societies. In specific ways, they influence speed, rhythm and diversity of the aspired routines. Without mobility practices, there is no access to these places and means of daily routines; without access, no share in society; without this share in society, no individual development. There is no modern subject without complex mobilities (Urry 2007).

However, spatially dispersed daily practices and a growing pressure to move and be mobile do influence mobility modes in general. Therefore, individual decisions for active or motorised mobility are not free. The spatial context and societal requirements frame them in a specific way. People can carry out their mobility practices, such as cycling, only within this frame. As with any mobility practice, cycling has three aspects: the moving aspect, describing the kind of moving; the using aspect, describing the links to means of transport; and the social aspect, describing links to other (im-)mobile actors. From this perspective, we understand cycling as technically supported, non-motorized, individual self-movement practiced alone or together with others in urban or natural space in multipurpose ways. It can link people and practices and can be linked easily with other forms of moving, especially with forms of sustainable traffic (Banister 2008). In public spaces, cyclists can compete and conflict with people using other means of mobility. One can practice cycling by using personal or rental bikes. The new PBS services allow bicycle mobility without owning a bike but also offer more options to those who have a personal bike.

From this user- and practice-centred perspective, one can understand the meaning of PBS as being rooted in new ways of living, including a set of interlinked mobility practices. Different groups and milieus are involved in these changes in different ways and to different degrees (Dangschat/Segert 2011, Goetz/Ohnmacht 2011 and Segert 2013). Therefore, we investigate the use of PBS as a specific practice to realise easier access to bikes and as carrying out specific forms of active movement. This will help us understand how PBS could be more frequently used by a broader public as well as better meet the needs of migrant women.

Investigating the effectiveness of PBS from this practice-theoretical perspective means to focus not on technical or economic efficiency but rather on the various meanings of reasonable use and on some unexploited potential for PBS. This means not studying it as part of technical traffic systems but rather as a socialised means of mobility functioning only within specific mobility practices of several user groups. Focusing on overlooked groups helps to develop both a practical and ambitious image of cycling possibilities including PBS.

The investigation was designed as a case study on the knowledge, the interest in and the autonomously use of PSB by 180 female migrant cycling-(re-)starters. They were participants of 22 Viennese cycling courses 2012–2017. We expected by using PBS they could bridge the observed gap between (re-)starting cycling and owning a bike. We also

expected that if these cycling-interested women use PBS in this specific biographical context it could positively influence their future PBS use.

The case study combines qualitative and quantitative methods of empirical social research in the framework of an experimental and participative setting. First, in four focus groups with migrant women interested in cycling and migrant experts, we discussed the mobility problems of migrant women. We used the results to shape the survey's questions. We asked for several aspects of

- Access to their own bike
- Current cycling in Vienna
- Knowledge about the local PSB
- Use of the local PSB
- Requests for adaption of the local PSB to their needs
- Requests for cycling-friendly infrastructure tailored to their specific needs
- Socio-demography.

Most of the questions were closed-ended. Additionally, we encouraged the respondents freely to express their requests for an appropriate configuration of PSB and for new PSB stations in three open-ended questions. For this purpose, a scholar with the suitable mother tongue or with the help of an interpreter conducted the interviews.

Our starting hypothesis consisted of the assumption that easy access to a usable bike, whether owned ore rented, would increase the frequency of cycling. Because we observed many women without their own bike a *'module'* to train cycling course participants in the use of PBS was conceptualised. We have tested this module in the cycling courses since 2016. In autumn 2016 and spring 2017, we contacted all course participants from 2012 to 2017. In total, 119 respondents of the 180 women filled out the questionnaire.[4]

The respondents' structure is quite diverse by origin, age and education. Relating to country group of origin, 40% of them have Turkish roots (corresponding to the second largest share in Vienna's migrant population), 9% come from other European countries, 30% have Asian and 21% have African roots. More than half of the women have lived in Vienna for more than 10 years, but over the last two years, the share of newcomers (especially from Syria) is growing. Therefore, we expect more newcomers among the cycling course participants in the future. Relating to age, the biggest group (61%) is between 31 and 50 years, followed by women over 50 (21%) and the younger between 18 and 30 (16%). Most of the migrant women (46%) attended a secondary school, 33% attended university, even though not all graduated, and for 21% the highest finished education is primary school. All these figures

[4] The rate of return was about 70%. This rate resulted from the very committed work of a project partner who phoned all participants and informed them about the survey's purpose. She organised face-to-face interviews for every woman, if necessary in her mother tongue.

show there is no absolute specific origin, no age or education status excluding migrant women from being interested in cycling. However, secondary education, middle age and a longer stay in Vienna make it more likely to (re-)start cycling by participating in cycling courses. We analysed the data in a descriptive statistical analysis (cross tables, Pearson-Chi^2-Value) and by using a regression analysis on the factors for cycling and Citybike use.

