

Grandparenting in China: Designing for Aging and Intergenerational Spatial Needs

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Abstract

Grandparenting in China:
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Landscape Architecture

To improve the living standards of its residents, China is currently implementing an urban renewal program for old communities. Community public space is a place for residents to carry out daily outdoor activities and is one of the focuses of community renewal. Since most middle-aged residents in the community go out to work during the day, the main users of community public spaces are retired elderly people. However, a large number of elderly people do not rest after retirement but take on new responsibilities. In recent years, the busy work schedules of parents and the high cost of babysitters in urban families have led to caring for grandchildren becoming a new responsibility for grandparents. As the elderly are considered vulnerable, the physical fragility and reduced mobility of older adults compared to middle-aged adults means that caregiving can place a significant burden on them. As a result, grandparents often face new demands when caring for their grandchildren. However, current standards for the design of public spaces in communities only consider the general population of society and do not meet the needs of older residents who take on intergenerational care matters.

Therefore, exploring the behavioral characteristics and patterns of the elderly population in the process of intergenerational caregiving is a key topic in constructing a community public space design model. In this study, Xi'an City, Shaanxi Province, China's Xiamaling neighborhood was selected as the research object. The Xiamaling neighborhood completed the state-promoted renovation from 2021 to 2022. Although the renewal and renovation solved some of the problems of universalization, the interviews with the elderly who need to take care of their children revealed that their needs were not considered. Therefore, this study combines the interview results with field research to obtain the behavioral patterns of older adults with grandchildren by studying the intergenerational caregiving process. By summarizing the patterns of grandparenting behaviors, the common and different needs of the different stages are explored. The gap between the current situation and the needs was then analyzed, and conflicts and problems were identified. Then, the problems are categorized and summarized into street problems and public activity space problems, which are mapped to the venue space. Based on the problems, corresponding strategies are proposed, and the main specific design measures are listed based on the feasibility of actual implementation. Ultimately, a design toolkit based on the needs of grandparenting was derived. This toolkit can be replicated in the future renewal process of older neighborhoods.



Grandparenting in China:

Designing for Aging and Intergenerational Spatial Needs

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Thesis

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May all beings be peaceful, happy and liberated.

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Introduction

Chapter 1: Introduction

1.1 Urban regeneration

Over the past four decades, China has experienced a large-scale and rapid urbanization process. At present, cities have shifted from the traditional extensive growth model to the urban stock quality improvement model. Small-scale, progressive, and high-quality urban stock renewal has become an effective way to promote development(Wu, 2021).

Against the background of this paradigm shift, the refined design and quality improvement of the current urban space have become one of the focuses of urban planning and construction work. "Improving the new urbanization strategy and comprehensively improving urban quality" has been clearly included in the "14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of Long-term Goals for 2035". (Liang 2022) Urban space renewal and transformation has become one of the important driving forces for high-quality urban development.

1.2 Renovation of old communities

In the context of the development of "urban renewal", the number of old residential areas in cities is increasing day by

day. After preliminary investigation, it is found that the old urban residential areas across the country that need to be renovated currently involve hundreds of millions of residents. Most of these communities have been built for more than 20 years. Due to the relatively low original design standards and inadequate maintenance and upkeep, there are several particularly prominent problems. First, the pipe network is dilapidated, and facilities such as water supply, sewerage, power grid, gas, and optical fiber are missing and aging seriously; second, public services are lacking, such as elderly care, property management, culture and entertainment, fitness, vehicle storage, etc.; third, the public environment, including roads, is poor. (The State Council 2019)

In 2018, the Chinese government work report mentioned the renovation of old communities for the first time: promoting the renovation of old communities in an orderly manner and improving supporting facilities. At this point, the renovation of old communities has changed from scattered and piecemeal needs to a systematic project promoted by the state. Nowadays, the renovation of old communities has become a focus of government work every year, with support and guarantees in terms of policies, funds, institutional mechanisms, etc. (NDRC 2021)

The renovation of old communities will be initially divided into

three categories: First, basic supporting facilities should be maintained, such as the maintenance and improvement of municipal infrastructure such as water, electricity, gas, and roads that are directly related to residents' lives. There is no compulsion to install elevators, and installation can be supported with the consent of residents; the second is to upgrade infrastructure, including public activity venues, parking lots, activity rooms, property buildings, etc. where conditions permit; The third is to improve the content of public services, including improving community facilities such as elderly care, child care, medical care, meal assistance, housekeeping, and express delivery. And considering that regional differences are relatively large, each province can develop a list of content that cities or communities need to transform based on actual conditions and urban needs. (The State Council 2019)

1.3 Age-friendly communities

Currently, the world is facing the problem of aging. (Figure 1.1) According to 2022 data from the United Nations World Population Prospects, worldwide, the proportion of people over 65 years old will reach 10% of the total population in 2022, and then the proportion will rise to 25% in 2100. The aging situation faced by China is even more serious. In China, the proportion of people over 65 years old will reach 13% of the country's total population in 2022, and then in 2100, the proportion will

rise to 41%. (United Nations 2022) Therefore, in the future, China's aging population will pose a serious challenge to the existing social support structure, so urban policymakers need to intervene early and actively.

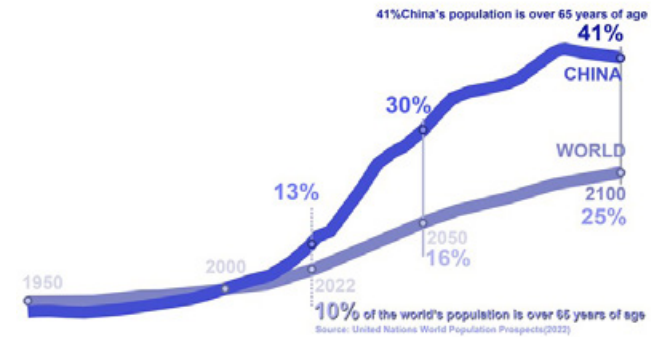


Figure 1.1: Aging Trends

According to statistics, a large number of the urban elderly population now live in older neighborhoods. As a result, there is a co-ageing of the population and the community's built environment. (Ito 2019)

The part which is to improve the content of public services in the old community renovation content released by the government already includes the elderly care service part. But at the same time, China's elderly population is large and aging rapidly. The demand structure of the elderly is changing from survival to development. There are still problems such as unbalanced and inadequate development of elderly undertakings and elderly care services. Therefore, the government will actively respond to the aging of the population. It has been elevated to a national strategy and has been specially deployed in the "14th Five-

Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of Long-term Goals for 2035". The policy mentions that the social environment should be made more livable for the elderly. Across the country, we will comprehensively promote the construction of model elderly-friendly communities to increase the elderly's social participation and enable the elderly to better integrate into society. (The state council 2021) Combining the aging-friendly policies in the renovation of old communities and the construction requirements of age-friendly communities in the national pension policy, it can be found that the current policies of the physical space environment and the social environment policies have the basis for the construction of age-friendly communities.

1.4 China's special social situation

- Grandparenting

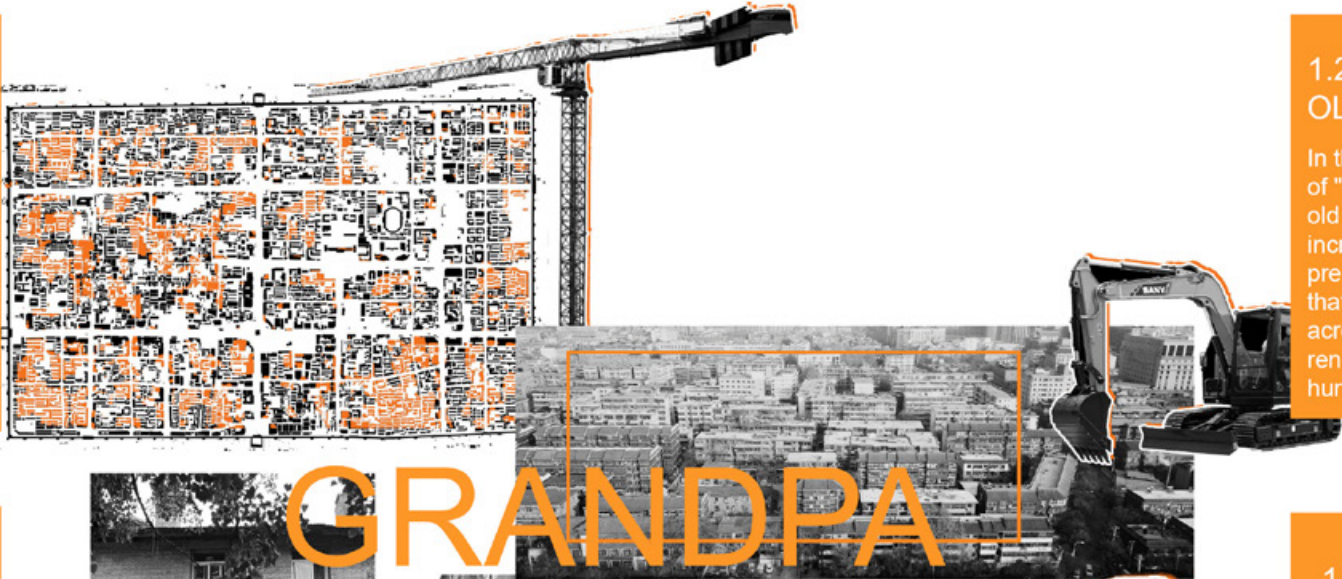
The government currently has standards for age-friendly communities, however, in the social and cultural environment of Chinese society, the elderly face many problems that are ignored in current aging-friendly design, one of the most important problems is grandparenting.

Although, the phenomenon of grandparenting is widely discussed in both Western and Chinese societies. In early

twentieth-century America, grandparents were members of the extended family who held an authoritative position in the family structure and made a significant contribution to the joint raising of children. (Cherlin 1986) However, recent studies in the United States and Western Europe indicate that most grandparents adopt a hands-off approach to family relationships and do not assume a central role in caring for or raising their grandchildren (Zhang 2020; Burnette 2013). In contrast, in Chinese society, traditional cultural values emphasize the concept of the extended family, thus forming a long tradition of grandparents playing an active role in childcare responsibilities (Burnette 2013; Sun 2017; Xu 2019). In recent years, according to statistics from the Shanghai Population and Family Planning Commission, 90% of young children in the city are cared for by at least one grandparent, and half of them are completely dependent on grandparents for care. This trend is particularly evident among urban households. Nowadays, as the number of working mothers in urban families increases, co-parenting has become an inevitable trend. This makes caring for grandchildren more of a task for grandparents, a responsibility they should fulfill in retirement, rather than an active choice to enjoy life. (Tang 2023) Therefore, a large number of elderly people need to take care of their grandchildren, which has created many new needs. However at present, the demand for grandparenting has not been met in the current renewal design of age-friendly communities.

1.1 URBAN REGENERATION

Over the past four decades, China has experienced a large-scale and rapid urbanization process. At present, cities have shifted from the traditional extensive growth model to the urban stock quality improvement model.



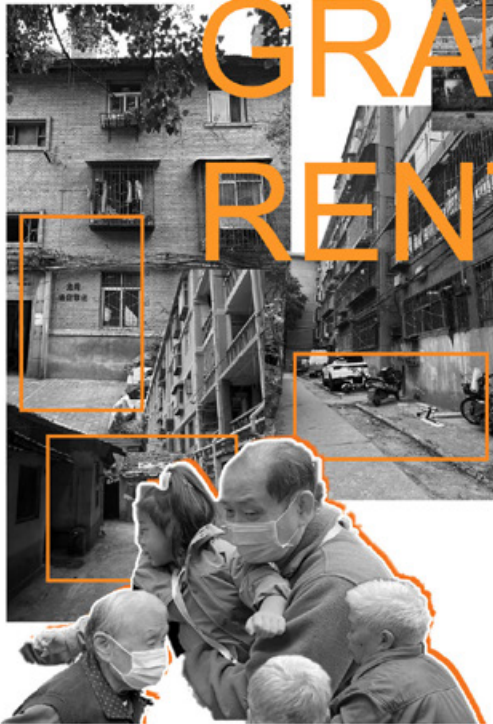
1.2 RENOVATION OF OLD COMMUNITIES

In the context of the development of "urban renewal", the number of old residential areas in cities is increasing day by day. After preliminary investigation, it is found that the old urban residential areas across the country that need to be renovated currently involve hundreds of millions of residents.

1.3 AGE-FRIENDLY COMMUNITIES

A large number of residential communities developed in the early stage are not only facing the problem of outdated hardware such as buildings and equipment, but also the problem of aging community residents. Studies have shown that the proportion of elderly people in old communities is higher than that in newly built communities.

At the same time, in the context of aging in China and even the world, environmental and health factors closely related to the actual lives of the elderly are gradually receiving more attention.



GRANDPA RENTING



1.4 CHINA'S SPECIAL SOCIAL SITUATION - GRANDPARENTING

At present, the government has considered the function of community elderly care. However, in the social and cultural environment of Chinese society, the elderly face many problems that are ignored in the current elderly-friendly design, one of the most important of which is the grandparenting problem.

Figure1.2: Research Background

2

Literature Review

Chapter 2: Literature Review

2.1 Age-friendly Framework

In order to make cities around the world more inclusive of the elderly, the World Health Organization (WHO) proposed the concept of age-friendly cities (Chung, 2021). The WHO introduced the "age-friendly city" framework in 2007, comprising eight domains: outdoor space and architecture, transportation, housing, social participation, respect and social inclusion, community and health services, communication and information, civic engagement and employment (World Health Organization, 2007). Due to the advantages of the WHO Age-Friendly Cities and Communities Framework -- its comprehensive content coverage, long development time, and wide application scope (Han, 2023), an increasing number of countries have responded to the initiative by launching locally-appropriate programs, including Britain, Canada, Japan (Glicksman, 2014; Gonyea and Hudson 2015; Winick and Jaffe, 2015).

Although China has not publicly responded to the WHO standards, the Chinese government has proposed in policy documents to improve basic community elderly care services (Office of the State Council, 2023). However, the current policy focuses on the care and services for the lives of the elderly with physical disabilities, mental disabilities, and functional

degeneration, which strengthens the image of the elderly as a vulnerable group of space users, and objectively aggravates the exclusion of the elderly in social life and material space. It does not take a holistic view, nor does it take into account the elderly as a whole (Yu, 2022). Therefore, in recent years, some scholars have conducted more research on the elderly population as a whole, and established an indicator system for elderly-friendly communities suitable for China based on the WHO framework (Yu, 2020). However, it is still in the framework construction stage and has not yet been implemented.

Although China has not publicly responded to the WHO standards, the Chinese government has proposed improvements to basic community elderly care services in its elderly care policy documents (Office of the State Council, 2023). However, the current policy primarily focuses on care and services for the elderly with physical disabilities, mental disabilities, and functional degeneration. The approach strengthens the perception of the elderly as a vulnerable group, thereby exacerbating their exclusion in social life and material spaces, It fails to take a holistic view of the elderly population (Yu, 2022). Consequently, in recent years, some scholars have conducted more comprehensive research on the elderly population and have developed an indicator system for elderly-friendly communities in China, based on the WHO framework (Yu, 2020). However, this system is still in the framework construction stage and has not yet been implemented.

World Health Organization(WHO) Age-friendly Cities and Communities(AFCC) Framework

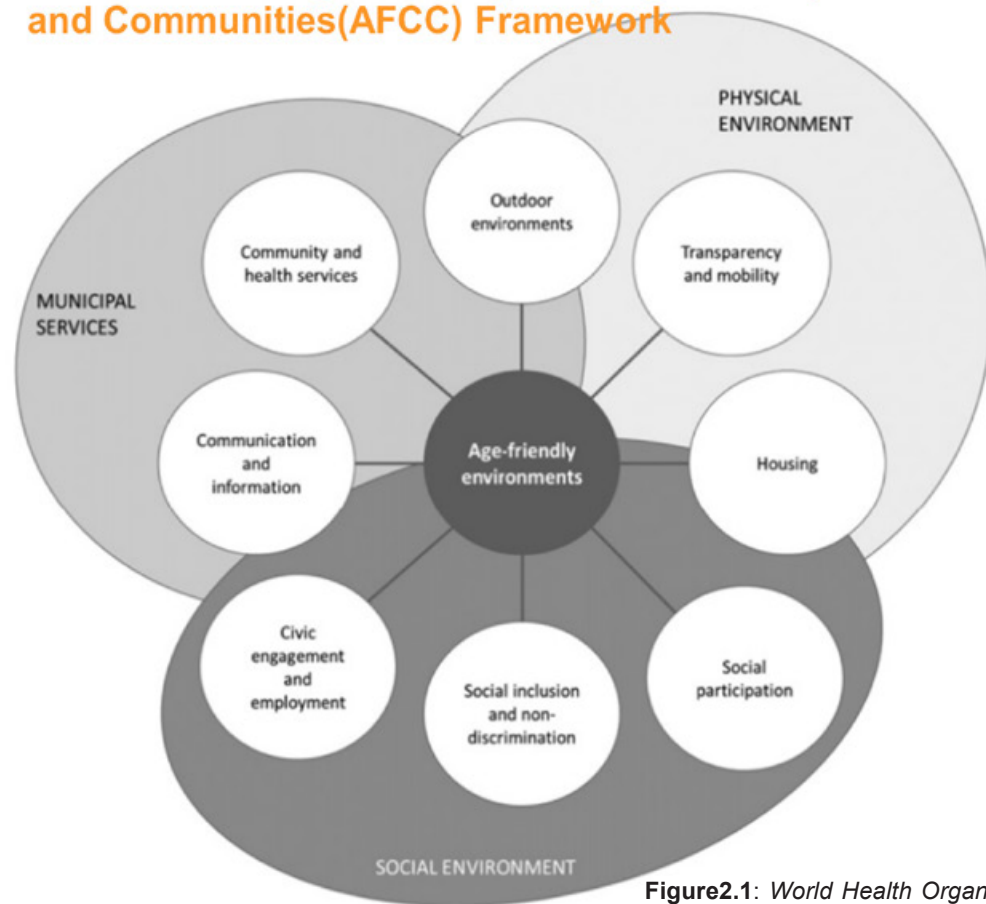


Figure2.1: World Health Organization Age-friendly Cities and Communities Framework

- In order to make cities around the world more inclusive of the elderly, the World Health Organization (WHO) proposed the concept of age-friendly cities (Chung, 2021).
- Due to the advantages of the WHO Age-Friendly Cities and Communities Framework -- its comprehensive content coverage, long development time, and wide application scope (Han, 2023), an increasing number of countries have responded to the initiative by launching locally appropriate programs, including Britain, Canada, Japan (Glicksman, 2014; Gonyea and Hudson 2015; Winick and Jaffe, 2015).
- Although China has not publicly responded to the WHO standards, the Chinese government has proposed in policy documents to improve basic community elderly care services (Office of the State Council, 2023).

