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Restrained mobility in a high-accessible and migrant-rich area in downtown Beijing

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Abstract

Purpose Immigrant travel has become an emerging research field in transportation planning. A handful of scholars have studied the travel behavior of residents in immigrant enclaves in North America. However, thus far, there has been no analysis of the travel behavior of residents living in migrant-rich neighborhoods in China. Additionally, previous studies rarely explored whether these (im)migrants could benefit from resources outside the neighborhoods, and the determinants of their travel to destinations outside the neighborhoods. This study aims to fill these research gaps in the literature. We used a migrant-rich area in downtown Beijing as a case study to understand the daily mobility and the determinants, and strategies to enhance mobility of neighborhood residents.
Method To answer the above questions, in-depth interview in Dashilar was used in this study. Eighteen migrant workers were recruited by using snowball sampling, and six local residents were recruited as "observers" to view the mobility of migrant workers from another perspective. The interviews were digitally recorded, transcribed and coded.
Results The research results show that the interviewees had restrained mobility, limited to the area within Dashilar. Their work location was near residence, and they seldom made recreation and social trips. One of the major reasons for this was that their social ties were highly restricted to people from the same hometown. Additionally, time and financial poverty further limited their mobility. Institutional barriers also segregated migrant workers with local people in job market, urban welfare and daily life. In order to improve physical mobility, migrant workers used electric bicycle as their daily travel facility. The use of mobile phone also improved their virtual mobility by facilitating information flow and extending social networks. Moreover, community initiatives such as community activities and volunteers helped to improve their mobility.
Conclusions Dashilar is an area with abundant transport resources and activity destination choices, but migrant workers living there still restrained their daily travel within the neighborhood. Although resources within the neighborhood facilitated daily necessities of migrant workers living in Dashilar, they seldom benefited from the resources outside the neighborhood, which played a larger role in promoting their social and cultural assimilation in the city. Their limited local social ties, individual time and money constraints, and institutional factors all contributed to their limited destination motivations and aspirations. To cope with these challenges, migrant workers and communities both adopted several strategies. These strategies could address the above challenges to some extent, but their limitations also fixed mobility of migrant workers. Combination of Internet of mobile phone and community initiatives was a feasible way to link migrant workers and local people, and help them to improve enlarge mobility space.

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1 Introduction

Immigrants have become an important source of population growth in many countries, such as the United States [1], Canada [2], and Australia [3]. The literature on the travel behavior of immigrants is growing, because transportation

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scholars and policymakers are interested in how demographic changes related to immigration should influence future transportation planning [4, 5]. Additionally, understanding the transportation needs and barriers encountered by immigrants is important to help them access employment, education, healthcare, and other opportunities and thus achieve social inclusion [6, 7].

Previous studies have discussed many determinants of immigrants' travel behavior. Blumenberg [8] organized these factors into six categories: "individual and household characteristics, the process of spatial assimilation, access to ethnic-specific resources, ethnic employment patterns, cultural differences, and federal, state, and local regulations" (p.173). Among these factors, spatial assimilation is one of the most widely discussed.

A subset of immigrant travel research has focused on the travel behavior of immigrants living in ethnic enclaves. Previous findings have indicated that these immigrants are especially likely to carpool, relying on their social networks within the enclaves [4, 9, 10]. Immigrants can overcome some transportation difficulties through carpooling, but this dependence often causes their non-work activity space to become restricted to within the enclave [11].

One important reason for the limited mobility space of residents living in ethnic enclaves is their lack of social connections. These immigrants' friendships are largely within their ethnic group, sharply constraining their accumulation of social capital and thus preventing them from building wider social networks or expanding their local spatial knowledge [12]. Social ties in neighborhoods are important for information flow, facilitate one's identification as a part of the neighborhood, serve as social credentials, and help people to advocate for policies with local decision makers [13, 14]. These functions of neighborhood social ties, especially those ties with local people beyond the ethnic enclave, could significantly increase immigrants' social capital [15], which is essential to enhance their trust in local transportation services, their spatial cognition, and their aspirations to move around more broadly [12]. From a policymaking perspective, extending the social ties of immigrants, particularly those with local people, is crucial to help them achieve social inclusion.

Accessing employment, education, leisure, healthcare, and other resources outside their enclave is important so that immigrants can become better assimilated into the surrounding society. However, the existing literature pays little attention to the obstacles that prevent immigrants from extending their daily travel beyond their enclave. More effort should be devoted to understanding the social meanings and the power structure that underlie immigrants' daily travel patterns [16, 17].

Another important gap in existing immigrant travel research is that most of the literature has examined Western contexts. In developing countries like China, migrants from domestic rural areas have become a major source of metropolitan centers' population and economic growth. However, to my knowledge, no previous study has explored the travel behavior of residents living in migrant-rich neighborhoods.

China is currently experiencing rapid urbanization. One striking characteristic of the urbanization process is the flood of peasants relocating to the cities as migrants. According to official data, the number of Chinese migrants was 273.95 million as of the end of 2014, and 61.4% of these were living and working in places outside the province where they were born. The total number of migrants had increased by 5.01 million in 2014 relative to 2013 [18].

The *hukou* system, a unique population policy in China, has prevented these migrants from becoming fully included in society [19]. The *hukou* system was instituted in the 1950s as part of an effort to control migration from rural areas to cities [20]. It involved an attempt to distribute welfare through China's planned economy. Since the 1980s, reforms of the *hukou* system have been implemented, relaxing the system's prohibitions and allowing migrants to work and live in cities. This change has been the main factor driving urbanization in China. However, many aspects of the *hukou*-related social welfare system and associated institutional arrangements persist, creating a "dual city" system in which local citizens and peasants are treated differently.

Under the *hukou* system, migrants are excluded economically, politically, and culturally [19]. Migrants without a local urban *hukou* remain disadvantaged when applying for low-price housing subsidized by local governments, as well as in accessing medical facilities and even schools. Accordingly, even though China has begun providing a local *hukou* to migrants that permits them to settle in the cities, social exclusion is still deeply rooted. Migrants are powerful contributors to China's urban development activities, but nearly all of them live in poor conditions [21]. Moreover, they are disadvantaged in maintaining and extending social networks because they have moved away from their original hometown [22]. Enabling the social inclusion of migrants is important not only to improve their happiness and quality of life, but also to boost China's economic development.

At the first glance, migrants do not seem to face as many challenges as international immigrants with regard to social inclusion, since they share the same language and race as local residents. However, many other institutional barriers and identified problems cause them to feel like strangers in the cities [23]. Research on Chinese migrants has focused disproportionately on issues of housing, employment, and social mobility [24, 25]; however, to the best of our knowledge, no study has examined the daily physical mobility of residents living in a neighborhood of migrants.

Some previous studies found that migrants may have difficulties in daily travel because of limitations in the travel modes available to them [26–28]. However, these studies

did not investigate the experiences and feelings of migrants regarding daily travel, nor did they explain how the residents coped with their mobility challenges. Moreover, these studies focused mainly on the infrastructure and institutional barriers faced by migrants, overlooking the impact of their social relationships on daily mobility. When Chinese migrants move to a city in pursuit of a new job and a new life, they lose their social connections from their place of origin and must build new ties in the destination city. Previous studies have rarely considered how social relationships affect migrants' travel behavior. The present study fills these research gaps by exploring the mobility of migrants living in the Dashilar neighborhood of downtown Beijing, China's capital city.

Dashilar attracts numerous migrants due to its low living costs and abundant working opportunities, forming a migrant-rich area in the downtown sector. The surrounding area offers various travel modes and activity destinations. We pose the following three research questions: (1) What are the characteristics of migrants' travel behavior? (2) What are the determinants of their travel behavior? (3) How do migrants and communities try to enhance their daily mobility?

To answer these questions, we viewed migrants living in Dashilar as active agents in communities and as engaging in complex patterns of social interaction with fellow migrants, their neighbors, local people with a Beijing *hukou*, and their broader communities. State policies, neighborhood relationships and individual experiences all contribute to their mobility intentions and decisions. Answering these questions will not only contribute to our understanding of the travel behavior of Chinese migrants, but will also have beneficial implications for mobility improvement strategies in migrant-rich inner-city areas in other developing countries.

The paper is organized as follows. The next section reviews prior international studies on travel behavior in immigrant enclaves. Section 3 introduces relevant previous studies of migrants in China. Section 4 introduces the city context, method, and data. Section 5 presents the qualitative analysis, and section 6 contains discussions and conclusions.

2 Mobility in immigrant neighborhoods

2.1 Understanding immigrants' travel behavior

Mobility encompasses all types of actual and potential movements, by individuals or groups [29]. It could be regarded as a relation between people and place or, more importantly, between individuals or groups of people [30]. In addition to movement itself, the study of mobility also explores the social significance and other meanings of the movement [31], along with the reasons why people do or do not intend to move [16]. In this paper, mobility is defined in three ways: (1) migrants' daily activity destination choices (e.g., working, picking up

children, shopping) made under their individual constraints; (2) travel frequency, travel distance, and travel mode between their home and their daily activity destinations; and (3) factors leading to their travel decisions.

The mobility of immigrants is closely associated with their social relationships. Individual mobility is determined, to a large extent, by one's social network, which generates travel decisions for social activity [32, 33]. Individuals with larger social networks also have greater mobility [32–37] and thus more social capital [13, 14, 38]. Moreover, mobility itself enables one to maintain and extend social networks, further improving one's social capital [38].

