

A Research on Evaluation Index System of High Quality Housing

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Abstract: After decades of rapid development, China's real estate industry is transforming from large-scale to high-quality development. The outline of the national 14th Five-Year Plan and the introduction of macro-control policies such as "three red lines" and "centralized land supply" have formed a consensus on improving the quality of housing in a wider range, which all point to the same direction, that is, real estate should return to the property of people's livelihood and pay attention to people-oriented and high-quality development. Residents' housing concept has undergone a major change, putting forward higher requirements for residence satisfaction, and the demand for housing has also shifted from quantity to quality. High-quality housing has become an inevitable trend in the development of residential construction. According to the requirements of high-quality development of housing construction, this paper explores and studies the evaluation index system of high-quality housing from the perspective of residents' feelings to help improve the overall happiness index of residents.

Keywords: High quality housing; Evaluation index system; Residence satisfaction.

1. Introduction

With the rapid development of the economy, China's housing shortage problem has gradually disappeared, from the floor area alone, China has been in the world's leading level, but the quality of housing needs to be improved, is still in the "quantity of low quality" stage^[1]. With the continuous improvement of people's living standards, residents' demand for housing has also shifted from quantity to quality, and a new era of housing quality characterized by innovation and high-quality supply has come. More and more quality housing has appeared on the market, bringing residents a more comfortable life experience. To find out the key influencing factors through the survey of household satisfaction, and build an index quantitative system based on it, is helpful to

promote the rapid development of the real estate industry, and has important scientific value and strategic significance for improving the quality of housing and guiding the development of China's housing industry.

2. Present situation of residents' living satisfaction

According to the "2023 Chinese Urban Residents' Residential Satisfaction Survey Report" released by the China Index Academy, the overall residential satisfaction of Chinese urban residents in 2023 is 72.3 points, down 2.7 points from 2022 and 4.3 points from 2021, which is the second time since 2018 that residents' overall residential satisfaction has declined^[2].

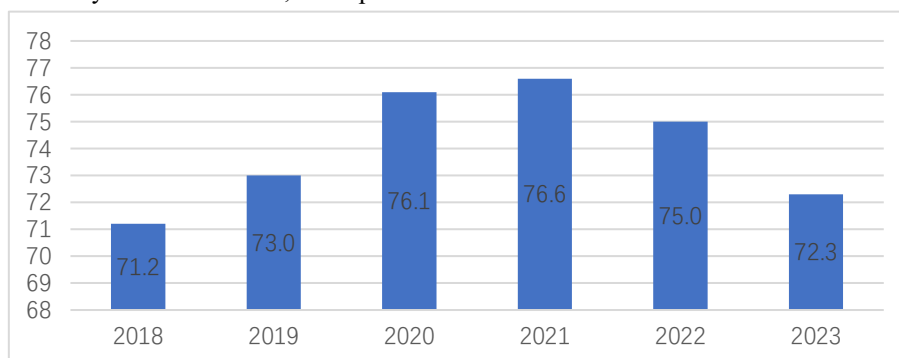


Fig. 1 Changes in overall satisfaction of urban residents in China with housing in 2018-2023

The survey involved a total of 10 key indicators, among which the satisfaction of residents in housing quality, property services and other aspects decreased significantly, directly dragging down the overall residential satisfaction. In the past two years, the evaluation of customers during the delivery of housing has decreased significantly. In the environment of cost control, the quality problems of newly delivered houses are more serious, and problems such as hardcover reduction and discrepancy between the quality of the community and the publicity are frequent. Various factors will affect the final presentation effect, resulting in quality problems that cannot

be solved in a long period of time. In addition, the irregular operation of the real estate industry is also an important reason for the decline in satisfaction. In order to make quick payment, some developers cheat consumers and other bad behaviors in the early publicity, which damages the rights and interests of buyers, reduces the trust of buyers, and has a negative impact on the satisfaction of the whole real estate industry.