3. Vienna's Bike Sharing Sheme 'Citybike'

The city of Vienna was one of the first cities in the world to introduce a modern public bike-sharing scheme in 2003, *Citybike Vienna*. The operator *Gewista* currently provides 121 stations with 3,115 boxes and 1,500 bikes. User can hire 1,500 bicycles at any of the 121 public cycling stations and return them at any station after completion of travel. The first hour of each ride is free and costs only occur after that. For most users it remains free because nearly 95 percent of all trips take less than an hour. The most common duration is 10 minutes. (Citybike Vienna 2017)

Citybike Vienna is a success story. Since 2003, the number of stations doubled and the annual number of rides has increased from less than 5,000 to more than one million. Registered users increased from about 30,000 in 2004 to more than 521,000 in 2016 (Citybike Vienna 2017). Currently, the focus is on increasing the system's efficiency. The provider and the municipal government no longer have a contract to install new stations, but they are discussing one. With the new tenders, there is an opportunity to not only to improve efficiency but also to adapt the service to attract new user groups and to enhance significantly the number and diversity of the PBS-cyclists.

So far, *Citybike Vienna* does not conduct a target group analysis. Like other providers in other cities, the company provides data on gender and age based on user-registration information. They do not collect data on other socio-demographical structures. In Vienna, as in other cities, a little less than half of the users are female. Most users are under 30 years old. Online surveys among the users show that 75% are Viennese. However, this data do not provide a representative image of the users' background, because the 75% classified as Viennese users include users with migrant background. In addition, even though 25% of the users have registered with a non-Viennese bankcard, they may have lived in Vienna for many years. Furthermore, the online surveys address current users only and cannot reflect concerns of potential users with different needs. A public survey should focus on the mobility and mobility needs of the interested non-users and identify their interests in PBS and general cycling conditions. This all the more as the *'Cyclist Report'* published by Vienna's Mobility Agency documents the rising number of PBS users and their needs but does not represent potential users of different social groups (Mobilitätsagentur 2017). It reports, for example, most of the current users want more stations, particularly those users who use the PBS less than once a month (Mobilitätsagentur 2017, 8). It reports nothing about the requirement of Viennese who live in districts without *Citybike* stations.

4. Vienna's modular cycling course scheme for Women

Starting point of the bicycle courses for women in Vienna has been the interest of women with a migrant background to learn cycling. These women discussed their mobility needs in a local women's centre and the organisers started to look for a partner who could teach cycling to adult beginners. They found such a partner in the local bicycle advocacy organisation. A training program was conceptualised and a first course was organised. The interest in learning cycling was bigger than anticipated. Therefore, the local mobility agency started to fund another course as a pilot project in 2013. The course operator in cooperation with several social and neighbourhood associations professionalised, expanded and developed the offered cycling courses. The city of Vienna financed some training bicycles and three to five courses per year, additionally the operator financed a few courses via project funds. However, every year dozens of migrant women interested in participating in a cycling course find themselves on a waiting list. The demand for training to (re-)start cycling is still higher than the supply.

Furthermore, in the first bicycle courses we observed that offering bicycle lessons for beginners is often not enough to prepare the participants for riding the bicycle in traffic. Therefore, since 2014 the course operator has provided a new follow-up program for advanced cycling classes. The advanced classes take part on cycle lanes and quiet streets. Learning rules of traffic as well as safe cycling behaviour are the focus. We did observe that integrating the new cycling skills into women's daily mobility remains a challenge. The lack of a personal bicycle is a main barrier for many participants even after visiting a cycling course.