An important component of mobility is people's ability, based on the affordability and availability of suitable transportation facilities, to reach activity destinations [39, 40]. People who are not mobile have difficulties in maintaining a social network and thus are at risk of social exclusion [7]. In addition to social activity, mobility can also influence people's opportunity to participate in other daily activities, such as employment, health, education, leisure, and shopping [7, 41].

Mobility is determined by enduring interactions among the transportation system, the individual agent, the local built environment, and macroscopic economic factors, both at home and all over the world. These factors interact with individual physical mobility through single or multifaceted mechanisms, further constructing the social structure [7]. The meaning of mobility is intertwined with politics, society, culture, and history; to some extent, mobility is a reflection of the power structure [42, 43]. Some people move more than others, and this tendency may reflect their control over or superior social position to others in some aspects, such as financial, time, transportation, and information resources [44]. Therefore, some people may enjoy mobility at the cost of others' immobility [38].

Many scholars have investigated the travel behavior of mobility-disadvantaged groups, such as housewives, people with disabilities, young adults, the elderly, and immigrants. These people may lack one or more key features that support mobility: time, financial resources, language and culture, education, information availability, or political involvement. Their low-mobility condition becomes fixed or exacerbated in this way [45, 46]. The relatively small handful of prior studies on the travel behavior of immigrants living in ethnic enclaves will be reviewed below.

2.2 The travel behavior of residents of immigrant neighborhoods

This section reviews previous findings on the travel behavior characteristics of immigrants living in immigrant neighborhoods, along with the impact of ethnic concentration on travel. The existing studies have been conducted disproportionately in North America; also, the migrants examined in the present

study differ from immigrants in important ways because their migration is domestic, meaning that they do not face the language and cultural assimilation challenges that confront immigrants do. However, migrants and immigrants do have similar experiences of discrimination in various aspects, such as job attainment, education, and welfare, and their residential and mobility patterns also resemble those of immigrants. Therefore, the following literature review reveals the relationship between living in an immigrant neighborhood and mobility, providing an important foundation for this study.

The presence of a residential cluster of immigrants significantly influences the travel characteristics of the immigrants who live there. Immigrant neighborhoods form as a result of ongoing social capital accumulation and information flow that encourage people to live and seek employment at a specific location, which is characterized by a high concentration of businesses, housing, and living amenities serving that ethnic group [47, 48]. Ethnic neighborhoods provide economic, social, and cultural resources for people of the same ethnicity.

Many previous studies have explored whether living in an ethnic enclave is economically beneficial for immigrants. Although the results are mixed, there is strong evidence that when one controls for the residential sorting effects, living in ethnic enclaves has a significant effect in improving immigrants' individual wages [49–51]. A popular explanation for this result is that such enclaves may facilitate the dissemination of job information that matches the skills of those immigrants [51]. Additionally, these enclaves provide self-employment opportunities for people offering ethnically sensitive products and services [11]. Transportation scholars have found that these enclaves provide major support for social networks that in turn furnish a large share of transportation resources [4]; thus, immigrants living in enclaves have a higher likelihood of carpooling or taking public transit. By relying on these shared transportation resources, especially informal ones, immigrants improve their access to employment, socialization, and other daily activities, thereby enhancing the social capital of their ethnic neighborhood.

Many previous studies have found that immigrants in ethnic enclaves, in comparison to native-born residents and immigrants living in other neighborhoods, tended to travel more often by carpooling, public transit and other alternative modes [4]. Immigrants living in neighborhoods with higher ethnic concentration were much more likely to carpool [48, 52]. Immigrants relied on social networks, such as close friends and family members, to share car travel by either informal or formally negotiated exchanges [10]. In addition to carpooling, immigrants also had a higher rate of public transit use than native-born residents [4, 48]. Glaeser et al. [53] claimed that public transit accessibility was an important determinant of residential location choice for the urban poor without automobiles, a group that includes most immigrants living in a downtown area. Another study, in Canada, found that recent

immigrants relied more heavily on public transit than previous cohorts [54]. Blumenberg and Shiki [55] proposed that carpooling may be an expedient way for immigrants to tap social capital, but that once they could afford a car, they would become assimilated to auto-mobility. However, this assimilation process may vary across different ethnic and cultural groups [5, 55]. Nevertheless, Chatman and Klein [56] found no trend toward assimilation among immigrants living in ethnic neighborhoods in New Jersey. The main reason was that they chose their residential location mainly based on proximity to job opportunities and families. Living in these places usually meant better transit accessibility, proximity to downtown, and greater difficulty in finding a place to park one's car. Another study found that immigrants living in an immigrant neighborhood were more likely to walk or use bicycles than other immigrants, especially for shopping-related travel [57].

Although ethnic enclaves provide immigrants with easy access to various destinations related to employment, education, housing, and daily necessities [11, 57], they also have obvious shortcomings in terms of fostering immigrants' social inclusion. It might seem that people could satisfy their everyday routine within the neighborhood by relying on ethnic-related resources, but doing so constrains immigrants' activity space to within the neighborhood and limits their interactions with other ethnicities. Segregation of these neighborhoods is detrimental for the cultural, language, and social assimilation of immigrants, especially recent ones [11, 58]. A U.S. study found that immigrants living in ethnic enclaves had better access to daily necessities but exhibited less physical activity, less recreational participation, and a lower level of social cohesion and civic engagement [59].Therefore, gaining access to key social and economic resources outside the enclave is crucial for new immigrants' assimilation.

Limited transportation presents a serious obstacle preventing immigrants from accessing outside resources. For example, one study investigated the daily mobility of refugees who were forced to live in a reception area set up by U.S. government officials. These refugees had to commute long distances to work by commuter bus, and they faced serious transportation obstacles in accessing shopping, educational, socialization, and leisure activities, which hindered their cultural assimilation [58]. Greves et al. [60] found that largely due to their working constraints and lack of travel mode choices, immigrant schoolchildren had to attend the nearest school instead of more distant but higher-quality schools.

Having an automobile is a very important determinant in immigrants' job search and assimilation, as a car can significantly enlarge one's set of potential work or activity locations. However, immigrants typically have lower car ownership rates than the native-born population. According to one study, Southeast Asian welfare recipients in California disproportionately experience problems with old and unreliable cars, often preventing them from using automobiles in daily travel

[6]. Therefore, carpooling has been a popular travel mode among immigrants. Many daily trips are best suited for travel by car, especially where public transit service is limited [4]. However, carpooling is far less flexible than using one's own automobile, because carpoolers must share the same travel schedule and must have destinations near each other. Carpooling is not feasible for household-specific daily travel, such as some social activities or unplanned health needs [61]. Lower rates of car ownership significantly constrain immigrants' daily activity space. Previous studies showed that compared to native-born US residents, immigrants generated far fewer household car trips and vehicle miles traveled (VMT), especially for non-work travel [57, 62].

Even controlling for accessibility, immigrants have still been found to suffer from lower mobility than native-born residents. Other obstacles, such as language, cultural, and psychological difficulties, further decrease immigrants' incentives to move around. For example, Yu [11] investigated the daily mobility of Chinese immigrants living in Flushing, near New York City. The study found that although Flushing has rather convenient transportation and destination accessibility, Chinese immigrants still had constrained mobility. Obstacles of ethnic discrimination, language, and education increased their fear and the feeling of being an outsider, thus reinforcing their tendency to remain within their enclave, where the availability of local resources with which they had a high comfort level further fixed the immigrants' lifestyles within the neighborhood rather than beyond it.

In summary, previous studies on the travel behavior of immigrants living in ethnic neighborhoods mainly explored their travel mode choice, car use characteristics of immigrants compared with native-born residents, the impact of social ties in enclaves on formation of their travel behavior, and their transportation obstacles, especially their typically lower ownership of automobiles when compared with native-born people. Nevertheless, several significant research gaps remain. For example, existing research has provided insufficient explanations as to the limited mobility of immigrants. Immigrants may choose not to travel much even when they live in highly accessible neighborhoods. However, prior literature has paid little attention to why such people do not travel facing with latent travel demand. Also, existing research is disproportionately dominated by U.S. studies of international immigrants, whereas research on internal migrants in developing countries remains rare.

3 Migrants in China

The social inclusion process for migrants in China includes a transformation in multi-dimensional geographical space, identity, and self-concept [63]. From the migrants' perspective, social inclusion is a process of gradually coming to regard themselves as citizens. Only in this way can they participate in economic, cultural, and political activities at the city and community level and achieve a lifestyle similar to that of other citizens.

Most contemporary Chinese sociologists believe that the social inclusion level of migrants is still quite low and that migrants experience various types of discrimination [22, 64–66]. In the economy, they are not treated like local citizens in terms of income and working conditions, and they cannot enjoy the benefits of local social insurance and social welfare without a local *hukou* [66, 67]. As for socialization, the migrants' social networks tend to be concentrated on relationships of blood and a common place of origin [65]. The migrants seldom take part in the activities of other citizens [68]. Although numerous migrants have been settling in Chinese cities for years, they still refuse to regard themselves as citizens, considering themselves instead as on the margin of citizenship or even as peasants. Therefore, they are experiencing self-exclusion [64, 69]. However, some scholars are optimistic about the social inclusion of migrants. For example, Zhu [70], who conducted a survey of female migrants in Guangzhou, discovered that the female workers could socialize and interact effectively with other citizens thanks to their similar dress, language, and behavior. This was an important way for them to be included in society.

