

Effects of Commercial Gentrification on Residents' Daily Lives in Chinese Historic Districts

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**Effects of Commercial Gentrification on Residents’
Daily Lives in Chinese Historic Districts**

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Abstract

Commercial gentrification has led to the widespread replacement of traditional shops with high-end boutiques and large chain enterprises, a phenomenon particularly prevalent in historic districts. However, existing research predominantly focuses on the effect of such changes on tourism while largely neglecting the daily lives of residents within historic districts. To address this gap, this study compares historic districts with commercial and non-commercial gentrification in China to examine the effects of commercial gentrification on residents' daily lives. The results indicate that in historic districts with a higher degree of commercial gentrification, residents' socioeconomic status exerts a stronger influence on their daily lives. In contrast, in historic districts with a lower degree of commercial gentrification, residents' perceptions of the residential environment have a more pronounced effect on daily life. Furthermore, because residents with different socioeconomic status perceive the residential environment differently, the combined influence of socioeconomic status and environmental perceptions on daily life becomes more evident in districts with a lower level of commercial gentrification. This study provides empirical evidence for understanding the effect of commercial gentrification on residents' lives and offers policy recommendations for urban planning, indicating that achieving sustainable and inclusive development is essential for balancing environmental improvements with social equity. This study contributes to the literature by shifting the focus from tourism

effects to the lived experiences of residents, offering new insights into how different commercial environments shape daily life dynamics.

Keywords:

Commercial Gentrification; Historic District; Residents' Daily Lives; Residential Environment; Socioeconomic Status

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dissertation to them, with my sincerest appreciation and love.

Chapter 1

Introduction

Chapter 1. Introduction

1.1. Background

1.1.1. Gentrification and Commercial Gentrification

Gentrification is a phenomenon characterized by the displacement of low-income groups and the influx of high-income white-collar populations. This phenomenon has been widely observed in various countries, including the United States (Ding et al., 2016; Halasz, 2021), Italy (Antoniucci & Marella, 2018), Spain (Mazorra Rodríguez, 2024), Sweden (Elldér, 2024), Japan (Kidokoro et al., 2023), China (Su et al., 2024), and South Korea (Kim et al., 2022). Beyond residential displacement, gentrification often reshapes commercial landscapes, introducing new shops, cafés, and restaurants that cater to wealthier populations, while eventually replacing traditional establishments (Kidokoro et al., 2023). This transformation is referred to as commercial gentrification (Cohen, 1983; Hubbard, 2017; Zukin et al., 2009). Numerous studies have demonstrated that commercial gentrification often serves as a precursor to the onset of broader gentrification processes (Beauregard, 2013; Bridge & Dowling, 2001; Smith, 1996). Therefore, it is now widely regarded as a critical component of urban change (Chen & Zhang, 2023; Gonzalez & Waley, 2013; Guimarães, 2018).

Commercial gentrification, defined as the replacement of local shops and small businesses with upscale boutiques and chain stores (Chen & Zhang, 2023; Lin & Yang, 2019; Shaw, 2008), has reshaped urban districts in cities such as Shanghai (Ryu et al., 2020), Taipei (Chen & Zhang, 2023), Seoul (Yoon & Park, 2018), Paris (Bantman-Masum, 2020), Istanbul (Özdemir & Selçuk, 2017), and London (Ferm, 2016). While commercial gentrification is frequently linked to high tourist activity (Bantman-Masum, 2020; Wen et al., 2023), current research predominantly centers on tourism-related dimensions, such as the renewal and organization of tourism spaces (Sun et al., 2024; Wang et al., 2015), tourist behavior and its potential to exacerbate social inequality (Díaz-Parra & Jover, 2021; Zhao & Agyeiwaah, 2023), the attractiveness of commercial facilities and consumption spaces (Wang & Sun, 2019; Zhang et al., 2021), assessments of commercialization suitability (Zhao & Photchanachan, 2021), and the mediating effects of attraction experiences (Xiong et al., 2020). These studies overlook the lived experiences of residents in tourist-heavy, commercially gentrified districts.

Commercial gentrification often brings profound and rapid changes to residents' daily rhythms, consumption patterns, and social networks (Morfopos et al., 2024). Its social impacts are particularly direct and significant. Such processes have been documented across a variety of global contexts, including riverside areas in Indonesia (Fachrudin & Lubis, 2016), historic districts (HDs) in China (Zhu et al., 2024), rural tourism regions in the United States (Woosnam et al., 2024), and Rhodes Island in Greece (Morfopos et

al., 2024). These cases encompass a wide range of spatial types, from urban waterfronts in developing countries to rural tourism destinations and historic cultural sites in developed nations. HDs represent one of the most prominent and concentrated manifestations, combining high heritage value (Naoi et al., 2007), mixed land-use patterns (Shin, 2010), and strong appeal to both domestic and international visitors (Jover & Barrero-Rescalvo, 2023).

These characteristics make them particularly susceptible to commercial transformation during tourism development. As commercial activities expand, the balance between heritage conservation, tourism demands, and residents' everyday needs becomes increasingly strained. Such transformations often exert profound effects on the daily lives of long-term residents (Lyu et al., 2023; Wen et al., 2023). Based on these considerations, this study focuses on HDs, not only to address the current lack of attention to residents' daily lives in existing research but also to provide an in-depth understanding of tourism-driven commercial gentrification in a highly relevant urban context.

1.1.2. Historic District

HDs, one of the most prominent forms of tourism-driven development, serve as prime examples of such transformation, as documented in countries such as China (Zhang et

al., 2021), Spain (Jover & Barrero-Rescalvo, 2023), Italy, and Greece (Skotis & Livas, 2022). Therefore, this study focuses on HDs as key sites for examining the dynamics of commercial gentrification and its implications for residents' daily lives. HDs refer to areas approved and announced by the people's governments of provinces, autonomous regions, and municipalities directly under the Central Government that are particularly rich in preserved cultural relics, have a concentration of historic buildings, and are able to reflect traditional patterns and historical features more completely and authentically, as well as having a certain scale (State Council of the People's Republic of China, 2008).

In addition to the official regulatory definition provided by the government, the academic community generally defines HDs as urban areas that possess significant historical, cultural, architectural, and social value, and where a relatively intact urban fabric or morphological continuity has been preserved (Lyu et al., 2023; Naoi et al., 2007; Shin, 2010). Although precise boundaries may vary by city or national context, HDs are commonly characterized by a cohesive historical streetscape, a concentration of heritage architecture, and an overlapping mix of residential, cultural, and commercial functions. An HD is not solely a tourist zone; it also serves as home to significant residential populations. Examples of such districts can be found in countries such as China (Zhu et al., 2024), South Korea (Kim, 2016), Mexico (Navarrete Escobedo, 2020), Portugal (Rêgo & Almeida, 2022), and Japan (Naoi et al., 2007). These areas play dual roles: preserving the historical and cultural memory of cities while serving as

popular tourist destinations. Notably, many HDs continue to house substantial numbers of residents (Guo et al., 2020; Lyu et al., 2023; Shin, 2010; Zhang & Han, 2022).

While existing research has primarily focused on the tensions between tourists and residents (Rêgo & Almeida, 2022) or residents' perceptions of tourism's impact (Novy & Colomb, 2019; Shen et al., 2015), the effects of commercial gentrification on the daily lives of HD residents remain largely unexplored, presenting a critical gap in the literature.

1.1.3. Effect of Various Factors on Residents' Daily Lives

Studies have shown that various factors, including age, income, education level, and street layout, can affect an individual's daily life (Liu & Wang, 2022; Salter et al., 2009; Tan et al., 2024; Zhu et al., 2024). Additionally, elements of the built environment, such as wall materials, housing unit density, and street lighting conditions (Ochodo et al., 2014), as well as indoor environmental factors, such as heat and humidity (Chen et al., 2023; Xiao et al., 2022), also play a role. Stress caused by an individual's social environment (McEwen, 2012) is another significant factor. Clearly, factors influencing daily life are multifaceted and multidimensional.

In existing behavioral and urban studies, factors influencing individual behavior are

commonly categorized into socioeconomic status (as “SES”) and residential environment. SES typically refer to individual-level characteristics such as income, age, and education, whereas residential environment denote broader environmental or contextual variables, including physical surroundings, neighborhood perceptions, and social relationships (Abolhasani, 2011; Raoof et al., 2024). This classification has also been applied in recent gentrification studies. For example, Chen and Zhang (2024) distinguished demographic indicators such as income and education from built environment variables when analyzing residential adaptation.

Previous studies on the factors affecting residents’ daily lives have focused on the role of SES. For example, Liu and Wang (2022) and Tan et al. (2024) analyzed the effects of SES variables, such as income and educational attainment, on older adults’ daily activities. Other studies have emphasized residential environment beyond the individual, such as environmental or contextual conditions. For instance, Chen et al. (2023) evaluated the effect of indoor residential conditions on residents’ quality of life, while Zhu et al. (2024) examined the effects of built environment features such as street layout. In most of these cases, the two categories of factors have been examined separately. Each was treated as an independent variable, which generally directed the research design toward assessing the effects of a single dimension.

An emerging body of literature has suggested potential mechanisms through which SES

and residential environment interact (Abolhasani, 2011). Studies have shown that residents from different socioeconomic backgrounds perceive and use the same environment differently (González Martínez, 2016; Wen et al., 2023). Research that empirically tests these interactions remains limited in sample size, thematic scope, and methodological integration. This limitation creates an opportunity for systematic investigations that examine the interplay between SES and residential environment, as undertaken in the present study.

Therefore, this study adopts an interactional perspective to systematically examine how SES and residential environment jointly affect residents' daily activities in commercially gentrified HDs. By revealing these underlying dynamics, this study aims to fill the theoretical and methodological gaps in the existing literature and provide an empirical foundation for more inclusive approaches to urban renewal and heritage-district management. A general conceptual framework is shown as Figure 1-1.

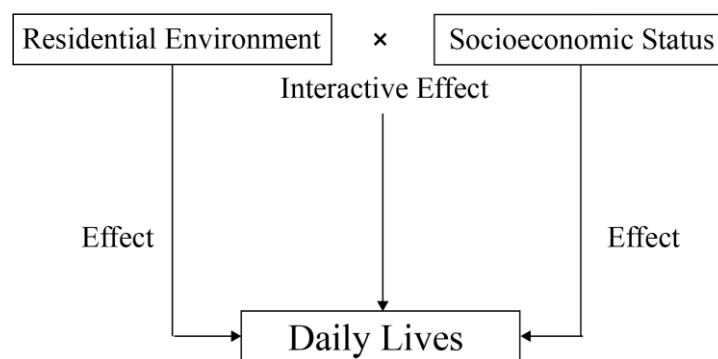


Fig 1-1. Conceptual Framework

1.2. Literature Review

1.2.1. Commercial Gentrification

Gentrification generally refers to the socioeconomic and physical transformation of urban neighborhoods; it is characterized by the displacement of low-income and working-class residents and the influx of higher-income, more affluent social groups. This process is typically accompanied by increasing housing and commercial rents, urban redevelopment, and changes in community structures (Kidokoro et al., 2023; Sho et al., 2024). Based on this concept, scholars have extended gentrification to the commercial realm, defining it as the replacement of local, community-serving businesses with upscale boutiques, chain stores, and establishments that cater to more affluent consumers or tourists (Shaw, 2008; Lin & Yang, 2019; Chen & Zhang, 2023). Commercial gentrification not only reshapes the physical landscape but also reflects a broader shift in consumption patterns, target clientele, and the symbolic meaning of urban spaces.

Empirical studies demonstrate that commercial gentrification occurs to varying degrees across countries and regions. For instance, several districts in Taipei, such as Daan, Zhongzheng, and Songshan, have undergone notable commercial gentrification (Chen & Zhang, 2023). In Shenzhen, China, the opening of Metro Line 7 significantly

accelerated commercial gentrification within a 15-min walking distance from newly established stations (Guo et al., 2025). In Seoul, South Korea, the burgeoning of Instagram-driven specialty cafés has contributed significantly to the reshaping of commercial landscapes along well-known shopping streets (Chang & Spierings, 2023). Similarly, in Tehran, Iran, new master planning and land-use policies have facilitated commercial gentrification by attracting non-local businesses to the main streets in the Nasr neighborhood (Forouhar et al., 2022). Collectively, these cases suggest that both developed and developing contexts experience commercial gentrification, albeit through various mechanisms and trajectories.

Commercial gentrification typically results from the interaction of multiple forces, including institutional directives, market logic, and sociocultural dynamics. Government-led urban redevelopment, cultural-heritage preservation policies, and tourism-development strategies provide policy support and spatial conditions for the entry of high-end commercial capital. For instance, in many HDs, local governments activate spatial value through land readjustment, façade renovation, and investment attraction, thereby indirectly reshaping the local commercial ecosystem (González Martínez, 2016; Wen et al., 2023). Meanwhile, increasing land prices and shifting consumption demands under market mechanisms are also key drivers. With improved living standards, the urban middle class has shown a growing preference for high-quality, differentiated consumption experiences, prompting capital to target promising

neighborhoods for commercial investment and gradually displace small-scale shops serving local residents (Chen & Zhang, 2023; Wexler & Fan, 2022).

Additionally, municipal governments assume a subtle yet significant role in promoting commercial gentrification through city branding and the construction of urban identity. To attract tourists, investors, and skilled talent, cities typically rebrand areas with labels such as “cultural fashion district” or “creative industry hub,” thereby enhancing their commercial appeal (Jeong et al., 2015; Özdemir & Selçuk, 2017). Simultaneously, the lifestyle and aesthetic preferences of the younger middle class have emerged as critical factors. New forms of commercial establishments—such as cafés, independent bookstores, and cultural-creative retail—cater to their desire for cultural sophistication, social interaction, and urban ambiance, further accelerating the transformation of classic commercial landscapes (Chang & Spierings, 2023).

In summary, commercial gentrification is not the outcome of a single economic activity but a spatial reproduction process shaped by institutional incentives, profit-driven capital, and cultural shifts.

1.2.2. SES and Residential Environment Affecting Daily Life

Previous studies have demonstrated that residents’ daily activities are shaped by a

combination of individual attributes and residential environmental conditions. In academic discourse, these factors are commonly categorized as SES and residential environment. SES typically include socioeconomic characteristics such as income, education level, and length of residence, whereas residential environment encompass the physical environment, public services, and social surroundings.