Due to the fact, that many participants do not own a bicycle and hesitate to buy one, a *'Citybike Training Module'* was developed and implemented as part of the bicycle courses. The purpose of this training module is to show the participants how the public bike sharing scheme works in theory and in practice so that after the training module they are able to use Citybike independently – either to continue to practice cycling in green spaces or as an additional mobility option. The *Citybike training module* seems to be unique; there is no research or practical information available on similar initiatives to integrate the usage of public bikes in cycling courses.

The training module takes place at the end of a cycling course and lasts 2 hours. It takes place in a park at and around the Citybike station closest to the regular course location. The module starts with an exchange of experiences and knowledge about how the public bike sharing system works. Then the trainers explain the practical framework in detail: the rent-and-return process, the costs, possibilities of multimodal combinations of rental bikes and public transport. After that, they present the options to register. The last topic of the theoretical part is how to find a *Citybike* station, for example via *Citybike* app, bicycle map or on the *Citybike* terminal. We observed that the majority of migrant women have smartphones and are familiar with apps and that they are interested in mobility apps.

The practical part of the *Citybike* training module consists of renting a *Citybike* at the terminal, riding it and returning the *Citybike* correctly. For this part, the trainer chose a *Citybike* station close to a quiet and green area. The experiences show it is helpful if the participants have already registered as *Citybike* users when the practical part of the training module takes part. The cycling trainers provide *Citybike* cards for the duration of the cycling lesson for those participants who do not have their own *Citybike* account. We realised that two hours are a short time for theoretical and practical training. Therefore, some more tests are necessary to optimise the training process.

The practical training has revealed another problem. *Citybikes* differ from the usual training bikes, as they are heavier and have a back pedal brake. For beginners this complicates things, as it is more difficult to put the pedal in the ideal starting position. The characteristics of cycling with this type of bike also differ. Therefore, it is important to practice stopping, cycling with one hand, going around curves and cycling with luggage in the handlebar pannier. Beginners who still struggle to ride with a training bike should first improve their cycling skills before they try to ride a heavier rental bike. However, we found in the courses that most participants could overcome their initial concerns about the public bikes being too heavy or too difficult to ride in the practical part of the module. The positive practical experiences while using rental bikes for the very first time empower these women to continue using PBS.

5. Migrant Women's use and requests for attractive PBS and PBP

Considering the mentioned lack of knowledge about potential new user groups of PBS, of their specific motivation(s) to use rental bikes, their destinations and required infrastructures our survey focused on such a new group: the participants of cycling courses, who are currently PBS users or non-users. We asked about their knowledge, usage, wishes regarding the local PBS and analysed factors such as age, education, migrant background, level of cycling course attended and bicycle ownership.

The survey responses revealed that 25% of the course participants use the local PBS. More exactly, 15% use it at least once a year, 7% at least once a month, another 7% use it at least once a week and 75% do not use it (so far). They mostly use PBS for seasonal trips near to the city, but much less for transport purposes. Thus, for this user group in this specific (re-)starting phase the PBS bikes seem to be more a means for training in a leisure setting than for regular use in traffic. Only one of the surveyed women routinely uses PBS to commute to work. The usual destinations correspond to the cycling duration: More than three-fourths of the course participants using PBS ride these bicycles up to the free limit of 60 minutes; 4% say they use it even longer, up to two hours.

However, many of the surveyed women were interested in future use of PBS: 28% are currently interested (but need some more advice) and 30% are not immediately interested but (possibly) may register as a user when they *'feel more secure cycling'*.

The real use of PBS is significantly associated with limited practical knowledge on the procedures of registering, borrowing and returning the bicycles (Chi^2 sign. 0,000). 89% of the course participants in the courses from 2012 to 2016 have seen the bikes and the stations, but only 30% know how to register in practice. This share was increased by up to 52% including women with PBS training in 2017. There is only a slightly increased probability that migrant women with a higher education have usable practical knowledge.

Nevertheless, age and employment status are significantly associated with PSB use (Chi^2 sign. 0,000 and 0,001). 68% of women less than 30 years of age and 54% of the employed women but only 18% of women aged between 31 and 50 and 18% of unemployed women use PBS. In contrast, the country of origin is not significantly associated with PBS use. However, those from Turkey and Egypt use it slightly more than average. In contrast, the personal possession of a monthly or yearly public transit pass is significantly associated with PBS use. Women who do not have such a card very likely do not use PBS (90% of non-owners do not use PBS, but 67% of owners. The frequent usage of public transportation is not necessary associated with less PBS usage. Instead, both (re-)starters as well as the general population public see PBS as complementary to public transportation. However, the general population uses PBS more often for daily trips than (re-)starters. They generally, in this learning phase, use PBS as a means for leisure mobility.

