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Is the gated community really safe? An empirical analysis based on communities with varying degrees of closure

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ABSTRACT

Gated communities are considered a way of living that provides privacy and security. Existing research has mostly focused on subjective emotional judgments such as fear of crime, while it is unclear whether communities with different degrees of closure have avoided insecure incidents. Taking six communities and 649 questionnaires in Changsha, China as study cases, we analyze the relationship between community closure and community security. The results show that not gated communities but open communities are the safest, while semi-gated communities are the least safe. It is confirmed that community security is regardless of being gated. One possible explanation for this is the joint effect of 'dual security scenarios'. This means that the living communities' security is not only rooted in the construction of a safe physical space, but also depended on a humanistic atmosphere with informal relations and residents' safety awareness, providing natural surveillance possibilities.

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Urban community; gated community; community security; community governance; situational crime prevention

Highlights

- The community security is regardless of being gated in China.
- Open communities but not gated communities are the safest.
- Community security is dependent on the physical space and humanistic atmosphere.
- Self-protection and neighbourhood watch are crucial to the open community's security.
- Four categories of security incidents, including burglary, fights or threats, elevator faults, and traffic accidents have been developed as a way to measure community security.

1. Introduction

Nowadays, gated communities (GCs) with fences emerged globally as the product of social class differentiation and strong security needs (Jurgens & Gnad, 2002; Roitman, 2010; Roitman, Webster, & Landman, 2010). A great deal of previous research suggested

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that GCs were a 'space isolation' response to external criminal threats and are urban space products driven by security needs (Rose, 2000; Wilson-Doenges, 2000; Wu, 2010). Studies in the United Kingdom, the United States, South Africa, and other countries have shown that people tend to prefer a defensive form of living in the community, which can alleviate the uneasiness caused by crimes such as robbery and fighting (Carvalho, George, & Anthony, 1997; Gooblar, 2002; Landman, 2004; Vesselinov, Cazessus, & Falk, 2007). An empirical study (Newman & Franck, 1982) showed that the crime rate of the community after being gated decreased by 26%. Meanwhile, some scholars hold different views and believe that the mitigation effect of the GC on community security is very limited. A previous study found that community security is not related to whether the community is gated (Vilalta, 2011). GCs are merely exclusive symbols of personal prestige (Romig, 2010). Some research even found that the privatization of space has led to increased social isolation (Jacobs, 1961; Low, 2003), and closure has brought security risks (Salcedo & Torres, 2004). Ambulances, fire engines, or police cars cannot enter the gated community in time to deal with unsafe incidents, weakening the role of neighbourhood watch (Jones, Adamson, & Hillier, 2003; Marcuse, 1997). A study in China has shown that the low crime rate is related to grassroots control over citizens, not to whether the community is gated (Wu & Li, 2020). Another study in South Africa also confirms that access control can even lead to criminal behaviour in some cases (Gregory, 2014).

In China, driven by the reform and opening-up (Zhou & Logan, 2008) and the spread of western gated housing living, gated communities have become one of the main forms of residential areas in China (Lu, 2019; Shen & Wu, 2012). A large-scale survey with 3,000 questionnaires (Wu, 2018) shows that about 80.61% of Chinese urban citizens live in GCs. In 2016, 'Several Opinions of the China State Council on Further Strengthening Urban Planning and Construction Management Work' pointed out: 'in principle, gated residential quarters will no longer be built, and the completed residential quarters and unit courtyards will be gradually opened', which caused widespread public debate in China. Our survey with 1636 questionnaires (Wu, 2016) showed that among the respondents who opposed the opening of the community fence, 90.4% of respondents were concerned about the security issues caused by the opening of the community. This leads us to wonder 'is the fence really related to community security?' Therefore, we decided to conduct a comparative study between gated and non-gated communities.

In fact, security or fear of crime is not essential for choosing CGs to live in China, which is different from the judgment of some scholars. In Western countries, CGs are mostly seen as tools to avoid racial and political conflicts (Morange, 2012; Rosen & Razin, 2009; Tedong, 2015). However, in China, the contemporary gated community is often seen as a way of modernizing urban spaces (Lu, 2020). This is because communities in China are generally safe, the crime rate is low, and there is a lack of racial factors within communities in China (Wu, 2010). On the one hand, a survey of 1,781 household questionnaires in China showed that 'convenience' rather than 'safety' was the most important factor for residents to choose where to live (Wu & Li, 2020). This may be because the low crime rate makes the residents' demand for safety not high. According to the China General Social Survey (2015), 73.4% of residents believe their community is safer. On the other hand, the construction of the gated community was not initially for

the safety of the residents, but for the property developers to maintain safety within the construction area of the building and prevent the theft and damage of building materials.