With respect to SES, numerous studies have emphasized the critical role of SES in shaping daily behaviors. For instance, income has been shown to correlate significantly with life satisfaction (Daraei & Mohajery, 2013), dietary habits (Schoufour et al., 2018), and overall quality of life (Drukker & van Os, 2003). In the context of gentrification, income and education levels influence how residents perceive and respond to neighborhood changes (Sho et al., 2024). Moreover, length of residence is typically used as an indicator of community attachment and adaptation, particularly in understanding residents' reactions to spatial transformations (Freeman et al., 2016; Sullivan, 2007).

Regarding residential environment, the literature widely recognizes that the residential environment significantly affects individual behaviors independent of personal attributes (Bauder, 2002; Pham, 2024; van Ham & Manley, 2012). These effects manifest not only through objective spatial conditions but also through residents' subjective perceptions of their surroundings (Troost et al., 2022). In recent years,

scholars have increasingly adopted approaches that integrate both objective and subjective measures to assess the impact of residential environment on residents' lives. Key environmental elements in urban settings—such as convenience of facilities, sense of safety, and residential comfort—are frequently identified as determinants of perceived quality of life (Guo et al., 2019; Nieuwenhuijsen, 2018; Thompson, 2011).

Although numerous studies have examined individual-level factors—such as income, age, education, and neighborhood conditions—and their effects on daily activities (Chen et al., 2023; Liu & Wang, 2022; Tan et al., 2024; Xiao et al., 2022; Zhu et al., 2024), these variables are typically analyzed separately. However, scholars have highlighted the potential for complex interactions between personal attributes and residential environment (Abolhasani, 2011; Jaccard & Turrisi, 2003). For instance, individuals with a higher SES may perceive and utilize the same urban setting in a manner that differs substantially from that demonstrated by lower-income groups. Similarly, long-term residents tend to respond differently to commercial redevelopment compared with new arrivals (González Martínez, 2016; Wen et al., 2023).

Nevertheless, most studies regard demographic traits and residential environments as independent explanatory factors, overlooking their possible synergies or reinforcing effects. This fragmented perspective may oversimplify how daily behaviors are shaped, leading to misidentification of the populations most affected under varying spatial

contexts and limiting the practical applicability of findings to urban governance.

Adopting an interactional perspective is essential for addressing this gap. Based on this approach, this study systematically examines how SES and residential environment jointly influence residents' daily practices in commercially gentrified HDs.

1.3. Research Purposes

The core objective of this study is to examine the interaction between SES and residential environment of residents in HDs under the context of commercial gentrification, and to further reveal how this interaction specifically affects their daily lives. To achieve this objective, the study needs to further clarify the following research purposes.

(1) Clarifying residents' daily lives

The daily lives of residents in different HDs often exhibit distinct characteristics and patterns due to variations in surrounding environmental conditions. For example, factors such as the density of commercial facilities, the accessibility of public spaces, and the convenience of transportation may all influence residents' daily lives. Therefore, before proceeding with further analysis, this study first seeks to systematically identify

and define the daily lives of residents in the selected HDs. This step is essential to ensure that the characteristics of the research purposes are fully captured and to lay a solid foundation for exploring the interaction between SES and residential environment.

(2) Establishing residential environment evaluation indicators in historic districts

Residential environment includes age, income, and educational attainment. These indicators not only reflect, to a certain extent, the social status of residents but also reveal differences in their access to social resources, lifestyle choices, and patterns of social interaction. Examining these SES provides a clearer understanding of how individual attributes influence residents' daily lives. In contrast, residential environment is primarily reflected in the associated conditions. Although this study has initially identified several representative indicators, such as the spatial characteristics of the built environment and physical elements like indoor temperature and humidity, these remain insufficient to comprehensively capture the complexity of external conditions in historic districts. As unique residential spaces, historic districts encompass a wide range of residential environment that go beyond the physical environment, extending to public services, infrastructure, neighborhood relations, and the degree of commercialization. Relying solely on a limited set of indicators would therefore make it difficult to accurately reveal the overall mechanisms through which residential environment affect residents' daily lives. Based on this consideration, the study

emphasizes the need to develop a residential environment evaluation index system specifically tailored to historic districts. Such an index will facilitate a more systematic and comprehensive assessment of residential environment, thereby providing a solid foundation for exploring how the interaction between SES and residential environment influences the daily lives of residents.

(3) Main objective

After identifying the core variables of residents' daily lives, SES, and residential environment, this study will conduct a systematic analysis of how SES and residential environment respectively influence residents' daily lives. At the same time, it will further explore the interaction between SES and residential environment in order to reveal how such mutual influences shape the characteristics and changes of residents' daily lives. To achieve this objective, Chapter 2 defines residents' daily lives, Chapter 3 defines residential environment, combined with the SES driven from previous studies, Chapter 4 finally conducts the effect analysis using all the variables above.

1.4. Research Areas

This study aims to examine the impact of commercial gentrification on residents' daily lives. To achieve this, two representative HDs are selected as case studies: one that has

undergone a significant process of commercial gentrification, and another that has either not experienced it or is at a relatively low level of commercial gentrification. By conducting a comparative analysis of these two districts, the study seeks to reveal the differential impacts of commercial gentrification on residents' daily lives within similar spatial contexts and to further clarify its underlying mechanisms.

Although China has over 1,000 officially designated HDs, only 30 were included in the first batch of nationally recognized HDs announced by the Chinese government. These 30 HDs not only embody the country's most representative cultural and historical legacies but also serve as pioneering sites of commercial transformation and urban redevelopment. Given their symbolic and practical significance, they were among the earliest to experience processes of commercial gentrification, driven by tourism development, heritage commodification, and capital investment.

Accordingly, this study selected one representative HD that has undergone commercial gentrification from this group of 30 national HDs. Table 1-1 summarizes the key characteristics of these HDs, including their geographical locations, provinces, founding periods, approximate residential populations, and predominant land-use patterns. These contextual attributes provide a comparative basis for understanding the developmental trajectory and representativeness of the selected case.

Table 1-1. Chinese National Historic Districts

Region	Province	Name	Year	Population	Main Land Use
North	Beijing	Dazhalan	1420	55000	Commercial
	Beijing	Dongsi	About 1300	15000	Residential
	Beijing	Imperial City	About 1271		Culture
	Tianjin	Five Ave.	About 1900	70000	Residential
Northeast	Jilin	1st Automotive Workshop	1956	20000	Industrial
	Heilongjiang	Russia St.	1907		Transportation
East	Shanghai	The Bund	About 1930	65000	Office
	Jiangsu	Meiyuan Xincun	About 1912	81900	Residential
	Jiangsu	Yihe Rd.	1930	1790	Residential
	Jiangsu	Pingjing	About 1750	20000	Commercial
	Jiangsu	Shantang St.	About 840		Commercial
	Jiangsu	Nanhexia	About 1300	10000	Residential
	Zhejiang	West St.	759	30000	Residential
	Zhejiang	Tianfu Mountain	About 1400	25000	Residential
	Zhejiang	Shusheng Guli	350	7780	Residential
	Zhejiang	Central Zhongshan Rd.	About 1100		Commercial
	Anhui	Tunxi Old St.	About 1488	18000	Commercial
	Fujian	Gulangyu	About 1368	30000	Commercial
	Fujian	Taiwan-Hongkong Rd.	About 1368	18000	Residential
	Fujian	Sanfangqixiang	About 310	15000	Residential
	Fujian	Zhongshan Rd.	1901		Commercial
Central	Hubei	Jiangnan Rd. & Zhongshan Ave.	1906		Commercial
	Hunan	Liuzi St.	About 618	4000	Commercial
South	Guangxi	Zhuhai Rd.-Shaji St.-Zhongshan Rd.	1821	15000	Residential
	Guangdong	Sunwen West	1925		Commercial
Southwest	Chongqing	Ciqikou	1918	21000	Residential
	Sichuan	Huaguang Tower	1867		Residential
	Yunnan	Old Town	About 742	7500	Residential
Northwest	Xinjiang	Gerstein	About 1616	20000	Commercial
	Xinjiang	Qianjin St.			Commercial

It is well recognized that HDs generally retain a considerable number of permanent

residents. In selecting an HD that has undergone commercial gentrification, this study sought to identify a case that is predominantly commercial in function—to capture the characteristics of commercial transformation—while still maintaining a substantial residential population, ensuring that residents’ daily lives can be meaningfully examined. Considering these two criteria and excluding HDs with missing population data, three potential candidates were identified: Dazhalan in Beijing, Gulangyu in Fujian, and the Gerstein in Xinjiang.

However, it should be noted that China is a multi-ethnic country with the Han ethnic group accounting for more than 90% of the total population. Xinjiang, by contrast, is predominantly inhabited by Uyghur residents, whose cultural background, religious beliefs, and daily living habits differ considerably from those of Han-majority regions in China. Consequently, the lifestyle patterns of residents in Gerstein may not adequately represent those of the majority of Chinese HD residents. Based on considerations of comparability and representativeness, this study ultimately excluded Gerstein and focused on Dazhalan and Gulangyu as the final candidate sites.

Since the founding of the People’s Republic of China, particularly after the onset of Reform and Opening-up, the spatial pattern of economic activity has gradually moved toward the southeastern coastal region. This shift is reflected in multiple empirical studies based on economic gravity models, which document a pronounced southward

and eastward migration of China's economic center of gravity over time (Liang et al., 2021; Guo & Minier, 2021).

Against this macro-spatial transformation, this study gives priority to selecting Gulangyu, Xiamen (Fujian Province) as a representative HD. First, it sits along the southeastern coastal corridor that has become a focal region for commercial development and external trade, thus making it more sensitive to processes of commercial gentrification. Second, Gulangyu exhibits a mixed residential–commercial land-use structure, enabling a meaningful investigation into how residents' daily lives are shaped by the evolving commercial environment.

Gulangyu, an island off the coast of Xiamen, has been designated entirely as an HD. Historically, Gulangyu was characterized by a lifestyle centered on residents, with commercial activities focused on small retail stores, daily convenience shops, and traditional craft stores serving the community.

However, with the development of tourism, Gulangyu has become one of China's most popular tourist destinations (Li et al., 2016). This shift has led to the transformation of the island's commercial landscape toward tourism-oriented businesses, including upscale guesthouses, boutique cafés, art galleries, high-priced souvenir shops, and chain stores. Some traditional long-standing shops have also adjusted their products to

cater to tourist demand, moving away from their focus on residents. Meanwhile, the tourism boom has driven a rapid increase in commercial rent on the island, making it difficult for many small traditional businesses to sustain their operations and forcing them to leave. External capital, including chain brands and investment institutions, has gradually become dominant, thereby accelerating commercial upgrades. Figure 1-2 presents photos of shops in Gulangyu, including the distribution of popular food chain stores officially promoted as trendy brands. These shops are elegantly decorated and distributed throughout every corner of the island.



Fig 1-2. Photos and Distribution of Shops in Gulangyu (Source from Google Images)

As a control group, this study selects Sanxue Street in Xi'an, China. Sanxue Street is a district renowned for its stone inscriptions and calligraphy (Figure 1-3).



Fig 1-3. Shops in Sanxue Street (photos taken by author)

Since it was designated as an HD by the government only in 2020, according to statistics from the Shaanxi Institute of Cultural Heritage (2021) in June 2021, commercial facilities in Sanxue Street accounted for only 8.69% of the total area of the district, with most shops specializing in traditional cultural items such as antiques, calligraphy, and paintings. In an interview conducted in April 2023 with the owner of one such shop, it was revealed that most stores in the district have a history exceeding 10 years. Furthermore, the Shaanxi Institute of Cultural Heritage has indicated that the future development of the district's commercial landscape will primarily focus on antiques, calligraphy and painting, intangible cultural heritage, cultural education, and cultural exhibitions. It can thus be concluded that both the current state and future plans for Sanxue Street indicate that it will not undergo commercial gentrification. The location and maps of Gulangyu and Sanxue Street are shown in Figure 1-4.



Fig 1-4. Maps of Gulangyu and Sanxue Street (made by author based on Baidu Map)

This study uses Gulangyu as an example of an HD that has undergone commercial gentrification and Sanxue Street as an example of an HD that has not experienced commercial gentrification. Through comparative analysis, this study explores the effects of commercial gentrification.

The selection of Gulangyu and Sanxue Street was carefully designed for research, aiming to capture the contrasting characteristics of HD in different commercial environments. Gulangyu, an island-type HD, has distinctive spatial boundaries that create a relatively enclosed environment, allowing the concentrated effects of commercial gentrification to be observed with minimal external interference. Its geographical isolation facilitates a clearer analysis of how commercial changes independently affect residents' daily lives without the effect of surrounding urban areas. Thus, Gulangyu is an ideal case for studying the concentrated features and effects of commercial gentrification.

By contrast, Sanxue Street is a traditional HD closely integrated with its surrounding areas. It provides an important context for examining how the commercial environment and adjacent regions interact in shaping residents' daily lives. This characteristic highlights the dynamics of a traditional commercial environment, particularly how it sustains the community's socioeconomic diversity in the absence of commercial gentrification. Selecting Sanxue Street as a contrasting case allows the study to explore how traditional commercial districts without physical isolation maintain inclusivity and diversity within their interconnected urban environment.

Although Gulangyu and Sanxue Street differ in geographical location, administrative status, tourism stage, and heritage designation, the central logic of this study's site

selection is to create a contrast between an HD that has undergone commercial gentrification and one that has not. This approach is consistent with prior comparative research that selected cases based on the presence or absence of gentrification, even when other contextual differences existed (Liu & Bardaka, 2023; Mendoza-Graf et al., 2023).

Mendoza-Graf et al. (2023) compared two African American communities in Pittsburgh, one of which experienced significant gentrification through public housing redevelopment, the creation of community green spaces, and commercial investment, while the other did not undergo such changes. Liu and Bardaka (2023) compared two urban rail transit lines in North Carolina: the LYNX Blue Line corridor, which underwent typical commercial gentrification, and a short streetcar line that did not experience similar transformations. Although these study sites differ greatly in geographical location, functional attributes, and developmental context, the gentrification process in essence involved substantial investment, improvements to public space and housing, and upgrades to commercial functions—features consistent with those observed in HDs. These precedents demonstrate that as long as the core variable is “whether gentrification has occurred,” a control group with other notable differences can still serve as a valid basis for analyzing the impacts of gentrification.