3. High quality housing policy

The concept of high-quality housing in China has a long

history. Combined with the development period of Chinese real estate, high-quality housing can be roughly divided into three periods: embryonic period, concept formation period and policy promotion period. China's real estate development began in 1980, through the collapse of the Hainan real estate bubble from 1988 to 1993, and the golden age of real estate from 1998 to 2005, during which the industry excessively pursued market size rather than the quality and quality of homes. From 2006 to 2009, as the country issued the "Green Building Evaluation Standards" and promoted the application of prefabricated buildings and ultra-low energy consumption building technologies, high-quality housing gradually began to sprout. From 2010 to 2019, starting from the compilation

of the "Beijing High-quality Housing Comprehensive Evaluation Standard" launched by the Beijing Real Estate Industry Association in 2014, the concept of "high-quality housing" has been defined for the first time in China's construction industry. After 2020, high-quality housing began to be gradually promoted in many cities across the country, Chongqing, Shandong, Jiangsu and other places have issued relevant documents, although the specific details of high-quality housing standards are different, but the general direction is relatively similar. It basically revolves around safe and durable, healthy and comfortable, convenient facilities, attentive service, sustainable value, respect for the occupants and aesthetic significance of the house.

Table 1. The relevant policies of each province and city concerning high-quality housing

District	Release time	policy	Key policy points
Guangdong Province	2020.9	Evaluation criteria for livable community construction	Adhere to the people's yearning for a better life and the pursuit of high-quality housing as an important guide for standardization work, continue to reform and improve the engineering construction standard system, promote the standardization of digital families, introduce the "good housing" standard, and constantly strengthen the guidance and supervision of the implementation of standards, promote the quality of construction projects, and strengthen the fine management of residential communities.
Hebei Province	2020.9	Hebei green building creation action implementation plan	Explore the pilot demonstration of healthy housing construction, on the basis of meeting the basic performance requirements of housing, highlighting the health elements, with the concept of sustainable development of residential health, to meet the physiological, psychological and social needs of residents at various levels, and build healthy, safe, comfortable and environmentally friendly high-quality housing for residents.
Beijing	2021.12	Notice on regulating the construction management of high quality commercial housing projects	The minimum quality requirements for green building two-star standard, the use of prefabricated buildings with an assembly rate of 60%, the installation of solar photovoltaic or photothermal systems; The high quality housing construction scheme consists of six parts: green building, prefabricated building, ultra-low energy consumption building, healthy building, livable technology application and management mode.
Chongqing	2023.2	Action guide of high quality living residential area in central city of Chongqing	Practice the concept of "people's city", with the goal of creating high-quality life, and strive to create: green ecological livable life, comfortable and convenient healthy life, stable and safe harmonious life, efficient and smooth convenient life, rich and colorful characteristic life, clean and standardized orderly life, friendly life with multiple sharing, innovative and dynamic smart life.
Shandong Province	2023.7	Shandong Province high-quality housing development and construction guidelines	High-quality housing should meet the requirements of high-quality development, with excellent quality, safety and durability, function optimization, health and comfort, beautiful environment, convenient and livable, perfect facilities, advanced technology, low-carbon green, energy saving and environmental protection, fine service, neighborhood harmony quality, reflect the humanistic aesthetic value, lead the development direction of a better living life, is widely recognized by the masses of "good house".
Jiangsu Province	2023.11	Guidelines for high quality residential design	The spatial quality of residential areas should be improved from the aspects of layout design, public facilities construction and environment construction. Improve building quality and performance from the aspects of house design, space optimization, wisdom and health; Improve the management level of residential area construction from the aspects of design quality, construction quality and information disclosure; Improve the service level of residential areas from the aspects of product use, operation and maintenance, and property management, and build "high-quality housing" that the people are satisfied with.