In general, safety is one of the top choices for residents in GCs around the world. However, there is still controversy about whether gated communities are truly safe. Existing studies focus on the perception of safety or fear of crime among residents in gated communities (Kochel & Nouri, 2021; Thomas, 2016; Yang, 2021), but few studies have measured and judged community security.

For our research to be grounded, we need to define community security. Multiple meanings of security make it difficult to measure. Fischer (1982) define security as 'a stable, relatively predictable environment in which individuals or groups can pursue their goals without interference or harm'. Others believe that security is the protection of assets, which include physical assets, personal assets, and information (Craighead, 2003). In different situations, security also has different meanings for different people (Manunta, 1999). There is an explanation that community security includes threats from neighbours, risks, and threats involving ourselves and our families (Inglehart & Norris, 2012). Some scholars have used crime prevention as a synonym for community security, meaning protection from fear, harm, and loss (Brooks, 2018). We map the definitions of community security in practice, rather than basing concepts on subjective perceptions. Thus, we define security in residents' communities as a state of the environment in which individuals are not threatened and not dangerous physically, which includes burglary, fights or threats, elevator faults, and traffic accidents.

China is an ideal field for researching whether gated communities are safer than open communities. Because communities in China have clear geographic boundaries, which makes it feasible to compare communities with different degrees of closure. Three types of communities were selected in the city of Changsha for field observation. We conducted quantitative analyses based on a large-scale questionnaire survey of 649 households. It aims to answer two research questions: (1) whether the gated community is really safe; and (2) what are the real factors influencing community security?

The following section will review the existing literature on the factors influencing the security of the community. After presenting the research methods, the results of the data description will be reported. Interviews are then employed to identify the determinants of safety risks in communities, as well as the reasons for the differences. Finally, case studies and theoretical contributions will be discussed.

2. Literature review and hypothesis

In existing research, in addition to the degree of closure of the community, the impact of the physical factors (e.g. community space management) and humanistic factors within the community on community security has also been scrutinized by many scholars. Most of the relevant factors are based on the *Defensible Space theory* or *criminological theories* such as the Situational Crime Prevention theory.

2.1. The degree of closure affects the security of the community

Scholars hold different views on whether closure can really bring security. As mentioned above, some scholars (Blakely & Snyder, 1997) indicate that the community safety of a

GC is higher. Several studies (Blakely & Snyder, 1997) have investigated whether an entrance guard has the function of enhancing security. Compared with public blocks, private blocks have a lower crime rate (Newman & Franck, 1982). Other scholars (Bai, 1992) found that communities with barriers such as fences are safer than those without spatial isolation, and see fewer thefts. According to the National Survey of Victims of Crime (Rennison 2001), there were about 25.9 million incidents of violence and property victimization in the U.S.A. in 2000. During the COVID-19 pandemic period, the 'safe zone' effect of GCs increased. Empirical data from Beijing provides strong evidence for this, with the effectiveness of GCs in preventing health risks by excluding outsiders (Li, Wan, & He, 2021).

Conversely, several authors have postulated that GCs will not improve the security of the community. In fact, the GC may reduce the residents' safety awareness (Wilson-Doenges, 2000). A study (Lang & Danielsen, 1997) found that once the responsibility for community security protection is transferred to the employed security personnel or security and protection system, residents are unlikely to pay close attention to suspicious personnel nearby, which increases the security risk of the community to a certain extent. Ironically, some studies have shown that GCs have not reduced actual crime but have increased residents' fear of crime (Jones et al., 2003). Security blockades such as gates and fences are often considered a sign of insecurity in modern society (Bible & Hsieh, 2001). According to one empirical study (Breetzke & Cohn, 2013), living in a GC increases the risk of burglary victimization.

The majority of current research has focused solely on gated communities' safety, but rarely made a distinction between communities with varying degrees of closure for comparative research. To fulfill the research gap, our research intends to define security uniformly, ascertain the diverse distribution of safety in different types of communities, and examine the mechanisms of community security. So we put forward the hypothesis that *communities with different degrees of closure have different levels of security*.

2.2. The physical factors affect the security of the community

Clarke (1995) found that the management and design of the physical environment of the community can reduce crime in the community. Based on the Situational Crime Prevention theory (Tonry & Farrington, 1995), an American scholar has pointed out that criminal behaviour is usually a rational choice made by a rational criminal suspect after weighing the costs of crime against the potential benefits. Thus, the physical environment of the community, that is, the construction of a safe space, has become an important factor affecting criminal behaviour.