The residential pattern of migrants in China is similar to that of the immigrant neighborhoods discussed above. Migrants tend to agglomerate with their relatives, friends, and colleagues from the same province or even the same rural town, causing migrant neighborhoods to emerge in many cities, especially at the periphery of Chinese metropolitan areas [71]. These settlements are spatially as well as ethnically segregated from their surrounding areas migrant [25]. The most important reason for the formation of migrant neighborhoods in China is that migrants have no access to the formal real estate market because they lack a local *hukou*, and most of them could not afford to buy a house in the city [24, 71]. Therefore, renting houses in villages adjoining or on the fringe of cities becomes their most viable way to live near the city while keeping living costs low [72].

Migrant neighborhoods provide people with support from social networks based on kinship or a common place of origin, which can help them with job attainment, living arrangements, socialization, and leisure. These relationships can even transform individual capital into social capital through individual investment, and the social networks can support their individual members' rights by collaborating with local government and political representatives [68]. If migrants succeed in establishing social networks with local citizens, this cross-cultural "migrant-citizen network" contributes significantly to their social inclusion [73]. A case study in Guangzhou found that migrants could rely on local residents or near migrant neighborhoods to help them maintain and extend their

business networks, enabling them to climb social ladders and become the active agents of migrant enclaves [24]. However, the media and many scholars are also concerned about the serious social and environmental drawbacks of living in a migrant enclave. These settlements are typically characterized by overcrowding, a dilapidated built environment, minimal government investment, lagging infrastructure development, and crime [71, 74, 75]. These negative features of migrant enclaves pose great challenges with regard to urban management and the social inclusion of migrants.

Although many scholars have paid attention to the residential and social mobility of migrants in the context of China's globalization and rapid urbanization, few studies have explored these workers' travel behavior. Several studies found that migrants in Beijing experience lower access to job opportunities via public transit [27] and higher commuting costs [76] than local citizens. Another study claimed that migrants' travel distances and times tended to be short and that their main travel modes were walking and cycling [28]. As far as we know, no previous study has investigated the travel behavior of migrants living in migrant-rich areas, nor has any prior research revealed the social and power interactions underlying migrants' mobility. Other studies have also failed to explain the intentions behind the mobility and immobility of migrants or their development of coping strategies.

4 City context, method, and data

4.1 Study area: Dashilar

The study area for this research was Dashilar, in the Xicheng District of Beijing. Dashilar is in the city center and covers an area of 1.26 km^2, with 114 streets and lanes. As of 2013, there were 55,067 people living in this area, of whom 15,553 were migrants [77]. There are 9 communities within Dashilar, indicated in Fig. 1.

The Dashilar area is south of Beijing's Tian'anmen Square and has a long history. It has been an important business district in Beijing since the Liao and Jin Dynasties (around 1000 A.D.). Since then, many migrants from the north and south of ancient China have converged here and created a fusion of diverse cultures. In the 1980s, with the extension of Beijing city, shopping malls and other entertainment venues proliferated outside the inner city, and Dashilar lost its former role as the business center of Beijing. At the same time, many previous inhabitants moved out of the area in search of a more desirable living environment, leaving behind a sector of urban poverty filled with older people and migrants [78].

Dashilar has become an important migrant enclave in Beijing for several reasons. First, the area has various job opportunities for low-skill migrants. There are many shops, restaurants, and supermarkets within or near Dashilar.

Additionally, Dashilar and the surrounding area are a popular destination for many tourists in Beijing, especially foreigners. Therefore, various low-skill positions serving local residents and tourists provide migrants with abundant potential job opportunities. Meanwhile, rent prices are relatively low. The houses in this area, primarily one-story bungalows, are mostly owned by the local government and rented to local residents at low prices. With the agglomeration of migrants in Dashilar, many local renters sublet houses to migrants for profit. The original tenants could rent a house from the local government by paying only 10 to 100 RMB per month for a single room, but those tenants could then rent it to migrants for 300 to 1000 RMB per month. Even so, rental prices are much lower than in nearby sections of Beijing or suburban areas, attracting many migrants with limited financial resources [78].

Additionally, living in Dashilar facilitates daily life, as people have access to many urban opportunities in and around the study area. Within Dashilar itself, stores meeting daily living needs, educational institutions (e.g., kindergartens and primary schools), the healthcare institute of Dashilar Jiedao (jiedao is the smallest governance unit in China), entertainment facilities (e.g., the activity center for the elderly), small restaurants, and a community activity center for political participation could satisfy all of inhabitants' basic living and social requirements. Within a five-kilometer radius of the study area, one can reach locally and nationally famous hospitals, schools, restaurants and public parks. These opportunities provide all kinds of travel destinations as well as employment opportunities for migrants. Furthermore, walking and cycling are prevalent in inner-city Beijing, reducing travel time and costs for migrants. Public transportation is also convenient in this area. The surrounding bus stops include Dashilar, Qianmen (this station is also a stop on the rapid bus line), Zhushikou, the south exit of Qianmen Street, and the south exit of Meishi Street. Subway station access is excellent. Although the streets and lanes are narrow, the motorized road system surrounding the area facilitates the inhabitants' daily travel. In sum, diverse transportation modes provide various travel choices and high local accessibility. The clustering of migrants and various potential destination and transportation choices make Dashilar an ideal case study for exploring mobility among migrants.

4.2 Data and method

The study was conducted in March and April 2015. Gatekeeper and snowballing techniques were employed to reach prospective participants [79]. Migrants living in Dashilar were, to a large extent, outside the control of local government agencies. Their residential contracts were mainly based on oral negotiations with local tenants, and the government had been fairly noncommittal regarding the subletting problem. Additionally, many migrants were quite sensitive about the issues covered in our study. Therefore, it was not

Fig. 1 The study area.
Source: the authors
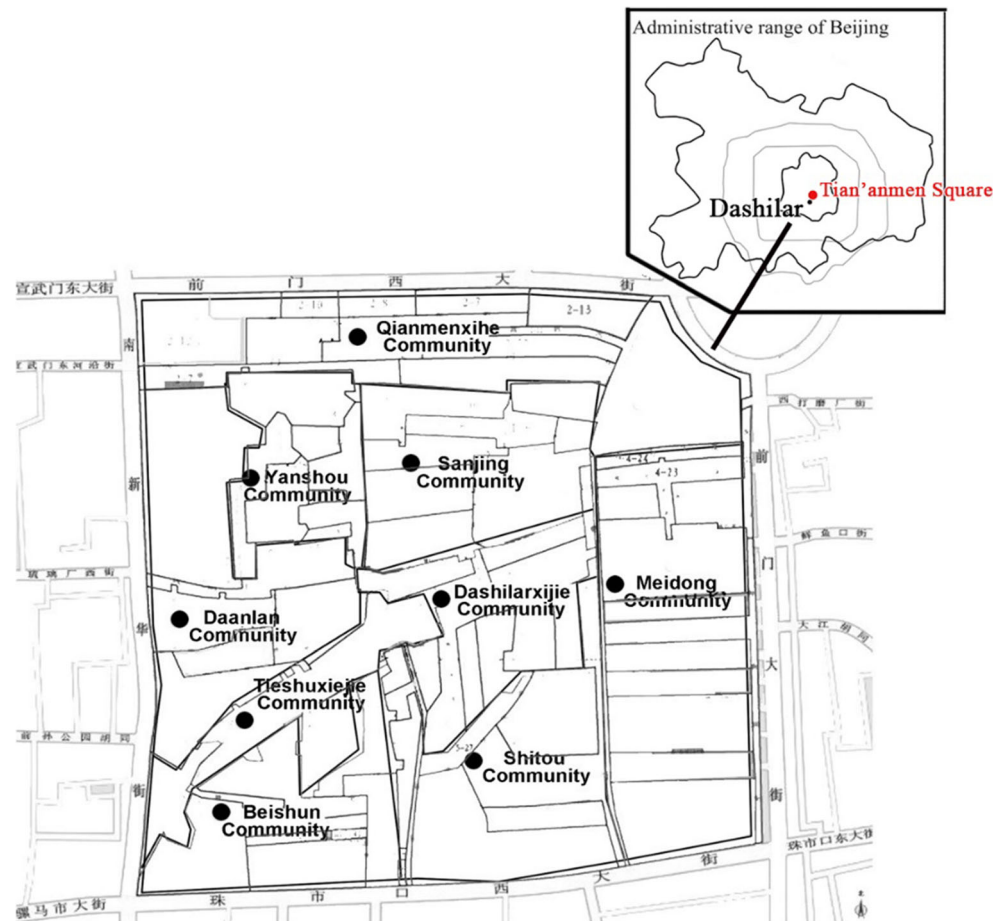
possible to conduct large-scale qualitative research, such as focus groups. The only way to recruit respondents was to find acquaintances who could serve as gatekeepers and ask them to recruit additional participants. We attempted to contact identified potential respondents until they agreed or declined to participate. In the end, eighteen migrants (defined as Group A, numbered A1 to A18) agreed to participate in our interviews and provided responses that could be used in the analysis.

In the sampling process, we also considered the socioeconomic attributes of these migrants, such as age, gender, household structure, and household income (shown in Table 1). The household income of migrants is further below the average income level for Beijing overall. Beijing Statistics Beaura reported that the average annual employment earnings in Beijing for 2016 were 92,477 yuan (approximately $13,803 in U.S. dollars) [80], much higher than the average monthly income of migrants shown in the table.