At the same time, this study recognizes that Gulangyu’s designation as a UNESCO

World Cultural Heritage Site introduces additional influences—such as increased tourist flows, priority policy support, and concentrated capital investment—that may interact with and potentially amplify commercial gentrification processes. These heritage-related factors create a unique context in which cultural preservation and commercial transformation progress simultaneously, potentially producing social impacts on residents that differ from those in non-heritage settings.

To address this, the study treats heritage status as both a contextual background and a potential source of confounding influence. We explicitly acknowledge this in the limitations section and supplement the analysis with a comparative table outlining differences in tourism intensity, commercial forms, shop rents, and heritage designation (Table 1-2). This ensures that the discussion of results considers how both commercial gentrification and heritage-related dynamics may shape residents' daily lives, thereby providing a more balanced interpretation of the findings.

Table 1-2. Comparison between Gulangyu and Sanxue Street

Background factor	Gulangyu	Sanxue Street
Tourism intensity	High	Low
Economic conditions	Old district; per capita GDP same; same admin. level	
Population structure	Lower resident density	Higher resident density
Heritage designation	UNESCO World Cultural Heritage	Municipal-level historic district
Commercial types	High-end dining, boutique hotels, art shops	Traditional dining, small goods, local services
Transport accessibility	walking	walking, bicycles
Shop rents	High rents	Stable rents

As shown in the table, under comparable city tier and regional economic conditions, the most notable differences between the two sites lie in tourism intensity, heritage designation, commercial function types, and shop rental levels. These differences precisely reflect the most prominent characteristics of commercial gentrification and strongly support the study’s research design logic of using “whether commercial gentrification has occurred” as the core comparative variable.

1.5. Research Framework

Chapter 1 provides an overview of the study by introducing the research background, reviewing relevant literature, outlining the research objectives, and presenting the study

area. This chapter establishes the overall context of the research and highlights the necessity of examining residents' daily lives in HDs under the background of commercial gentrification. To achieve the purpose of this study, several variables should be clarified, daily lives, SES and residential environment. Chapter 2 will introduce the method to define the daily lives, Chapter 3 will establish a system to quantify the residential environment, and SES are from literature review.

Chapter 2 turns to the core issue of residents' daily lives, focusing on the cases of Gulangyu and Sanxue Street. It clarifies the distinct characteristics of daily activities in the two HDs and further introduces a methodological approach that identifies residents' daily lives through the lens of street layout, offering an innovative perspective for analyzing everyday practices in historic urban settings.

Chapter 3 builds upon Maslow's hierarchy of needs theory to construct a residential environment evaluation indicators specifically designed for HDs, named HD-REAL. This indicator provides a systematic framework for assessing residential environment in a way that reflects the unique spatial and social contexts of HDs.

Chapter 4 then integrates the preceding analyses by examining how SES, residential environment, and their interactions influence residents' daily lives. Furthermore, this chapter conducts a comparative analysis between districts with different levels of

commercial gentrification, thereby revealing the varying impacts of gentrification processes on residents’ daily activities and clarifying the mechanisms through which commercialization reshapes everyday life in HDs. **Chapter 5** is the conclusion of this dissertation. The research framework is shown as figure 1-5.

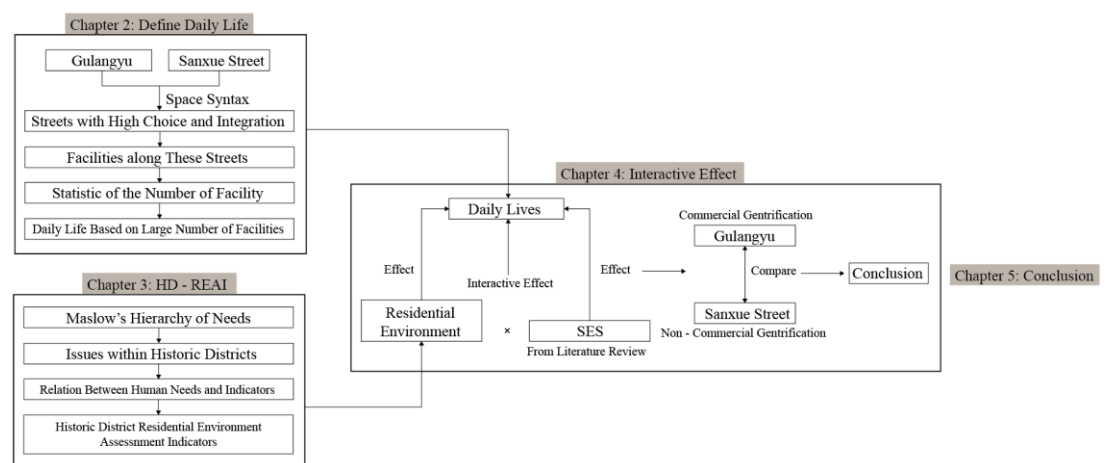


Fig 1-5. Research Framework

This framework illustrates the overall structure and logical flow of the study. The purpose of this research is to examine how SES and residential environment jointly influence residents’ daily lives in HDs with different levels of commercial gentrification. Chapter 2 identifies residents’ daily life patterns through space syntax; Chapter 3 constructs the HD-REAI system to quantify residential environment; Chapter 4 integrates both to analyze the interactional effects and compare gentrified (Gulangyu) and non-gentrified (Sanxue Street) cases; and Chapter 5 summarizes key findings and implications for inclusive heritage-district management.

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Chapter 2

Residents' Daily Lives based on Space Syntax

Chapter 2. Residents' Daily Lives based on Space Syntax

2.1. Introduction

With the rapid development of cities and tourism, many former residential areas have gradually transformed into zones of intensive commercial activity. This process has been observed in riverside areas in Indonesia (Fachrudin & Lubis, 2016), HDs in China (Zhu et al., 2024), rural communities in the United States (Woosnam et al., 2024), and Rhodes Island in Greece (Morfopos et al., 2024). Such transformations are considered manifestations of commercial gentrification (Ojeda et al., 2020; Freytag & Bauder, 2018; Estevens et al., 2023). HDs represent typical examples of commercial gentrification, as demonstrated in cases from China (Zhang et al., 2021), Spain (Jover & Barrero-Rescalvo, 2023; de la Calle-Vaquero & García-Hernández, 2023), Italy, and Greece (Skotis & Livas, 2022).

Current academic research on commercial gentrification in HDs has primarily concentrated on topics such as the reconstruction of consumer spaces (Zhang et al., 2021), evaluations of consumer experiences (Skotis & Livas, 2022), the evolution of commercial transformations in Spain (de la Calle-Vaquero & García-Hernández, 2023), and the relationship between commerce and landscape (Jover & Barrero-Rescalvo, 2023). As a relatively new concept, most studies have focused on understanding the

development and theoretical underpinnings of commercial gentrification, while relatively little attention has been paid to its impact on the daily lives of residents living in HDs.

Although some studies have investigated the relationships between residents, commerce, and external consumers, they do not directly address the concept of commercial gentrification. For example, research has examined residents' perceptions and attitudes toward commercial development and conflicts between residents and non-local users (Carmo Sousa Rêgo & Almeida, 2022). However, as noted above, studies explicitly focusing on residents' daily life in the context of commercial gentrification remain scarce.

With the intensification of commercial gentrification, facilities such as restaurants, retail shops, and cultural venues in HDs inevitably shift toward serving tourists and high-income groups (Zhang et al., 2021). Similarly, cultural heritage elements—such as historic buildings, traditional festivals, and local craftsmanship—are frequently repackaged as “consumption landscapes.” Visitors, in turn, experience these facilities as cultural attractions. This phenomenon has been widely observed in China (Lu et al., 2015), Japan (Naoi et al., 2007), Spain, Italy, Greece (Skotis & Livas, 2022), and the Netherlands (Kemperman et al., 2009). Consequently, most facilities and cultural heritage resources in HDs have gradually transformed into consumption destinations.

However, because HDs are simultaneously tourist-commercial areas and residential spaces, these facilities inevitably become part of residents' daily lives. After undergoing transformations driven by commercial gentrification, a critical question arises: can these facilities still adequately meet residents' daily needs?

Residents' daily lives typically consist of fundamental activities such as eating, shopping, commuting, social interaction, and recreation (Mlinac et al., 2016). These activities are often tied to specific facilities such as restaurants, markets, and public spaces (Zhu et al., 2024), and the clustering of such facilities generally encourages greater frequency of daily practices.

Residents' daily lives are closely tied to the functionality and accessibility of local facilities. Yet, as these facilities are increasingly reoriented toward serving tourists and affluent consumers, their availability and usefulness for local residents may be compromised. For example, restaurants and convenience stores that once catered to community needs may prioritize tourist demands, thereby reducing their relevance for everyday residential use. While some studies have addressed the broader economic and cultural implications of such changes (Díaz-Parra & Jover, 2021; Svensson, 2020), few have examined their concrete effects on residents' daily lives.

It should be noted that not all facilities distributed within HDs necessarily exert an

influence on residents' daily lives. For example, facilities located on streets with low accessibility, or on streets seldom frequented by residents in their daily routines, may have only a limited impact. Based on this understanding, this chapter proposes a "layout–daily life model" to identify the streets that are truly relevant to residents' daily activities. Specifically, the model first delineates the primary spatial units where daily practices are likely to occur by selecting the streets most associated with residents' routines. Subsequently, the concentration of facilities along these streets is used to define and characterize daily life, followed by a verification of its validity.

2.2. Research Method: Layout – Daily Life Model

Models explaining the living environment–resident relationship follow one of three main approaches: 1) a qualitative analysis based on questionnaire surveys (e.g., Mišič & Podnar, 2019; Tan et al., 2019); 2) a quantitative analysis followed by modelling, as demonstrated by Szczuraszek & Chmielewski (2020) and Liu et al., (2020); and a combination of quantitative and qualitative methods. Following the third approach, this chapter first constructs a layout–daily life model involving a quantitative analysis of layouts to identify residents' daily activities. The model's feasibility is then validated using the following three steps (Figure 2-1).

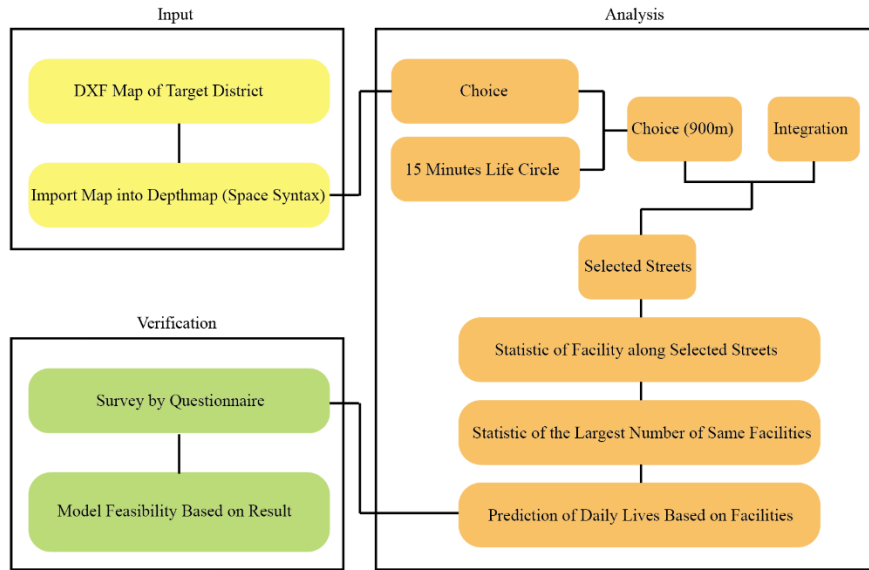


Fig 2-1. Model Flow

2.1.1. Step 1: Quantitative Analysis of Layout and Residents' Daily Life Activities

This chapter adopted space syntax (SS) to quantitatively analyse the historic layout and identify residents' daily activities. SS encompasses a set of theories and techniques for analysing spatial configurations, spatial layouts, and human social activities (Hillier & Hanson, 1984; Hillier et al., 1976). It has been widely applied in urban and architectural planning (Hillier et al., 2009), archaeology (Battistin, 2021), transportation route planning, and pollution control (Hillier, 1997). Apart from analysing buildings' internal spatial structures, today, SS is also used to analyse the spatial structure of entire metropolises (Jguirim et al., 2014; Li et al., 2020; Li et al., 2023; Mustafa et al., 2010) and the interaction between space and people; for instance, the impact of streets on sexual harassment patterns (Mohamed & Stanek, 2020), an urban space's impact on

human spatial behaviours (Askarizad & Safari, 2020), and the relationship between urban spaces and social needs (Guo et al., 2022).

This chapter employed SS to measure the spatial layout of the case-study context by abstracting the locale into axes within the Depthmap software, within the Autodesk environment. SS was also used to quantify the distribution patterns of residents' daily activities in the historic layout (Asif et al., 2018). Thereafter, DepthmapX (developed by University College, London) was used to quantify the street layout.

Space Syntax (SS) encompasses a variety of parameters for quantifying the analysis of street layouts. However, not all parameters are relevant to this study, and it is unlikely that every street impacts the daily lives of residents. Therefore, we initially selected specific parameters to identify the streets that most significantly affect residents, particularly the choice and integration parameters.

Choice represents the potential for a space to be traversed, meaning the higher the choice value, the more likely it is to be selected by pedestrians (Hillier et al., 1987). This parameter directly reflects the extent of residents' preference for certain streets. Since choice requires a defined range of selection, this chapter incorporated the concept of the 15-minute life circle (Moreno et al., 2021), where urban community residents can access most services needed for daily life—such as food, clothing, housing,

transportation, education, and leisure—within a 15-minute walking distance. Based on walking speeds of 0.8 m/s to 1.5 m/s, this study selected a walking speed of 1 m/s as a standard, setting the choice selection range at 900 m. The combination of choice and a 900 m range also represents the streets that residents are inclined to choose within their daily living walking range.

In addition to choice, the second parameter selected for this chapter was integration, which represents accessibility (Hillier & Hanson, 1984). We cannot ascertain if the choice at 900 m can accurately predict the residents' daily life, thus integration was incorporated as a parameter. Integration is a commonly used parameter in most studies analysing urban street layouts using SS (Iranmanesh & Alpar Atun, 2020; McCormack et al., 2021; Othman et al., 2020). It is divided into global integration and local integration, where the former represents the accessibility of the entire area and the central region, and local integration identifies the sub-centres of an area. Given the small scope of the target area in this study, the difference between global and local integration is minimal, hence global integration was selected as the second parameter. This study posits that combining the choice parameter at 900 m with the global integration of streets can shape the daily lives of residents.