In China's policy documents concerning the renewal of old communities, there is no specific emphasis on aging-friendly requirements. Nonetheless, the stipulated improvements, such as roads and sidewalks repairs; enhanced lighting facilities; and better barrier-free design, indirectly meet the needs of aging-friendly communities (General office of the people's government

of Beilin district, Xi'an city, 2019; Ministry of Housing and Urban-Rural Development of the People's Republic of China, 2023).

A review of China's current elderly care policies and old community renovation policies reveals that their content aligns well with the WHO's elderly-friendly framework. Consequently,

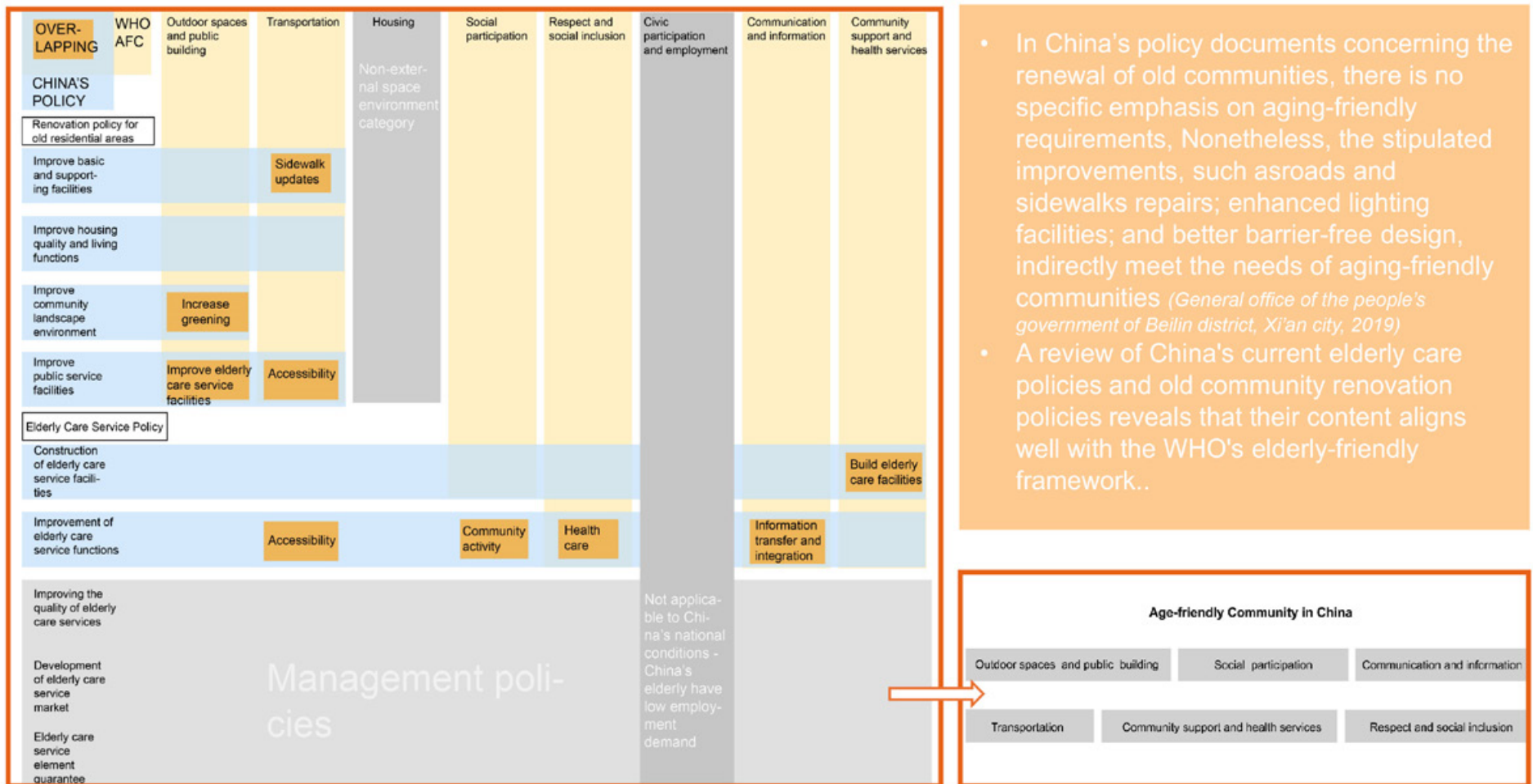


Figure 2.2: Age-friendly Framework in China

this paper, following the example of other Chinese scholars (Yu, 2020), also adopts the WHO's age-friendly framework as a foundation, and then, based on China's national conditions, finally establishes an age-friendly indicator evaluation system in the process of China's old community renovation.

Considering the basic national conditions, the employment demand among urban elderly people in China is low (Giles

2012), and citizen participation is differs significantly from that in Western context (Ma 2023). Therefore, the citizen participation and employment components of the WHO AFC framework are not applicable to China. In addition, while housing-related issues are critical for the elderly, this study focuses exclusively on the external space environment and does not address the internal space environment of building. As a result, the housing

aspect of the WHO AFC framework is also excluded from consideration in this paper. For these localized considerations, the age-friendly framework adopted in this study emphasizes six main areas: outdoor spaces and buildings, transportation, social participation, respect and social inclusion, communication and information, and community and health services.

2.2 Child-friendly Cities and Parenting Needs

As cities continue to expand, an increasing number of people are living in cities, including children, are growing up in urban environments. It is expected that by 2050, 70% of children will be raised in cities (UNICEF, 2012). While cities offer vibrant and stimulating environments, they also pose unique risks and challenges to children's health and development, such as noise pollution, air pollution, traffic hazards, sedentary lifestyles, social isolation and disconnection from nature (UNICEF Citation 2012, Christian et al. Citation 2015; Brown et al., 2019). Recognizing the need for a healthy upbringing (), academia and practitioners have recently developed some frameworks and guidelines on child-friendly cities (Riggio 2002; Brown et al., 2019; UNICEF, 2018). Following this global trend, China has begun implementing the concept of "child-friendly cities" in some large urban centers (Liu 2020).

However, young children, due to their fragile physical fitness and low psychological maturity, require constant parental care and cannot navigate urban environments independently. This increased attention paid to children's health and the development of child-friendly framework indicates a heightened demand for parental involvement.(Liu, 2020; Cheung, 2011)

In China, where working parents often lack the time and energy to take care of their children, and cultural values emphasize family harmony and mutual support, retired grandparents frequently assume the role of primary caregivers (Burnette 2013, Xu 2019). According to statistics from the Shanghai Population and Family Planning Commission, 90% of the city's young children receive care from at least one grandparent, with half of them relying entirely on grandparents for their upbringing. (Tang 2023). Therefore, under China's unique national conditions, since the burden of care needs brought by children in the family often falls on grandparents, grandparenting needs to be considered in age-friendly framework.

2.3 The Challenges of Grandparenting

Since both children and the elderly are recognized as vulnerable groups (Nelischer 2023), the physical frailty and reduced mobility of the elderly compared to middle-aged individuals

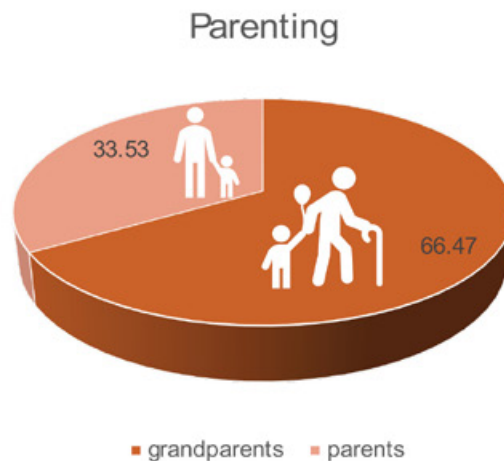
United Nations(UN) Child Friendly Cities Initiative(CFCI)

- 1 Every child and young person is valued, respected and treated fairly within their communities and by local authorities;
- 2 Every child and young person has their voice, needs and priorities heard and taken into account in public laws (if applicable), policies, budgets, programmes and decisions that affect them;
- 3 Every child and young person has access to quality essential social services¹;
- 4 Every child and young person lives in a safe, secure and clean environment;²
- 5 Every child and young person has opportunities to enjoy family life, play and leisure.³



- As more and more children grow up in cities, which offer conveniences but also pose many threats, people are increasingly aware of the need for healthy growth, and academics and practitioners have recently developed some frameworks and guidelines for child-friendly cities (Riggio 2002; Brown et al, 2019; UNICEF, 2018).

- However, young children, due to their fragile physical fitness and low psychological maturity, require constant parental care and cannot navigate urban environments independently. This increased attention paid to children's health and the development of child-friendly framework indicates a heightened demand for parental involvement.



- In China, where working parents often lack the time and energy to take care of their children, and cultural values emphasize family harmony and mutual support, retired grandparents frequently assume the role of primary caregivers (Burnette 2013, Xu 2019).
- Consequently, under China's unique national conditions, the burden of care needs brought about by the evolving requirements for urban children often falls on grandparents.

Figure2.3: Child Friendly Cities and Child Friendly in China



Figure 2.4: Grandparenting in China

mean that caregiving can impose a significant burden on them (Emick 1999). Therefore, elderly grandparents often face new demands while caring for their grandchildren. When taking on caregiving roles, they they prioritize their responsibilities towards the grandchildren, frequently neglecting their own needs as a vulnerable group (Devine 2011).

At present, China's age-friendly concept takes into account the vulnerability of the elderly. However, because society defaults to the value that the elderly have the obligation to take care of children, it does not take into account the challenges that grandparenting brings to the elderly themselves (Goh, 2006). And in recent years, as the proportion of families in which both

parents are busy with work has increased, the number of elderly people who have to take care of their grandchildren has also increased (Zhao, 2018).

Therefore, it is crucial to respond to the unique needs of the elderly caregivers under China's special national conditions. However, these specific demand have not been taken into account in the elderly-friendly aspects of the current community renewal policies.



Figure2.5: Research Process

2.4 Research Process

Based on the above research, this thesis proposes the following research questions: What are the needs of grandparenting in old communities? How can these needs be met during the renovation of old communities?

The methods used in this research is a combination of self-studies and participatory process where relevant residents are involved in the process.

The research goal is to create a design toolkit for renovating old communities with a focus on the grandparenting.

3

Methods

Chapter 3: Methods

A qualitative research approach was used to explore the needs faced by older adults caring for their grandchildren living in older communities. The research location was selected in the Xiamaling area of Xi'an City. Xi'an is a city that can represent China's rapid urbanization process, and in the "Notice on Carrying out the First Batch of Urban Renewal Pilot Work" issued by the Ministry of Housing and Urban-Rural Development, Xi'an, together with 21 other cities including Beijing, was identified as the "first batch of national Urban Renewal Pilot Work" and launched the first batch of old communities renewal pilot projects (Central People's Government of the People's Republic of China, 2021). The Xiamaling area located in the old city of Xi'an is a typical old community built in the 1970s, with 18% of the elderly population. The Xiamaling area completed the

renovation of old communities between 2021 and 2022. In the renewal and renovation policy, although the needs of the elderly were considered to a certain extent, the ancestral care needs faced by the elderly were not considered. Therefore, this article chooses the Xiamaling area as the research object.

Primary data were collected through interviews and field observations. The interviewees were elderly people taking care of their grandchildren. The elderly people talked about their daily life experiences and problems encountered in taking care of their grandchildren. Participation was voluntary, with permission, interviews/discussions were recorded using digital devices, otherwise recorded immediately.

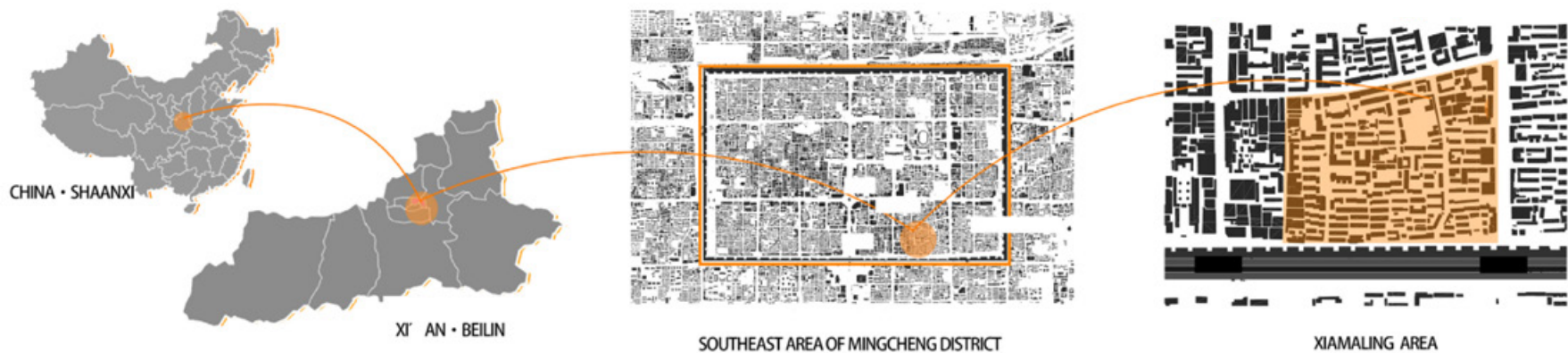


Figure 3.1: Site Location

3.1. Interview

Interviews Thirteen semi-structured interviews were conducted between December 2023 and March 2024 with 25 elderly people who are taking care of or have taken care of their grandchildren. The ages of these 25 elderly people are concentrated in the age group of 65-75, among which there are more female participants

than male participants (male:female = 1:1.86). And they have lived in the Xiamaling community for more than 5 years and have witnessed the community Changes before and after the renovation. Interviews were conducted in community activity centers. Interviews were conducted first with one person and, when requested by invited participants, with two or more people. The average interview time was 45 minutes (ranging from 30 to



Figure 3.2: Interactive form for interviews

60 minutes). Interviews were conducted in Chinese, and data were transcribed and translated into English.

The interview schedule included the following questions: (a) What are the most difficult issues faced when caring for children in the community? Why? (b) Have these problems been solved during the community renewal process? The answers to these questions are most relevant for the purposes of this study.



Figure3.3: Interview

3.2. Field Observation

From June 2023 to March 2024, more than 30 surveys were conducted in the Xiamaling area with an area of 30 hectares and a total population of 13,000. The main purpose is to observe how the elderly who take care of their grandchildren use external spaces, and record the types of activities, the duration of the activities, and the inconveniences encountered by the elderly when taking care of their grandchildren in the main public spaces.



Figure3.4: Aerial photo of the site

4

Site Study

Chapter 4: Site Study

4.1 Observation

First of all, Xiamaling is located within the Mingcheng Wall of Xi'an City, Shaanxi Province, China. It is an old area of Xi'an, with a total area of 30 hectares and a population of 13,000 people, of which 18% are elderly. And the Xiamaling area will be closed from 2020 to 2022. During the year, the renovation of the old community was completed. During the renovation of the old community, the buildings in Xiamaling and the external spatial environment of some communities were mainly updated, but the overall road structure and the location of the public activity space remained unchanged. When collecting interview data and observation data, this study mainly explored and analyzed the problems that still exist in the space after the renovation for the elderly and their grandchildren.