4. Establishment of evaluation index system

4.1. Index selection principle

In the past, we built houses. In the future, we will build good houses. Promoting the development and construction of high-quality housing is the basic work to lead the steady and healthy development of real estate, accelerate the

transformation and upgrading of the industry, and is a specific measure to meet the people's new expectations for a better living life^[3]. The establishment of the evaluation index system of high-quality housing should start from the actual feelings of the residents, because the residents do not have corresponding professional knowledge, they pay more attention to the actual feelings of space and environment, so the high-quality housing that they really feel should be the important goal pursued by the housing construction, and

should also become the index system with the largest common divisor in the evaluation content of high-quality housing. This is also the realistic demand for cultivating a complete industrial chain of residential domestic demand. Residence satisfaction itself is the subjective feeling of the residents to the living situation. It is very important to observe the overall judgment of residents' residence satisfaction through scientific methods [4]. To ensure the rationality and applicability of the evaluation index of residential satisfaction, this paper adheres to the following principles:

1) People-oriented principle

The main object of residence satisfaction is residential residents, so the research process requires starting from residents and grasping the real needs of residents. Only by looking at the problem from the perspective of residents and taking the actual experience of residents as the starting point, can we more accurately understand the needs of residents for high-quality housing and the existing problems.

2) Principle of independence

Each indicator of residence satisfaction must be able to represent a certain aspect of residents' life and cannot be replaced by other indicators. The indicator that residents are most concerned about is selected to facilitate the identification and reflection of different aspects of the problem.

4.2. Evaluation index system construction

To study the specific index content of the evaluation index system of high-quality housing, it is necessary to link up the development stage of green building, healthy housing and high-quality housing, link up different standards, link up the existing housing quality problems and improvement measures, and consider the principle of overall consideration between the current domestic standards and international standards. To study the specific index content of the evaluation index system of high-quality housing, more targeted technical measures should be taken from the perspective of living experience to deal with the relationship between residential health and comfort and the indoor and outdoor environment of residential buildings. From the perspective of the physiological and psychological impact of residential buildings on occupants, health and comfort concerns should be integrated into the indoor and outdoor living environment after completion. Fully coordinate the relationship between residents' feelings and the environment. By referring to the policies issued by various provinces and cities and the literature of outstanding scholars, the indicators are sorted out and summarized, and a high-quality housing evaluation index system including 5 first-level indicators and 20 second-level indicators is established, as shown in Table 2 below.

Table 2. High quality housing evaluation index system

	Primary index	Secondary index
High quality housing	Safe and durable	Engineering quality X1
		Fire, gas and electrical equipment safety X2
		Durability of building structural materials X3
		Durability of decoration and decoration materials X4
	Environmental habitability	Residential landscape design X5
		Convenient travel X6
		Aging performance X7
	Intelligent technology	Smart home X8
		Intelligent community X9
		Smart property X10
	Comfortable and healthy	House type design X11
		Air environment X12
		Light environment X13
		Acoustic environment X14
		Complete set X15
		Residential maintenance and repair X16
		Community transportation organization X17
	Green and low-carbon	Industrial design system X18
		Industrial construction mode X19
		Reduce residential carbon emissions X20

4.3. Evaluation index interpretation

1)Engineering quality

The residential structure design should adopt mature and reliable technology, process and material to meet the needs of green development and sustainability. The structural design should adopt a structural form with good seismic performance, and its applicability, durability and seismic performance should meet the relevant requirements of national standards and codes, and encourage appropriate higher than the requirements of national standards and codes.

2)Fire, gas and electrical equipment safety.

Check regularly and keep records.

3)Durability of building structural materials

In order to comprehensively improve the service life,

quality quality and long-term value of high-quality housing, residential design should increase the design life of the structure, which should not be less than 70 years.

4)Durability of decoration and decoration materials

The quality of the decoration project, the selection of materials and the quality of the product should comply with the provisions of the current relevant standards of the state, industry and provinces.