It has been confirmed that community public space utilization and environmental maintenance have an impact on community security (Kondo, Hohl, & Han, 2016). The Management Hypothesis also suggests that there will be more crimes in poorly managed places because managers fail to take action to prevent crime (Eck, 2005).

The 'defensible space' theory (Newman, 1996) believes that establishing a community environment is essential to community safety. It is now well established from a variety of studies that spaces easily observed by residents are less likely to attract

potential criminals. In addition, a clean, non-cluttered, orderly living environment also reduces crime.

Furthermore, proactive prevention measures such as surveillance are thought to be the main form of prevention of many different types of crime and antisocial behaviour (Hough, Clarke, & Mayhew, 1980). Although some scholars (Gill & Spriggs, 2005; Painter & Tilley, 1999) question its effectiveness as a tool to reduce crime, it is still considered to be an important tool for ensuring the security of residents.

Existing research reveals a sharp increase in the attention paid to the physical factors influencing community security, such as space design. However, these tend to be based on the hardware configuration for space management. As such, little is known about other factors in the creation of safe spaces, such as management quality. The lack of research is largely due to the single metric. This is a gap that our current study aims to fill. As a result, we hypothesize that *managing and maintaining the physical environment of the community has a positive impact on community security*.

2.3. Humanistic factors affect the security of the community

Community cultural factors such as collective effectiveness can also have a direct impact on community security (Sampson, 2012). These factors increase the risk of the perpetrator's behaviour by strengthening surveillance and protection (Cornish & Clarke, 2003). Factors influencing spontaneous action by residents, such as citizen patrols and neighbourhood watch, have only been certified in recent years in empirical studies in the Netherlands and the United Kingdom (Bullock, 2014; Butcher, 2019; Lub, 2018; Schreurs, 2019; Van der Land, 2014; Van Steden, 2011, 2018).

On one hand, residents' high level of safety awareness is conducive to community security. Overall, crime is most easily deterred when people have individual or assigned responsibilities and a clear focus on the place or environment. It was felt that crime prevention depended primarily on the dispersed and universal responsibility of the residents (Felson, 1995). Studies have shown that increasing residents' awareness of the need for security and their defensive mindset can help reduce incidents of insecurity in the community (Ferrell, 2008). Some scholars have pointed out that the typical crime scene is still a 'dark alley' because crime is easiest to complete in places where there are no people (Felson, 2002, p. 32).

On the other hand, neighbourhood relations affect community security. It has been demonstrated that good neighbourhood relations are beneficial in making residents safer. The longer the time spent with neighbours, the lower the frequency of burglary, motor vehicle theft, and robbery (Bellair, 2010). The neighbourhood hypothesis asserts that the high crime rate is due to a lack of informal social control, that is, crime is made easy by the risk of no resident intervention (Taylor, 2019). Some researchers emphasize the role of social disintegration, i.e. the disappearance of informal social relations can reduce the level of collective effectiveness of communities, and thus make communities insecure (Ray 2011). For example, 'the ability of local residents to control abnormal behaviour' will be weakened (Eck, 2005, p. 8).

Although some scholars have started to conduct empirical studies on the humanistic factors influencing community security, most of the previous studies have mostly focused

on one perspective. Additionally, work in this vein is mainly focused on statistical descriptions; it is usually considered that the multidimensional humanistic impacts are independent of each other. In light of this, we present the idea that humanistic factors (neighbourhood relationships, resident safety awareness) have a positive impact on community security.

3. Methodology

Changsha city, with a population of 8.3945 million, is the capital of Hu Nan province, located in central China, and is one of 21 megacities in mainland China. Changsha also won the first batch of 'National Harmonious Community Construction Demonstration Cities', and two of its districts were also approved as the National Community Governance and Service Innovation Pilot Zones of the Ministry of Civil Affairs of China in 2017. Therefore, Changsha has certain representative significance for exploring community governance in China.

Our team has been conducting fieldwork in Changsha for a long time (ten years) and is familiar with the distribution of communities in Changsha. In order to avoid the influence of external factors such as the physical environment, we selected six neighbouring communities in Changsha.