4.1.1 Land Use

In the land use map of Xiamaling area, residential functions account for the largest proportion. This is followed by businesses, schools and other public service facilities. There are also a large number of temporary buildings on the site. The land use in this area is a representative land use composition among

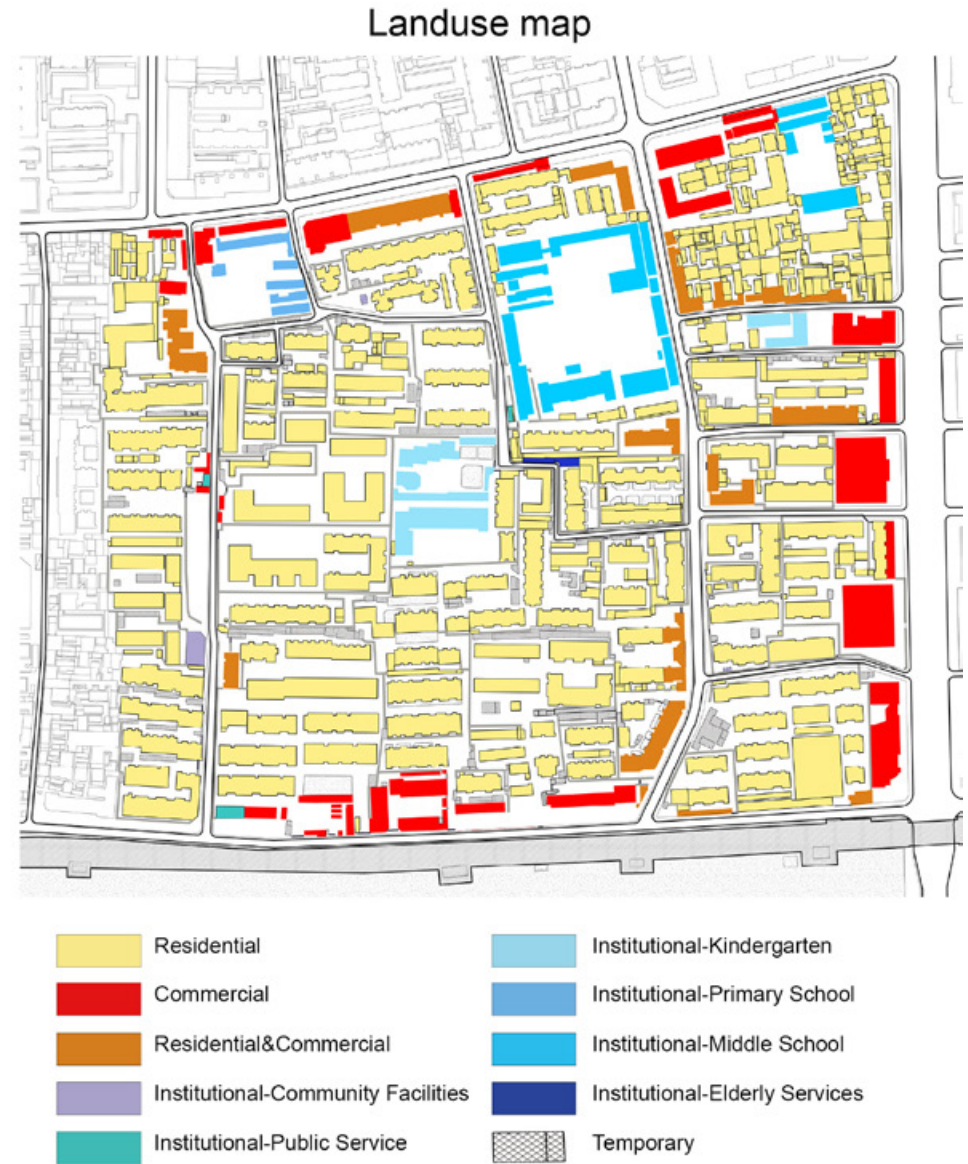


Figure4.1: Site Land Use

China's old communities. It can reflect the characteristics of old communities and is representative.

4.1.2 Residential Area Analysis

Through the analysis of the residential area in Xiamaling area, it can be found that the residences in the site are divided into multiple courtyards by walls. The reason for this form is that old communities were mostly built in the 1970s and 1980s. At that time, residential areas were divided into land plots for state-owned units to design family areas. Therefore, basically every small residential area composed of walls is a family home of a state-owned enterprise, which is independent of each other. Each community has its own entrance and exit connected to the road, and there is no communication between the communities. Therefore, it can be seen from the picture that there are no public roads in the middle of the site, and they are all blocked by the walls of each community, which causes certain inconvenience to the residents' travel.



Figure4.3: Residential Area Analysis

Figure4.2: Residential Area

4.1.3 Commercial Area Analysis

The businesses in the Xiamaling area are mainly located along the streets. According to the survey, commercial areas are classified into rigid needs, expansion and professional services. The rigid demand category includes supermarkets, banks, convenience stores, butcher shops, stationery stores and other commercial stores that are often needed in people's lives. The expanded category includes coffee, restaurants, flower shops, clothing stores, etc., where the relative purchase frequency has decreased. Professional services mainly include hotels, bars, tutoring institutions, pet hospitals, etc. Such commercial services mainly serve specific groups of people.

According to the location analysis in the figure, the businesses that are needed are mainly concentrated on both sides of the road in the community and on both sides of the road in the north, with a linear distribution. However, because the shops are relatively scattered, residents need to walk longer distances to complete their purchases for a day. The expansion part is mainly concentrated in the area beside the city wall. Since this type of coffee shop and flower shop can use the city wall landscape to create a good publicity effect, they are mainly distributed along the city wall on the south side of the site. In the layout of professional services, it is mainly arranged on the easternmost side of the site, close to the main roads in the

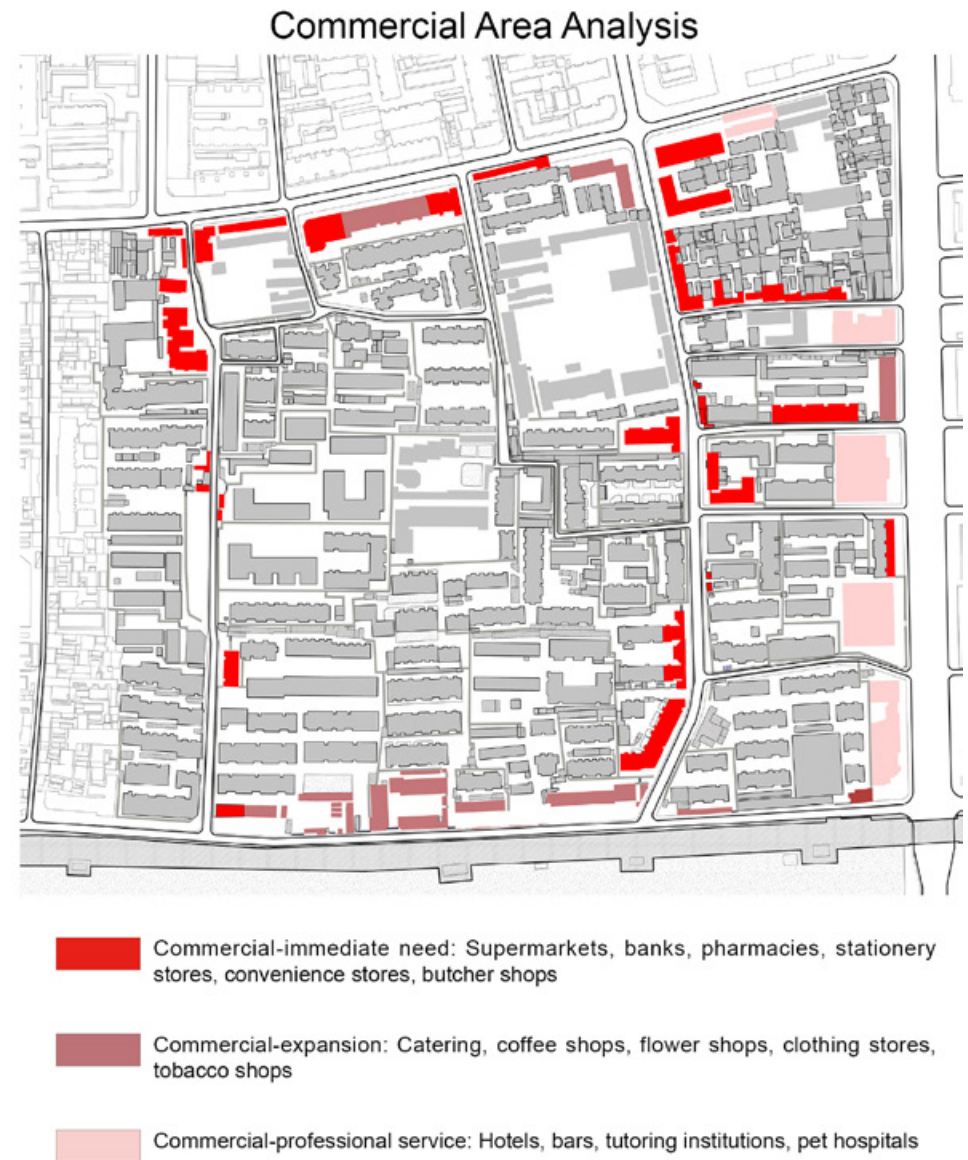


Figure4.4: Commercial Area Analysis

city. Because such functions are more oriented to urban areas, and are generally only used by residents with specific needs. Therefore, it is placed on the boundary of the community facing the city's main road.

Through the analysis of the commercial area, we can find that the most commonly used businesses by residents in the site are rigid-need businesses. Although they are currently concentrated in the inward space of the community, due to their linear distribution and the relatively poor roads, there will be inconvenient detours when purchasing.

4.1.4 Education Area Analysis

There are three kindergartens, one primary school and two middle schools on the site. The 15-minute living circle of the residential area includes kindergarten, primary school and middle school, which is a typical educational supporting model in the old city. Since children in kindergartens must be picked up and dropped off by guardians, through statistics on the guardians who pick up children at the entrance of kindergartens, it can be found that among the people who pick up children in kindergartens, the elderly account for about 40%. This is a relatively high proportion, so it can be seen that the behavior of caring for grandchildren is a relatively common phenomenon in the venue.



Figure4.5: Education Area Analysis

4.1.5 Street Analysis

The site boundaries are defined by the city's main roads. Most of the internal roads within the site are shared by pedestrians and vehicles. However, the road next to the kindergarten is too narrow, so cars cannot pass. Only people and non-motorized vehicles can pass. At the same time, there are also paths within certain communities on the site that connect the internal roads of the community. Although they are not the main roads of the community, they are accessible to pedestrians. Then based on the research, the roads in the site were classified, mainly into commercial street, pick-up street, facade street, leisure street and internal roads of the community.

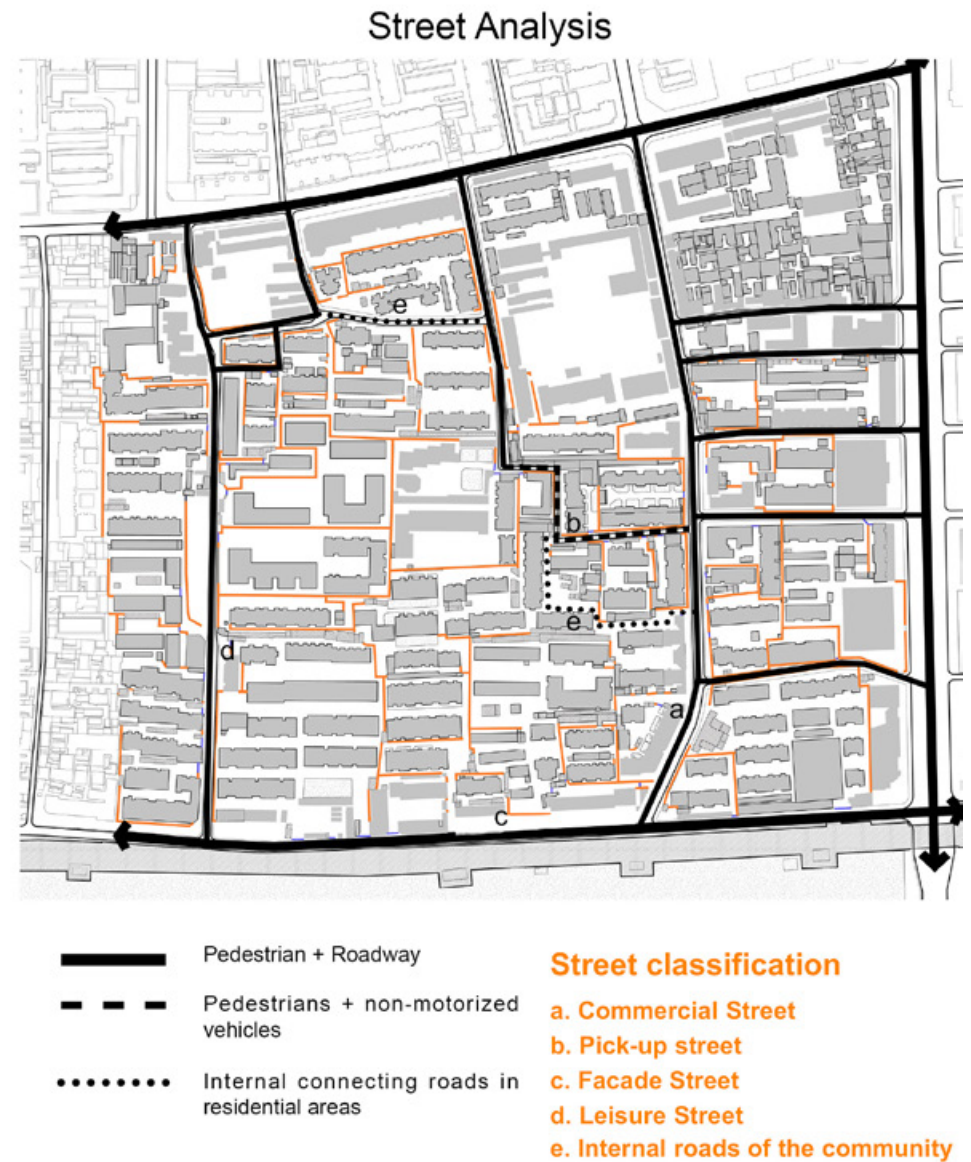
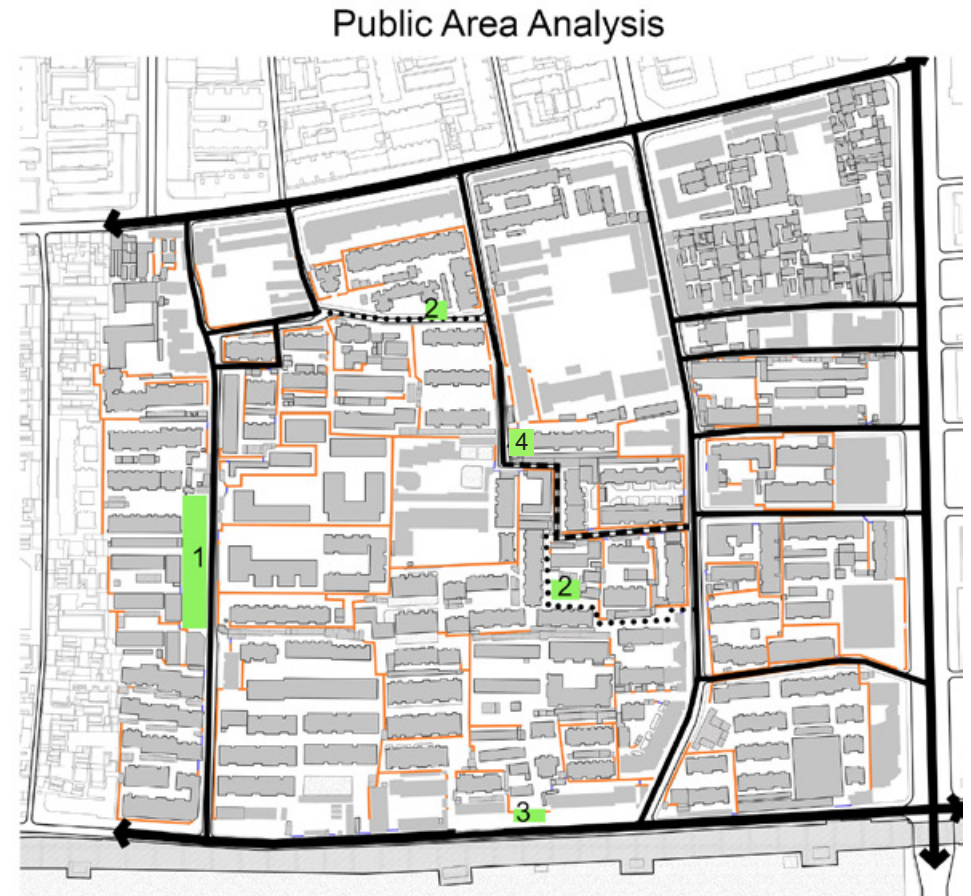


Figure4.7: Street Analysis

Figure4.6: Street

4.1.6 Public Area Analysis

Since the old community was built in multiple periods and there was no unified planning for the entire site, there are few public activity areas reserved within the site. There are currently only 4 ready-made public activity areas on the site, with a total area of 0.3 hectares, of which No. 1 is a larger square area and the rest are small node areas. Based on the survey, public areas were classified. They are comprehensive event space, community internal activity space, street space and pick-up waiting area space.



Existing Public Activity Space

Number of existing public activity spaces: 4
Total area of existing public activity spaces: 0.3ha

The number of event venues is small and the area is small.