According to the narratives of the respondents and local residents, our sample was representative of migrants in Dashilar, but no data about migrants in Dashilar were available to confirm this statement. Those who refused to be interviewed fell into two groups. First, some people who had attained the status of middle-income businessmen in Beijing,

and who led lives similar to those of local Beijing residents, felt uncomfortable about participating. The second group unwilling to participate consisted of people who had arrived in Dashilar recently and had not yet developed trusted social ties within the neighborhood. These two groups of people were both quite exceptional cases among migrants in Dashilar, so their omission had no significant effect on the overall analysis.

Additionally, six local people (defined as Group B, numbered B1 to B6) were recruited to take part in the research. They were local residents and the neighbors and landlords of migrants, so their narratives reflected the power structure in Dashilar and the differences in life experiences between migrants. Two of them were students in grades 3 to 5 in Dashilar Jiedao. Two working adults participated: a community policeman and the owner of a clothing store respectively. Finally, the group included two retired people who served as community volunteers. The interviewees in group B were familiar with the living status of migrants.

Semi-structured interviews were conducted, lasting 20 to 60 min each. The interview protocol for Group A included questions on their social network; considerations in choosing their job and housing location; daily mobility experiences, challenges, and the reasons for their mobility or immobility; and their feelings and coping strategies regarding their

Table 1 Characteristics of the migrant interviewees

Categories	Number of participants
Age	
20–30 years	4
30–40 years	10
Above 40 years	4
Gender	
Male	9
Female	9
Household structure	
Single, living alone	2
Single, living with parents	2
Married, living with children	10
Single, living with children	1
Married, living with children and parents	3
Monthly household income (RMB, 1 U.S. dollar ≈ 7 RMB)	
4000–6000	6
6000–10,000	7
10,000–20,000	3
Above 20,000	2

mobility or immobility. The interviews with members of Group B asked about their interactions with the migrants living in the study area, their feelings about those relationships, their observations of the daily mobility of migrants, and the impact of those experiences on their own lives and those of the migrants.

In this study, we used one-to-one in-depth interviews to explore migrants' mobility. Various qualitative research methods were used in previous studies of immigrant travel, including focus groups [10, 56], ethnography [11], and a participatory approach [58]. As mentioned above, it was difficult to access to enough migrants in Dashilar to form a focus group, and the migrants' sensitivity and fears made ethnography or a participatory study impossible. Thus, in-depth individual interviews were considered the most feasible approach. The drawback of this qualitative method was that it was hard for us to establish relationships of trust with migrants in a short time. Thus, migrants may have understated their everyday mobility problems, especially their travel difficulties. Additionally, the quality of this study was sensitive to the social networks of the gatekeeper and other respondents.

The interviews with the respondents were digitally recorded, transcribed, and coded using the qualitative software Nvivo. Based on the narratives of our 24 respondents, we identified the following main themes, which will be analyzed in the following section: Migrants' mobility constraints, causes of these constraints and the workers' feelings about them, and various coping strategies.

5 Analysis

5.1 Mobility constraints of migrants in Dashilar

Our interviews revealed that the interviewees' daily activities took place within and near Dashilar. Most of the interviewees traveled no more than five kilometers from their home each day, and they walked on most of their daily trips. Dashilar and the surrounding areas provide migrants with all kinds of job opportunities, so most of them could commute by walking: "*There are so many opportunities around here in Dashilar and we can walk to the workplaces*" (A2, female, age 33). Like A2, many migrants living in Dashilar benefit from the presence of visitors, especially foreign visitors, to Dashilar, as well as the large number of local residents. As B1 (male, age 62) observed, many of the migrants living in Dashilar had temporary jobs in the city center of Beijing. For example, some of them took photos for visitors at Tian'anmen Square during the daytime, and others drove tourists around Dashilar in rickshaws. Another group of interviewees owned businesses serving residents of Dashilar. They sold daily necessities such as vegetables, meat, and groceries or provided everyday services such as haircuts, shoe repair, and deliveries. All these jobs were located near their homes, and most of them were low-skilled jobs serving tourists and local residents.

Another important routine for migrants was escorting their children home. All the children of the interviewees were attending the same primary school, located in the heart of Dashilar. As one parent said, "*It is very convenient for children to go to school. He could walk five minutes to get home. It is also convenient for us to take him home*" (A9, female, age 39). Interviewees and their children admitted that the primary school was of poor educational quality, even worse than that in their hometown, and the migrants' children had to endure contempt from local students. Nevertheless, in terms of the children's safety and ease of transportation, the school was quite convenient and quality was considered an unattainable luxury.

The interviewees' daily shopping and leisure activities other than work and escorting students were also mainly within Dashilar. They seldom traveled beyond the neighborhood for shopping, recreation, or dining out, even on weekends. It was their consensus that the small stores and the markets in and near the study area could satisfy their basic daily needs.

In contrast, there were obvious variations in travel for social activity among the respondents. A few of them had relatives and close friends living outside Dashilar in Beijing, so they sometimes visited these people's homes or ate with them in other neighborhoods. On the other hand, those who did not have relatives or close friends outside Dashilar reported that their social relationships in Beijing were limited to neighbors, work colleagues, and people from the same hometown who lived in Dashilar. These people seldom left Dashilar even for

social activity—or, still worse, some of them seldom had social activities.

Dashilar, like many other migrant-rich areas, provides migrants with various transportation resources and activity destination choices, helping them to settle conveniently among fellow migrants. However, the employment opportunities in Dashilar are mostly low-skill service positions, and the educational quality of the neighborhood primary school is unsatisfactory. Additionally, the business destinations within the neighborhood are all groceries, markets, and vendors. Located in the downtown area of Beijing, Dashilar has good access to high-quality education resources, supermarkets, libraries, museums, public parks, civic centers, and top-tier hospitals. Migrants could also reach various activity destinations in Beijing easily by bus or metro. These urban opportunities are important to improve the migrants' quality of life and to help them attain social inclusion. However, our findings suggest that migrants living in Dashilar seldom go to these destinations, despite their convenient accessibility. What obstacles discourage them from accessing urban opportunities outside their immediate neighborhood? The following section will articulate three categories of barriers: social networks, limited time and money, and institutional barriers.

5.2 Determinants of constrained mobility

5.2.1 Social networks

Social networks are an important barrier to daily mobility among migrants. Travel for social activity has become the fastest growing segment of daily travel because of improvements in transportation systems and information and communication technology (ICT) and increased leisure time [81–83]. However, the socially disadvantaged tend to have smaller social networks than other people, contributing to their higher exposure to social isolation and poorer physical health [84]. Social trips are generated by social networks. Thus, people with smaller social networks have fewer opportunities for social trips [83], which may be detrimental to their physical and mental health.

Most of the migrants acknowledged that they did not have a stable social network before they came to Beijing. They came to Dashilar and secured jobs in the area because their relatives or others from the same hometown had gone there and made money. A11 (male, age 42) said, "*I came here in 1996 ... I found my present job through people of the same origin.*"

Another group of people came to Dashilar to be reunited with their families after one or more family members got a job there:

I came here with my parents and my younger brother. My parents opened a restaurant in the Dashilar area. I

came here after graduating from high school. (A7, female, age 23)

My husband came here in 2009… and then I came here. (A2, female, age 33)

Relationships in individual social networks could be distinguished in terms of interaction intensity between weak and strong ties. Strong ties refer to intimate relationships in which people know each other well; in contrast, weak ties refer to one's acquaintances, who generally know little about each other [85]. Social networks are important for individual well-being and attainment of social status [14]. From the perspective of social capital, social networks provide a platform for people to invest and adopt social resources [13].

Lin [13] indicated that social capital could improve individual opportunities in several ways: flow of information, which facilities better matches between individuals and organizations; influencing decision makers; functioning as social credentials; and enhancing an individual's identity in a social group. Obviously, the social capital of migrants can have a significant impact on their job search, socialization, and neighborhood participation, and thus on their self-identification as being part of the city. Nevertheless, interviews showed that migrants' social networks were mainly restricted to their families, relatives, and people from the same hometown. Admittedly, these strong ties are characterized by similarities in social status and power, and thus these relationships should be typified by a high level of mutual understanding, which is essential in meeting emotional and socialization needs.

However, many sociologists argue that weak ties are more important because they function as bridges connecting the strong ties of different groups of individuals [85]. A scarcity of weak ties could seriously weaken individuals' social capital. Indeed, the lack of weak ties among migrants in Dashilar was a serious problem affecting their social inclusion. According to a Chinese sociologist, the strong ties of migrants could be viewed as ascribed resources, which are important for them to get the first job and settle in a city. However, without the help of weak ties, defined as achieved resources, they cannot build up their local social resources and thus they struggle to become assimilated culturally and psychologically in the city [73]. Many migrants living in Dashilar, especially the more recent arrivals, acknowledged the constraints of their social networks, particularly the lack of weak ties, as their major mobility challenge: "*I used to take part in many social activities. I think the activities could relax me, and it is very important. ... When I have time, I do not know what I should do or whom I should contact. I do not know anything and I feel I am becoming more shortsighted*" (A5, female, age 29).

Social networks could be a bridge motivating people to move into Dashilar. Maintaining and extending social

networks could facilitate the exchange of information and emotional feelings, which reinforces a sense of trust between individuals. The accumulation of social capital among the transportation-disadvantaged could improve their spatial cognition and also increase their motivation to move around [12, 32, 34]. Accumulating social capital via work and residential mobility, as well as through more interactions with work colleagues and neighbors, could significantly improve migrants' mobility.