5)Residential landscape design

The green land rate of the residential area reaches more than 25%, and all types of green space are rationally distributed; No encroachment on green space, no damage to trees and flowers, no bare land. There is a central public green space, with rest, play, walking, fitness and other functions,

and a separate activity area for children and the elderly.

6) Convenient travel

Bus and subway transportation is convenient.

7) Aging performance

The aging space design is adopted.

8) Smart home

The main functions of the smart home system should include intelligent central control system, intelligent lighting system, wireless wifi system, intelligent security system, indoor environment detection system, multimedia entertainment system, intelligent medical care system, etc.

9) Intelligent community

Smart community is the most basic unit of smart city for people's livelihood. It adopts the new generation of information and communication technology, integrates the public information application in the community and the intelligent application of the owner's home, realizes the affairs management and administrative management of the buildings in the community, the infrastructure of the community, and all kinds of residents, and provides a livable environment with intelligent services for the residents of the community.

10) Smart property

Actively develop smart property, which mainly includes building smart property management service platform, standardizing property service data collection and integration, promoting intelligent facility and equipment management, promoting intelligent residential community security management, expanding the field of property services, and improving the efficiency of public services.

11) House type design

The scale of each functional space should be compatible with the size of the house. The surface is wide and deep, the dynamic zone is suitable, the north and south are transparent, the number of bedrooms and toilets is appropriate, the room scale and streamline are reasonable, and the storage space of the unit type is fully considered.

12) Air environment

The effective natural ventilation opening area of the dwelling should not be less than 5% of the floor area of the building. The concentration limits of the basic items of outdoor ambient air pollutants meet the relevant requirements of "Ambient Air Quality Standard" GB3095.

13) Light environment

Delimit the light environment control area, optimize public lighting, promote green lighting, and avoid light pollution. The measurement items of outdoor public area lighting should include illuminance, color temperature, color rendering index and brightness.

14) Acoustic environment

The main interatrial sound performance is good. In the community services, reasonable arrangements for decoration, renovation, public activities and other noise events, timely response to the noise demands of the masses. Outdoor public areas should meet the requirements of functional areas of sound environment according to regional characteristics. Install intelligent noise detection equipment.

15) Complete set

In combination with the urban supporting facilities and the population size of the residential areas, we will improve various public supporting facilities such as living, education, medical care and elderly care.

16) Residential maintenance and repair

Classify the durability level of parts and make maintenance plan; The maintenance space is set up in the centralized part

of the pipeline, and the underground garage is managed regularly; Develop a high-quality residential information service platform to provide regular air quality and other information to owners.

17) Community transportation organization

The traffic organization inside the residential district should be smooth between internal and external traffic, reasonable layout, clear functional division, to achieve people and vehicles in their own way, do not interfere with each other, to achieve green energy saving, convenient living, comfortable environment, conducive to the neighborhood life scene.

18) Industrial design system

Encourage the use of building information modeling (BIM) technology in the design stage for forward design, and transmit data to parts manufacturing, construction, operation and maintenance and other stages to promote the application of BIM technology in the life cycle of residential construction.

19) Industrial construction mode

We will encourage the application of new green building materials and prefabricated technologies.

20) Reduce residential carbon emissions

In strict accordance with the requirements of green construction construction; Conduct residential carbon emission analysis to reduce residential carbon emission.

5. Complimentary close

In today's housing demand from the quantity to the quality of the environment, people's awareness of improving the quality of housing has reached a consensus in a wider range. At present, the real estate industry has encountered problems in the process of development, and the way to solve these problems and break through the obstacles to development is to further improve the quality of residential projects. The construction of a high-quality housing evaluation index system, in the case that the existing standards can not meet the current situation of China's housing, not only provides the industry with a yardstick to measure the quality of existing housing, but also provides the direction and reference for the further development of the industry, so as to promote the real estate to return to the livelihood of the people's livelihood and truly realize the social consensus of "house is used to live, not to speculate".

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