Public area classification

1. Comprehensive event space
2. Community internal activity space
3. Street space
4. Pickup waiting area space

Figure4.9: Public Area Analysis

Figure4.8: Public Area

4.1.7 Grandparenting Route Analysis

Based on the above analysis of the residential areas, commercial areas, schools, public activity areas and illegal construction of walls on the site, combined with the observation of the routes for the elderly with grandchildren, it can be concluded that the main routes for grandparenting are: from home to public activity areas, from home to commercial areas, and from home to kindergarten. These routes are obstructed by walls and temporary buildings, so the elderly and their children have to take long detours to reach them. In many cases, the straight-line distance is actually shorter, but because there are walls, they need to take a long detour to get there, which brings inconvenience to people bringing grandchildren and increases safety risks.

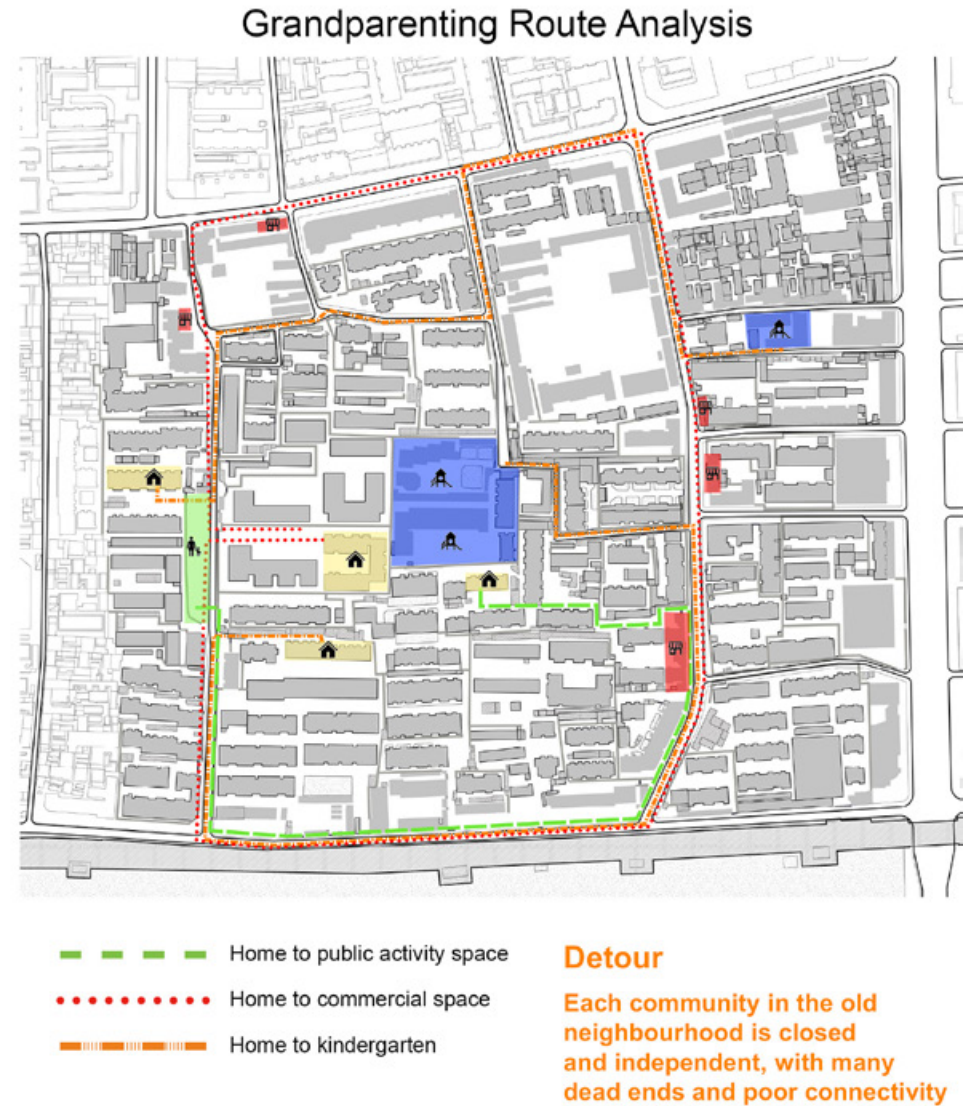


Figure4.11: Grandparenting Route Analysis

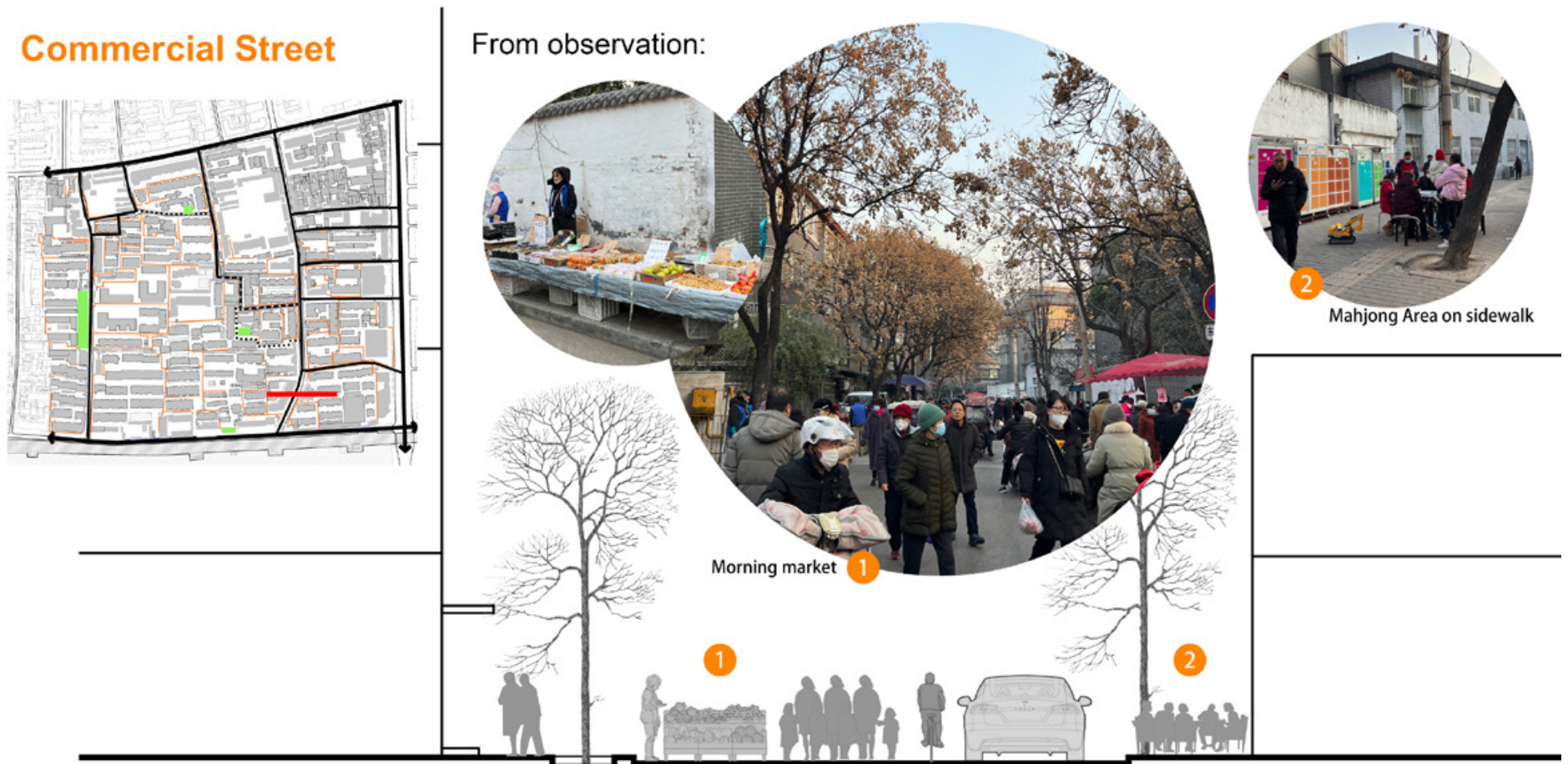
Figure4.10: Route

4.2 Street and Public Space Analysis

Next, a detailed analysis of typical streets and public activity spaces will be conducted.

4.2.1 Commercial Street

It can be seen from the picture that the commercial street has a serious problem of mixed traffic of people and vehicles during the morning market period. Buying and selling shops are placed on the sidewalks and roadways, which compresses the space for people to walk and makes it impossible for cars to pass smoothly. During normal non-morning market hours, people often occupy the road to play mahjong. At the same time, this



SECTION 1-1

Figure4.12: Commercial Street Analysis

commercial street also lacks rest areas.

4.2.2 Pick-up street

This street is the main road to the kindergarten. This street is very narrow due to the construction of temporary buildings on the right side. In addition, sidewalks and non-motorized

lanes are distinguished on narrow roads. However, the actual construction effect is that the sidewalks are too narrow, causing people to mainly walk on the roadways. Therefore, this street is very crowded during the kindergarten and school hours, and it has two right-angle turns, which blocks the view and creates a great safety hazard.

Pick-up street



Figure 4.13: Pick-up Street Analysis
21

4.2.3 Community internal activity space

An analysis of the main activity spaces within the community shows that the main activity spaces within the community are equipped with fitness equipment. However, because the fitness equipment is located inside the community, there are fewer

people going here and the accessibility is poor. Therefore, the proportion of idle fitness equipment is high. In addition, except for fitness equipment, the venue is paved and has no other functions, resulting in a lack of vitality here. There is also a lack of seating area, resulting in poor stayability.

Community internal activity space

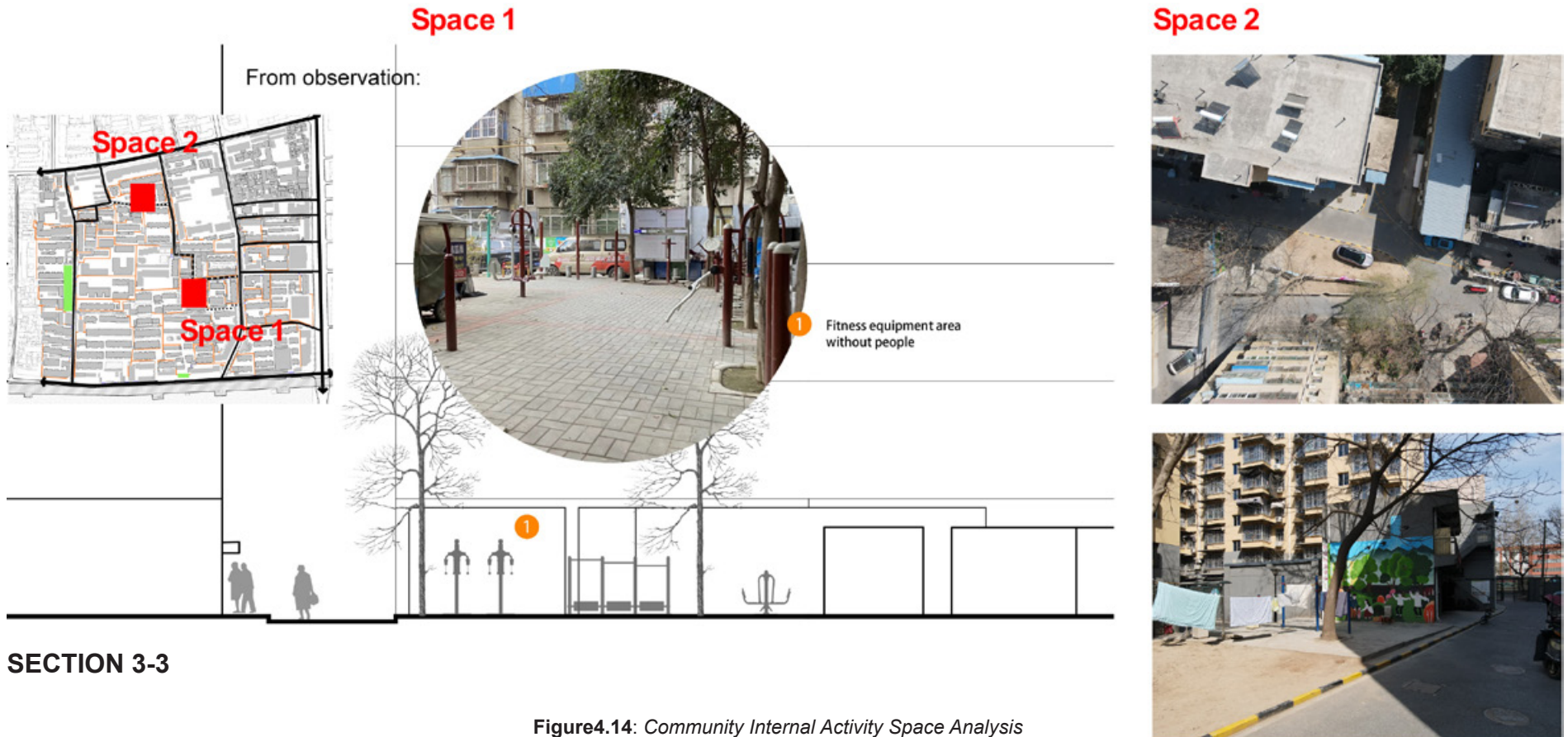


Figure 4.14: Community Internal Activity Space Analysis

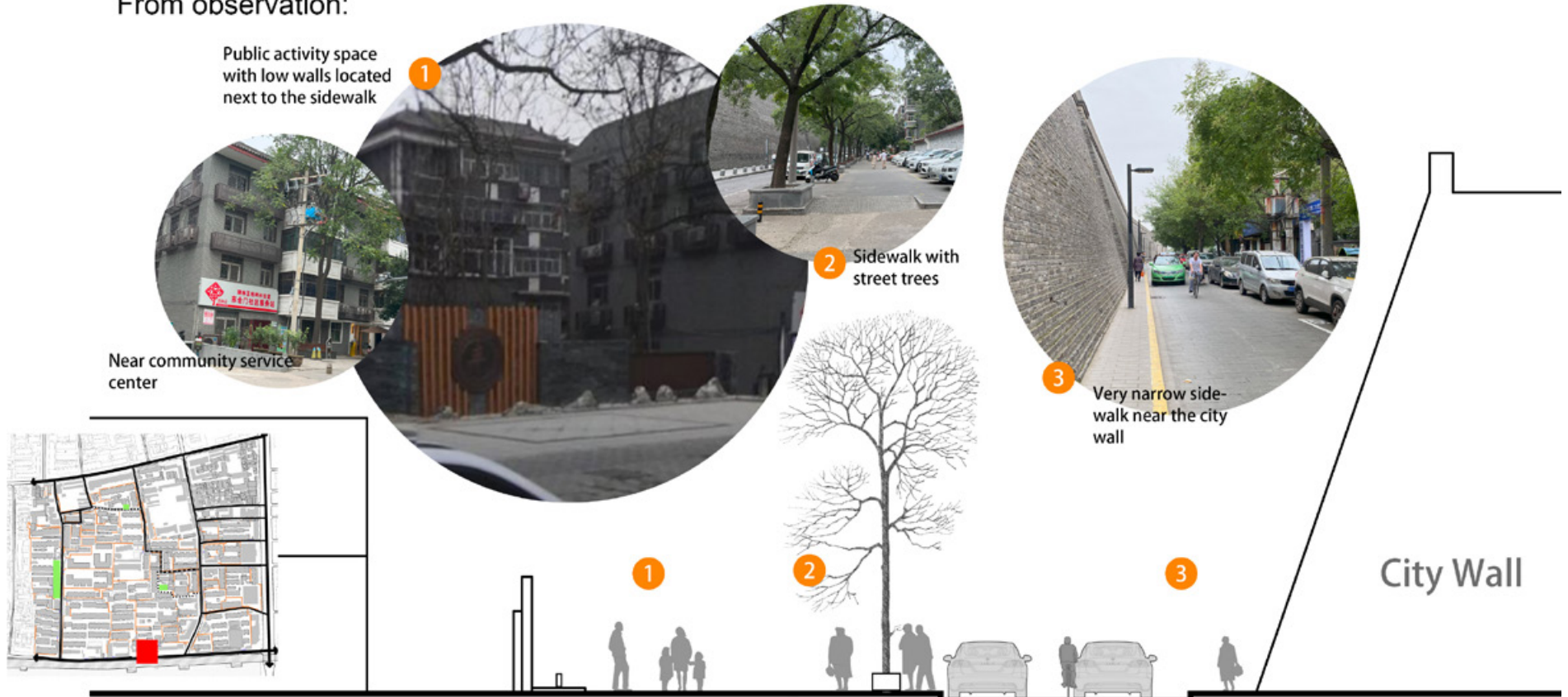
4.2.4 Street space

Through observation, it can be found that there is currently only one designed wall here. Sometimes elderly people play here with their grandchildren, but since there is no separation between the activity area and the sidewalk and the roadway,

children may run onto the roadway, posing a safety hazard. In addition, because the site is adjacent to the community service center, it is often used as a venue for community activities. The elderly are the main participants in community activities, so this is also a gathering area for the elderly.