In some cases, interviewees stated that social trips helped them to overcome depression and stress. A barbershop owner (A16, male, age 38) said, "*I have many relatives and friends in Beijing. I often dine out with my relatives or friends. This kind of face-to-face communication is a good way to strengthen emotional ties and express our feelings. We are all stressed in this city.*" Another female who had moved to Dashilar with her son said, "*I'm outgoing and I would like to know new neighbors. I have moved several times and have many friends here. They are willing to keep in contact with me, and we get out together for shopping and leisure*" (A3, female, age 55) Even so, she admitted that most of her neighbors and friends were migrants living in Dashilar. It was very difficult for her to make friends with local people who had been born in Beijing.

5.2.2 Time and money limitations

The second set of mobility challenges that migrants face involves poverty, in terms of both time and income. Time poverty means that individuals do not have enough discretionary time beyond their work and family commitments [86]. The ability of travel is a function of access to destinations and disposable time. Lacking time for leisure activities is a major obstacle that leads to insufficient involvement in leisure and social activities, and this inability to participate in turn reduces social exclusion [87].

The migrants interviewed were mainly employed in low-skilled positions that require excessive physical labor, with no employment contracts. Facing the financial burden of both maintaining their daily life in Beijing and supporting their family members back home, they needed to work long hours. Many of them had to work well into the night, because their jobs entailed providing local people's daily necessities.

B1 (male, age 62) pointed out that Dashilar was also home to many wholesalers. Living near the wholesale market or having good access to the market is of vital importance; Dashilar facilitates this access because it has so many bus stops nearby. It was very convenient for these people to access the market by taking the last number 204 bus to the Beijing Zoo market. However, they worked at night and slept during the daytime, and so they seldom had time for non-work travel. Therefore, the scarcity of discretionary time squeezed out leisure activities such as shopping and dining out.

For example, A12 (female, age 45), a waitress working at a restaurant in Dashilar, described her long work hours as a major reason for her constrained mobility: "*For us waiters, work is too busy. When I need something, I buy it by walking. You could find almost everything you need here in Dashilar.*"

The situation is even worse for migrant female workers than for males. In the rural areas of China, traditional belief holds that men are the breadwinners and should earn the money for the whole family while women shoulder all the household tasks. As the migrants settled in Dashilar, their social status had not changed much. Besides, considering the benefits for the whole family, women were willing to shoulder more than their share of the household tasks. As one young female migrant claimed, the only way to cope with time poverty was to reduce leisure travel: "*I work from 9 a.m. to 5 p.m. every day. I have to clean the room and do the dishes every day. I'm busy every day. I'm accustomed to buying things for one month at a time from the surrounding shopping malls. If I have sufficient time, I take the bus. Rather, I take the subway instead*" (A15, female, age 32).

Moreover, late work hours and time committed to family led to a mismatch between the opening time of potential activity destinations and the interviewees' discretionary time, preventing them from taking part in social and leisure activities that would help them to cultivate spatial awareness and a sense of belonging: "*We would like to take children to the Beijing Zoo. It sounds interesting. We could get there easily by metro line number 4 in less than thirty minutes. But we are so busy that when we get there, the zoo will be already closed. I am sad about this situation. Just staying in the home makes me like a frog in the well*" (A2, female, age 33) Although Dashilar provides various transportation resources such as buses and subways, some interviewees considered it a waste of time even to make the trip to and from the transit station. A16 (male, 38 years) complained that it was too hard for him to get out of the study area on foot. It took him about 15 min to get to the nearest subway station. Fifteen minutes may sound like an acceptable travel time for transportation researchers, but for migrants already shouldering high-intensity physical labor, it discouraged them from enlarging their activity space.

Additionally, financial burdens imposed extra pressure preventing migrants from moving around. Under the economic pressure of supporting themselves and their families in their hometown, they felt forced to stay in a relatively small activity space to avoid incurring more costs: "*The big malls on the subway line are good and convenient to us. But we could not afford them*" (A9, female, age 39). Interviewees who had lived in Dashilar for many years were familiar with the area and knew the surrounding leisure and shopping destinations well, but they indicated that financial constraints prevented them from leaving Dashilar to travel to those destinations: "*I bought a piece of chocolate in the market in Dashilar for my son. It was about to expire and the flavor was awful. … There*

is no doubt that the commodities in the malls like Walmart and Merry Mart outside the neighborhood are of good quality, but they are too expensive" (A8, female, age 38).

Obviously, interviewees won't have the resources to move around if they don't work. However, their average wages were significantly lower than those earned by local people with a *hukou* [19], compelling them to work longer hours to meet their financial needs in Dashilar and those of their extended family back home. For this reason, they made work a much higher priority than socializing or leisure trips, which could help them to become more involved in the civic life of Beijing.

5.2.3 Institutional barriers

The third set of barriers to daily mobility among migrants consists of institutional barriers resulting from the *hukou* system. Being without a Beijing *hukou* made the migrants feel even more different from others. The *hukou* system seems to be an insurmountable wall for most of them. They expressed feeling as if they were left outside the door, unable to enjoy the same welfare support as citizens of Beijing.

Discrimination against migrants penetrated into almost every aspect of everyday life. First, work experiences reinforced people's sense of being outsiders. In Dashilar, there was an obvious employment gap between migrants and local people of the same age. Most interviewees had jobs serving local people and tourists, whereas local people of the same age typically had professional jobs in downtown Beijing. Although migrants could earn enough money to support their family members in Beijing and in their hometown, they still did not think that they were part of Beijing. Their low-skill job experiences serving people of higher socioeconomic status left them feeling humiliated about the things that they did not possess. For example, A17 used to be an auto detailer. Once he saw the ID card of the owner of a Porsche car. The owner was the same age as he was, causing him to think about the gap between them. Later, he was unwilling to connect with people because he was afraid to interact with the rich. As he put it: "*You feel as if you do not exist. The rich look at you differently.*"

Second, migrants were also excluded from urban education and healthcare resources because of their *hukou* status. Some migrants stated that they would like their children to go to better schools in Beijing, because they thought this was the only possible way for their children to climb the social ladder. There were several top-tier primary and middle schools nearby, just outside Dashilar. But to enable their children to receive these educational opportunities, they had to submit a residential certification, formal residential rent contract, employment certification, and *hukou* certification. Their residential rents were usually based on oral contracts with local renters because of the complicated housing tenure system in Dashilar, and their jobs had no formal contracts. Thus, they were ineligible

to enroll their children in better schools and had no choice but to send them to the school in Dashilar. Exclusion from pursuing equal education opportunities prevented the interviewees with schoolchildren from reducing intergenerational poverty [88]. Some parents said that after summer vacation, the school in Dashilar also prohibited children whose families could not submit the required certifications from attending school. Therefore, many parents had to send their children home or even left Dashilar.

The discrimination against migrants could even extend to everyday life. For example, A2 ascribed her limited mobility to her unwillingness to move around by bus: "*Beijingers look down on me. One time, I took the bus and knocked a passenger down by accident. I said I was sorry, but he insulted me and tried to beat me. He said there were too many people without a Beijing hukou in Beijing, and that they were of low quality. It makes me feel that this is not my city*" She further explained that migrants could be easily distinguished from local people by their accent and clothing. Life experiences like this one caused migrants to develop negative impressions of local people, which could inhibit their aspiration to move around and make connections with local people. *Hukou* was like a wall that not only blocked the mobility and activity space of migrants but also reduced their willingness to extend their social networks to include local people, thereby slowing their accumulation of social capital and their attainment of social inclusion.

5.3 Coping strategies and social impacts

5.3.1 Electric bicycles: The symbolic exclusion of migrants

The analysis above showed that interviewees experience various challenges in daily mobility. They needed to arrange their daily work and also complete necessary household tasks during the daytime. To move faster, many of them rode electric bicycles, a popular mode of transportation in the study area. A1, a 43-year-old female, said, "*It saves money, saves petrol, and is fast and safe. Therefore, it is the most desirable travel mode in this area.*" Some interviewees explained that the high speed of electric bicycles saved travel time and increased their physical mobility. For example, A1 got a job outside the neighborhood several months ago. The one-way travel time was 45 min by electric bicycle. She said that the electric bicycle had expanded her ability to pursue job opportunities with higher wages.

In contrast, local residents seldom rode electric bicycles: "*The local young people have formal jobs here. They take the bus or drive to work*" (B1, male, age 62). Although there existed no exact data showing the mode share variations between migrants and local residents, the narratives from our interviews with the two groups of participants indicated that electric bicycles were a predominant mobility tool among

migrants. Local residents living in Dashilar were mostly young people with formal jobs who owned their houses, or elderly people who did not want to move out. These two groups seldom relied on electric bicycles. Local residents had much less stringent time and financial constraints than the migrants, so most of their travel could be accomplished on foot. Additionally, many of them owned private cars.