After selecting streets through choice and integration parameters, this chapter combined these streets with land use. This involved tallying facilities located on the selected

streets, such as restaurants, shops, schools, and so on. By counting these facilities, the most numerous types were identified, and through the functions of these facilities, residents' daily lives were predicted. For instance, if restaurants were prevalent, residents' daily lives included dining out; if parks were abundant, residents' daily lives included visiting parks for leisure and exercise. This approach was used to define the daily lives of residents.

2.1.2. Step 2: Qualitative Analysis Using a Questionnaire Survey

In the second step, the accuracy of identified activities and the model's reliability were assessed by collecting questionnaire responses from residents living in the case-study context. The survey questions asked whether the residents acknowledged the elements identified in the quantitative analysis as parts of their daily lives, and about the frequency of engagement with these features. The one-month survey was conducted from April 3 to May 29, 2024, from residents living in Gulangyu and Sanxue Street. The questionnaires were created and distributed via the Questionnaire Star platform and no compensation was provided to the participants. As the questionnaire included questions about age, minors under the age of 18 years, who might not have been able to fully comprehend the questions, were excluded from the final dataset. Consequently, 418 valid questionnaires were collected from Gulangyu and 380 from Sanxue Street.

2.1.3. Step 3: Verifying the Feasibility of the Model

Finally, the survey results were compared with the results of the activities identified in Step 1 to verify the feasibility of the model. This process helped assess the effectiveness of the proposed approach in understanding and identifying elements of residents' daily lives based on an analysis of the layout.

2.3. Results

2.3.1. Quantitative Analysis of the Historic Layout

This chapter initially conducted a quantitative analysis of SS using Depthmap software, the color distribution from blue to red represents the range from low to high for both choice and integration. The selected streets are shown as Table 2-1.

Table 2-1. Results of Selected Streets from Space Syntax

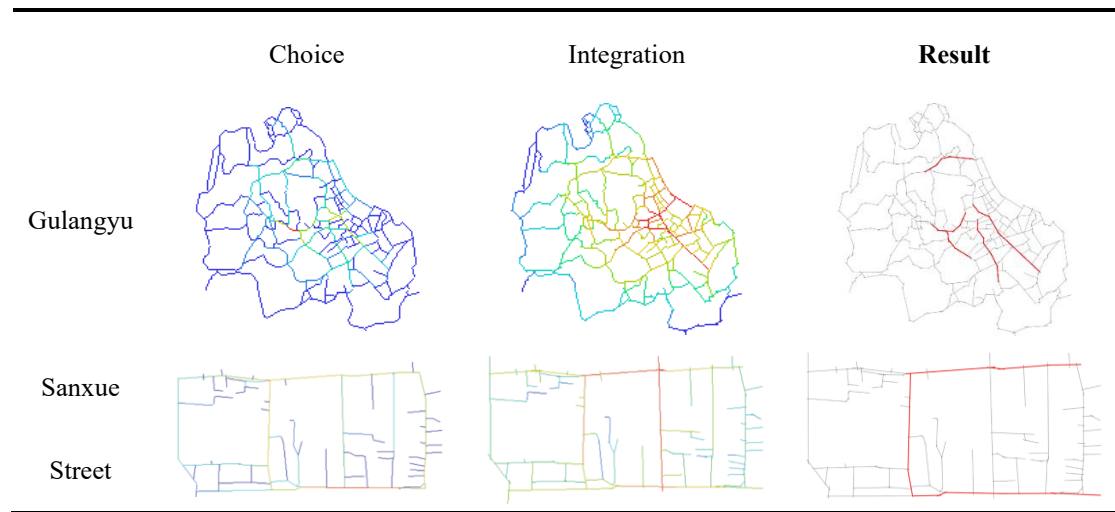
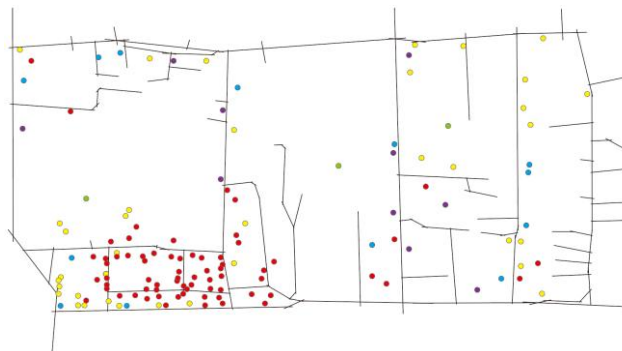


Figure 2-2 shows the facilities within the HDs, and the number of facilities along the selected streets.



Gulangyu



Sanxue Street

Legend					
	Restaurant	Shop	Convenience Store	Attraction	Calligraphy
Gulangyu	72	34	8	59	0

Sanxue Street	37	9	13	3	69
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Fig 2-2. Facilities Distribution (made by author)

According to the map, in Gulangyu, there are 72 restaurants, 34 shops, 8 convenience stores, 59 attractions. And in Sanxue Street, there are 37 restaurants, 9 shops, 13 convenience stores, 3 attractions and 69 calligraphy stores. The premise of this study was that only a significant presence of a particular type of facility can impact the daily lives of residents. Therefore, in Gulangyu, restaurants, shops and attractions; in Sanxue Street, calligraphy stores, restaurants, and convenience stores were identified as the targets and considered the three main types of facilities that affect residents' daily lives.

Based on the facilities identified in the previous section as potentially influencing residents' daily lives, this chapter further associates them with specific daily life activities, thereby establishing a "facility–activity" linkage. Restaurants are the most straightforward example, as they accommodate residents' dining-out needs, not only fulfilling basic dietary requirements but also serving as venues for social interaction and leisure. Shops and convenience stores are more closely related to residents' daily consumption and acquisition of goods, reflecting patterns of travel and activity when purchasing necessities. Calligraphy shops, as facilities with stronger cultural attributes, represent more than mere consumption; they embody residents' engagement with artistic appreciation, interest cultivation, and the pursuit of spiritual enrichment, and are

therefore categorized as “calligraphy activities.” Finally, attractions have a relatively complex and multifaceted role: they serve as carriers of urban history and culture while also providing spaces for leisure, entertainment, and cultural experiences. By visiting attractions, residents can not only gain cultural enrichment and knowledge but also achieve relaxation and social interaction. Therefore, in this chapter, attractions are defined as representatives of “cultural activities.”

Therefore, daily lives in Gulangyu are eating outside, shopping outside and cultural activities; daily lives in Sanxue Street are eating outside, shopping outside and calligraphy activities. The questionnaire survey will be conducted based on these daily lives.

2.3.2. Feasibility Verification via Questionnaire Survey

Table 2-2 presents the statistical results of the questionnaire survey, which was designed to validate the daily life activities previously identified through analysis. For instance, in Sanxue Street, the earlier analysis suggested that residents’ daily life mainly consisted of eating out, shopping, and calligraphy activities. Based on this, the questionnaire included corresponding questions such as: “Do you consider eating out/shopping/calligraphy activities to be part of your daily life?” Respondents answered using a five-point Likert scale, with “strongly agree” scored as 5 to “strongly disagree”

scored as 1. The collected responses were then aggregated to calculate the mean score for each activity. If the average score of a given activity exceeded 3.0, this study regarded the predicted activity as consistent with residents' actual daily life, thereby validating the effectiveness of the earlier analysis.

Table 2-2. Results of Questionnaire Survey

ADL	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Ave. Score
<i>Gulangyu (N=418)</i>						
Eating	125 (29.90%)	105 (25.12%)	78 (18.66%)	66 (15.79%)	44 (10.53%)	3.48
Shopping	148 (35.41%)	113 (27.03%)	89 (21.29%)	46 (11.00%)	22 (5.26%)	3.76
Cultural	130 (31.10%)	115 (27.51%)	103 (24.64%)	43 (10.29%)	27 (6.46%)	3.05
<i>Sanxue Street (N=380)</i>						
Eating	136 (35.79%)	187 (49.21%)	29 (7.63%)	19 (5.00%)	9 (2.37%)	4.11
Shopping	148 (38.95%)	115 (30.26%)	75 (19.74%)	30 (7.89%)	12 (3.16%)	3.94
Calligraphy	142 (37.37%)	116 (30.53%)	74 (19.34%)	30 (7.89%)	18 (4.74%)	3.88

As shown in Table 2-2, the average scores of all identified daily life activities exceed 3.0, indicating that most respondents recognize these activities as part of their actual daily lives. This not only verifies the validity of the model in predicting residents' daily activities but also demonstrates that inferring daily life patterns through street layout and facility distribution is a reasonable approach. In other words, residents' actual daily lives are largely consistent with the model's predictions, providing empirical support for the model.

A further comparison reveals that the overall average score in Sanxue Street is significantly higher than that in Gulangyu. This difference highlights the distinct

mechanisms shaping daily life in different HDs. Specifically, in Sanxue Street, which has not yet undergone—or is only in the early stages of—commercial gentrification, residents’ daily activities are more directly influenced by street layout and facility accessibility, reflecting a strong “life–space” linkage. In contrast, in Gulangyu, where commercial gentrification has already taken place to a greater extent, residents’ daily life is more affected by tourism development and spatial restructuring, which weakens the direct role of street layout and facilities in shaping everyday practices. This finding further underscores how the process of commercial gentrification alters and disrupts the daily life patterns of residents in HDs.

2.4. Discussion

Previous studies on historic street layouts have primarily focused on layout types (Kuśnierz-Krupa et al., 2021), spatial analysis (Chen et al., 2022), and renewal and preservation (Huo et al., 2018) efforts. This study examined the relationship between layouts and residents’ daily lives, thereby extending the scope of existing research. Furthermore, residents’ daily lives have been primarily examined through quantitative methods, given the challenges of applying quantitative methods, whereas layouts have been solely studied using quantitative methods (Davoodi & Dağlı, 2019). This study addressed this discrepancy by establishing a model that links layouts with residents’ daily lives, verifying the model using residents’ questionnaire responses.

Concerning methodology, this study primarily relies on the SS to analyse the spatial characteristics of street layouts. SS has been demonstrated as an effective method for predicting urban traffic flow and population movement (Kang, 2017). This study is based on the prediction of the residents' movement, combined with the distribution of facilities within the district, to identify the elements of residents' daily lives. While SS typically analyses urban structures, this study integrates SS with humans' daily activities, thereby expanding the scope of its application.

The model proposed in this study, having been verified as feasible during the questionnaire survey phase, can ultimately be simplified to the model depicted in Figure 2-3. This entails first importing the Street Layout into SS analysis, followed by exporting the choice values for 900 m distances and global integration. Streets that score high in both choice and integration are selected. If a significant number of facilities with the same function are distributed on these selected streets, the functions these facilities serve will impact the daily lives of residents.

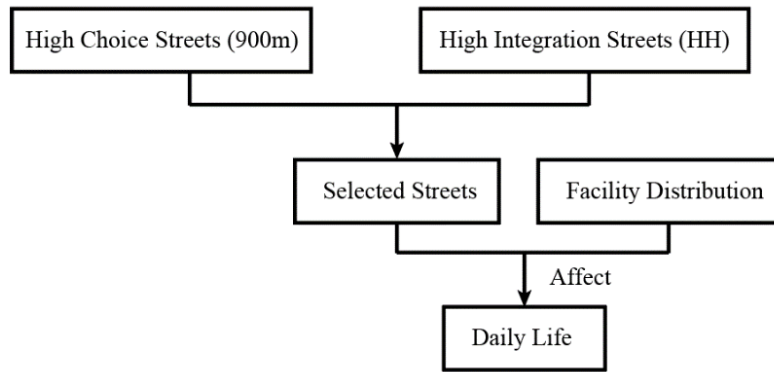


Fig 2-3. Simplified Model

This study posits that this selection method can be applied to urban areas beyond HDs. This is because, in SS analysis, choice represents the potential for a space to be traversed, meaning the higher the choice value, the more likely it is to be chosen by pedestrians (Hillier et al., 1987). Setting the choice value based on the 15-minute life circle to 900 m (Moreno et al., 2021) signifies the streets most likely to be chosen within a daily living walking distance. Integration represents accessibility (Hillier & Hanson, 1984), so combining these two metrics selects the streets within an area most likely to be chosen for walking. If many facilities with the same function are located on these streets, they will probably affect the residents' daily lives. Under this logic, as long as an area contains residential zones, this model can be applied to any urban region, and thus, it is not limited to China. Due to the universality of the 15-minute life circle concept and space syntax theory, this study's model can be used in most countries worldwide.

This study posits that residents' daily lives occur in places corresponding to the residential areas and may vary based on the presence of different facilities in the vicinity. Not only Gulangyu and Sanxue Street but also other distinctive HDs in China have demonstrated a correlation between residents' daily lives and the types of facilities within the districts. For example, in Suzhou's Pingjiang Road, numerous silk shops are distributed, and residents' daily lives are closely related to the production and sale of silk products (Dai, 2018). In Xi'an's Muslim Quarter, centred around cuisine, most residents in the district are either restaurant owners or food-ingredient suppliers (Hu et al., 2019). Lijiang's Shuhe Ancient Town preserves the rich Naxi culture, and its residents participate in traditional music and dance performances to promote this culture (Ren et al., 2017). Similarly, Montmartre in Paris is a HD known for Montmartre Hill and the Sacré-Coeur Basilica, which boasts numerous art galleries, eateries, and music venues. Thus, residents' daily lives are closely intertwined with art, gastronomy, and music, and many residents may be artists or involved in the cultural and creative industries (Hewitt, 2017).

Similar to Gulangyu and Sanxue Street, these cases underscore the close connection between the facilities within HDs and residents' daily lives. These examples further confirm that the unique culture and amenities of HDs not only provide convenience to residents but also enrich their daily lives by enabling them to engage closely with history, art, and traditional culture. Thus, given the historical and cultural significance

of HDs, urban planning, design, and preservation efforts in these districts should integrate residents' needs and cultural backgrounds.

This study employs a quantitative analysis of street layouts, followed by the identification of residents' daily lives within these districts. As districts comprise street layouts and facilities, quantitatively analysing these two elements can help identify residents' daily lives within the districts. Therefore, we believe that this method applies to most districts, not just HDs, and can enable urban planners to make more informed decisions regarding the transformation and renewal of the districts.

2.5. Summary

This chapter focused on the impact of historic layout on residents' daily lives. Given the challenge of directly connecting layouts to residents' daily lives, this study proposed a model to establish a link between the layout and residents' daily lives.