Street space

From observation:



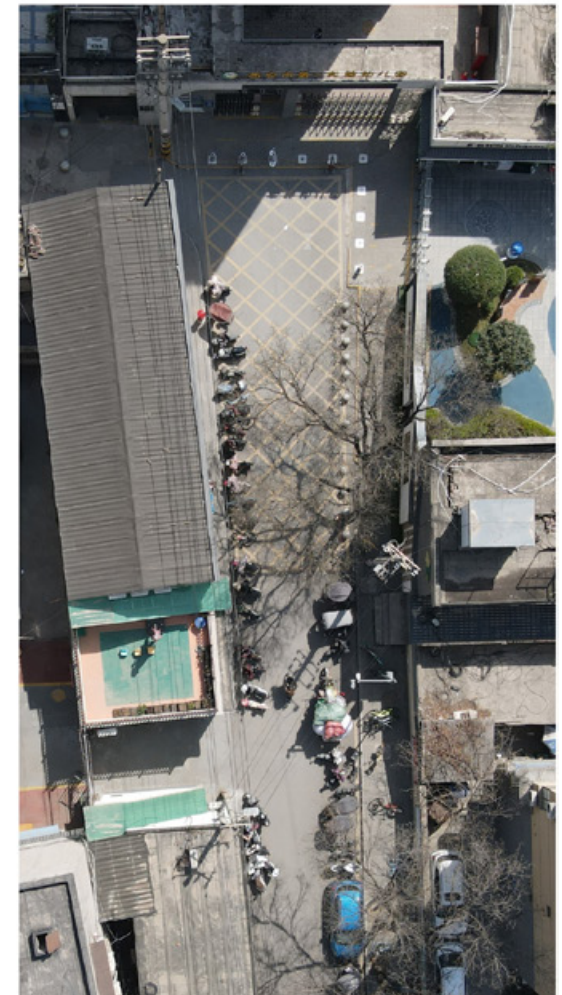
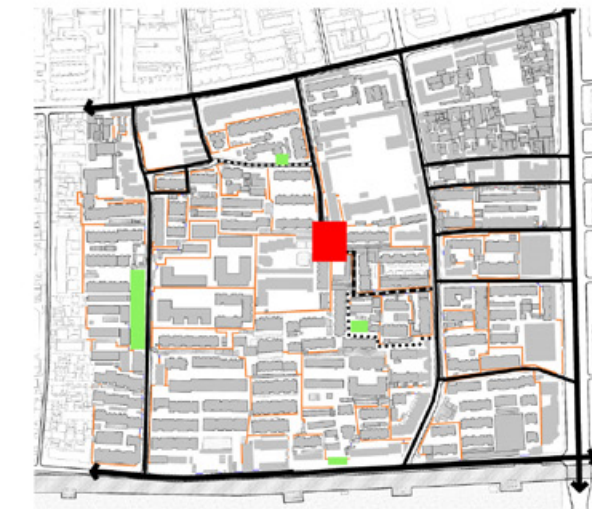
SECTION 4-4

Figure4.15: Street Space Analysis

4.2.5 Pickup waiting area space

There are two kindergartens right next to each other here, and the roads are narrow and the open area is small. Therefore, during the time of commuting to and from school, there is a large flow of people here and it is relatively crowded. And because the entrances of the two kindergartens are close to each other,

Pickup waiting area space



there are often flow line conflicts during pick-up and drop-off, posing safety risks. There is currently a lack of seating area and the elderly who come to wait to pick up their children can only stand. Currently, there are many non-motorized vehicles parked on the site, which hinders traffic.

Figure4.16: Pick-up Waiting Space Analysis

4.2.6 Comprehensive event space

This is the largest event venue in the Xiamaling area. The venue is mainly divided into three parts: upper, middle and lower. The upper part of the venue is mainly the mahjong area, the middle part is currently only paved, and the lower part is mainly the

fitness equipment activity area and table tennis area. In the mahjong area, it can be found that the elderly have a greater demand for mahjong, and they do not use the stone tables and benches in the venue. This is because the stone tables and benches are not flexible and the height is not suitable for playing mahjong, so they spontaneously prepared tables and chairs,

Comprehensive event space

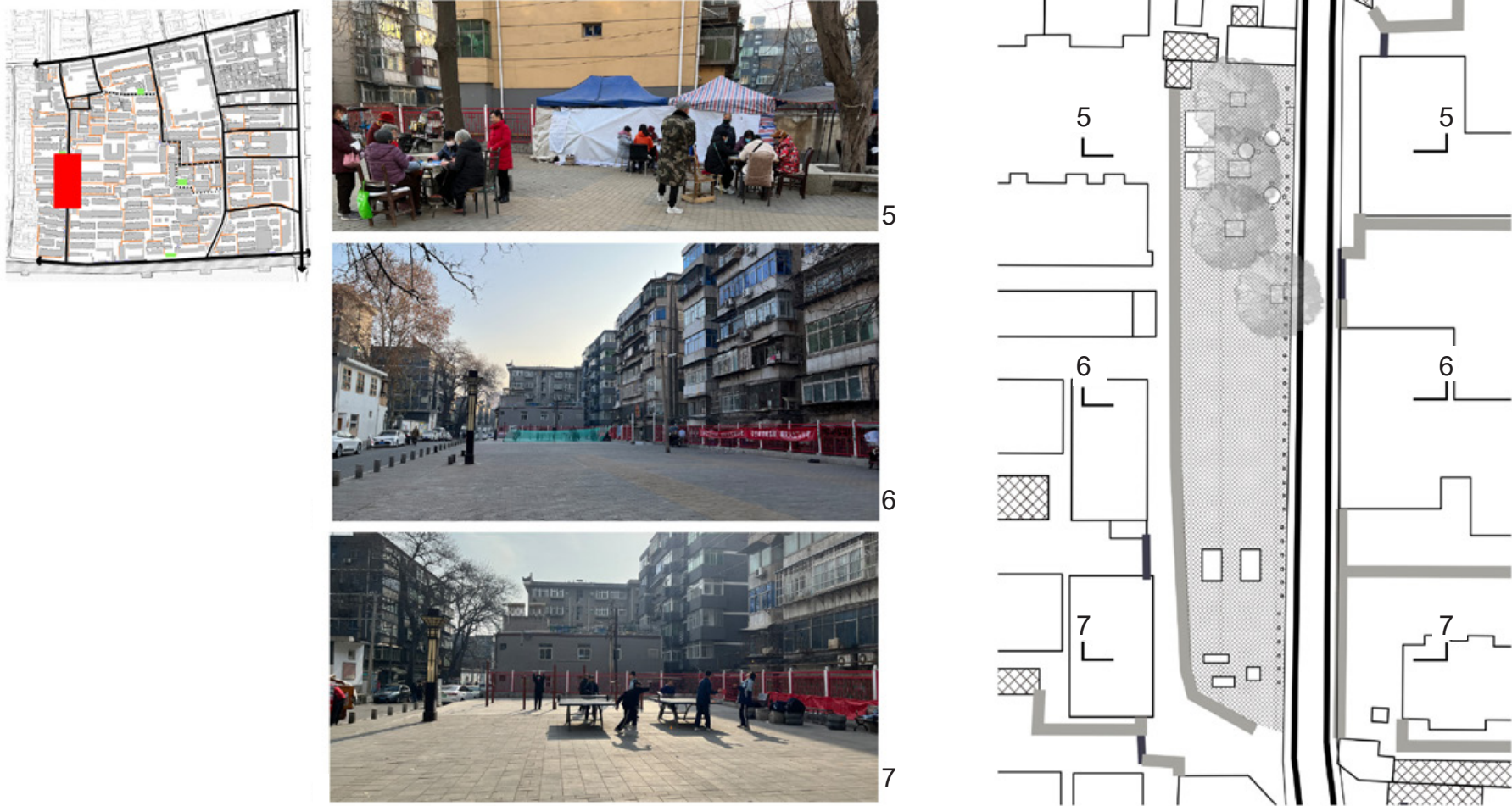


Figure 4.17: Comprehensive Event Space Analysis - Plan

and set up temporary tents for playing mahjong during the winter. At the same time, there are many non-motorized vehicles parked in the venue, which also occupy the activity area in the venue.

The middle part of the site is currently relatively empty, and although there is an activity venue, few activities take place. Although children sometimes choose to ride and play here,

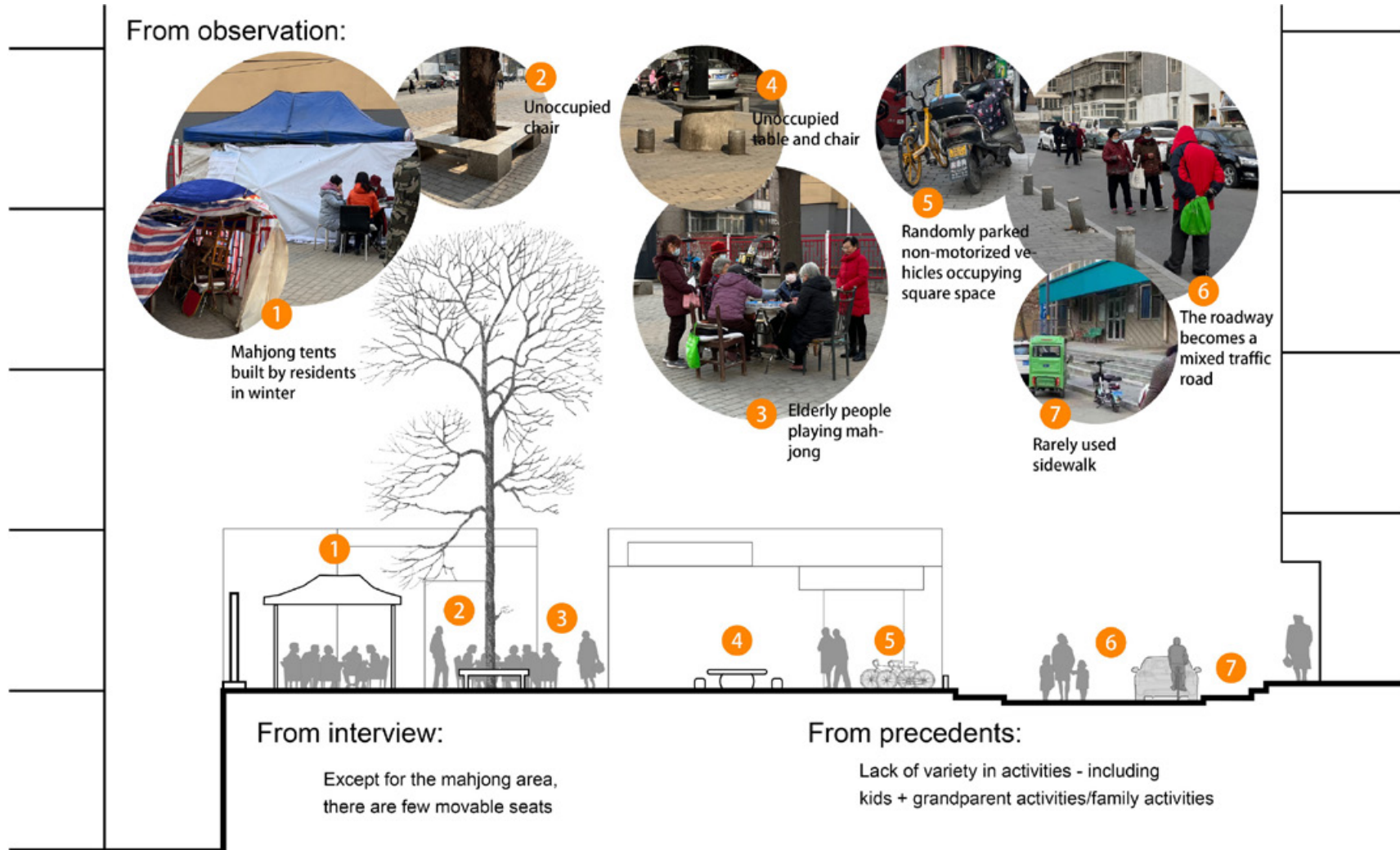
because there are no seats here, the elderly often have to stand aside and wait for their children. Sometimes the elderly will sit on the short pillar next to them, but the small pillar is not comfortable and safe to sit on.

In the lower part of the venue, there are mainly fitness equipment areas and table tennis areas. This type of fitness equipment is designed for adults. The material of these fitness



Figure4.18: Comprehensive Event Space

equipment is hard and heavy, which causes safety hazards for children and requires parental supervision.