Traveling by electric bicycle can involve serious safety concerns and greater risk of traffic collisions with cars or larger vehicles. Migrants' aspirations of moving faster was intrinsically in conflict with the threats to bicyclist safety posed by distracted auto drivers. Meanwhile, speeding electric bicycles had become a source of complaints by local residents:

> "*The migrants are riding electric bicycles too fast. There are so many old people and children in the Dashilar area. Every time they ride by the post office of Liulichang, the local old people are always calling, "Look out! Electric bicycle! The migrant! Barbarous!" Even if they knock a dog down, it is impossible for them to pay for it. It is impossible for the local people to ride so fast.*" (B1, male, age 62)

> *One day, I went to my tutor's home. On the road, a migrant from northeast China, riding an electric bicycle, was drunk and hit our car. My dad warned him to be careful. Amazingly, he slapped my dad across his face. The migrants are quite unreasonable.* (B4, female, age 12)

It is impossible to confirm whether the narratives from these two local residents were biased, but the electric bicycle had clearly become a symbol of migrants in Dashilar, signifying differences in social status and lifestyle between migrants and local residents. Although the electric bicycle helped migrants to better organize their daily travels and lives, it also shaped a modal split between migrants and local residents, and it further increased conflicts between the two groups and discouraged friendly social interactions.

5.3.2 Mobile phones: A paradox of improving and fixed mobility

The prevalence of mobile phones among migrants in Dashilar has significantly improved their virtual mobility. Almost all the respondents said that the mobile phone was their primary means of contacting family members and friends in their hometown. The mobile phone was important for them because it helped them to sustain connections and reinforce their emotional ties with social relationships back home [89]. Exchanges of voice and emotions by mobile phone could help migrants to transcend the boundaries of space and time [11]. "*Contacting people by telephone could almost replace face-*

to-face communication. It is impossible for me to go back home a few times each month" (A14, male, age 38).

Undeniably, the mobile phone facilitated communication and life organization for migrants, as well as giving them a convenient way to interact with neighbors and friends. It could also help them ask others to complete household tasks when they were unable to leave work. Moreover, the social relations enhanced by the mobile phone increased migrants' confidence and their aspirations to get out of their home and participate in leisure activities. For example, A2 (female, age 33) used the mobile phone to notify her neighbors if she needed their help in picking up her children. A3 (female, age 55) said that she had many friends' numbers in her telephone. When she wanted to go out for recreation, she would ask if others were available. By means of the mobile phone, every migrant could build up his or her own mobile social network and contact any node in the network at any time. In this way, an integrated mobile community developed, by which migrants could readily communicate with each other.

In addition to reinforcing emotional ties and social networks, the Internet could provide migrants with a platform by which to learn information, search for jobs, and even accumulate power. As Castells argued [90], in the Internet arena, connectivity and online access play an indispensable role in power and power sharing. Most of the migrants interviewed had difficulty in accessing the Internet by computer. Some respondents had computers at home, but they admitted that their children were the main users. In contrast, smartphones substantially lowered the requisite skill development, making it much easier for respondents to connect each other or access the Internet.

On one hand, mobile Internet access was a sort of substitute for travel because many tasks could be completed online instead of by physical movement, such as collecting information about jobs and commodities. Chatting by Internet video compensated for face-to-face contact by displaying mobile images and providing a sense of reality. On the other hand, mobile Internet use facilitated daily mobility by enabling migrants to obtain useful information such as weather reports and real-time traffic conditions of public transportation. Mobile Internet access could also support mobility by providing more information about leisure activity destination choices: "*I pay attention to getting information about good restaurants and recreation through the mobile phone. When I have time, I would go with my family*" (A13, female, age 35).

Moreover, the Internet accelerated the flow of information and knowledge about laws, policies, and news related to migrants, thus giving these individuals greater confidence and material to express themselves in online and offline communities:

> "*I could learn some laws and news through the mobile phone and get some "positive energy."* (A9, female, age 39)

I learn about everyday weather by the mobile phone. I also have many official accounts on WeChat (a chatting service application in China). I could find out about something I have interest in, such as the education policies in Beijing for migrants. ... I feel better informed and often talk about what I learned on the Internet with my colleagues, neighbors, and e-friends. (A15, female, age 32 years)

However, as one Chinese sociologist has argued, ICT presents a paradox of empowerment and disempowerment among migrants. The socio-organizational structure favors the upper class, whereas migrants are disadvantaged with regard to participation in online resources [91]. In communities connected by the mobile Internet, people become nodes in complicated interpersonal systems, constructing their individual virtual networks according to their individual interests and social networking. But this does not mean that e-society is egalitarian. In the virtual world, even if everyone had access to the mobile Internet, the ability to use it would vary across different groups of people, due to individual differences in socioeconomic status and the quantity and quality of Internet resources they possessed. Respondents in Dashilar might still be at the margins of the virtual world because they remain disadvantaged in terms of education level and in social networks.

Virtual society is also structured, and migrants may also experience a new type of social exclusion. For example, A17, a 30-year-old messenger service employee, spoke of his exclusion experience in *WeChat*:

Our company has a WeChat group. There are couriers, municipal managers, and regional managers. Managers invite us to the group, but the conversations are always initiated by local managers and regional managers. We cannot say anything, and the conversations have nothing to do with us. In daily life, we are at the bottom. For us, the WeChat group is the same as reality. (A17, male, age 30)

This feeling of being marginalized in society, which extended from the real world into the virtual world, could further undermine the migrants' sense of meaningfulness and belonging as well as their motivation for mobility. This study thus demonstrates the paradoxical role of the mobile phone in both improving and holding back people's mobility, but we did not have enough information to determine whether the negative or the positive side was dominant, nor could we draw causal connections between mobile phone use and physical mobility.

5.3.3 The role of community

Communities were also important forces pushing migrants to become more involved. By "communities," I refer to those residential committees (*juweihui*) that serve as a bridge between a sub-district government and the residents living within that government's jurisdictional boundaries. Activities organized by residential committees can improve trust within the whole community, enhance community satisfaction, and extend community support resources. These functions can all be considered forms of social capital that could contribute to the social inclusion of migrants living in Dashilar [15, 92]. Several interviewees told me that communities organized activities designed to bring migrants together, improve their understanding of each other, and alleviate misunderstandings between migrants and local residents:

Every year, the community organizes free physical examinations for us migrants. This provides us with an opportunity to get to know each other, and we can receive a gift after the examination. We are valued by the community. (A9, female, age 39)

For the migrants living in Dashilar, this feeling of being valued was important for their social inclusion. Although none of the interviewees said that they had the opportunity to give input before community or sub-district policies were adopted, forms of assistance like physical examinations for migrants could be regarded as a good start toward harmonious cooperation. Such community initiatives could reduce misunderstanding and cultivate trust between migrants and local people, incorporating migrants into the broader community. Moreover, these activities could make migrants more familiar with the services provided by residential committees and help them build more friendships with both local residents and other migrants. These benefits would all contribute to migrants' accumulation of social capital, encouraging them to participate in more community activities and enjoy greater mobility.

Community volunteers were another bridge connecting the residential committees and migrants in Dashilar. These volunteers, mostly retired elderly people who remained enthusiastic about community affairs, could play a positive role in the inclusion of migrants. For example, B6, a 63-year-old retired female with a Beijing *hukou*, stated:

I am a volunteer in Sanjing Community. Every time a new migrant comes here, I introduce the person to the conditions in the community and to safety issues. I also ask new arrivals to tell me their hometown, name, and occupation. In this way, I can help them in their daily lives, such as receiving deliveries and taking in their laundry on rainy days.

These volunteers could be regarded as active agents willing to help migrants build social ties. They had time available because of their flexible schedule, and their knowledge of

Dashilar and their trusted status could help migrants to quickly become familiar with their new home, make friends, and take advantage of local resources. Moreover, migrants could also rely on these retired volunteers to assist in resolving conflicts with local residents. However, the number of community volunteers was limited, and many interviewees had not even heard about them.

Such community initiatives are a promising way to help migrants living in Dashilar to move beyond their constrained mobility space and become constructively involved in their new community. However, many interviewees exhibited "voluntary immobility" [11] and were not interested in extending their social networks. They did not regard social networks, especially those with weak ties, as an important part of life. For these people, life was simple. Their social network consisted only of their relatives, and they refused to make use of the weak social ties established at work, as they saw no benefit in doing so. Rather, they viewed work as simply a place where they gave their physical labor and time in exchange for money. These migrants regarded accumulation of income and improving their quality of life as the only way to achieve social inclusion. To some extent, they didn't regard Dashilar as their home at all or a place where they belonged, but only as a place for earning money. Entering into even small social networks felt dangerous to these interviewees. Since they were not forming or extending their social networks, their lives basically revolved around physical labor routines (paid work and housework) and family affairs. The low-level, repetitive nature of their job duties made it impossible for them to move upward toward a higher socioeconomic status.

6 Conclusions and discussions

This study has sought to interpret the constrained mobility of migrants in Dashilar, a place with abundant transport resources and good access to various activity destinations. Migrants' daily travel took place within their own neighborhood, and they seldom traveled outside the neighborhood. There are many high-quality urban opportunities for employment, education, leisure, healthcare, and socialization near Dashilar, but the migrants seldom took advantage of these resources, thereby hindering their cultural assimilation or social inclusion.

The social structure in which the migrants were embedded also contributed to their restricted mobility. They had very limited social networks, restricted largely to people of the same origin. Their lack of acquaintances, especially among local residents, significantly reduced their motivation to move around. Additionally, migrants typically had long and nontraditional work hours, and they were required to support their family members both in Beijing and back in their original hometown. Time poverty and financial poverty further limited their mobility, and various institutional barriers segregated migrants from local people in the job market, urban welfare, and daily life. These barriers prevented the migrants from enjoying equal opportunities and decreased their interest in traveling beyond the immediate area where they lived. The strategies adopted by migrants and their communities to cope with these challenges were helpful to some extent but also reinforced the migrants' fixed, limited mobility status.