The level of training is significantly associated with confidence in cycling and use of the PBS. 36% of migrant women who finished an advanced level course use PBS but only 19% of the participants of a beginners' level course. Furthermore, participating in the PBS training is associated with PBS usage. In general, easy access to courses that enable participants to develop cycling skills as well as practical knowledge on PBS is associated with the use of PBS for (re-)starters.

In addition, the survey revealed the importance of a (re-)starter-friendly configuration of the PBS stations and bikes for this group of (re-)starters. In addition, a starter-friendly configuration of the cycling and traffic infrastructure is important.

In the survey, the migrant women offered many specific suggestions to increase the usability of PBS (Figure 1).

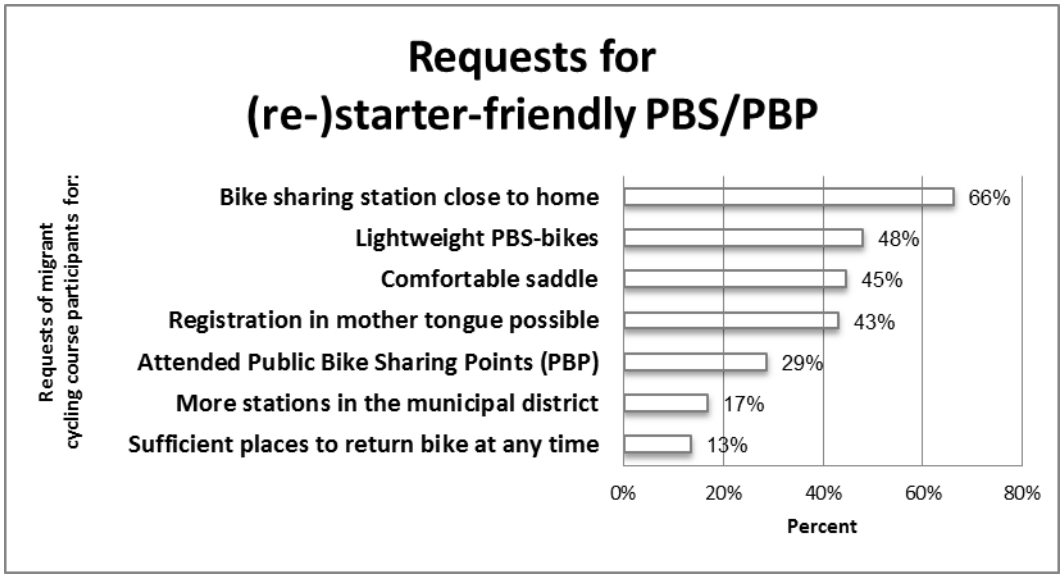

Figure 1: Requests by migrant cycling course participants for (re-)starter-friendly Public Bike Services 'What do you wish for using PBS bikes?' Multiple answers, N=308

The request for a bike sharing station near their homes found most support. In Vienna (as in many other cities), the city centre has a higher density of stations than the outer districts where many migrants live. Some of Vienna's outer districts do not have any PBS stations. In Vienna, 66% of the respondents noted there are not enough or no stations nearby.[5] Concerning more comfortable bikes 48% would like lighter bicycles and 45% more comfortable saddles. Women who have practical knowledge about PBS and women between 31 and 50 years of age more frequently mentioned these concerns. The fourth-ranking priority was easy linguistic access to registration: 43% would like an interface option in their mother tongue, especially in Turkish and in Arabic. The participants of cycling courses without PSB training had ranked this concern first (interim analysis 2016).

A surprisingly high number of (re-)starters (29%) wanted an additional, *'attended PBS'* that would address the needs of (re-)starters. As with the current system, this PBS should be free or partly free, but include advisers offering support. The bikes should be more ergonomically adaptable and should come in different sizes. These concerns were expressed more by women who finished a starting-level course, who recently arrived in Austria, who have language problems, who have no bankcard or who live in districts with many migrants. In general, the survey shows that cycling-interested, migrant women have a good awareness of cycling issues and can offer specific suggestions on improving PBS.