SECTION 5-5

Figure4.19: Comprehensive Event Space Analysis

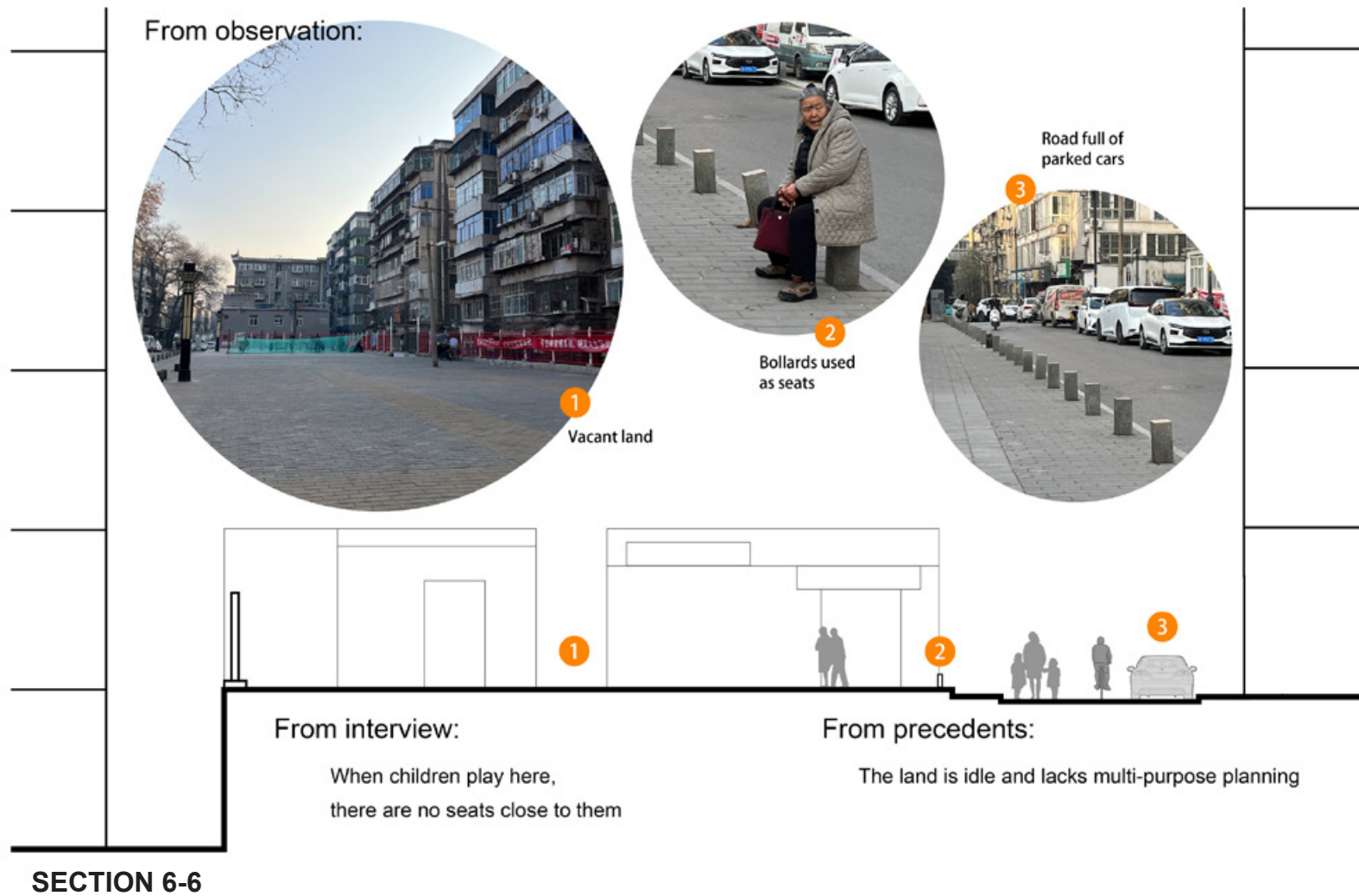


Figure4.20: Comprehensive Event Space Analysis

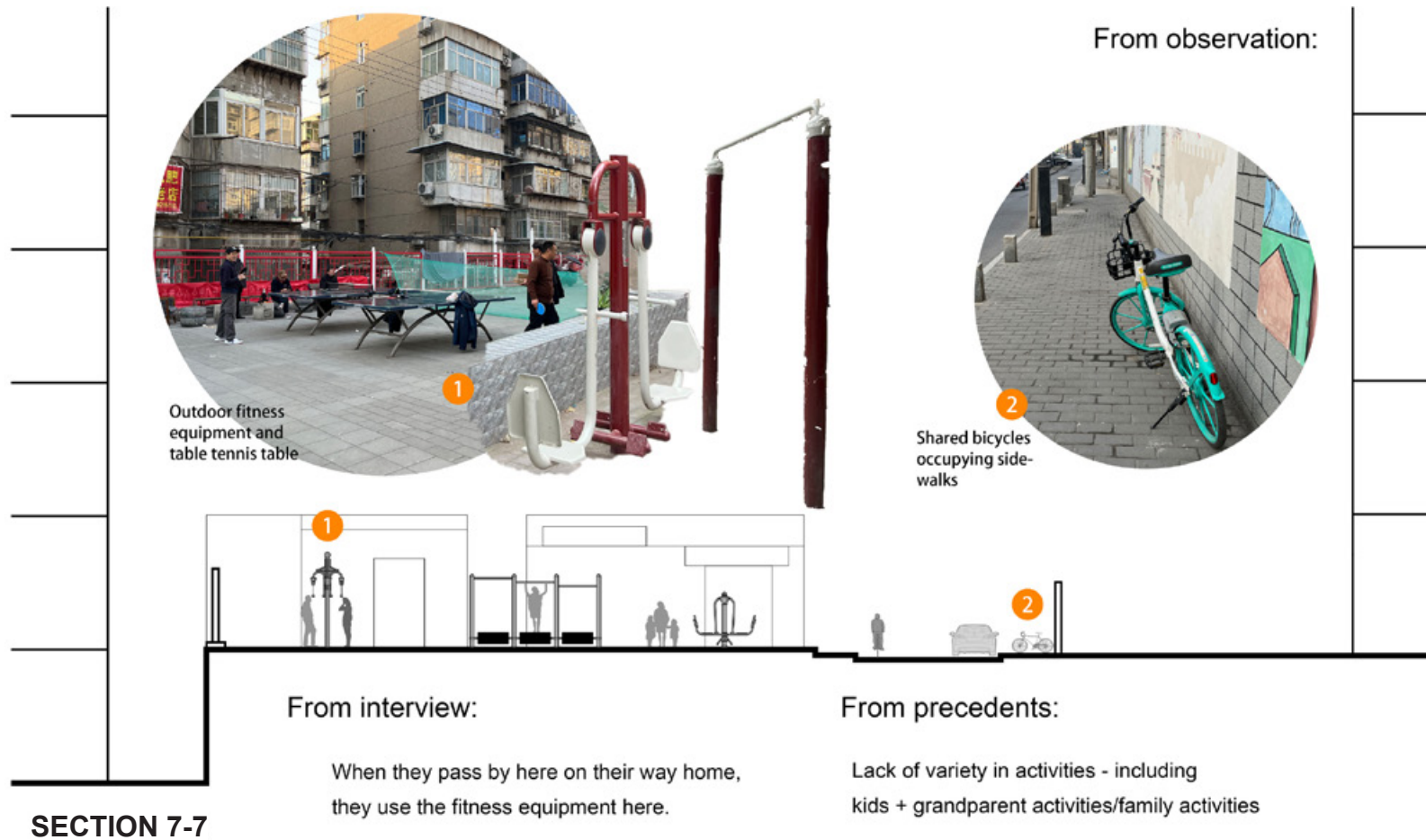


Figure4.21: Comprehensive Event Space Analysis

4.3 Summary of interview content

After observation and analysis, and a preliminary understanding of the content of the venue, a series of interview questions were then formulated and interviews were conducted with the elderly caring for their grandchildren. Interview questions are attached at the end. Based on interviews, this study summarized several types of problems most commonly encountered by older people taking care of their grandchildren when they are active in external spaces.

The first is the traffic problem. All the elderly are very worried about the traffic problem at the venue. Due to the poor continuity of sidewalks, they often have to walk on the roadway when taking their children out, which increases the stress.

The duration of taking care of children is also a question that people often ask. Children need to be taken care of almost every day, especially when the children are in preschool. Since the parents are at work, the children can only be taken care of by the elderly when they are at home all day. In this case, the elderly have almost no time for their own activities and rest. They have to accompany and take care of their children at home every day. Generally in the afternoon, if the weather is good, the elderly will take their children downstairs for a walk, and they will push their strollers with their grandchildren for their rare outdoor activities of the day. The elderly hope to take this opportunity to

socialize with other people at this time, but currently it is difficult for them to have a fixed and comfortable place to stay and socialize. Also related to time is the issue of the length of years that care lasts. Many elderly people report that taking care of children takes up many years of their time, ranging from two to three years to more than ten years. Therefore, this is a stage that lasts for a very long time after retirement and needs to be taken seriously.

Elderly people also have some concerns about outdoor spaces. First of all, when accompanying children in outdoor activities, they often feel more pressure because there are currently few dedicated activity venues for children in the design site, so they need to spend more energy paying attention to whether children's activities are safe. Secondly, when playing with children, elderly people also want to sit down because standing for a long time will cause waist discomfort. However, there are currently only some fixed stone benches in the venue, and the number is small. However, because the children's activity areas are not fixed, they sometimes have to carry the benches by themselves, or stand aside and wait for the children, which is harmful to their bodies. Also it makes difficult for them to have space and opportunities to socialize.

Regarding personal hobbies, most elderly people also report that they lack time to enjoy their hobbies after taking care of their children. Although the time for the elderly to do independent

activities increases after their grandchildren go to kindergarten, feedback shows that they still often feel lonely when taking care of children. Moreover, most elderly people report that because their lives revolve around children when taking care of their grandchildren, they often find it difficult to have communication opportunities.

Finally, every elderly person reflects that when taking care of children, they inevitably have to hold the children, especially when going out. When the children are small, they need to be held while walking. However, they need to bend down when picking up a child. This behavior is likely to cause serious injuries. Therefore, they very much hope to have a high platform for their children to stand on, and then pick them up to reduce the pressure on their waists. And because there are few roads and poor connectivity in the site, they often need to take a long detour when going from one place to another, so they need to carry their children for a long distance. However, there are few places to sit and rest on the road, which also puts a greater burden on their bodies.



Figure4.22: Interview and Results





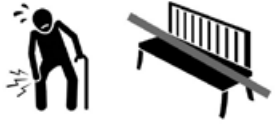



INTERVIEW TRANSCRIPT	ISSUES	PROPORTION	KEY TAKEAWAY	
<i>"There are too many cars now. Unlike when I had my baby, there were not many cars on the street. Now I have my grandson, and I am afraid that a car will hit my baby, so I always pick him up from school."</i>	Traffic	100%	Mixed traffic of people and vehicles, no sense of security, lack of pedestrian system, detours, There are always steps when pushing a stroller 	
<i>"Every day is a fixed schedule, which revolves around the children. After picking up the children, I go to buy groceries and cook. Then, after taking a break, I have to pick up the children again and take care of the children."</i>	Time of duration	Daily	84%	During the preschool years, elderly spend almost all day caring for children. After the grandchildren go to kindergarten, although elderly can have more time, they still have to take on the task of picking up and dropping off the children. 
<i>"I took care of our my grandson from birth to 13 years old. It's a really long time."</i>	Yearly	78%	Taking care of a grandchild usually lasts for several years, ranging from three years to more than ten years. 	
<i>"I took care of our my grandson from birth to 5 years old. 5 years, I feel tired."</i>				
<i>"Just watch while they play, and don't let them fall. If you are playing with your mobile phone or doing something else, and you don't look at it for a while, the child falls or even loses the child, this is all your responsibility."</i>	Outdoor space	Children playing	100%	When the elderly take their children to play in outdoor spaces in the community, they feel that they are under great pressure. 
<i>"My granddaughter is 5 years old. Every time the child plays, I always stand next to her because I need to be close to the child so that I can help the child quickly if anything happens. I wanted to sit down, but there was no suitable seat."</i>	Seating	100%	There is a lack of seats in the area where children often play. The only seats are not only small in number, but also all stone benches, which are immovable and inflexible. 	
<i>"After the child was born, until 8 months ago, except for shopping for food and cooking, I had never left the house. After 8 months, I feel like I am separated from the world. I seem to be unable to speak. People don't know where you have been."</i>	Own hobbies	94%	The only outing activities for the elderly who take care of preschool-age children are mainly taking their grandchildren out, which makes it difficult to meet the elderly's activities and social needs. 	
<i>"When I first retired, my granddaughter wasn't even born yet, so I didn't have to take care of her, so I could go dancing and meet friends. But now that I have started taking care of my granddaughter, it is difficult for me to have my own activities."</i>	Communication & Activities	91%	Life revolves around children, resulting in the elderly's own activity needs being compressed and lack of social interaction with other elderly people. 	
<i>"When my grandson was 4.5 years old, I no longer pushed a stroller when going out. He had to be carried when he was tired. My waist was very sore and my legs also hurt. Moreover, the moment you pick him up, it's easy to get lost."</i>	Physical Discomfort	100%	Holding a child for a long time will cause back pain and leg pain, so the elderly need to rest along the way, and the moment they pick up the child from the ground, it is easy to cause waist injuries. 	

Figure4.23: Interview Results Analysis

4.4 Summary of needs for grandparenting

This part analyzes the results of interviews and observations,

summarizes the needs of grandparenting, analyzes the gap between the current situation and needs, and summarizes conflicts and problems.

ANALYSIS

Based on the interview content and field observations, this study analyzed the characteristics of activities related to grandchildren based on the differences in the school age groups of the children being taken care of, and summarized the different needs that the elderly face when caring for children of different ages, and then analyzed the gap between the current situation and needs, and obtained Problems and conflicts arise. Then sort out and classify the problems, map the problems into the space, and then derive the strategy. Finally, select the appropriate method based on the strategy.



The ages of the elderly who take care of their grandchildren vary, but the common characteristic of the elderly who take care of their grandchildren is that they are relatively healthy and able to take care of their grandchildren. Therefore, the elderly are not further classified.

The needs of children of different ages vary greatly, so they are divided



1-3



4-6



7-13



Caring for preschool children aged 1-3



Caring for kindergarten children aged 4-6



Caring for primary children aged 7-13

Figure4.24: Analysis Process

When analyzing the group of elderly people who take care of grandchildren, the elderly people are classified in the same category because even though there may be differences in age, the physical fitness of the elderly people is almost equal as long as they are able to take care of their grandchildren. As for the grandchildren being cared for, since the age ranges from 1 to 13 years old and the behavior of the children varies greatly at different ages, the children were classified into three categories according to their school age: 1-3 years old, 4-6 years old, and 7-13 years old for further grandparenting behavioral analysis.

4.4.1 Analysis of the 1-3-year-old stage

When caring for preschoolers, that is, children between the ages of 1 and 3 years old, the behavior of the elderly is divided into two main types: access and activities. In the case of access, the main behavior is to push the stroller. In this behavior, since the baby has no initiative to sit in the stroller and the elderly are leading the way, the main needs of the elderly need to be taken into consideration. Therefore, it is necessary to consider the safety issues that the elderly are aware of and the accessibility issues that are encountered when pushing a stroller. However, the current situation is that due to the narrow sidewalks and the sidewalks are often littered with parked shared bicycles, resulting in the elderly having to push strollers on the driveway, creating a safety hazard. In terms of accessibility, it is very

difficult for an elderly person to push a stroller if they encounter steps or curbs. However, the venues have not yet achieved full implementation of barrier-free facilities.

In terms of activities, the main behaviors that are present are holding and sitting. Holding means holding the baby for a walk, and sitting means placing the baby in the stroller while the elderly sits beside to rest. In addition, since the stroller contains more supplies that the baby needs, the elderly person's range of motion is usually around the stroller. In this case, the activities are also dominated by the elderly, who take the lead in choosing the venue. It is also the only time of the day when seniors caring for preschoolers can interact with others. However, many elderly people have reported that they often feel lonely at this time because it is difficult for them to find a suitable resting area, to sit with their strollers, and to gather and find space for communication. There is also no activity area for children between the ages of 1 and 3, so the elderly are often bored because they have to watch the children all the time and have nothing to do.



Figure4.25: *Preschool Grandparenting*

AGE	GRANDPARENTING BEHAVIORAL CHARACTERISTICS	SPACE REQUIREMENTS	SITE CURRENT SITUATION	CONTRADICTIONS & PROBLEMS
Preschool Children 1 - 3	Access	<p>Pushing the stroller - from home to stay space</p> <p>The activity needs are mainly for the elderly. The elderly need to push strollers and carry items used by young children when going out.</p>	<p>Safety</p> <p>When pushing a stroller, the elderly often walk on the roadway.</p>	<p>Mixed traffic of people and vehicles poses safety risks</p>
	Activities	<p>Holding - take the baby out of the stroller and hold in place</p> <p>Sitting - baby in stroller, the elderly sitting next to baby</p> <p>The activity needs are mainly from the elderly. Young children are in strollers or held by the elderly. The elderly take the lead in choosing a resting place, and the elderly can freely carry out conversations or a small amount of activities.</p>	<p>Accessibility</p> <p>When pushing a stroller, the elderly often encounter steps when entering the activity venue due to the disconnected sidewalks.</p> <p>Social and conversational needs</p> <p>Activities around the stroller, small range of activities</p> <p>Activity venues differentiated from other age groups</p> <p>Sometimes the elderly are alone next to the stroller and feel bored. There are no activities to do and no communication.</p>	<p>Lack of accessibility on roads</p> <p>Lack of seating areas where strollers can be parked and where people can gather and talk</p> <p>Lack of activity space suitable for children aged 1-3 years old</p>

Figure4.26: Preschool Grandparenting Analysis

4.4.2 Analysis of the 4-6-year-old stage

When the elderly take care of children at the kindergarten stage, which is the age group of 4 to 6 years old, the elderly are dominant in terms of access, as the children are less safety conscious and need to be led. The main access behaviors of the elderly at this stage are holding the child and leading the child to walk. In terms of holding a child, the weight of a child of this age group is about 20 kilograms, so this weight is a great burden for the elderly. Therefore, the elderly often need to stop and take a break when holding a child, and the moment they hold the child up, they may get hurt due to bending down too much. Therefore the elderly mentioned during the interviews the desire to go to avoid injuries. When walking with their children, they generally walk side by side, with the elderly walking on the outside and the children walking on the inside. However, some of the roads are narrow, making it difficult to support the elderly and their grandchildren walking together, and because sidewalks have poor continuity, while driveways have good continuity and are free of obstacles, the elderly and children often choose to walk on the driveway, which poses a safety hazard.

In terms of activities, the main activity for grandparenting of this age group is to sit and wait for the children to play. The activity needs of this age group are primarily for the children

because they can run and jump at this age, but because they are less safety conscious, they need constant attention from their caregivers, the elderly, who are not able to take their eyes off the children to carry out their own activities. The elderly need to be aware of the children's activities in order to prevent them from getting into conflicts or getting hurt. Therefore, the demand for space is mainly for safe children's activity space with boundaries, and there is a distance to arrange suitable seats for the elderly to rest, and the rest seats can also meet the social needs of the elderly. However, the lack of flexible and appropriately positioned seating in the current open space makes it difficult to meet the social needs of the elderly. There are also safety risks associated with children's activities.



Figure4.27: Kindergarten Grandparenting

AGE	GRANDPARENTING BEHAVIORAL CHARACTERISTICS	SPACE REQUIREMENTS	SITE CURRENT SITUATION	CONTRADICTIONS & PROBLEMS
Kindergarten Children 4 - 6	Access	<p>The demand is mainly from the elderly. Children at this age have weak safety awareness and need to be held or led by the elderly, so the elderly play a leading role.</p>	<p>Reduces pressure on the elderly's waist when holding their child</p>	<p>The elderly need to bend down to pick up the child, which will cause greater damage to the waist.</p> <p>Lack of a high platform for the children to stand on, making it easier for the elderly to hold children.</p>
	<p>Holding - hold a child while walking</p>		<p>The elderly feel tired after carrying their child for a long distance.</p> <p>Lack of resting space along the road.</p>	
Kindergarten Children 4 - 6	Activities	<p>The activity needs are mainly for children. Children in this age group can run and jump, but their safety awareness is weak. They need constant supervision by the elderly. The elderly need to be far away from the children's activity areas and have unobstructed sight to watch over the children at all times.</p>	<p>Walking side by side</p>	<p>1. Some sidewalks are narrow 2. Shared bicycles are often piled up, making it impossible to accommodate side-by-side traffic, causing people to often walk on the roadway.</p> <p>Poor sidewalk continuity.</p>
	<p>Leading - lead the child to walk</p>		<p>Safe, bounded children's play area</p> <p>Set up seats around children's activity areas</p> <p>A waiting space that meets the social needs of the elderly while considering distance and line of sight</p>	<p>The activity venue is adjacent to the roadway. A child ran onto the roadway while playing, and the old man quickly pulled the child back.</p> <p>Lack of separation between children's play areas and hazardous areas.</p> <p>When the elderly are waiting for their children, they often stand close to them, but their backs hurt after standing for long periods of time.</p> <p>There is a general lack of seats. There are stone benches in some places, but they cannot be moved. Poor flexibility to meet diverse needs.</p>
	<p>Sitting - wait by the children's playground</p>			

Figure4.28: Kindergarten Grandparenting Analysis

4.4.3 Analysis of the 7-13-year-old stage

In caring for children at the primary school level, i.e. children aged 7 to 13 years, there are two main types of access, one in which the child walks with the elderly and the other in which the child walks in front and the elderly follows at a short distance behind. Because children at this stage already have a certain sense of danger, and energetic. Therefore, the needs of both the elderly and the child need to be considered and balanced at this stage. When the elderly and children of this age group walk together, they usually walk side-by-side. However, some sidewalks are narrow and bicycles occupy the sidewalks, making it impossible to walk side-by-side on the sidewalks, causing the elderly and children to walk in the driveway, which poses a safety hazard. When children are walking in front of them, the elderly will feel more at ease if the children are within their line of sight, however, once they are out of sight, the elderly will become anxious. Therefore, it is important to keep children out of sight during the passage and to provide reminders at turning locations.