Two communities are GCs (code A, B), two are semi-gated communities (SGCs, fenced but free access: code C, D), and two are OCs (code E, F). We conducted a questionnaire survey on residents in six communities, and distributed a total of 720 questionnaires, collecting 649 valid questionnaires (see Table 1). In addition, we also conducted in-depth interviews with 69 people, including residents, security personnel, and the staff of property management companies. The reliability of the survey data is high ($\alpha = 0.843$), and the cumulative variance contribution rate of independent variables is 58.078%.

A and B communities are comprehensive and fully gated by property developers during the initial construction period, with multiple functions of residence, commerce, catering, and leisure. They have relatively complete security protection facilities and conduct strict inspections on personnel vehicles (Figure 1).

C and D communities are SGCs with fences, but outsiders and vehicles can enter and exit at will (Figure 2).

Table 1. Sample distribution.

Community type	Community name	Number of questionnaires	Interviewee
Gated community	A	216	10 people including residents, security personnel, and property management company's staff
	B		16 people including residents, security personnel, property management company's staff, cleaning staff, etc.
Semi-gated community	C	198	10 people including residents, property management company's staff, security personnel, etc.
	D		10 people including residents, merchants, property management company's staff
Open community	E	235	12 people including residents, security personnel, and merchants
	F		11 people including residents and merchants



Figure 1. The gated community.



Figure 2. Semi-gated community.

E and F communities are OCs without the fence, pedestrians and vehicles can pass through the community at will. Among them, A, B, C, D, and E communities are all property management communities, C is in a state where the previous property management company is handing over management to another company, and F community is a self-managed community of residents (Figure 3).



Figure 3. Open community.

3.1. Measures

This survey includes questions relating to the degree of closure, community security, physical factors (property management quality, the utilization of public space, and the maintenance of social order and environment), and humanistic factors (the perception of security and neighbourhood relationships).

Community security. Community security is mainly measured by the number of different types of security incidents. We consider both the World Health Organization (Sethi, Habibula, & McGee, 2004) and existing research to refine community security into four specific security incidents (burglary, fight or threat, elevator faults, and traffic accidents). The specific data requested in the questionnaire are: (1) 'the number of times you have experienced threats to yourself or your family members, and fights in the community in the past three months', (2) 'the number of times you have experienced theft of your residence in the community in the past three months', (3) 'the number of traffic accidents (collisions and being hit, or scraping) in the community in the past three months', and (4) 'the number of elevator faults in the community in the past three months'.

Since multiple measures can be used to measure a variable, it is necessary to determine the weights of related variables before performing regression. To reduce subjectivity, this study used principal component analysis to determine the weights of measures under each variable: the more variance explained by a particular measure, the higher the weight of that measure. The weight identification results are shown in Table 2.

Table 2. List of variables and measurement.

Variable		Measurement
Security of community		Categorical data: 1 = 0 time/2 = 1 time/3 = 2–3 times/4 = more than 3 times
Burglary ($W = 0.28$)		
Fight, threat ($W = 0.27$)		
Elevator faults ($W = 0.17$)		
Traffic accidents ($W = 0.28$)		
Different degrees of closure		Categorical data: 1 = open community/2 = semi-gated community/3 = gated community
Physical factors	The utilization of public space	Ordering variables: range from 1 to 5 (very bad–very good)
	The maintenance of social order and environment	
	The property management quality	
Humanistic factors	The perception of security	
	Neighbourhood relations	

The degree of community closure. According to relevant literature, based on urban community construction and research requirements, we divide the community into three categories. The first type is GC, which is characterized by a fence or a barrier in the community, and the entry of vehicles and pedestrians needs to pass through an entrance control with a guard or registration. The second type is OC, which is characterized by no obvious boundary between the community and the surrounding environment, and outsiders and vehicles can enter and leave freely. The third type is SGC, which is characterized by a simple fence and does not prohibit outsiders and vehicles from entering.

Physical factors. The construction of the physical environment of the community is provided by the property developer. *China's Property Management Regulations* has pointed out that property management companies or residents themselves must be responsible for the maintenance of equipment in public space. In China's first-tier cities, the proportion of communities managed by the property management company has reached 90%. Therefore, we have incorporated the level of community property management into the physical factors. In addition, to make the topic more detailed, space construction, social order, and environmental maintenance have also been incorporated. In the questionnaire, these three variables are expressed as (1) 'resident satisfaction with property management quality', (2) 'satisfaction with the use of community public space (design of venues and internal roads)', and (3) 'satisfaction with the community environment (public order, environmental maintenance)'.