To validate the proposed model, a three-step approach was adopted. A SS analysis in the first step, helped identify four major activities that the residents performed in their daily lives. Next, the identification results were verified through a questionnaire-based analysis, confirming that residents' daily lives indeed encompassed the aforementioned activities. Finally, through a comparison of the quantitative and qualitative data, we concluded that these daily life activities were influenced by the distribution of facilities

on streets with high choice and integration. When certain types of facilities are widely distributed in streets with high choice and integration, residents' daily lives are intertwined with the functions represented by these facilities.

In this study, the indicator for accessibility is integration. Besides integration, this study also introduces the concept of choice, providing suggestions for urban planners in designing cities. Urban planners should prioritise distributing daily facilities on streets with high levels of choice and integration, offering more convenient services for residents. This approach also considers the accessibility of facilities and the potential for pedestrian use. This method aligns with the findings of Hillier & Hanson (1984) who emphasised the importance of integrating social activities into spatial configurations to enhance urban liveability.

Furthermore, we found that in HD that have not undergone commercial gentrification, residents' daily lives are more directly shaped by street layouts and facility accessibility, exhibiting a stronger "life-space" linkage. In contrast, in HD that have experienced deep commercial gentrification, residents' daily lives are more heavily influenced by residential environment such as tourism development and spatial reallocation, thereby weakening the role of streets and facilities in shaping everyday practices. This further indicates that commercial gentrification not only alters the spatial form of HDs but also profoundly reshapes the daily life patterns of their residents.

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Chapter 3

Historic District

Residential Environment Assessment Indicators

Chapter 3. Historic District Residential Environment Assessment Indicators

3.1. Introduction

Residential environment is a collective term for the residents' physical, cultural, and social environments. A residential environment consists mostly of dwellings, residential buildings, public services, and outdoor spaces where people meet their needs, participate in various activities, and build social, economic, and neighborhood relationships. Research on residential environments has become increasingly important, given the rapid population growth and urbanization globally over the past three decades (Ng et al., 2017).

Numerous indicators are used to evaluate residential environments to improve residents' lives or urban development. For example, the residential environment assessment indicators (REAI) were proposed to gauge the fulfillment of basic human needs, including safety, health, efficiency, and comfort (World Health Organization [WHO], 1961). Subsequently, Asami (2001) expanded these indicators by incorporating sustainability and creating a novel assessment approach. Recently, Xiao (2019) added two indicators – district environment and economy – and London incorporated heritage and cultural indicators (Greater London Authority, 2021). Regardless of the assessment method, the primary objective is to identify issues and improve residential environments through assessments (Marques & Pitarma, 2018).

Despite numerous distinct methods for evaluating residential environments, the evaluation of HDs has been overlooked. Hence, studies have failed to uncover the underlying factors, such as the potential cultural and historical aspects that affect residents' residential environments or issues linked to relationships with tourists or neighbors. Given the current absence of tailored assessment frameworks for residential environments in HDs, this study aimed to establish an assessment system for this purpose that can provide a deep and nuanced understanding.

An HD is a section of a city containing historically or architecturally valuable buildings (Historic Districts Council, 2019). The criteria for HDs vary from one place to another. In the United States, Charleston's HD showcases a blend of 18th-century residences and cobblestone streets (Harrill & Potts, 2003). In Europe, the Jewish Quarter in Prague is a notable HD, preserving medieval synagogues and a rich history (Gaižutytė-Filipavičienė, 2020). Globally, HDs have evolved from having singular functions, such as religious (e.g., the Temple Bar in Dublin), commercial (e.g., Le Marais in Paris), and ceremonial (e.g., The Royal Mile in Edinburgh), to contemporary mixed-use, blending commercial, residential, and touristic elements (Shin, 2010). This global perspective highlights the challenges in assessing HDs using traditional residential environmental assessment methods, necessitating nuanced approaches.

In Chinese cities, HDs are predominantly commercial and residential mixed-use tourist areas, such as the Wenshu Monastery, the Kuanzhai Alley in Chengdu City, and the Sanxue Street in Xi'an City. Issues have arisen concerning the coexistence of residents and tourists (Dai et al., 2017; Rêgo & Almeida, 2022; Romão et al., 2018). Inadequate management has led to problems related to unclear residential property ownership (Qian & Li, 2017). Alternatively, owing to prolonged development and a lack of organized and disciplined maintenance, spontaneous and unregulated renovations have led to extensive shanty-town-like areas within HDs. If the existing methods for evaluating residential environments were applied to HDs, the conclusions would likely be incomprehensive, highlighting issues, such as history, culture, and tourism.

In theory, the earliest REAI can be traced back to the four fundamental human needs proposed by WHO in 1961, namely safety, health, efficiency, and comfort (WHO, 1961). Therefore, when discussing REAIs, it is imperative to consider the basic human needs. In this regard, Maslow's hierarchy of human needs theory (Maslow, 1943) provides a compelling explanation of the aforementioned issue. Maslow proposed that basic human needs comprise five levels – physiological, safety, love and belonging, esteem, and self-actualization. Subsequent research concerning human needs has predominantly built on Maslow's theory (Allen et al., 2019; De Haan et al., 2014; Doost Mohammadian & Rezaie, 2019; Han et al., 2021; Sheikh & van Ameijde, 2022; Zavei & Mohd Jusan, 2012). The subject of this paper, namely REAIs, is fundamentally

concerned with basic human needs. Therefore, this work establishes an HD-REAI based on Maslow's theory.

Choosing Maslow's theory to evaluate the residential environment in HDs has several key reasons. Maslow's hierarchy of human needs provides a comprehensive framework, from physiological to self-actualization needs, helping understand and prioritize improvements in residents' satisfaction and requirements. This framework is particularly adaptable to the unique cultural, historical, and social structures of HDs where traditional residential assessment indicators often fall short. By incorporating basic human needs into the evaluation, it identifies and implements measures to enhance the quality of life, addressing physical, functional, social, and emotional dimensions. This bridges research and practice, guiding policymakers and urban planners to focus on residents' needs and well-being while considering the conservation and development of historic districts. This method effectively analyzes and addresses the complexities and diversities of the living environments in HDs, creating suitable living conditions for the residents.

3.2. Literature Review

3.2.1. Residential Environment Assessment Indicators

The residential environment is a vital component of urban areas and occupies the largest portion of the urban space (Zapušek & Kučan, 2009). It primarily consists of housing, residential buildings, public service facilities, and outdoor spaces where people spend time to meet their needs and engage in various activities. Furthermore, the residential environment is defined by spatial and social indicators (Skalicky & Čerpes, 2019).

As a part of this study, we conducted an extensive literature review to elucidate the current research gaps pertaining to REAIs. The earliest evaluation indices originated from the fundamental human needs proposed by WHO, which included safety, health, efficiency, and comfort (WHO, 1961). Various REAIs have been proposed for numerous domains. Koizumi (1985) expanded these criteria to include urban infrastructure, district environments, durability, economy, and social aspects. Asami (2001) added sustainability to provide a detailed explanation of each subdomain, while Skalicky and Čerpes (2019) proposed four indicators – environmental, social, functional, and cultural. Furthermore, Harrison et al. (2023) developed the Residential Environment Impact Scale for Clinical Medicine. In China, the Ministry of Housing and Urban-Rural Development (2010) put forth specific requirements for urban infrastructure, district environment, economy, and social aspects. Chinese scholars, such as Xu et al. (2019) and Xiao (2019), have emphasized the importance of the district environment and economy. In addition, the Greater London Authority (2021) incorporated heritage and culture into its indices. Table 3-1 presents the major

indicators (1–7) proposed in each of the above studies.

Table 3-1. Comparison of Existing REAIs

Indicators of Residential Environment	1	2	3	4	5	6	7	8
Safety								
Natural disasters, traffic hazards, industrial risks, life and property safety	✓	✓	✓	✓	✓	✓	✓	✓
Health								
Physical and mental health, noise, pollution, sunlight exposure, ventilation, natural lighting	✓	✓	✓	✓	✓	✓	✓	✓
Efficiency	✓	✓	✓	✓	✓	✓	✓	✓
Convenience of daily life, facilities, transportation								
Comfort								
Aesthetic quality of the environment, relaxation of body and mind	✓	✓	✓	✓	✓	✓	✓	✓
Urban Infrastructure		✓		✓				
Water, electricity, gas, roads								
District Environment								
Quality of residences, amount of open space, connectivity of residences to roads		✓	✓	✓	✓		✓	
Durability				✓				
Environmental stability								
Economy								
Land fees, residential expenses, environmental maintenance costs, efficient land use		✓	✓	✓	✓		✓	✓
Social Aspects		✓	✓	✓				
Residential habits, crime prevention, population structure								
Sustainability								
Economic sustainability, social sustainability, environmental sustainability						✓	✓	✓
Resource conservation		✓						
Energy conservation, water conservation								
Heritage and Culture							✓	
Heritage conservation and growth, creative industries								

*Meaning of 1-7: 1. WHO (1961); 2. Ministry of Housing and Urban-Rural Development (2010); 3. Xu et al. (2019); 4. Koizumi (1985); 5. Xiao (2019); 6. Asami (2001); 7. Greater London Authority (2021); 8. Indicators considering the HD context

3.2.2. Issues in Historic Districts

To understand the issues in HDs, we evaluated them within the context of four essential human needs – safety, health, efficiency, and comfort (WHO, 1961) – before exploring additional concerns pertinent to the unique traits of HDs based on a literature review.

In residential environments, safety in HDs is crucial for protecting life and property (Asami, 2001). WHO emphasizes disaster protection for overall safety (WHO, 1961). HDs comprise aging structures, posing structural risks (Qian & Li, 2017) and leading to everyday hazards. Traffic safety is a concern because of narrow, busy streets. Moreover, fires in traditional buildings with flammable materials can cause significant losses (Wallace & Wallace, 2011; Yuan et al., 2018; Zhou et al., 2012). HDs pose environmental health risks in buildings with limited spacing, which adversely affect sunlight exposure and ventilation (Chu et al., 2015; Yang et al., 2017). Poor housing conditions, exacerbated by inadequate policies, negatively affect health.

The efficiency of HDs can be defined by social infrastructure and transportation facilities. While accommodating tourist amenities (Zhu et al., 2017), the daily needs of residents are often neglected. Balancing historical preservation with modern traffic demands is challenging and impacts the urban fabric and ecological sustainability (Downs, 2005; Evans, 2002; Li et al., 2019; Wang & Sun, 2019). Building density and public spaces in HDs are crucial factors affecting comfort, while high density and low

residential space per capita exceed the recommended levels (Ministry of Housing and Urban-Rural Development of the People's Republic of China, 2005).

Safety concerns related to HDs stem from interactions between residents and tourists, leading to disputes over space and resources (Rêgo & Almeida, 2022). Urban tourism sustainability requires balancing inhabitants' quality of life with their business needs, with issues arising from tourism saturation and competition for space (Cheung & Li, 2019; Milano et al., 2019; Postma & Schmuecker, 2017; Zhang & Kwong, 2017). Property rights in HDs, which have been complex since the 1970 reforms, involve significant institutional management, which affects preservation (Hall & Zhang, 1988; Qian & Li, 2017). Sustainability in HDs involves focusing on maintaining educational value, public engagement, local identity, and cultural significance, as well as balancing preservation with modern livability (Heath et al., 2013; Yung et al., 2014; Zhong & Kou, 2018).

3.3.3. REAI for HDs

The evolution of residential environment evaluation indices reflects changes in social, economic, and cultural contexts, and an increasing emphasis on environmental sustainability and urban identity. The focus and innovations in the evaluation indices across regions and periods provide valuable perspectives and tools for understanding

and improving modern urban residential environments (Table 3-1). We conducted a detailed categorization of each assessment indicator system. Each indicator included primary and secondary indicators. We list the primary indicators, with their respective secondary indicators, in Table 3-1.

Currently, there are no REAIs specifically designed for HDs. Based on the issues summarized above and the literature review, we conclude that the essential REAIs for HDs can include safety, health, efficiency, comfort, economy, and sustainability (Column 8 of Table 3-1).

3.3. Historic District Residential Environment Assessment Indicator

3.3.1. Human Needs Theory in Relation to REAIs

The research indicators originate from the initial concepts put forth by WHO and are deeply rooted in the understanding of fundamental human needs. These original concepts from WHO are based on Maslow's hierarchy of needs theory. Maslow categorized human needs into five levels – physiological, safety, love and belonging, esteem, and self-actualization (Maslow, 1943; Maslow et al., 1987). This theory provides a comprehensive framework for understanding human needs and guides the systematic evaluation of residential environments. The most common criticism of

Maslow's theory concerns the rigidity and linearity of the hierarchy of needs (Wahba & Bridwell, 1976). Maslow (1987) later revised his writings, stating that the hierarchy of needs is "almost never that strict," and that it is inaccurate to assume "a need must be 100% satisfied before a new need emerges." Therefore, this paper does not strictly adhere to the hierarchical divisions when applying Maslow's theory. Instead, each level of need is integrated with relevant urban domains. Consequently, within the framework constructed in this paper, there is no rigid hierarchical division.

Relatively limited research exists in the field of urban studies based on Maslow's hierarchy of needs. The focus of such research includes emphasizing the connection between sustainability and livability (De Haan et al., 2014; Doost Mohammadian & Rezaie, 2019; Sheikh & van Ameijde, 2022), satisfaction with public transportation (Allen et al., 2019), housing attributes (Zavei & Mohd Jusan, 2012), and resident demands (Han et al., 2021). Maslow's theory is largely associated with the human experience within urban research.

(1) Physiological Needs

Physiological needs are the most fundamental human needs (Maslow, 1943). Maslow emphasized that physiological needs primarily pertain to essential bodily needs that humans must fulfill for survival, ensuring the minimal conditions for human existence.

In urban studies, alongside the demand for oxygen, water, and food, elements, such as natural lighting, sunlight, and ventilation, which ensure good health (Waheeb & Hemeida, 2022), are included in the category of physiological needs.

(2) Safety Needs

These requirements drive the pursuit of protection, stability, and order. Safety needs encompass personal, housing, and financial security. These interpretations are consistent with the safety indicators proposed in this study. In addition, we believe that ensuring residential safety through housing, transportation facilities, and welfare services (Sheikh & van Ameijde 2022) is an essential element that caters to safety needs.