This research had several limitations that should be addressed in future studies. One improvement would be to coordinate the qualitative data collection with Geographic Information System (GIS) techniques, which could be used to investigate migrants' travel behavior (e.g., daily travel distance, routes, modes of travel, and daily activities) more deeply [11, 61]. Also, the study lacked a comparison group. It would be valuable to compare the mobility of migrants living in Dashilar with that of local residents with a *hukou* and of comparable socioeconomic status. In this way, we could determine whether migrants travel less than local citizens and to what extent the factors discussed in this paper are responsible for their mobility constraints.

One important finding of this research is that social network status is an important contributor to the mobility limitations of migrants living in Dashilar. These migrants face challenges very similar to those of international immigrants. The interviewees' information on jobs and housing options came mainly from people of the same origin, reflecting the chain of migration that has caused migrant enclaves to emerge. When rural people move to Dashilar, the social networks from their hometowns are of little practical daily use to them, and they should build new social networks to thrive in their new location. However, except for their relationships with neighbors who share their place of origin, they may have no relationship with Beijing or its people.

For migrants, one important way to become involved in their community would be to build their social ties with local residents who have a *hukou*. Local people typically had more local information and social resources, which were important to help migrants hunt for jobs, express their opinions, and become assimilated into the community. Building local ties could provide important social capital for them and could thus prove even more powerful than their ties with fellow migrants. Social ties in Dashilar largely determined where people went for activities and with whom. Without such ties, people's motivation to travel outside their immediate neighborhood was significantly reduced. Moreover, information flow, building trust, and identifying opportunities through social networks were also beneficial in helping migrants to know their community and in encouraging their increased mobility.

This paper has emphasized how the migrants are treated differently under the *hukou* system [26, 76]. This system leaves them feeling like outsides in Dashilar and discourages them from communicating and interacting with others, especially local people. Previous studies have focused mainly on

the *hukou* system's role in limiting access to employment [26, 27], but this study showed that lacking a *hukou* gives migrants in Dashilar a marginal status in other ways and may present additional barriers limiting their daily travel. Such obstacles to mobility have been overlooked by previous studies on migrants in China. This "invisible wall" to some extent locks migrants into a limited mobility status and further reduces their mobility aspirations.

The prevalence of mobile phones has changed the constrained mobility situation of migrants to some extent. They can now use mobile phones to contact people, entertain themselves, or obtain information at any time and at any place, thanks to the mobile Internet. On the one hand, this increase in virtual mobility could decrease the social exclusion of Dashilar's migrants. It could also substitute for forms of travel that previously would have been obligatory, such as for job hunting. Virtual mobility improved respondents' efficiency of information access and saved travel time. Additionally, it motivated migrants to travel more by informing them about various activity destinations and helping them obtain more information on their own. On the other hand, the popularity of mobile phones could lead to another type of social exclusion for these migrants, due to their limited education, skills, and capacity for information access, as well as the treatment they reportedly receive in Beijing and their relatives lack of social resources.

Electric bicycles helped to improve the physical mobility of some interviewees in Dashilar, giving them a tool to enlarge their activity space relative to walking or traditional bicycle use. However, electric bicycles were clearly associated with migrants in Dashilar and harmed the public image of that population. How to deal with electric bicycles is a controversial issue. Some respondents regarded them as a low-cost mobility instrument that could complement other travel modes, but others advocated prohibiting them because of traffic and safety concerns [93]. Riding electric bicycles in Dashilar's narrow traffic lanes is especially risky because elderly people constitute a large proportion of the residents. One possible way to improve the situation would be to educate Dashilar's migrants on traffic safety knowledge and help them understand the dangers of using electric bicycles within the neighborhood. In the meantime, more bicycle and electric bicycle parking lots should be established to facilitate travel both within and beyond the neighborhood.

Another promising force to improve mobility of migrants is urban residential committees. Community activities and volunteers are important ties to build bridges between migrants and local people. However, information about these community initiatives was unevenly distributed among migrants, and some interviewees were totally unaware of them. Perhaps the use of online communities and mobile phone applications could more effectively link migrants with local citizens. Residential committees could try to get migrants involved in these online communities via Chinese applications like *QQ* and *Wechat*, using these tools to periodically send information of interest such as relevant urban policies or information on volunteer and other community services. Additionally, they could also promote activities such as free physical examinations, workshops to improve migrants' information literacy and employment skills, or migrant recreational and leisure activities. In this way, the services of the residential committees and the needs of migrants could be better matched through the assistance of ICT. More frequent interaction between migrants and local residents, as well as among the migrants themselves, could increase their social capital and thus both their capacity and their desire for greater mobility.

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References

1. Portes A, Rumbaut RG (2006) Immigrant America: a portrait. University of California Press, Oakland
2. Boyd M, Vickers M (2000) 100 years of immigration in Canada. Canadian Soc Trends 58(2):2–12
3. Markus AB, Jupp J, McDonald P (2009) Australia's immigration revolution. Allen & Unwin, Sydney
4. Blumenberg E, Smart M (2010) Getting by with a little help from my friends and family: immigrants and carpooling. Transportation 37(3):429–446
5. Tal G, Handy S (2010) Travel behavior of immigrants: an analysis of the 2001 National Household Transportation Survey. Transp Policy 17(2):85–93
6. Blumenberg E (2008) Immigrants and transport barriers to employment: the case of southeast Asian welfare recipients in California. Transp Policy 15(1):33–42
7. Lucas K (2012) Transport and social exclusion: where are we now? Transp Policy 20:105–113
8. Blumenberg E (2009) Moving in and moving around: immigrants, travel behavior, and implications for transport policy. Transp Lett 1(2):169–180
9. Blumenberg E, Smart M (2009) Travel in the'hood: ethnic neighborhoods and mode choice. Paper presented at the 88th annual meeting of the Transportation Research Board, Washington D.C

10. Lovejoy K, Handy S (2011) Social networks as a source of private-vehicle transportation: the practice of getting rides and borrowing vehicles among Mexican immigrants in California. Transp Res A Policy Pract 45(4):248–257

11. Yu S (2016) "I am like a deaf, dumb and blind person": mobility and immobility of Chinese (im) migrants in flushing, queens, new York City. J Transp Geogr 54:10–21

12. Schwanen T, Lucas K, Akyelken N, Solsona DC, Carrasco J-A, Neutens T (2015) Rethinking the links between social exclusion and transport disadvantage through the lens of social capital. Transp Res A Policy Pract 74:123–135

13. Lin N (1999) Building a network theory of social capital. Connect 22(1):28–51

14. Lin N (1999) Social networks and status attainment. Annu Rev Sociol 25(1):467–487

15. Cheng Z, Wang H (2013) Do neighbourhoods have effects on wages? A study of migrants in urban China. Habitat Int 38:222–231

16. Adey P (2006) If mobility is everything then it is nothing: towards a relational politics of (im) mobilities. Mobilities 1(1):75–94

17. Sheller M, Urry J (2006) The new mobilities paradigm. Environ Plan A 38(2):207–226

18. Ministry of Human Resources and Social Security of People's Republic of China (MHRSS) (2015) Statistic bulletin of human resources and social security of China 2014. http://www.mohrss. gov.cn/SYrlzyhshbzb/dongtaixinwen/buneiyaowen/201505/ t20150528_162040.htm. Accessed 30 Oct 2016

19. Yang Y (2014) Staying in the city or going back to the hometown? Huazhong University of Technology Press, Wuhan

20. Cheng T, Selden M (1994) The origins and social consequences of China's hukou system. China Q 139:644–668

21. Zheng S, Liao J, Ren R, Cao Y (2011) Housing policy for migrants and economic growth. Econ Res J 2:73–86

22. Liu J (2011) The social inclusion of migrants in China. Social Sciences Academic Press, Beijing

23. Zhang L (2001) Strangers in the city: reconfigurations of space, power, and social networks within China's floating population. Stanford University Press, Redwood City

24. Li Z, Wu F (2008) Tenure-based residential segregation in post-reform Chinese cities: a case study of shanghai. Trans Inst Br Geogr 33(3):404–419

25. Liu Y, Li Z, Liu Y, Chen H (2015) Growth of rural migrant enclaves in Guangzhou, China: agency, everyday practice and social mobility. Urban Stud 52(16):3086–3105

26. Zhao P, Howden-Chapman P (2010) Social inequalities in mobility: the impact of the hukou system on migrants' job accessibility and commuting costs in Beijing. Int Dev Plan Rev 32(3–4):363–384

27. Fan Y, Allen R, Sun T (2014) Spatial mismatch in Beijing, China: implications of job accessibility for Chinese low-wage workers. Habitat Int 44:202–210

28. Liu B, Feng C (2012) Commuting pattern and spatial relation between residence and employment of migrants in metropolitan areas: the case of Beijing. Urban Plan Forum Chin 2012(4):59–64

29. Urry J (2007) Mobilities. Polity Press, Cambridge

30. Adey P (2017) Mobility. Routledge, New York

31. Shaw J, Hesse M (2010) Transport, geography and the 'new' mobilities. Trans Inst Br Geogr 35(3):305–312

32. Carrasco JA, Hogan B, Wellman B, Miller EJ (2008) Agency in social activity interactions: the role of social networks in time and space. Tijdschr Econ Soc Geogr 99(5):562–583

33. Larsen J, Urry J, Axhausen KW (2005) Social networks and future mobilities. Report to the Horizons Programme of the Department for Transport. Department of Sociology, University of Lancaster and IVT, ETH Zürich, Lancaster