In terms of activities, the main categories are interactive type, separable type and companionable type. At this age, children's needs are considered in conjunction with those of the elderly, as children already have a certain sense of security. They

can move independently, and have a more vigorous need for activities. Elderly people and children at this age can engage in a particular activity together, or they can engage in separate activities to meet their own needs, and there are also cases where children play while elderly people wait. Therefore, in response to the demand for such complex activities, the need for space needs to be flexible and multi-functional to meet the needs of both the elderly and children in a common arrangement. However, at present, the activity space is mainly filled with activity equipment for adults and an open paved plaza, and there is a lack of space for the elderly and children to conduct activities separately or together.



Figure4.29: Primary School Grandparenting

AGE	GRANDPARENTING BEHAVIORAL CHARACTERISTICS	SPACE REQUIREMENTS	SITE CURRENT SITUATION	CONTRADICTIONS & PROBLEMS		
Primary School Children 7 - 13	Access	Children walk in front, and elderly people walk at a shorter distance behind.	Children at this age already have a certain awareness of safety and are energetic, so the needs of both children and the elderly must be balanced.	Set up reminders at corners to reduce line of sight in straight areas.	When children go out of sight of the elderly, the elderly will be very anxious.	There are many detours, unclear instructions, and lack of road guidance system.
		Leading - lead the child to walk		Walking side by side	1. Some sidewalks are narrow 2. Shared bicycles are often piled up, making it impossible to accommodate side-by-side traffic, causing people to often walk on the roadway.	Poor sidewalk continuity.
	Activities	Interactive - carry out the same activity together	Children at this age have a certain awareness of safety, so the need for care from the elderly is reduced accordingly. Therefore, the activity needs to take into account the needs of children and the elderly.	Provide space for intergenerational activities	The existing activity venues mainly consist of a large number of sports equipment and only paved squares. There are safety risks when children use adult sports equipment. There are only paved squares and no one is using them.	Lack of areas for children and seniors to enjoy activities together.
		Separable - carry out activities separately		Allow the elderly and children to carry out their own activities or rest within sight of each other at the same time		There are safety risks when children use adult sports equipment.
		Companionable - waiting next to the children's playground				The paved square space lacks functional division and streamline organization, making it impossible for people to stay and gather.

Figure4.30: Primary School Grandparenting Analysis

4.5 Strategies

After analyzing the needs and problems of grandparenting behavior in the above three different age groups, I classified and summarized the problems, mapped them to space, and divided them into problems in streets and problems in public spaces. The picture below shows the problems that can be solved by design. Finally, based on the strategies corresponding to the problems one by one, and based on the strategies combined with the feasibility of actual implementation, the main actions were obtained.

After combing the series of problems of the street, three major categories of problems can be obtained. One is the lack of effective roadway connections. The second is the lack of a pedestrian system that focuses on the needs of grandparenting. The third is the lack of a series of facilities that take into account the needs of grandparenting. In terms of public activity space, the problems are also summarized into three main categories. Firstly, there is a lack of public activity space, secondly, there is a lack of age-specific and safe children's activity areas, and a lack of corresponding waiting areas. The third is the lack of flexibility in urban furniture. The study proposes strategies based on these problems.

The corresponding strategies for streets are, first, to improve the

connectivity of roads and increase the density of roads in order to alleviate the problems of many disconnected roads and poor continuity in the past. Second, establish pedestrian systems that value grandparenting behavior. Third, establish modular facilities along the roads that consider grandparenting needs. Strategies for public activity spaces include, first, increasing the number of activity areas and expanding the size of these areas. Second, separate children's activity areas from the driveway. Third, establish activity areas and waiting areas for children of different ages. Forth, establish multi-functional activity areas. Fifth, create modular urban furniture to meet the needs of a variety of activities. After the strategies are sorted out, they are categorized into planning level strategies and detailing level strategies. Then based on the strategies, the actions come up.

The detailing actions at the planning level are as shown below. Removal of temporary structures and opening of internal roads to increase the connection of the road network. Implementation of no-height difference sidewalks in narrow road areas. Add crossroads pedestrian design. Increase non-motorized parking areas at the entrance of the communities. Increase in signage and ground level wayfinding systems. Add picking-up street design. Add additional rest areas at 70-meter intervals (Generally accepted data based on interviews). Setting up a raised platform in conjunction with a seat to assist in carrying a child. Planning for demolition and conversion of temporary buildings to increase

space for activities. Design modular seating, planting, and pavilions, etc.

Detailed actions at the detailing level are shown below. Harmonization of paving of activity areas to have more public

space. Increase transition space - utilize transition space as a waiting space for seniors to sit and wait. Add functions to the square: Playgrounds, social gatherings, walking paths, gardening spaces, etc.

STRATEGIES		ACTIONS
Planning level strategies	Increasing the density of the road network	Removal of temporary structures and opening of internal roads
	Increase in the number of activity venues and consolidation of decentralized activity venues	Implementation of no-height difference sidewalks in narrow road areas
	Establishment of a pedestrian system plan that takes into account the behavior of the elderly with their grandchildren of different ages	Crossroads Pedestrian Design Increase non-motorized parking areas at the entrance of the communities
	Establishment of a flexible modularized grandparenting series facility	Increase in signage and ground level wayfinding systems Picking-up street design Additional rest areas at 70-meter intervals
Detailed designing level strategies	Establishment of modular urban furniture	Setting up a raised platform in conjunction with a seat to assist in carrying a child
	Establishment of waiting areas that incorporate the needs of children of different ages	Planning for demolition and conversion of temporary buildings to increase space for activities
	Separating children's activities from the driveway	Design modular seating, planting, and pavilions, etc.
	Establishment of multi-purpose activity areas	Harmonization of paving of activity areas Increase transition space - Utilize transition space as a waiting space for seniors to sit and wait
		Add functions to the square: Playgrounds, social gatherings, walking paths, gardening spaces, etc.

Figure4.32: Strategies and Actions

5

Site Design

Chapter 5: Site Design

After summarizing the grandparenting behavior analysis and proposing strategies, I applied this strategy to the site, proposed specific strategies for different streets and public activity spaces, and designed them.

First of all, the transformation of the overall site is mainly to demolish some temporary buildings and connect roads. After analyzing the demolition, replacement and preservation of temporary buildings, roads were opened in stages, which increased the density of the road network in the old community, improved accessibility and improved amenity. This reduces detours and keeps the distance from any residential location on the site to school activity venues and commercial activity spaces within 5 minutes. And due to the increased connectivity of roads, people can also be diverted, reducing congestion and improving safety. In addition, new public activity spaces have been created based on the new road network, increasing the number of public activity spaces. And 5 representative areas were selected for detailed analysis in these public activity spaces.

5.1 Planning level

After analyzing the overall strategy and reflecting it on the

plan, the most important changes are the removal of temporary buildings and walls to deal with the detour. The opening up of the road network not only connects the public space and communities, but also helps to develop new functional spaces for activities. The strategy is divided into three phases. The first phase, shown in yellow in the diagram, is to quickly open up the road near the kindergarten to disperse the picking-up flow. The second stage is the orange part of the picture, increasing the road network connection in the southern area of the site. The third part is the red area, connecting the north-south road, encrypting the road network, and also forming a new activity space in the intersection of the road, which brings a new activity site. Based on the new road network, implement sidewalks without height differences in narrow road areas, such as pick-up streets. add pedestrian designs at intersections. Add non-motorized parking areas at community entrances. Added rest areas at 70 meter intervals. Add modular seating, plantings, cover, etc.

RENOVATION PLAN

NEW PLAN

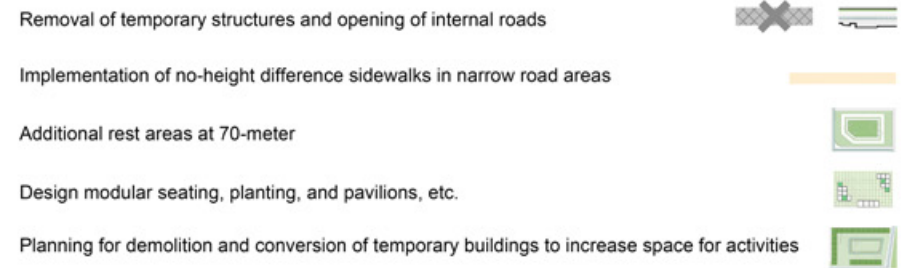
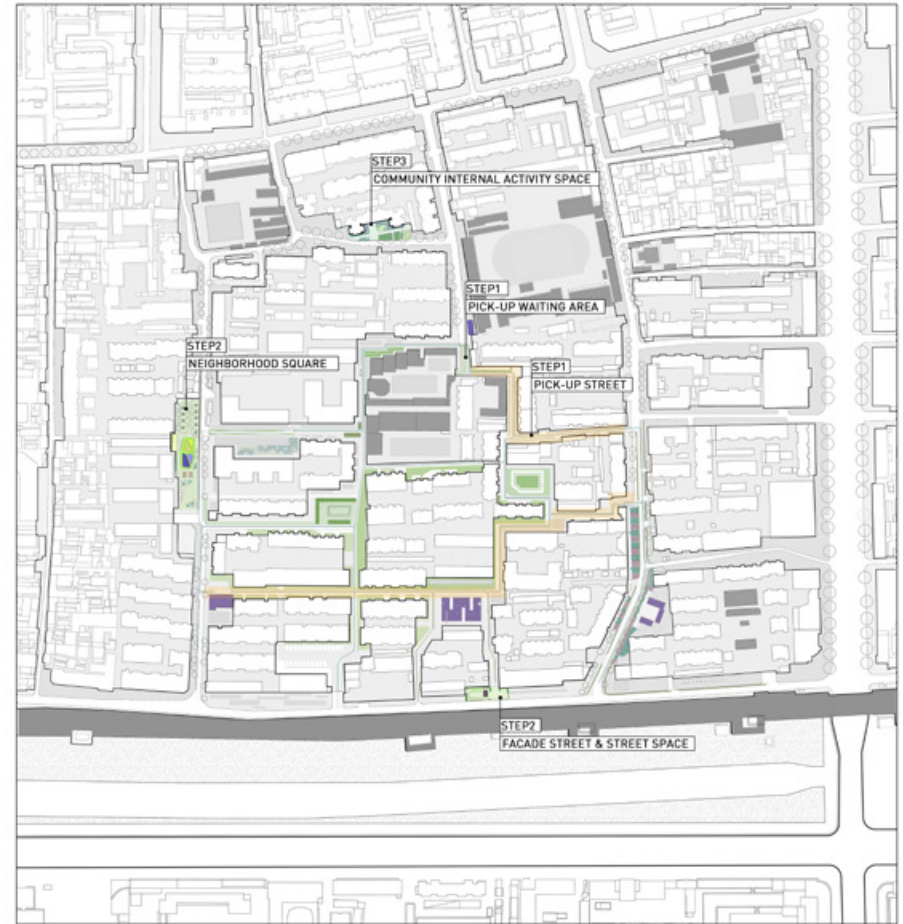
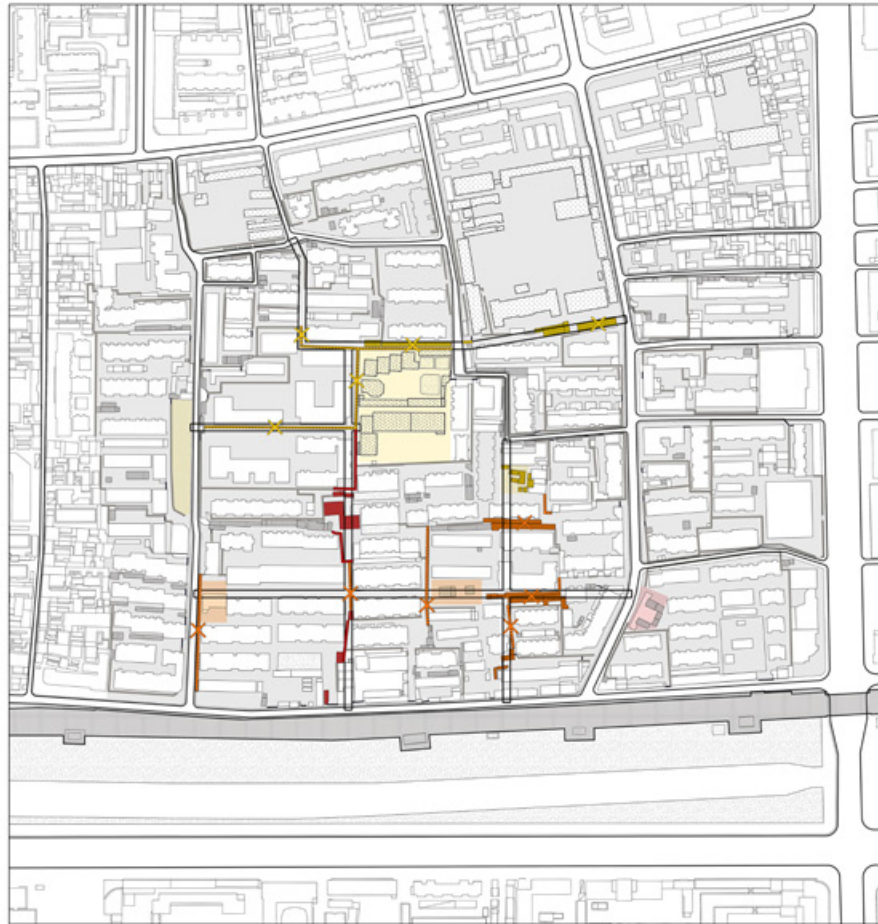


Figure 5.1: Renovation Plan and New Plan

5.2 Detailed design level

5.2.1 Pick-up street

The most significant change in the design of the street for the

drop-off and pick-up area was the removal of the temporary buildings and the widening of the road. However, since the road is still narrower than the rest of the neighborhood, it was designed with no elevation difference. A ground level navigation system was added to the ground level, giving the ground a

Pick-up street

- Add guide system
- No cars
- Walking priority
- Add green space
- Add armrests
- Add turn signs
- Add a few seats

2.1 Demolish illegal buildings, widen roads, add ground signs, and give the ground eye-catching colors to make people aware of entering the school area.

2.2 Since this road is only crowded during school hours and has less traffic at other times, green plants and a small number of seats have been added to allow the elderly to exercise and walk on this road.



Figure 5.2: Pick-up Street New Plan

more distinctive color and linear paving, which is oriented so that people entering the area are clearly aware that it is a drop-off and pick-up zone. Since the pick-up and drop-off times are fixed and less time consuming times of the day, the functions and roles of the daytime were also taken into consideration. Handrails are installed on both sides of the road and on one side of the road in the usual period, so that the elderly can use them for mobility and exercise. In addition, there is a rest area

in the middle of the road, which can be seen from both ends of the road, and it is a guide. The road is connected to the main road in the community, and there is also a warning area for intersections. The raised portion of the ground connects the sidewalks on both sides, and the protruding portion is equivalent to a speed bump and makes the difference in elevation the same as that of the sidewalk, which is designed for accessibility and safety.



Figure5.3: *Pick-up Street Before and After*

5.2.2 Pick-up waiting area

In the design of the pick-up and drop-off area, the original cluttered non-motorized parking area was first moved to the

southern area of the site, where a special parking area was set up. The parking area is kept at a certain distance from the entrance of the kindergarten, taking safety into consideration. Above the parking area is a waiting space, and the orientation

Pickup waiting area

- Improve pick-up and drop-off flow lines
- Reduce congestion
- Increase waiting areas
- Changes in parking locations for non-motorized vehicles

3.1 Demolish illegal buildings, widen roads, and give the ground eye-catching colors to make people aware of entering the school area.

3.2 Continue the ground guidance system to help quickly evacuate people.

3.3 Unify the existing non-motorized vehicles that are parked randomly to pick up and drop off children at the parking spots.

3.4 Add a resting place far away from the kindergarten to provide waiting seats for the elderly who arrive early, and consider the sight direction.

3.5 Since the entrances and exits of the two kindergartens are very close to each other, ground signs are used to distinguish the areas for queuing for pick-up and drop-off.