(3) Love and Belonging Needs

These needs include giving and receiving affection, enjoying friendships and companionship, and establishing close and frequent interpersonal relationships. Appleyard (1980) emphasized that livable streets can foster a sense of play and activity, providing places for community engagement and building. Gehl (2013) highlighted the importance of public space quality and design in promoting social integration. Community facilities, such as daycare centers, senior support centers, and centers for individuals with physical or mental disabilities, contribute to enhancing social

integration and a sense of belonging.

(4) Esteem Needs

These needs represent a desire for a high sense of self-worth. They involve self-esteem, respect, and appreciation. Satisfying these needs brings confidence, a sense of competence, and a belief in being valuable, useful, and necessary for society. Opportunities to acquire new skills, face challenges, and provide quality housing that reflects user values can fulfill these needs (Donovan, 2010). Other urban planning measures supporting the need for respect include sports, education, culture, retail, and recreational facilities.

(5) Self-actualization Needs

This need refers to the desire to fulfill one's true nature, realize one's potential, and achieve one's ideal life. Measures to promote self-actualization in urban planning contribute to the long-term development of individuals and communities, such as promoting health and well-being, education, skill training, and artistic expression. Schools and vocational training centers can assist in career improvement or entrepreneurship, thereby, facilitating social mobility. Donovan (2010) suggested that residents' involvement in community service and facility planning can help individuals

realize their potential, and better meet the needs and desires of the local community.

(6) Summary

Table 3-2 summarizes the relationship between Maslow's hierarchy of human needs and the HD-REAI. Physiological needs are linked to health and sustainability, safety needs are linked to safety, efficiency, and economy, love and belonging needs are linked to efficiency, comfort, and sustainability, and esteem and self-actualization needs are linked to safety, efficiency, and sustainability.

Table 3-2. Correlation Between Human Needs and HD-REAI

		HD REAI					
Conditions of Indicators		Safety	Health	Efficiency	Comfort	Economy	Sustainability
Physiological Needs	Environment Needs		●				
	Personal Health		●				●
Safety Needs	Living Safety	●					
	Security Facilities			●			
	Financial Security					●	
Love & Belonging Needs	Community Care Facilities			●			
	Public Space				●		
	Community Belonging						●
Esteem Needs	Cultural & Recreation Facilities			●			
	Housing Quality	●					
	Relation with Society						●
Self-actualization Needs	Community Safety	●					
	Self-improvement Facilities			●			
	Community Participation						●

3.3.2. HD Assessment Indicators Based on the Human Needs Theory

By incorporating the analysis of human needs and their relationship with the HD issues identified previously, we established an HD-REAI comprising 6 primary indicators, 14 secondary indicators, and 30 tertiary indicators. The AHP methodology was employed to determine the weights of the assessment indicators for the HDs' residential environments, which decomposed the problem into a hierarchical structure, starting from goals, criteria, and sub-criteria. This paper invited five experts to participate in determining the weights to ensure the comprehensiveness of the results. Two of these experts were academic specialists in urban planning and architecture from Xi'an University of Architecture and Technology, while the other three were project experts from China Northwest Architectural Design and Research Institute Co., Ltd., with practical experience in HD renovation projects. After receiving feedback from all five experts, their results were averaged. The final indicators and the corresponding weights are shown in Table 3-3.

Table 3-3. HD-REAI with Weight

HD-REAI		
<i>Primary indicators</i>	<i>Secondary indicators</i>	<i>Tertiary indicators</i>
Safety (0.22)	Basic Safety (0.52)	Building Quality (0.44)
		Traffic Safety (0.24)
		Fire Safety (0.32)
	Esteem Safety (0.26)	Residence Quality (0.64)
		Relation with Tourists (0.36)
	Self-actualization Safety (0.22)	Welfare (0.5)
Health (0.20)	Physiological Health (1)	Community Safety (0.5)
		Sunlight (0.52)
		Ventilation (0.22)
Efficiency (0.22)	Safety Efficiency (0.35)	Lighting (0.26)
		Medical Facility (0.52)
		Transportation Facility (0.37)
	Love & Belonging Efficiency (0.20)	Police Facility (0.11)
		Community Center (0.43)
	Esteem Efficiency (0.33)	Elderly Daycare Center (0.57)
		Culture Facility (0.40)
	Self-actualization Efficiency (0.12)	Recreational Facilities (0.60)
Comfort (0.16)	Love & Belonging Comfort (1)	Education Facility (0.75)
		Entrepreneurship Center (0.25)
		Public Space (0.52)
Economy (0.09)	Safety Economy (1)	Building Density (0.48)
		Property Security (0.46)
		Housing Property Right (0.54)
Sustainability (0.11)	Physiological Sustainability (0.21)	Personal Health (1)
	Love & Belonging Sustainability (0.39)	Community Activity (0.61)
		District Memory (0.39)
	Esteem Sustainability (0.17)	Cultural Identity (0.62)
		Neighborhood Relation (0.38)
	Self-actualization Sustainability (0.23)	Community Service Participation (0.71)
		Community Planning Participation (0.29)

3.4. Summary

This chapter contributes to residential environment assessment in HDs by addressing the gaps in existing research, that is, a lack of an REAI specifically for HDs. Based on Maslow's theory of human needs, constructs an REAI tailored to HDs, filling this gap. Recognizing the unique characteristics of HDs and their challenges, such as coexistence issues between residents and tourists, this study underscores the need for a specialized approach to assess residential environments. Drawing on WHO's foundational work on human needs and Maslow's widely recognized theory of human needs, we constructed a comprehensive assessment system tailored to HDs. This system integrates a broad spectrum of needs, ranging from physiological to self-actualization, reflecting the multidimensional nature of human experiences in these HD environments.

A key aspect of this research was the systematic review and analysis of existing residential environment assessment methods juxtaposed with the conditions unique to HDs. This process led to the identification and adaptation of relevant indicators that aligned with the reality of life in HDs. The newly developed indicators of the HD-REAI can effectively assess the residential environment in HDs, offering a pathway for feedback on current living conditions and targeted improvements. This is crucial in the context of rapidly urbanizing societies where the preservation of cultural heritage and improvement of residential quality must coexist harmoniously.

This study paves the way for further research and application of these indicators to other HDs, potentially leading to more refined and context-specific assessment tools. It opens avenues for policymakers and urban planners to integrate these indicators into their decision-making processes, ensuring that development and preservation strategies in HDs align with the actual needs and aspirations of their residents.

In conclusion, this study marks a significant step toward a more humancentric and culturally-sensitive approach to assessing and enhancing residential environments in HDs, providing a template that can be adapted and applied in similar contexts globally.

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Chapter 4

Interactive Effects on Residents' Daily Lives

Chapter 4. Interactive Effects on Residents' Daily Lives

4.1. Brief Summary and Purpose

In Chapters 2 and 3, this study has already addressed two core issues. First, through the prediction and empirical verification of Space Syntax, it revealed the typical patterns of residents' daily lives in two HDs. The results show that residents of Gulangyu mainly engage in activities including eating out, shopping, and participating in cultural activities, while residents of Sanxue Street focus primarily on eating out, shopping, and calligraphy activities. This finding not only highlights the differences in daily life between the two districts but also confirms the role of spatial configuration and facility distribution in shaping everyday activities. Second, based on Maslow's hierarchy of needs, this study developed a Residential Environment Assessment Indicator system tailored to historic districts (HD-REAI). This framework incorporates dimensions ranging from physiological needs and safety to social belonging, esteem, and self-actualization, integrating the distinctive spatial and social characteristics of HDs, and thus providing a solid foundation for subsequent analysis.

Building upon this foundation and drawing on the SES summarized in Section 1.2.2 (age, income, education level, and length of residence), the study further addresses its overarching research objective: to comprehensively explore the multiple mechanisms

influencing residents' daily lives. Specifically, the research seeks to answer four key questions: (1) to what extent do SES determine residents' daily life choices and patterns; (2) how do residential environment influence residents' everyday activities; (3) whether and how SES and residential environment interact to generate differentiated life outcomes across social groups and spatial environments; and (4) what role commercial gentrification plays within these mechanisms—whether it exacerbates inequalities and divisions in daily life, or conversely, enhances diversity and vibrancy.

Through the in-depth exploration of these four questions, this dissertation aims not only to reveal the underlying logic shaping the daily lives of residents in HDs but also to analyze the role of commercial gentrification in these processes, thereby addressing the scholarly gap concerning the impacts of gentrification on residents of HDs.

4.2. Research Method

4.2.1. Data Collection

The questionnaire was designed as a self-administered survey using the online platform Wenjuanxing. After designing the questionnaire, a link was automatically generated and sent to the cell phones of residents who provided consent to participate. By accessing this link, residents could complete the entire questionnaire, with all responses automatically uploaded to the platform's backend for recording. From April 3 to May

29, 2024, a survey was conducted in both Gulangyu and Sanxue Street, with all respondents being residents. As the questionnaire included questions about age, minors under the age of 18 years, who might not have been able to fully comprehend the questions, were excluded from the final dataset. Consequently, 418 valid questionnaires were collected from Gulangyu and 380 from Sanxue Street.

This study employed a cross-sectional questionnaire approach and conducted simultaneous surveys of original residents in different HDs at a specified time. Although this method cannot directly reveal causal pathways between variables, it has been widely used in gentrification-related studies. For example, Sho et al. (2024) used a cross-sectional survey to examine multiple districts in Osaka and identified the social effects of gentrification by comparing the results across different areas. Fukuda et al. (2024) conducted questionnaire surveys in Tokyo and Osaka to explain patterns of residential inequality. Therefore, although cross-sectional data may have limitations in establishing causality, they can still provide robust empirical evidence of gentrification's impact when combined with a well-designed research framework. This study enhances the explanatory power and specificity of the results by controlling for respondents' characteristics, standardizing the survey instruments, and incorporating items that measure perceptions of gentrification.

This questionnaire is divided into three sections. The first section investigates

participants' attitudes toward these daily activities, specifically whether they agree that these activities are part of their daily lives. The result of this part has already shown in Chapter 2.

The second section of the questionnaire focuses on SES. This study specifically defines SES as income, education level and length of residence. An age indicator is also included to exclude the effect of minors. Therefore, the second section consists of age, income, education level, and length of residence (Table 4-1).

Table 4-1. Socioeconomic Indicators of Residents

	Gulangyu (N=418)	Sanxue Street (N=380)
Age		
18-30	89 (21.29%)	93 (24.47%)
31-40	158 (37.80%)	126 (33.16%)
41-50	95 (22.73%)	92 (24.21%)
51-60	49 (11.72%)	44 (11.58%)
Above 60	27 (6.46%)	25 (6.58%)
Monthly Income (RMB)		
Under 3000	93 (22.25%)	50 (13.16%)
3000-6999	217 (51.91%)	160 (42.11%)
7000-9999	70 (16.75%)	120 (31.58%)
Above 10000	38 (9.09%)	50 (13.16%)
Education Level		
High school or below	37 (8.85%)	83 (21.84%)
High school graduate	48 (11.48%)	59 (15.53%)
3-year associate degree	183 (43.78%)	63 (16.58%)
4- or 5-year bachelor's degree	126 (30.14%)	115 (30.26%)
Master's degree	16 (3.83%)	46 (12.11%)
Length of Residence		
Under 1 Year	0	49 (12.89%)
1-3 Years	0	68 (17.89%)
3-10 Years	161 (44.59%)	64 (16.84%)
10-20 Years	170 (40.67%)	106 (27.89%)
Above 20 Years	187 (44.74%)	93 (24.47%)

To verify whether these two HDs were suitable for comparison, this study conducted

independent sample t-tests to analyze the differences in four indicators: age, income, education level, and length of residence. The first group corresponds to Gulangyu, while the second group corresponds to Sanxue Street. Table 4-2 presents the statistical results.

Table 4-2. Result of t-test for differences in resident characteristics

Variable	Mean Difference	t	p
Age	.016	.199	.842
Income	-.321	-5.194	.000**
Education	-1.017	.886	.376
Length of Residence	.970	12.452	.000**

**p<0.01

The t-test results indicate no significant differences in the mean values of age and education level between residents of the two locations ($p > 0.05$). However, a significant difference is observed in income ($p < 0.01$), with the average income of Gulangyu residents being notably lower than that of Sanxue Street residents (mean difference = -0.321). Simultaneously, the difference in length of residence is also significant ($p < 0.001$), with Gulangyu residents having a significantly longer length of residence than those in Sanxue Street (mean difference = 0.970). This suggests a significant socioeconomic disparity in income levels and length of residence between the two

locations, whereas age and education levels are relatively similar.

The t-test results show that while there is a significant difference in income levels and length of residence between Gulangyu and Sanxue Street, the consistency in age and education levels among residents provides a foundation for comparing the differences in living patterns between the two areas. The economic disparity between the two locations aligns with their differing commercial environments and stages of development, further supporting their suitability as contrasting cases for study. Gulangyu represents an HD that has undergone commercial gentrification, while Sanxue Street represents an area that has retained its traditional commercial environment. This contrast offers an ideal context for exploring the varying impacts of changes in commercial environments on residents' lives.

The third section of the questionnaire focuses on residential environment, with questions designed based on the indicators listed in Table 3-3. Participants rate each tertiary indicator on a scale from 0 to 10, where 0 represents the lowest score, and 10 is the highest, based on their subjective perceptions. After weighting these scores, a final residential environment score is calculated. Due to the extensive range of questions, this study only presents the questions related to safety (Table 4-3).

Table 4-3. Questions on Perceptions of Residential Environment

Question	Response
How would you rate the quality of the residence in the district?	
How would you rate the traffic safety in the district?	
How would you rate the fire safety in the district?	
How would you rate the quality of the whole building in the district?	Score from 0-10
How would you rate the relationship with tourists?	
How would you rate the welfare in the district?	
How would you rate community safety?	

The questionnaire comprises three sections. Socioeconomic attributes provide basic information about respondents and represent relatively stable individual characteristics. By contrast, the questions related to daily life behaviors and evaluations of the residential environment primarily reflect the respondents' subjective perceptions and lived experiences. Prior studies have demonstrated that commercial gentrification can influence residents' daily lives (Forouhar et al., 2022). Conversely, residents' daily behaviors and evaluations of their surroundings are shaped by not only commercial gentrification but also a range of factors, including personal characteristics, neighborhood relationships, spatial structure, and policy context. Because of this complexity, designing questionnaire items based on subjective perceptions instead of

relying solely on objective variables can better capture residents' direct responses and authentic experiences regarding changes in the commercial environment (Troost et al., 2022).