[5] In an open question, the women mentioned 39 specific locations for new PBS stations.

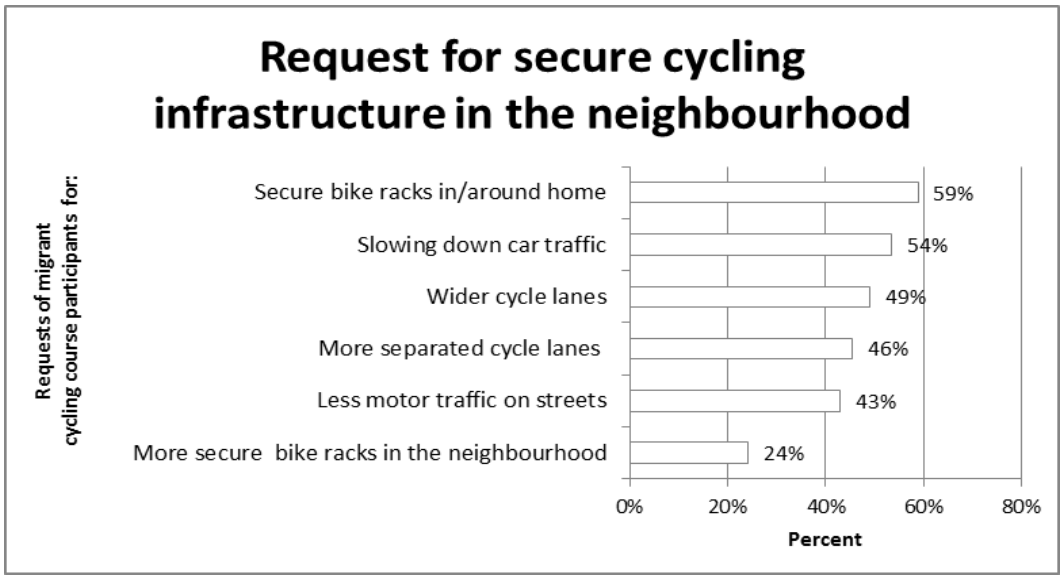

Figure 2: Requests by migrant cycling course participants for secure cycling infrastructure 'What do you wish for safe cycling in your neighbourhood?' Multiple answers, N=307]

The desire for safe and user-friendly cycling and transport infrastructure is particularly pronounced. When asked, *'how safe do you feel while cycling near your home?' 66% answered with 'very' or 'somewhat unsafe'.* Figure 2 shows that the reconfiguration of cycling infrastructure for all those interested in cycling was very important for (re-)starters.

The survey indicated that 59% want secure bicycle stands because they or their relatives fear or have experienced bike theft. The second ranking concern is reduced speed of cars (54%) followed by wider bike lanes (49%), more separate bike lanes (46%), fewer cars on the streets (43%) and more bicycle racks in the neighbourhood (24%). This group of (potential) cyclists and PBS users is particularly sensitive to high safety standards and sees cycling infrastructure as an underrepresented part of traffic facilities. This user group is very sensitive to dominant car traffic and its threat to safe cycling. They prefer better cycling infrastructure and car-free areas near their homes.

6. Discussion and Conclusions

This paper discovered empirical insights on the following issues. First, adult migrant women starting or restarting cycling equally emphasise the importance of complex cycling-friendly conditions including societal climate, personal encouragement, spatial conditions and traffic preferences. More than other types of cyclists these (re-)starters need a cycling-friendly societal and family climate in order to start cycling regularly. They particularly benefit from collective learning experience in cycling courses on several levels including PBS training. Additionally, they require starter-friendly cycling infrastructure as well as car-reduced traffic infrastructure. Addressing only one of these issues would not greatly increase the number of cyclists and PBS users from this group of (potential) cyclists. Therefore it is necessary to

combine *'hard'* and *'soft conditions'* to meet the feelings and desires of these women interested in cycling in a targeted way and thus strongly affect the number of cyclists.