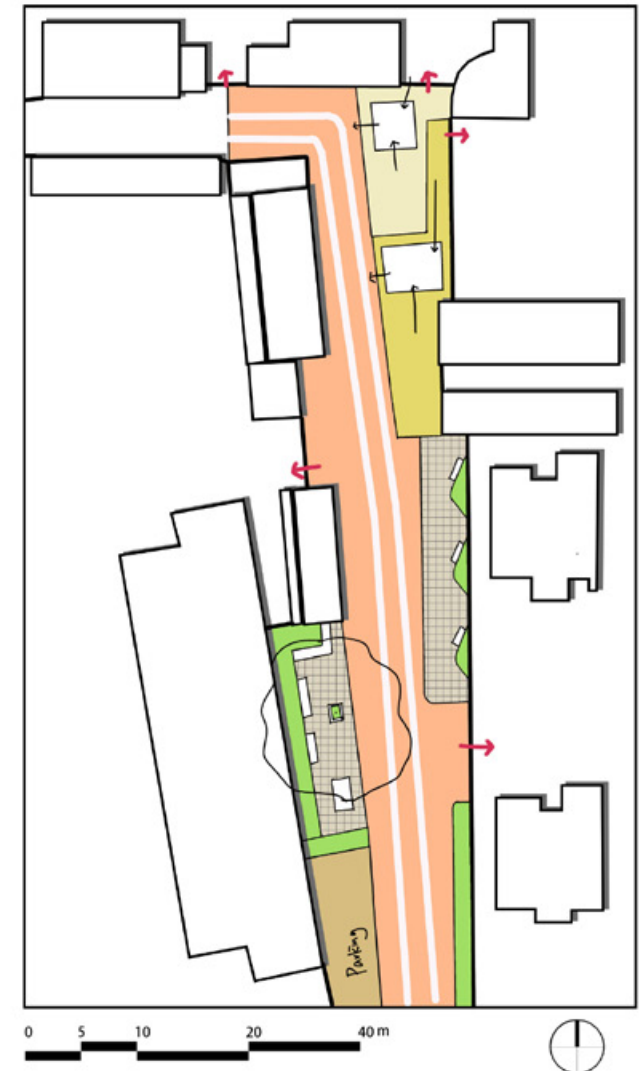


Figure5.4: Pick-up Waiting Area New Plan

of the seats is taken into consideration, so that the movements at the school entrance can be kept in view at all times. In the area in front of the school, the two schools' pick-up and drop-off lines are taken into consideration, so as not to disturb or affect each other. The pavement of the road continues the pavement

of the road for picking up and dropping off children, and it has the color and linear pavement on the ground, which has the role of guidance and warning.



Figure5.5: Pick-up Waiting Area Before and After

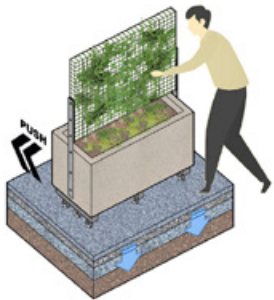
5.2.3 Neighborhood square

Since Neighborhood square is the largest activity area in the site, it takes on the most integrated function, considering all

ages. Since there is less vehicular traffic on this road, and considering the safety of pedestrians, the overall pavement of the square is united with that of the road, and the height difference is the same, so that the square's usable area is

Neighborhood Square

- Increase the flexibility of intergenerational common activity space
- Take into account the needs of community gatherings
- Increase children's activity venues and waiting areas



1.1 Using modular urban furniture, various combinations can be formed to meet various needs such as resting, greening, playing mahjong, etc.



1.2 The children's activity area is enclosed by seats, which not only protects children, but also provides the elderly with a rest area closest to children's activities.

1.3 The road paving and event venue paving are unified to form a sign and slow down the vehicle speed.

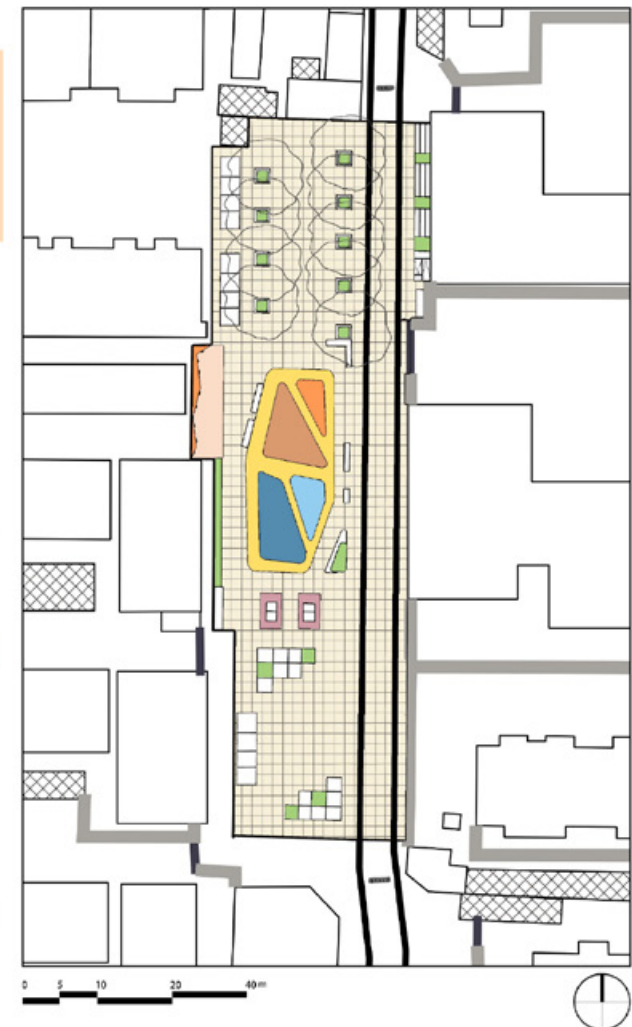


Figure5.6: Neighborhood Square New Plan

enlarged. At the same time, taking into account the safety problem, the elderly's waiting space can be a transition space between the roadway and children's playground. In addition, the children's activity area is divided into activity areas for different age groups. Above the children's area is a tree square, and on the west side are modular tables and chairs with flexibility.

The modular furniture can be combined to create a mahjong or lounge area. Tall trees can provide shade in the summer. Below the children's area, modular greenery and urban furniture are used to create a small plaza space for gathering, and due to the mobility of the modules, they can also be combined into a crafting area, a trading area, and other activity spaces.



Figure5.7: *Neighborhood Square Before and After*

5.2.4 Facade street & street space

The original area was flanked on the east side by the community's event center. However, there is a community entrance road between the two, dividing the site. Since the

traffic volume at the entrance of this neighborhood is small, the paving was unified to expand the activity area, taking into account the integrity of the site, while still reserving space for traffic. Seats as well as a bulletin board were installed in the community center area. The seats provide an outdoor waiting

Facade Street & Street space

- It is separated from the pedestrian area to increase a moderate sense of enclosure
- Provide a safe place for leisure activities
- Publicity and notification

5.1 This place is located in the portal space and is adjacent to the community center with a large flow of people, so a bulletin board is set up to convey community information.

5.2 Seats are used to enclose the space, and rain shelters are added. Since the seating orientation is not restricted, the space will not be too closed.

5.3 Adding a blackboard on the ground does not hinder activities and also increases the possibilities for children's entertainment.

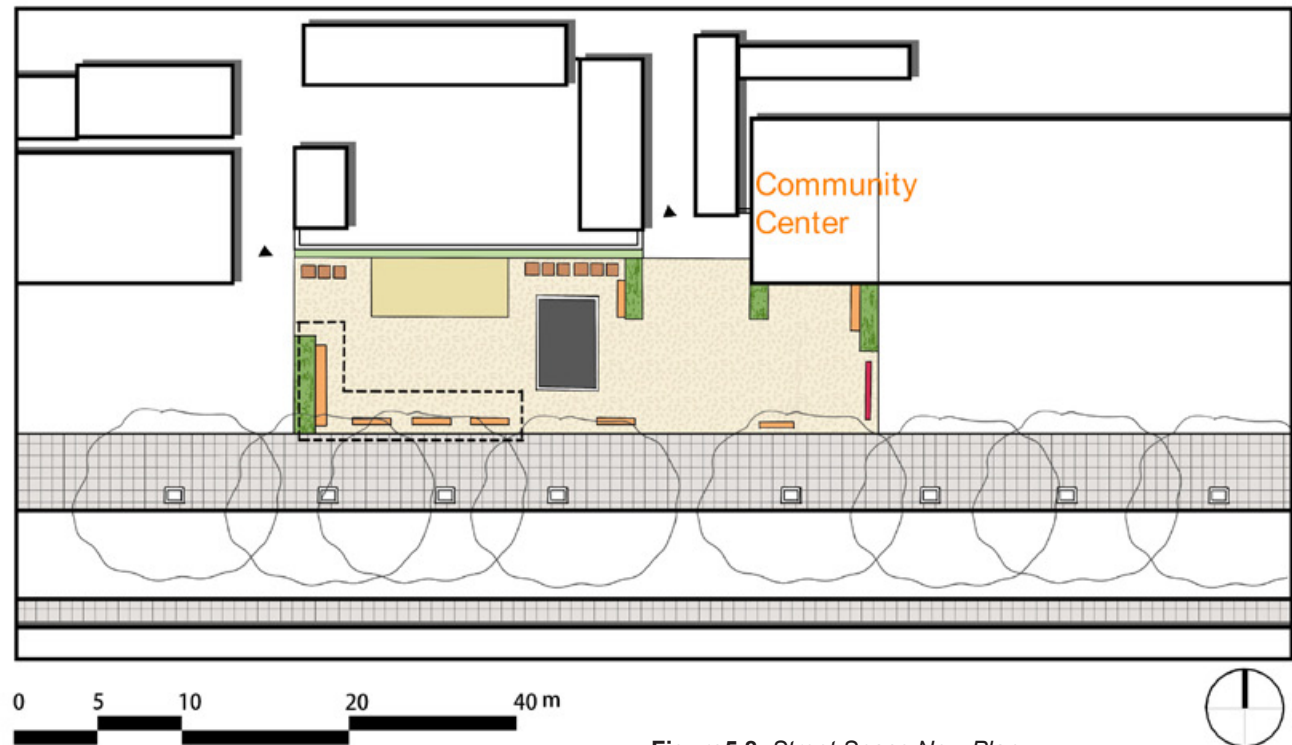


Figure5.8: Street Space New Plan

space for people who come to do business. A bulletin board with notices of community events and updates allows the elderly to be informed of the latest news in a more direct way. In the main activity area, a movable stage and a seating area are set up. The seating area is covered to provide shade and protection from rain. The dark concrete pavement in the center of the floor

serves as a chalkboard, offering children the possibility to draw and paint. Seats are placed around the ground chalkboard to provide a resting space for the elderly and to enclose the children's activity area, making it safer. The site also contains modular, movable tables and chairs, providing more possible combinations of space.



Figure5.9: *Street Space Before and After*

5.2.5 Community internal activity space

The activity space inside the community is more inward-looking than other public spaces in the community, mainly serving the

neighborhood, and avoiding large and noisy activities due to its proximity to residential buildings. This design will be paved uniformly linked to the original dispersed activity area. In the easternmost area is still fitness equipment, but changed the

Community internal activity space

- Increase the number of activity venues within the community
- Consider activity venues that focus on static intergenerational activities
- Flexible

4.1 Set up a plastic paved area where children and the elderly can move around, and set up seats around it.

4.2 Add community gardens/community farms that can be jointly run by the elderly and children. While the elderly enrich their lives, they also popularize science knowledge for their children and increase intergenerational exchanges.

4.3 Adding modular urban furniture can provide space for people to organize vegetables, play mahjong and share food.

4.4 A rain garden can be built around the building, and the elderly and children can also participate in maintaining it.

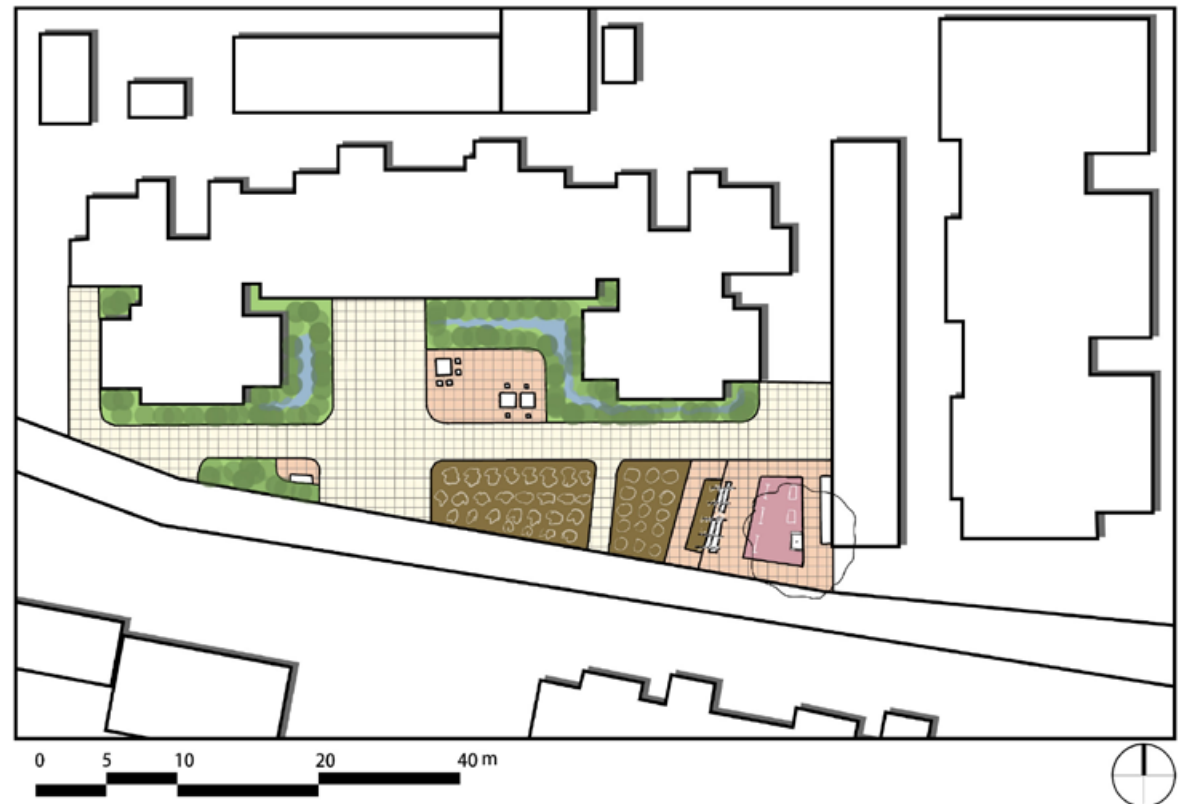


Figure5.10: Community Internal Activity Space New Plan

pavement material underneath, and then set up a warning sign that child playing must have an adult to watch. In addition, resting seats are installed around the equipment, which makes it easier to rest and keep an eye on the children. In the center area, a community garden has been set up, which provides a possibility for children and the elderly to carry out activities together. Elderly people can enjoy planting and lead their children in the activities, and they can teach their children about planting, and the children can learn about science and exercise their hands in the process, which provides a new way of intergenerational communication activities. Above the

community garden is a sitting area with movable seats and tables and chairs, which can be assembled and combined to form a mahjong activity area or a larger table and chair area. This area can be used for daily activities as well as for sharing the fruits picked in the garden. Rain gardens have been installed around the perimeter of the building to help treat stormwater runoff while also serving an educational purpose. The garden also serves as a place for the elderly and children to observe plants and experience nature, as well as promoting intergenerational activities.



Figure5.11: *Community Internal Activity Space Before and After*

6

Conclusion

Chapter 6: Conclusion

Community public space is a carrier for residents to carry out daily outdoor activities. Most middle-aged residents go out to work during the day, and the main users of community public activity spaces are elderly retirees. In addition to general activities, intergenerational care is becoming the daily routine of the elderly in the community, which makes the scale and characteristics of community public spaces different from those of the general population. However, the current community public space design standards only consider the general population of society and support to elderly residents who are responsible for intergenerational care. Therefore, this study explores the behavioral characteristics and patterns of the elderly in the intergenerational care process, and constructs a community public space design model. This study is based on the theory of human behavior and studies the process of intergenerational care to obtain behavioral patterns and subjective space evaluation conclusions of the elderly with their grandchildren. It proposes an external space renovation strategy based on the needs of grandparenting and guides the design practice of renovation and renovation of old communities in China.

Based on on-site research and interviews, this study examines

the phenomenon of grandparenting in old neighborhoods in urban China, and finds that the characteristics of elderly grandparenting are categorized by the age of the grandchildren, which is classified into preschool, kindergarten, and elementary school children. Based on the grandparenting behaviors of these three age groups, the corresponding needs are listed, and then the problems in streets and public spaces are identified in relation to the actual situation. Based on the problems, planning and design strategies are proposed.

After the strategy was formulated, although it was impossible to actually test the help of the strategy on grandparenting, I got in touch with the elderly people who cooperated with the interview again. A series of design strategies and methods were explained, and a new outlook on the renovation of old communities that took into account the needs of grandparenting was provided. According to feedback, the elderly generally agree with this strategy, but they also raise questions about the problems that will be encountered in the specific implementation of the strategy. This is also the part that is currently lacking in this study. In future follow-up research, it is necessary to give more consideration to the priorities of this series of strategies and think about how to take into account the grandparenting needs as much as possible while taking into account the universal needs in the renovation of old communities with limited budgets.

The innovation of this paper lies in the consideration of the common but often overlooked in design problems of grandparenting faced by the actual users of old neighborhood spaces, the elderly, in their daily lives. Past research on the renovation of old neighborhoods has mainly focused on generalization, which is relatively broad and lacks research on the actual users. In the past, the research on the elderly was single-minded, mainly focusing on the needs of the elderly themselves, ignoring the fact that a large number of elderly people need to bear the responsibility of raising their grandchildren in their actual lives. Therefore, this study focuses on the needs of the elderly who need to raise their grandchildren in China's old neighborhoods, filling a gap in this area.

However, due to the limited research time, this study only get the feedback from the older adults in the community who participated in the interviews, and did not obtain the opinions of the community managers and governmental personnel, so there is still a lack of consideration of the implementation and feasibility of the design toolkit. In future research, we will consider coupling the results of the current study with the actual transformation process of old communities, analyzing the priorities of transformation, and exploring how to effectively integrate the needs of grandparenting in the transformation process of old communities.

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