4.2.2. Analysis

After quantifying daily life, SES, and residential environment, this study employs regression analysis to explore the effects of SES and residential environment on daily life. SES such as income, education level, and length of residence are used as independent variables, while each type of daily life serves as a dependent variable. This approach identifies the effects of changes in income and education level on daily life. Gulangyu, representing an HD after commercial gentrification, and Sanxue Street, representing an HD without such an effect, provide a basis for comparative analysis. By contrasting the results from these two HDs, the effects of commercial gentrification can be effectively assessed.

For residential environment, the final composite score is used as the independent variable, while each type of daily life serves as a dependent variable in the regression analysis. This approach reflects how changes in residents' evaluations of their surrounding environment affect their daily lives.

Finally, the interaction effect is represented as the product of two variables. This study uses *residential environment* $\times$ *education level*, *residential environment* $\times$ *income*, and *residential environment* $\times$ *length of residence* as independent variables, with daily life as the dependent variable. This allows for an analysis of the interaction between SES and residential environment in daily life. By comparing the results of the two HD models, the effects of commercial gentrification can be evaluated.

This study does not include a three-way interaction between *residential environment* $\times$ *income* $\times$ *education level* for the following reasons. First, both income and education level are SES, and their interaction can introduce interference with SES themselves. Second, incorporating three-way interaction effects would significantly increase the complexity of the model, making the results less intuitive. For example, the simultaneous moderating effect of high income and high education levels on the residential environment may obscure the directionality of the interaction effect, reducing its practical applicability. Moreover, higher-order interaction terms may overshadow the primary effects and the true significance of lower-order interactions. The research framework for assessing SES, residential environment, and interaction effects on residents' daily lives in HDs is shown in Figure 4-1.

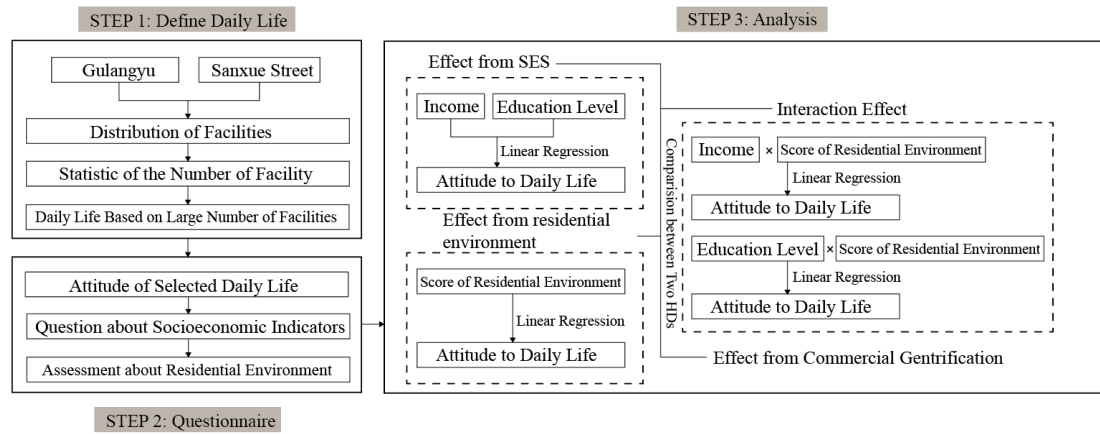


Fig 4-1. Research Flow

4.3. Results

Table 4-4 presents the regression analysis results for the SES and residential environment for each aspect of daily life across the two HD models. In previous studies, individual socioeconomic variables typically exhibited certain causal relationships or structural correlations. For example, individuals with higher education levels tended to have higher incomes (Sho et al., 2024), and the length of residence may be associated with economic status or social adaptability. If such collinearity or interactions between variables are not addressed, the regression results may be confounded. A common approach to addressing this issue is to introduce interaction terms (see Burks et al., 2019; Li et al., 2020). Therefore, this study incorporated interaction terms in the regression analysis (e.g., monthly income $\times$ education level; monthly income $\times$ length of residence) while retaining the original variables. This approach aims to identify the differentiated effects of individual factors on residents' daily activities under various combinations.

Table 4-4. Result of linear-regression analysis

Gulangyu (N=418)			Cultural		
			Eating	Shopping	Activities
SES	Monthly Income	t	-.1.125	-3.251	.1.229
		p	.261	.001**	.220
	Education Level	t	-1.368	-4.051	2.209
		p	.172	.000**	.028*
	Length of Residence	t	.587	-.993	.614
		p	.558	.351	.540
	Monthly Income × Education Level	t	-1.484	-1.585	.400
		p	.139	.114	.689
	Monthly Income × Length of Residence	t	.897	.511	-.265
		p	.370	.610	.791
	Education Level ×Length of Residence	t	.628	-1.101	1.226
		p	.530	.271	.221
Residential Environment	Residential Environment	t	2.230	4.581	-2.766
		p	.026*	.000**	.006**
Sanxue Street (N=380)			Eating	Shopping	Calligraphy
SES	Monthly Income	t	-.057	-1.578	1.248
		p	.995	.115	.213
	Education Level	t	1.065	1.478	.292
		p	.287	.104	.771
	Length of Residence	t	-.905	-1.089	.008
		p	.366	.277	.993
	Monthly Income × Education Level	t	.465	-.396	1.251
		p	.642	.692	.212
	Monthly Income × Length of Residence	t	-1.064	-2.246	.604
		p	.288	.025*	.546
	Education Level ×Length of Residence	t	1.211	1.986	-.390
		p	.227	.072	.696
Residential Environment	Residential Environment	t	27.779	9.726	11.407
		p	.000**	.000**	.000**

**: Significant < 0.01

*: Significant < 0.05

As shown in Table 4-4, although several interaction terms were included to examine the joint effects among the SES variables, only one relationship (i.e., “monthly income × length of residence”) affected shopping activities in Sanxue Street, with statistical significance ($p = 0.025$) indicated among the 18 regression models across the two HDs and three types of daily activities. This suggests that in most models, the interaction effects among individual attributes are not significant, thereby empirically precluding systematic interference from such interactions. Consequently, subsequent analyses can reliably focus on the independent effects of each factor on residents’ behaviors, as well as the more critical influence of residential environment.

Regarding SES, Gulangyu shows statistical significance in three relationships: income and shopping, education level and shopping, and education level and cultural activities, as indicated by p-values less than 0.05. The remaining relationships have p-values greater than 0.05, indicating no significance. This demonstrates that three out of the six examined relationships for Gulangyu are significant, suggesting that SES partially affect daily life. In contrast, all p-values for Sanxue Street exceed 0.05, indicating no significant relationships. Comparatively, SES have a greater effect on daily life in Gulangyu than in Sanxue Street.

Regarding residential environment, for both Gulangyu and Sanxue Street, all relationships have p-values less than 0.05, indicating statistical significance across the

board. However, a comparison reveals that for Sanxue Street, all three relationships have p-values below 0.01, whereas for Gulangyu, only two relationships meet this threshold. Additionally, the absolute t-values for all three relationships in Sanxue Street exceed those for the corresponding relationships in Gulangyu. This demonstrates that while residential environment affect daily life in both HDs, their effect is significantly stronger in Sanxue Street than in Gulangyu.

Results of the interaction effects (Table 4-5) show that for Gulangyu, only residential environment * length of residence has p-values significantly greater than 0.05 for all three daily activities. In contrast, for Sanxue Street, the indicator residential environment $\times$ income and residential environment * length of residence shows p-values below 0.05 for all three daily activities, with p-values for eating and calligraphy falling below 0.01. This indicates that the interaction effect of residential environment $\times$ income and all three daily activities have a significant effect on daily life in Sanxue Street.

Table 4-5. Interaction Effect Analysis

Gulangyu (N=418)		Eating	Shopping	Cultural Activities
Residential Environment × Monthly Income	t-value	.518	.280	-1.152
	p-value	.605	.780	.250
Residential Environment × Education Level	t-value	-.048	.112	.547
	p-value	.962	.911	.584
Residential Environment × Length of Residence	t-value	2.428	3.448	-2.108
	p-value	.016*	.000**	.036*
Sanxue Street (N=380)		Eating	Shopping	Calligraphy
Residential Environment × Monthly Income	t-value	5.904	1.995	4.726
	p-value	.000**	.047*	.000**
Residential Environment × Education Level	t-value	-.307	.596	-.819
	p-value	.759	.552	.414
Residential Environment × Length of Residence	t-value	8.461	4.168	5.634
	p-value	.000**	.000**	.000**
**: Significant < 0.01				
*: Significant < 0.05				

4.4. Discussion

4.4.1. Effect of SES on Daily Life

This study first examined the effect of SES on daily life. The results show that in Gulangyu, income and education level significantly influence daily life, whereas in Sanxue Street, this relationship is not significant. This difference reveals the mechanism and spatial dependence of SES in shaping residents' lifestyles under commercial gentrification.

Mechanistically, Gulangyu has undergone substantial commercial gentrification,

accompanied by a large influx of high-income white-collar groups (Kidokoro et al., 2023; Kim et al., 2022; Su et al., 2024), which has driven the clustering of high-end commercial facilities. Given that this study defines daily life as the frequency of residents' facility usage, individuals with higher SES, possessing greater economic and cultural capital, are better able to use these high-end facilities emerging from commercial gentrification. This aligns with previous studies concluding that "capital-advantaged groups tend to benefit more from urban regeneration" (Beauregard, 2013; Bridge & Dowling, 2001; Smith, 1996).

In contrast, Sanxue Street has not experienced commercial gentrification, and its landscape remains dominated by small-scale, traditional shops. These forms are accessible to residents of different income and education levels, with low consumption thresholds and services closely aligned with daily needs. This reduces the effect of SES on lifestyle differentiation. In other words, in the absence of commercial gentrification, the traditional commercial environment acts as an "equalizer," suppressing differences in facility usage across socioeconomic groups. This "homogenization effect" is consistent with similar findings in China (Zhang et al., 2022), Japan (Kidokoro et al., 2022), and Australia (Sarkar et al., 2018).

This finding adds a microlevel perspective to research on commercial gentrification: the reconstruction of commercial space is not only a reproduction of physical space but

also amplifies differentiation in daily life among social groups. Existing research has largely focused on urban spatial patterns, shop structures, and rental changes (Chen & Zhang, 2023; Guo et al., 2025; Seomun et al., 2024), while paying insufficient attention to how individual attributes intervene in this process. The results of this study suggest that in areas undergoing commercial gentrification, income and education level function not only as indicators of SES but also as critical thresholds determining whether residents can participate in and benefit from upgraded commercial facilities.

From a policy perspective, this indicates that during urban regeneration and commercial upgrading, it is important to maintain basic, low-threshold facilities alongside high-end formats to avoid social differentiation caused by unequal accessibility. This is especially vital for balancing economic vitality and social inclusion in HDs.

4.4.2. Effect of Residential Environment on Daily Life

The results show that in both Gulangyu and Sanxue Street, residents' subjective evaluations of the residential environment have a significant positive effect on daily life—that is, the better the environment, the more willing residents are to use nearby facilities. This finding is consistent with studies showing that improvements in community and physical environments enhance residents' willingness to participate in community affairs and use local facilities (Shen et al., 2023; Zhu, 2015; Zhu et al.,

2024). In HDs, this suggests that the residential environment is not only a core component of quality of life but also an important driver of social participation and daily activity.

However, this study also finds that the effect of residential environment improvements is significantly greater in Sanxue Street than in Gulangyu. This difference underscores the potential negative effects of commercial gentrification: in Gulangyu, high rents and commercial upgrading may marginalize original residents (Sho et al., 2024), disrupting lifestyle patterns and weakening community ties, thereby reducing the positive effect of environmental improvements (Díaz-Parra & Jover, 2021; Navarrete Escobedo, 2020). The growth of tourism and intensification of cultural disparities (Zhang et al., 2021) may further weaken community belonging and willingness to use local facilities. In contrast, Sanxue Street, as an HD that has not undergone commercial gentrification, retains relatively stable community characteristics and resident networks, making it easier for environmental improvements to translate into tangible enhancements in daily life.

This finding reveals an important mechanism: in communities without substantial intervention from external commercial capital, the positive effects of physical and social environmental improvements are more likely to be realized. Under commercial gentrification, however, the benefits of environmental improvement may be offset by

social differentiation and spatial exclusion. This contributes to the literature by incorporating contextual conditions into the “environmental improvement–quality of life” chain and aligns with policy arguments advocating for the integration of social structure protection into renewal projects (Forouhar et al., 2022).

Practically, this suggests that urban planners and renewal policymakers should pair regeneration and commercial upgrading with social inclusion measures—such as affordable commercial provision, community participation mechanisms, and rent control—to ensure environmental improvements genuinely enhance daily life rather than exacerbate inequality.

4.4.3. Interaction Effects on Daily Life

The interaction effect analysis shows that in Gulangyu, there is no significant interaction between residential environment and either income or education level, indicating that in HDs affected by commercial gentrification, improvements to the residential environment do not significantly amplify the influence of SES on daily life. In contrast, in Sanxue Street, the interaction effect of residential environment $\times$ income is significant, suggesting that environmental improvements affect income groups differently.

The mechanism behind this difference lies in how commercial gentrification alters accessibility and suitability. In Gulangyu, although the residential environment has improved with the introduction of high-end commercial facilities (Chen & Zhang, 2023; Lin & Yang, 2019; Shaw, 2008), these facilities often cater to high-income groups and impose relatively high financial thresholds on low-income residents. Consequently, upgrading the environment may not substantially increase facility usage among low-income residents, weakening the interaction effect between income and environment. In contrast, in Sanxue Street, the commercial structure remains dominated by daily-use businesses serving local residents (Zhu et al., 2024), allowing low-income groups to benefit from environmental improvement and amplifying the effect of income under favorable conditions.

Moreover, although length of residence is not significant as a main effect, it shows a significant interaction with the residential environment. Long-term residents, being more familiar with local facilities and possessing stronger neighborhood networks, are better able to use new resources and resist spatial exclusion when the environment improves (Ding et al., 2016). This echoes research emphasizing the “environment–social capital–behavior” pathway (Kim et al., 2022; Shen et al., 2023) and enriches understanding of the contextual mechanisms through which environmental improvements activate individual characteristics.

From an academic perspective, this result suggests that commercial gentrification not only affects direct living conditions but also reshapes the relationship between individual characteristics and environmental conditions. In highly commercialized contexts, the dominant effect of the residential environment may suppress individual-level effects, whereas in non-gentrified communities, the interaction between the two is more likely to emerge.