Humanistic factors. The creation of a humanistic environment is generally used to describe the collective effectiveness of communities, which is related to community security and is mainly reflected in the construction of informal relationships and the cultivation of personal safety awareness. Neighbourhood relations are mainly expressed in the questionnaire as 'the degree to which residents are familiar with neighbours in the community and have smooth communication'. Personal security awareness is often used as a synonym for victim risk perception itself (Blinkert, 2010), which is measured by the question 'Do you feel safe in your community?'

4. Distribution of community security in communities with different degrees of closure

Here, through descriptive statistics, cross-tabulation, and analysis of variance, we compared the differences in the security of communities with different degrees of closure. It is found that SGCs rather than OCs are the least safe, while GCs are relatively safer.

Statistical analysis shows that SGCs have the highest frequency of unsafe incidents, far higher than the average of the three types of communities. We assigned the times of occurrences of unsafe incidents in the past three months. The results show that SGCs have the highest number of insecure incidents ($M = 1.40$), followed by GCs ($M = 1.32$), and OCs are the safest ($M = 1.22$). In addition, 'elevator faults' occur in various types of communities. In GCs, SGCs, and OCs, 45.2%, 43.3%, and 25.4% of residents have experienced elevator faults in the past three months. In comparison, 'fights and threats in communities' rarely occurred, and the average scores of the three types of communities were 1.15, 1.23, and 1.11.

Specifically, the frequency of burglary in SGCs and OCs was higher than that in GCs (see Table 3). The incidences of 'burglary in the past three months' among unsafe incidents were 24.23% and 21.19%. In SGCs, 9.28% of residents reported having encountered an incident more than twice, while the proportion in the other two types of communities was around 4%, which was significantly lower than that of SGCs.

The frequency of 'fighting threats' in SGCs was higher. Of the residents in the SGCs, 12.89% 'have experienced fights and threats in the past three months', of which 3.09% of the residents have experienced 'fighting threats' more than four times. OCs and GCs have relatively low results for this category, with 8.05% and 9.59% of residents, respectively, experiencing this incident.

In terms of the frequency of elevator faults, OCs have significantly lower results than the other two types of communities. Of residents 25.42% 'have experienced elevator faults in the past three months', and the proportion for GCs and SGCs was 45.21% and 43.3%, respectively. Of the residents in the SGCs, 11.34% have experienced elevator faults more than four times, which is significantly higher than in the other two types of communities. The field investigation found that the frequency of 'elevator faults' in OCs was low, partly because there were no elevator facilities in some OCs.

Residents of SGCs were involved in more traffic accidents than residents of GCs and OCs. The proportion of residents who have experienced traffic accidents has reached 25.77%, and the proportion of residents in the other two types of communities encountering such accidents is 21.92% and 15.25%, respectively. The field investigation found that the correlation between traffic accidents and the closure of the community was

Table 3. Differential analysis of community security assessment and community closure degree.

	Mean		
Times of unsafe incidents	Gated community	Semi-gated community	Open community
Burglary	1.22	1.37	1.28
Fight, threat	1.15	1.23	1.11
Elevator faults	1.78	1.78	1.28
Traffic accident	1.31	1.36	1.23
Community security	**1.32**	**1.40**	**1.22**

not significant and was more dependent on the strict control of vehicles by the community and the design of the roads.

5. The real factors influencing community security

To confirm the hypotheses, we first summarized the influencing factors of community security based on descriptive analysis, then conducted a more detailed intergroup comparison of each factor. Finally, based on interview data and field research, we analyzed the reasons for the differences in the security of the three types of communities (Table 4).

5.1. The impact of physical environment construction on community security

The correlation test shows that the construction of the physical environment is highly correlated with community security, and the influencing factors are different in the three types of communities. Specifically, the property management of the GC is relatively the best ($M = 3.46$), followed by the SGC ($M = 3.22$), while the OC has the worst security system due to the lack of professional management by property management companies ($M = 2.99$). In addition, the environmental order ($M = 3.32$) and spatial design ($M = 3.65$) of the GCs are the best, which is superior to the SGC and the OC.

5.1.1. The level of property management affects community security

The ideal property management was found to be conducive to reducing unsafe incidents in the community ($r = -0.186$, $p<0.01$). The impact of property management on community security is mainly reflected in the construction of security systems, the allocation of security personnel, and the maintenance of related equipment.

One such example is the entrance guard system. Some communities are designed with strict patrol systems, which are safer. GC 'A' has perfect monitoring systems, and the guards are on duty 24 h a day. Also, the entrance guard system has a deterrent effect on criminals. Residents in the communities must enter with their cards. Residents living in other communities can only be allowed to enter after confirmation by the residence owner, and their vehicles will be released after registering the vehicle number. There are fewer unsafe incidents in community 'A' than in other communities.