Firstly, it is important for migrant women starting and restarting cycling to learn and practice it in their leisure time and in traffic-reduced areas. They later can train their skills in traffic situations and everyday life. Therefore, they need adequate training spaces in their districts. However, this learning process is more than a mobility learning training; at the same time, it is a kind of rehearsing of new gender roles as well as practicing integration in the host society. Migrant (re-)starters in cycling have an invisible but, nevertheless, important role with multiple effects on social integration and societal development.

Secondly, PBS use can help to bridge the observed gap between (re-)starting cycling and owning a bike. This is particularly true for (re-)starters who participated in an advanced level course and who are motivated and able to cycle for leisure or transport purpose. Even though many migrant women, like most other people, understand the PBS concept, many do not have practical, detailed knowledge on how to operate it. Hence, those who are interested in using PBS are grateful for some advice. Cycling courses comprising a PBS module and providing the needed practical knowledge facilitate (re-)starters interest in cycling in an appropriate way. Information on PBS or its practical use could also be integrated in educational or language courses and cultural or integration events. Therefore, co-operation is required between stakeholders of the different fields of mobility, education, health, gender empowerment etc. The better they are interlinked the more heterogenic the group of (re-)starters as well as PBS users will be and more women with and without migrant background as well as people with more diverse ethnic backgrounds can be addressed.

In contrast to this group of (re-)starters interested in PBS use, another group of surveyed migrant cycling course participants prefers easier access to an affordable personal bike and secure bike-parking facilities. It has to be stressed most migrant women surveyed prefer owning a bike and think the PBS could be used additionally or not at all. For migrant women, a personal bike is more than a means of mobility. It can rather be a symbol of integration in family, community and society; it also demonstrates strength to make a lifelong dream come true. These migrant (re-)starters need detailed practical information or supported access to a second-hand bike or to a repair shop. For this purpose, course providers should network with organisers of bicycle flea markets and recycling projects to make it easier for (re-)starters to get information and contacts, so no time is lost and skills remain active.

A very interesting point is the demand of more than a fourth of these women for *'personally attended public bike sharing points (PBP)'*, addressing their specific needs in the learning phase between cycling in secure zones and biking on cycling paths or streets with little traffic. Such public bike services for adults interested in learning and developing cycling skills would increase their comfort with bicycles; it could be organised like the existing public bike offer for other user groups such as children. For example, the Paris municipal government

funds seasonal public bike sharing points *'P'tit Vélib'* for children; the service is organised by NGOs and thus cost-efficient (P'tit Vélib' Paris). Personal staff provides personal advice for children cycling in traffic-free locations. They offer bicycles in various sizes. Some adults also want this learner-friendly service. In some cases, PBP for (re-)starters could offer cargo bikes or e-bikes too. Such attended rental points for (re-)starters require organised co-operation between municipal government and interested NGOs or neighbourhood centres. Organisers could come from the field of mobility as well as from the sports, health, women or integration. Such projects would need another form of contract than the usual PBS agreements in public-private partnerships.

Third, PBS and the required PBP can play a specific role for (re-)starters in a specific phase of the process of changing their mobility practices towards cycling. This phase may last a short time, such as one or two summers. However, in this time, it can play a key role in retaining the learned skills and to develop them to a level at which it 'makes sense' to invest in a personal bike and to be sure not to waste money for an experiment. Later, in the next phase of changing mobility routines, it can support the development of confident cycling skills in car traffic and learning the shortest and safest routes to routine destinations. Guided bike rides and city tours using PBS-bikes or PBP-bikes can facilitate the learning process in this phase. In a third phase, the (re-)starters could use the main form of PBS as a means of multimodal mobility for traveling to work or school, to run errands, and to visit family or friends. It is obvious that only some of the current (re-)starters will reach this level. However, this is true for all people changing their mobility practices; some will evolve more, others less.

Can one find some generalised results from this research on a specific group of cycling-oriented women? Yes, indeed. When we understand increasing cycling and using rental bikes as social learning practices interlinked with group-specific daily routines and lifestyles, we need to research user needs and practices of both current and potential cyclists. To increase the number of cyclists and PBS users, one can learn from the needs of a *'weak group'* whose sensitive *'learning conditions'* help identify almost neglected key factors for cycling in general and for PBS success. Furthermore, considering the different access of different groups to cycling, one can use all infrastructures such as PBS in an unexpected, innovative way. Using PBS as an instrument for practical learning processes as (re-)starting cycling is such an innovative way.

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