34. Carrasco JA, Miller EJ (2006) Exploring the propensity to perform social activities: a social network approach. Transportation 33(5): 463–480

35. Carrasco JA, Hogan B, Wellman B, Miller EJ (2008) Collecting social network data to study social activity-travel behavior: an ego-centric approach. Environ Plan B: Plan Des 35(6):961–980

36. Silvis J, Niemeier D, D'Souza R (2006) Social networks and travel behavior: report from an integrated travel diary. Paper presented at the 11th International Conference on Travel Behaviour Research, Kyoto, August 2006

37. Srinivasan K, Reddy Athuru S (2004) Modeling interaction between internet communication and travel activities: evidence from Bay Area, California, travel survey 2000. Transp Res Rec: J Transp Res Board 1894:230–240

38. Urry J (2003) Global complexity. Polity Press, Cambridge

39. Kenyon S, Lyons G, Rafferty J (2002) Transport and social exclusion: investigating the possibility of promoting inclusion through virtual mobility. J Transp Geogr 10(3):207–219

40. Jones P, Lucas K (2012) Social impacts and equity issues in transport: an introduction. J Transp Geogr 21:1–3

41. Hanson S (2010) Gender and mobility: new approaches for informing sustainability. Gend, Place Cult 17(1):5–23

42. Cresswell T (1997) Imagining the nomad: mobility and the post-modern primitive. In: Benko G, Strohmayer U (eds) Space and social theory: interpreting modernity and postmodernity. Blackwell, Oxford, pp 360–379

43. Watts L (2008) The art and craft of train travel. Soc Cult Geogr 9(6): 711–726

44. Massey D (2010) A global sense of place. In: Daniels S, Lee R (eds) Exploring human geography. Routledge, Arnold, pp 237–245

45. Hodgson FC, Turner J (2003) Participation not consumption: the need for new participatory practices to address transport and social exclusion. Transp Policy 10(4):265–272

46. Uteng TP (2009) Gender, ethnicity, and constrained mobility: insights into the resultant social exclusion. Environ Plan A 41(5): 1055–1071

47. Zhou M (2004) Revisiting ethnic entrepreneurship: convergencies, controversies, and conceptual advancements. Int Migr Rev 38(3): 1040–1074

48. Liu CY, Painter G (2012) Travel behavior among Latino immigrants: the role of ethnic concentration and ethnic employment. J Plan Educ Res 32(1):62–80

49. Edin P-A, Fredriksson P, Åslund O (2003) Ethnic enclaves and the economic success of immigrants—evidence from a natural experiment. Q J Econ 118(1):329–357

50. Zhou M (2004) Revisiting Ethnic Entrepreneurship: Convergencies, Controversies, and Conceptual Advancements Revisiting ethnic entrepreneurship: Convergencies, controversies, and conceptual advancements 38 (3):1040–1074

51. Damm AP (2009) Ethnic enclaves and immigrant labor market outcomes: quasi-experimental evidence. J Labor Econ 27(2):281–314

52. Blumenberg E, Smart M (2014) Brother can you spare a ride? Carpooling in immigrant neighbourhoods. Urban Stud 51(9): 1871–1890

53. Glaeser EL, Kahn ME, Rappaport J (2008) Why do the poor live in cities? The role of public transportation. J Urban Econ 63(1):1–24

54. Heisz A, Schellenberg G (2004) Public transit use among immigrants. Can J Urban Res 13(1):170–191

55. Blumenberg E, Shiki K (2007) Transportation assimilation: immigrants, race and ethnicity, and mode choice. Paper presented at Transportation Research Board 86th Annual Meeting, Washington DC, January 2007

56. Chatman DG, Klein NJ (2013) Why do immigrants drive less? Confirmations, complications, and new hypotheses from a qualitative study in New Jersey, USA. Transp Policy 30:336–344

57. Smart MJ (2015) A nationwide look at the immigrant neighborhood effect on travel mode choice. Transportation 42(1):189–209

58. Bose PS (2014) Refugees in Vermont: mobility and acculturation in a new immigrant destination. J Transp Geogr 36:151–159

59. Osypuk TL, Roux AVD, Hadley C, Kandula NR (2009) Are immigrant enclaves healthy places to live? The multi-ethnic study of atherosclerosis. Soc Sci Med 69(1):110–120

60. Greves HM, Lozano P, Liu L, Busby K, Cole J, Johnston B (2007) Immigrant families' perceptions on walking to school and school breakfast: a focus group study. Int J Behav Nutr Phys Act 4(1):64

61. Rogalsky J (2010) Bartering for basics: using ethnography and travel diaries to understand transportation constraints and social networks among working-poor women. Urban Geogr 31(8): 1018–1038

62. Chatman DG, Klein NJ (2009) Immigrants and Travel Demand in the United States: implications for transportation policy and future research. Public Works Management & Policy 13(4):312–327

63. Ren Y, Wu M (2006) A literature review: social inclusion of migrants. Popul Res Chin 30(3):87–94

64. Gao H (2005) The self classification model of the rural workers in China: an analysis of the low class' social infusion process of rural workers. S China Popul Chin 20(2):60–64

65. Li P (1996) Social networks and social status of migrants. Sociol Stud Chin 50(4):42–52

66. Li Q (2004) Deprivation theory and Chinese migrants. Academics in China Chin 107(4):7–22

67. Sui X (2005) A survey on migrants in China [in Chinese]. Qunyan Press, Beijing

68. Zhou L (2007) Embedded autonomy: the informal social inclusion way for migrants. J Anhui Agric Sci Chin 35(33):10861–10863

69. Xu Y (2006) Consideration about peasant workers who are hard to mainstream the city life. J Northeast Univ Soc Sci Chin 8(4):275–279

70. Zhu H (2005) Socializations of female farmer workers in urban areas: an empirical study. J Nanjing Univ Soc Sci Chin 1(6):52–57

71. Zheng S, Long F, Fan CC, Gu Y (2009) Urban villages in China: a 2008 survey of migrant settlements in Beijing. Eurasian Geogr Econ 50(4):425–446

72. Song Y, Zenou Y, Ding C (2008) Let's not throw the baby out with the bath water: the role of urban villages in housing rural migrants in China. Urban Stud 45(2):313–330

73. Yue Z, Li S, Jin S (2011) From ascribed to acquired:migrants' social networks and migrant integration in China. Sociol Chin 31(6):130–152

74. Zhang L, Zhao X, Tian J (2003) Self-help in housing and chengzhongcun in China's urbanization. Int J Urban Reg Res 27(4):912–937

75. Tian L (2008) The chengzhongcun land market in China: boon or bane?—a perspective on property rights. Int J Urban Reg Res 32(2): 282–304

76. Zhao P (2015) The determinants of the commuting burden of low-income workers: evidence from Beijing. Environ Plan A 47(8): 1736–1755

77. Dashilar Jiedao (2010) Development Planning for Dashilar 2011–2015 [in Chinese]

78. Gao Y (2004) Tentative study on the preservation and small-scale transformation of the Dashilar area in Beijing [in Chinese]. Tsinghua University, Beijing

79. Boschmann EE (2011) Job access, location decision, and the working poor: a qualitative study in the Columbus, Ohio metropolitan area. Geoforum 42(6):671–682

80. Beijing Statistics Bureau (2017) Notice on releasing annual employment wage in Beijing [in Chinese]. http://www.bjrbj.gov.cn/xxgk/gsgg/201705/t20170527_65801.html. Accessed 30 Oct 2016

81. Urry J (2003) Social networks, travel and talk1. Br J Sociol 54(2): 155–175

82. Schlich R, Schönfelder S, Hanson S, Axhausen KW (2004) Structures of leisure travel: temporal and spatial variability. Transp Rev 24(2):219–237

83. van den Berg P, Arentze T, Timmermans H (2013) A path analysis of social networks, telecommunication and social activity–travel patterns. Transp Res C: Emerg Technol 26:256–268

84. Greaves CJ, Farbus L (2006) Effects of creative and social activity on the health and well-being of socially isolated older people: outcomes from a multi-method observational study. J R Soc Promot Heal 126(3):134–142

85. Granovetter M (1983) The strength of weak ties: a network theory revisited. Sociol Theory 1:201–233

86. Kalenkoski CM, Hamrick KS (2012) How does time poverty affect behavior? A look at eating and physical activity. Appl Econ Perspect Pol 35(1):89–105

87. Bittman M (2002) Social participation and family welfare: the money and time costs of leisure in Australia. Soc Pol Adm 36(4):408–425

88. Loo BPY, Lam WWY (2015) Does neighbourhood count in affecting children's journeys to schools? Child Geogr 13(1):89–113

89. Wilding R (2006) Virtual'intimacies? Families communicating across transnational contexts. Glob Netw 6(2):125–142

90. Castells M (2004) Informationalism, networks, and the network society: a theoretical blueprint. In: Castells M (ed) The network society: a cross-cultural perspective. Edward Elgar Northampton, pp 3–45

91. Qiu JL (2008) Working-class ICTs, migrants, and empowerment in South China. Asian J Commun 18(4):333–347

92. Palmer NA, Perkins DD, Xu Q (2011) Social capital and community participation among migrants in China. J Community Psychol 39(1):89–105

93. Cherry C, Cervero R (2007) Use characteristics and mode choice behavior of electric bike users in China. Transp Policy 14(3):247–257