However, we observed that the community's access control system was ineffective in another gated community, B. Residential buildings' multiple access control intercom systems were broken, allowing unauthorized individuals to enter at will and posing a threat to the neighbourhood's security. According to the interviews,

Table 4. Description of influencing factors of community safety risk with closure degree.

		Degree of closure		
		Gated community	Semi-gated community	Open community
Physical factors	The utilization of public space	3.65	3.19	3.11
	The maintenance of social order and environment	3.32	2.95	2.92
	The property management	3.46	3.22	2.99
Humanistic factors	The perception of security	3.16	2.98	2.88
	Neighbourhood relations	3.23	3.27	3.34

> The doors of our residential buildings are often open, and some of them are broken, so we don't feel very safe at night. We have reported the problem to the property management for repair many times. However, the problem has not been solved. (2019.03.02 B)

Another one is the security patrol. The security and protection systems of SGC 'C', and OC 'F' are virtually useless, and the patrol personnel is lax in their work. The patrol work in 'D', and 'F' have major defects. One is that they do not patrol around the clock, and the other is that patrol records are falsified, and thefts (entry, battery, and car) occur from time to time. In contrast, the security personnel of OC E patrol on time and play a role in community security. The interviews revealed that:

> The community is patrolled 24 hours a day. (2019.03.03 E)

Through field research, we found that there are potential risks in community 'C', of which monitoring facilities are useless with electricity erratic, due to the subway construction.

Another is the maintenance of living facilities. In the OC 'E', the property management company regularly overhauls the elevator and repairs public facilities on time. Therefore, there are fewer elevator accidents in communities of E. The interviews revealed that:

> We haven't had many breakdowns in the elevator, and I've seen the property often come to service the elevator. (2019.03.02 E)

The number of streetlights in the OC 'F' is not large, providing criminals with 'dark alley'-like opportunities. Most residential buildings have shops on the ground floor, and the gates are always open, allowing residents who live in other communities to enter and exit freely. Elevator accidents occur from time to time, and the relevant staff in charge do not handle these incidents in a timely fashion, which poses a great threat to the personal and property security of residents (Table 5).

5.1.2. The utilization of community space affects community security

Community public space utilization is significantly related to community safety risk ($r = -0.123$, $p < 0.01$), that is, poor road planning and space utilization heighten the risk of accidents for residents.

Table 5. Community security of different space management situations in three types of communities.

Community code	Degree of closure	Community security	Space management
A	Gated	High	Perfect security and protection system and high satisfaction of property management.
B		Low	The entrance guard system looks like fake defense and public facilities are not repaired in time.
C	Semi-gated	Low	Confusion in property management, unreasonable road design, severe damage to public facilities.
D		Medium	The security and protection system is absent, and patrol personnel slack.
E	Open	High	The property overhauls elevators on time.
F		Low	The security facilities are incomplete, the residents' safety awareness is not high, and the community environment is messy.

The proper design of the internal transportation facilities of the community is closely related to the security of residents. The GC 'A' has an underground parking lot, the sidewalks and non-motorized roads are well constructed, and fewer traffic accidents occur. There are no speed limitation devices in OC 'F', and the residents face traffic security risks. GC 'B' allows outside vehicles to enter, and the property management company privately rents underground garages and public parking spaces, resulting in the continuous scraping of vehicles, causing many traffic security hazards to residents.

5.1.3. The maintenance of social order and environment affects community security

Community public environment maintenance is significantly related to community safety risk ($r = -0.122$, $p < 0.01$), that is, the less messy the community environment, the safer the community. The environment in the OC 'F' is messy, due to the irregular placement of shared bicycles. Residents have been injured by fallen bicycles. Based on the field research, we found several residential buildings built next to the lake, so residents could not conduct surveillance, and this became a high-incident area of theft. The interviews revealed that:

> There are quite a lot of thefts in our community, and last year several families had their jade stolen. The one on the other side of the lake had the most thefts. (2019.03.02 F) (Figure 4)

The ground parking lot in the SGC 'C' is poorly planned, and the vehicles are parked in a disorderly fashion, which is easy to cause danger for residents.