From a policy and practice perspective, this suggests that urban renewal projects should assess the accessibility and applicability of environmental improvements for different social groups. In highly commercialized HDs, physical upgrades alone may not benefit disadvantaged groups. Measures such as diversifying business types, implementing price control, and ensuring public service provision are necessary to restore inclusiveness and foster positive interactions with diverse resident characteristics.

4.5. Summary

This study investigates the effects of individual socioeconomic attributes and the residential environment on residents' daily lives within the context of commercial gentrification in HDs. The findings suggest that commercial gentrification influences residents' daily lives not only by transforming neighborhood commercial patterns and environmental quality but also by reshaping the socioeconomic structure, amplifying

the differences in the interaction between SES and residential environment.

In HDs that have undergone commercial gentrification, the residential environment appears to have a significantly greater effect on residents' daily lives than individual socioeconomic factors. This indicates that in highly commercialized environments, improved residential environment

may serve as the primary driver of residents' daily activities. However, such improvements in the residential environment often cater more effectively to middle- and high-income residents, leaving low-income residents less able to benefit equally due to economic constraints.

In contrast, in HDs that have not experienced commercial gentrification, the interaction between individual socioeconomic attributes and the residential environment appears to have a more pronounced impact on daily life. This suggests that in traditional commercial environments, low-income residents are better able to participate in daily activities through improved residential environments, reflecting the potential of traditional neighborhoods to maintain socioeconomic diversity and foster resource inclusivity.

While this study highlights that commercial gentrification can improve the material quality of HDs, it also underscores its potential to exacerbate inequalities in resource

utilization among different socioeconomic groups. Future commercial planning and policy interventions should aim to balance environmental improvements with social equity, ensuring that residents from diverse socioeconomic backgrounds can share in the benefits of neighborhood development.

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Chapter 5

Conclusion

Chapter 5. Conclusion

Commercial gentrification has become an important topic in recent years within the broader context of urban regeneration and socio-spatial transformation. It is typically manifested through the influx of commercial capital into specific urban areas, which promotes the upgrading and specialization of retail structures and consequently reshapes the economic landscape and spatial configuration of the area. Compared with other types of urban transformation, commercial gentrification entails a more complex set of mechanisms: on the one hand, it alters the commercial structure and service provision, thereby directly influencing the everyday life scenes of residents; on the other hand, it is often intertwined with residential environment such as tourism development and cultural consumption, which bring about profound changes in residents' lived experiences and social relations. Therefore, understanding how commercial gentrification affects residents' daily lives holds both theoretical and practical significance.

Within this process, HDs have become particularly prominent arenas where the effects of commercial gentrification are most evident, they embody the cultural heritage and collective memory of the city, and often serve as focal sites of tourism development and capital investment. When commercial capital and tourism industries become excessively concentrated, the functional orientation of HDs tends to shift: residential

spaces are progressively compressed and replaced by consumption-oriented functions, which in turn reshape the living environment and transform residents' everyday practices. In this sense, commercial gentrification should not be viewed merely as an economic phenomenon, but rather as a social process that directly redefines the daily life of residents.

Nevertheless, existing research on the relationship between commercial gentrification and residents' daily lives remains limited. Most studies tend to focus on a single dimension: either SES such as income, age, and educational level, or residential environment such as spatial form, public services, and facility accessibility. This fragmented approach makes it difficult to fully explain the complexity of residents' daily practices. In reality, residents' lifestyles are not only an expression of their individual socio-economic attributes, but also the outcome of constraints and opportunities shaped by the residential environment. The interaction between SES and residential environment is likely to determine differentiated outcomes among social groups under the same commercialization context. Investigating this interaction thus becomes a key step in understanding how commercial gentrification reshapes residents' daily lives.

Based on this perspective, this study takes commercial gentrification as the analytical starting point and situates HDs as the typical sites of investigation. Two contrasting

cases were selected, Fiest is Gulangyu, which owing to its World Heritage designation and highly touristified development, has become a paradigmatic example of commercial gentrification; and Sanxue Street, which remains less commercialized and retains a relatively intact community lifestyle. Through this comparison, the study aims to reveal how residents' daily lives are shaped under different stages of commercial gentrification, how SES and residential environment interact in this process, and to what extent such interactions exacerbate or mitigate disparities in residents' lived experiences. In doing so, the study contributes new perspectives to the research on commercial gentrification and offers an interpretive framework for the renewal and governance of HDs.

To achieve this research objective, several key aspects need to be clarified. First, it is essential to define the scope of residents' daily lives and identify the most representative types of activities within HDs, which serve as the analytical foundation of the study. Second, both SES and residential environment that may influence residents' daily lives should be selected. Finally, based on this framework, the study investigates the interaction between SES and residential environment, analyzing how they jointly shape residents' daily life patterns, thereby uncovering the underlying mechanisms of lifestyle transformation in the context of commercial gentrification.

In Chapter 2, this study first established the foundation of the research, which is layout

– daily life model. To this end, the study introduced the Space Syntax method and, through the calculation of street integration and choice values, predicted and identified the key street networks most likely to influence residents’ daily lives. On this basis, this study further counted the various facilities distributed along these streets, and corresponded to specific daily lives. This process led to the establishment of a “street–facility–daily life” analytical model.

Subsequently, in order to verify the feasibility of this model, a questionnaire survey was designed and conducted. Drawing on residents’ actual living experiences, the survey tested whether the relationship between facility distribution and daily lives was consistent with the predictions derived from Space Syntax analysis. The results indicated that the model demonstrated strong explanatory power in both case studies, confirming that spatial configuration and facility distribution significantly shape residents’ daily lives.

The findings further revealed that the daily life of residents in Gulangyu primarily revolves around eating out, shopping, and participating in cultural activities, whereas the daily lives of residents in Sanxue Street are eating out, shopping, and calligraphy activities. According to the results of the questionnaire survey, the average score of residents’ daily life in Sanxue Street was significantly higher than that of Gulangyu. This not only shows that residents in Sanxue Street generally recognize these activities

as important components of their everyday lives, but also reflects a closer connection between their lifestyles and the surrounding spatial and facility environment. In contrast, Gulangyu, influenced by high levels of commercialization and tourism-oriented development, shows a weaker alignment between residents' lifestyles and facility distribution.

Furthermore, this difference suggests that in HDs with lower levels of commercial gentrification, residents are more likely to frequently use and rely on nearby facilities, thereby maintaining the continuity between the neighborhood environment and their daily lives. This finding provides direct evidence of how commercial gentrification reshapes residents' life patterns and lays the foundation for the subsequent analysis of the interaction between SES and residential environment.

In developing the indicator system, this study first drew on SES commonly adopted in previous gentrification research, including residents' monthly income, educational attainment, and length of residence. These factors have been widely demonstrated in the literature to significantly influence residents' lifestyles and adaptability in urban spaces, and were therefore incorporated into the analytical framework to reflect individual attributes and socio-economic conditions.

At the same time, residential environment in existing studies have often been defined

in a fragmented manner, typically addressing only partial aspects of spatial or facility conditions, which fails to capture the overall environment upon which residents' daily lives depend. To address this limitation, this study sought to systematize these fragmented residential environment and expand them into a more comprehensive residential environment assessment framework. However, most of the existing residential environment assessment systems were designed for modern residential communities and are not fully applicable to the unique context of HDs. Therefore, this study considered it necessary to develop a residential environment assessment indicator system specifically tailored for HDs, in order to comprehensively examine how residential environment influence residents' daily lives.

Accordingly, in Chapter 3, this study constructed the HD-REAI (Historic District Residential Environment Assessment Indicator). Grounded in Maslow's hierarchy of needs theory, the system covers dimensions ranging from physiological and safety needs to social interaction, esteem, and self-actualization, while incorporating the spatial and social characteristics of HDs. Ultimately, it formed a comprehensive indicator system consisting of six dimensions, which not only reflects residents' material and functional requirements but also addresses higher-level needs such as social engagement, cultural identity, and developmental potential.

In practice, the study systematically reviewed relevant literature and selected multiple

evaluation indicators, adjusting them to align with the unique attributes of HDs. For example, in the safety dimension, factors such as street accessibility and public security conditions were included; in the comfort and efficiency dimensions, the convenience and walkability of daily-life facilities were emphasized; and in the economic and sustainability dimensions, particular attention was given to residents' subjective perceptions of commercial facilities, living costs, and the long-term habitability of the neighborhood.

The establishment of this indicator system addresses the lack of tools specifically designed to evaluate the residential environment of HDs in existing research. HD-REAI therefore provides a systematic and quantifiable framework for analyzing the relationship between residents' daily lives and environmental conditions, while also offering policymakers and urban planners a practical reference for the protection and renewal of HDs.

In Chapter 4, this study conducted a systematic analysis of residents' daily lives and their influencing factors. First, in terms of variable setting, residents' daily life patterns were identified through questionnaire surveys. The results indicated that in Gulangyu, residents' daily lives were mainly centered on dining out, shopping, and participating in cultural leisure activities, while in Sanxue Street, residents' daily lives were more focused on shopping, daily consumption, and activities related to traditional calligraphy

and painting.

With regard to influencing factors, SES included monthly income, educational attainment, and length of residence, reflecting residents' socioeconomic attributes and stability of life. Residential environment were measured using the HD-REAI framework developed in Chapter 3, which evaluates the residential environment across six dimensions: safety, health, efficiency, comfort, economy, and sustainability.

In terms of methodology, data were collected through questionnaire surveys. SES were directly quantified through residents' self-reports, while residential environment were quantified using the scores of HD-REAI indicators. Residents' daily life scores were taken as the dependent variable, while SES and residential environment were used as independent variables. A multiple regression model was then constructed, and interaction terms were further introduced to test the combined effects of the two.

The results showed that in HDs that have undergone commercial gentrification, the residential environment exerted a significantly greater influence on residents' daily lives than individual socioeconomic factors. This suggests that in highly commercialized environments, improvements in residential environment may serve as the primary driver of residents' daily activities. However, such improvements often cater more effectively to middle- and high-income residents, while low-income

residents are less able to benefit equally due to economic constraints.

In contrast, in HDs that have not experienced commercial gentrification, the interaction between individual socioeconomic attributes and the residential environment had a more pronounced impact on residents' daily lives. This indicates that in traditional commercial environments, low-income residents are better able to participate in daily activities through improvements in the residential environment, reflecting the potential of traditional neighborhoods to maintain socioeconomic diversity and promote resource inclusivity.

Overall, these findings demonstrate that residents' daily lives are not determined solely by SES or residential environment, but rather by the interaction between the two. In highly commercialized HDs, residential environment tends to magnify internal disparities, thereby intensifying social inequalities. In less commercialized HDs, by contrast, the relationship between residents and their environment is more balanced, helping to preserve continuity and equity in daily life. The main findings and conclusions are shown as figure 5-1.

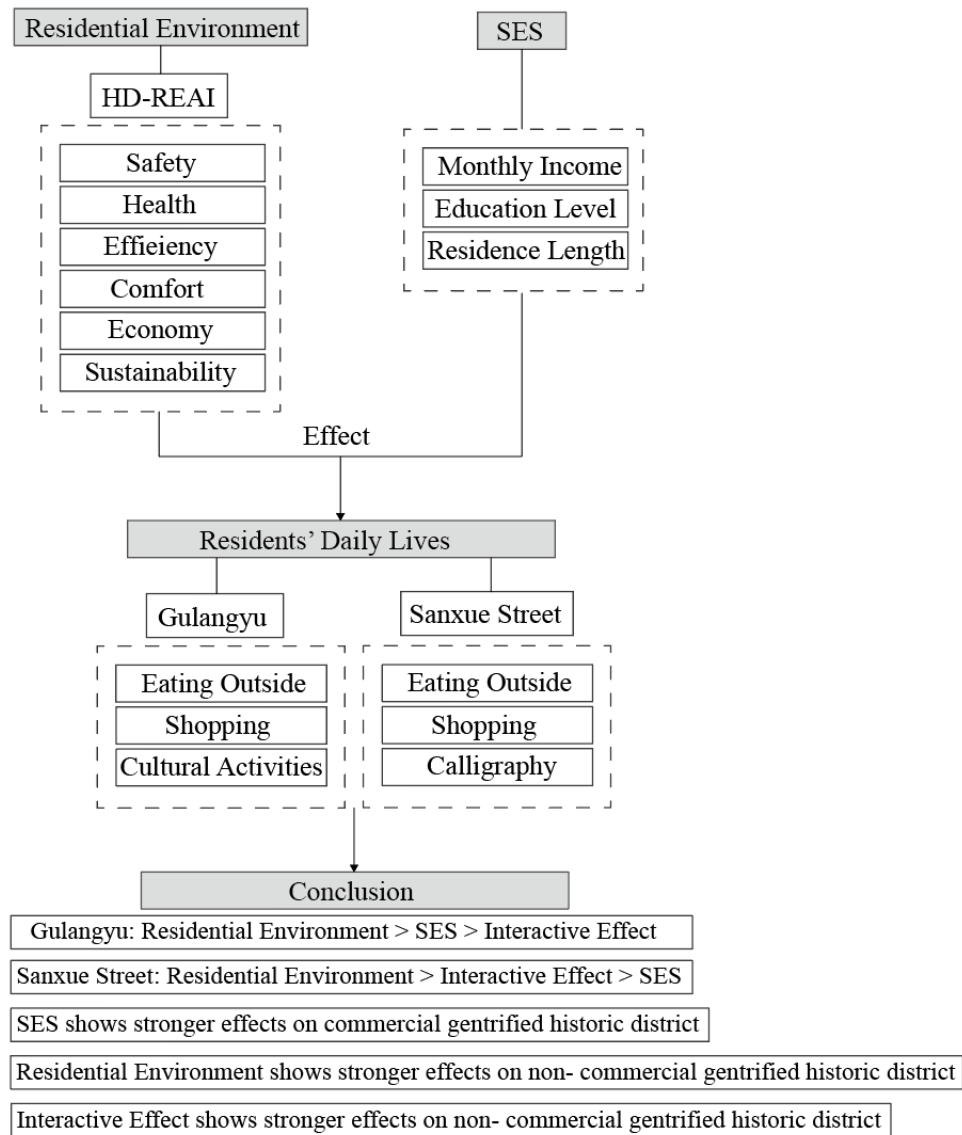


Fig 5-1. Main Findings and Conclusions