5.2. The impact of humanistic factors on community security

Of the three types of communities, GC is considered safer by more residents, and most residents of OC believe their community is unsafe. Differences in residents' safety awareness have led to their initiative in self-protective behaviour. Besides, natural surveillance

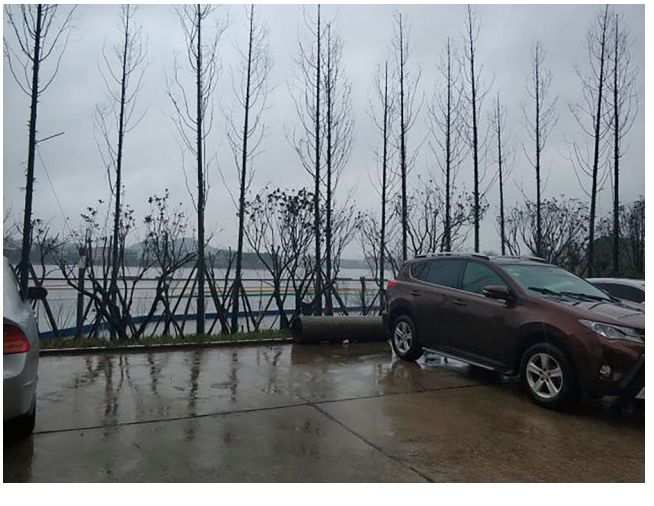

Figure 4. Buildings backing up to the lake in F.

in the OC is the best, and it was found that the average value of the neighbourhood relationship in the OC is 3.34, the highest score. The average values of the neighbourhood relations of SGCs and GCs are 3.27 and 3.23.

5.2.1. Residents' self-prevention and protection measures affect community security

The residents' safety awareness affects the community safety risk. When residents believe that the community is unsafe, they will take self-protective measures to avoid unsafe incidents. Some of the residents interviewed told us:

> Because we live in an open community with many non-community residents walking through, many of my neighbors are more worried about safety. We have installed protective nets on the windows, and I have installed double-sided security doors. (2019.03.03 E)

> Our protective fences are installed by ourselves, to prevent thieves well. (2019.03.03 D) (Figure 5)

The residents' safety awareness of OC 'E' is rather high. The household anti-theft door is a double-layer anti-theft door installed by the resident, which highly increases security, making the probability of burglary in the house almost zero (Figure 6).

In GC 'B' and SGC 'C', some residents have not installed anti-theft nets, the corridors are open balconies, and the doors of residents' buildings are often open, providing a convenient method for thieves. The interviews revealed that:

> Some residents' buildings in our community have access control and some don't, mostly because the first floor is basically a hotel and they simply leave it open for convenience. (2019.03.02 C) (Figure 7)

Community 'B' once blocked the fire-fighting passage due to the random parking of cars, which meant that fire trucks could not enter. Although the community is gated, the public safety education initiative has not been strong, and most residents do not care about security (they do not pay attention or participate in security activities). Few residents also pay attention to the security risks around them (such as elevator maintenance),



Figure 5. Communities where residents have added security grilles.



Figure 6. B for residents without burglar screens.

and a lack of awareness of their protection and their accommodation means that they are more likely to be injured in the community.

5.2.2. The more intimate the neighbourhood, the safer the community

Intimate neighbourhoods are associated with few unsafe incidents ($r = -0.133$, $p < 0.01$). The neighbourhood relationships of residents in OCs are more harmonious. The possible reason for this is that the OCs are indigenous communities, which are more familiar to residents. Besides, over 20% of residents in OCs are retirees, so they can spend more time



Figure 7. Residents' buildings with unlocked doors.

participating in community activities. In contrast, the residential structure of a commercial housing community is more complex. The residents of GCs are mostly young and spend less time in the community, and some of them have migrated from other cities. Its neighbourhood relationships can become alienated, coming off as a 'community of strangers'.

Much evidence proves that the permanent residents of the OC 'E' are mainly elderly people, which is a typical 'acquaintance society'. Because of the existence of the surrounding vegetable market and restaurants, the neighbourhoods are more familiar. And residents are more likely to play a role in 'natural surveillance', so that the OC is safer than the GC. The neighbourhood relationship between GC 'B' is relatively alienated. Most community residents are a floating population; most of the young people leave early and return late, making the neighbourhood not very familiar. Most residents do not give attention to the security of the community and are more reluctant to bear the cost of the construction of security facilities in the community. The responsibility for maintaining the security of the community is borne by the community and the property management company, and it is difficult to achieve good 'collective effectiveness', so the community is less safe.

6. Discussion

Overall, fences are not the determinant of community security. Whether the community is safe has nothing to do with whether it is gated, but rather with physical and humanistic factors. We corrected the loose judgment of viewing a fence as a factor of community security.

The factors of community security in China are not limited to the physical environment of the community, but also include the social and cultural environment of the community. This forms the second security scenario of the community. As early as 60 years ago, scholars believed that it was necessary to link the criminological concept of 'scenario' with the sociological concept of 'scenario' and social interaction (Von Lampe, 2011). Yet existing research is still limited in the context of the physical environment, ignoring the impacts of multiple factors (e.g. social ties) on crime or community security. The Situational Crime Prevention theory (Tonry & Farrington, 1995), which was criticized for focusing on the management of the physical environment of the community (Raymen, 2016), should shift from purely rational judgment to focus on informal relationships and the individualization of residents. We analyzed in detail the impact of physical and humanistic factors on community security in terms of the specific security scenarios of different types of communities. Our findings make this claim more concrete.

Besides, in the context of community governance in China, this study has made a new improvement in the definition and measurement of community security. Existing criminological theories, such as Situational Crime Prevention, are mainly used to prevent crime, and the scope of community security is far beyond crime. Some unsafe incidents may not yet reach the level of crime, but they are already threatening the safety of residents. Based on the absorption of crime as a security indicator, we consider specific practice contexts (community level and individual level) to refine the meaning of community security. We apply four types of security incidents, such as burglary, fights or threats,

elevator faults, and traffic accidents, to measure community security. Under certain circumstances, these four categories of insecurity are entirely likely to be considered criminal.

In addition, China is the ideal venue for 'whether fence makes a community safer'. In China, fences in gated communities are installed during the initial living community construction period generally. Open communities are often historical productions of living spaces, such as independent houses of farmers who used to be aborigines without common property rights, or houses originally built by state-owned enterprises before the reform and opening-up in 1978. These residents living in open communities do not have an organization to install access control, fences, and other gated facilities in the entire residential area. Therefore, gated facilities such as fences are not the choice of residents after living in communities, but 'remaining unchanged after construction'.

7. Conclusion

Contrary to some research conclusions, the study in China shows that whether a community is gated is not a determinant of its security. Based on objective data from authoritative scale statistics, the study found that semi-gated communities are the least safe, followed by gated communities, with open communities being the safest (OC > GC > SGC). Based on the theory of Defensible Space and Situational Crime Prevention that emphasizes the physical environmental impact, our research has found that community security is influenced by 'dual security scenarios' with a combination of physical and humanistic factors. Compared with previous studies that regard 'fence' as a factor in community security, the construction of a safe space (in terms of property management, community space utilization, order, and environmental maintenance) and the creation of informal relationships (the residents' self-prevention and protection measures) are important factors affecting the security of the community.

Physical factors refer to factors that affect the construction of a safe space, including property management, the design of public spaces, and the maintenance of the environment and order in living communities. Specifically, the lack of security equipment construction in the community and irresponsible property management make the community unable to cope with security risks. For example, semi-gated communities do not have access control for external vehicles and pedestrians, and criminals can easily enter the community. Thus, the expected closure effect is often difficult to achieve. In addition, if the space of the community is poorly managed and the environment is disorderly, criminals can easily enter the community area. More importantly, external rescue agents (e.g. police and fire services) cannot intervene in time, which increases the security risk of the community.

Humanistic factors include neighbourhood relations and safety awareness by residents. For the construction of community security in China, the humanistic construction of the community is more important than the construction of the physical environment, which is also one of the core factors of open communities being the safest. Because most open communities are acquaintance societies, neighbours are more willing to take the initiative and help each other. Incidents such as burglary rarely occur. Moreover, the residents of the community have low safety awareness, which adds to the security risk. If residents overly trust the security provided by the community-base fence, this will reduce

their concerns and vigilance over hidden dangers in the community, i.e. producing a false sense of security. This means that the informal prevention and control forces within the community weaken, while security risks increase. Our research does confirm this point of view. In open communities without the community-base fence, most residents with higher safety awareness rely on self-protection to make their communities safer.

Objectively, we chose a representative city and did a good job of comparing six neighbouring communities with different degrees of closure, which complemented research that had not been done. The outcomes of this data analysis are also indicative of the overall level of security in Chinese communities and have some relevance for cross-national comparative studies. Although we conducted 649 questionnaires to verify the hypotheses, the study merely offers a speculative explanation. A rigorous econometric model that includes control variables to explore the influences of community security is an option for future research. To have a better grasp of this conclusion, larger questionnaires and comparative studies are needed.

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Data availability statement

The following data, models, or code generated or used during the study are available from the corresponding author upon reasonable request.

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