

Original Research Article

An Investigation of the Impact of Physical Quality and Architectural Function of Housing Interior Space on Housing Choice: A Comparison Between Stated and Revealed Preferences in Arak

Mahsa Mokhtari¹, Seyed Mohammadreza Miralayi^{2*}, Reza Nasr Isfahani³

1. Department of Architecture, Ar.C., Islamic Azad University, Arak, Iran.

2. Department of Architecture, Ar.C., Islamic Azad University, Arak, Iran.

3. Department of Economics and Entrepreneurship, Faculty of Advanced Studies in Art and Entrepreneurship, Isfahan University of Art, Iran.

Received: 03/03/2025

Accepted: 26/05/2025

Availableonline: 23/07/2025

Abstract

Problem statement: The significance and necessity of the physical and functional quality of housing architecture, in consort with the demographic characteristics of the household, play a key role in housing selection. In this process, households choose their housing from available options; there might be a discrepancy between their choices and their expectations as well as subjective preferences, and such a gap may lead to some dissatisfaction.

Research objective: a) To analyze the impact of the physical and functional quality of housing architecture and household characteristics on the selection of qualitative attributes of housing (i.e. physical and functional in the current situation), and b) To identify the expected quality of housing architecture for the household, which will ultimately lead to more practical knowledge for designing housing architecture that is more appropriate to the needs of each group of housing users.

Research method: This research is applied in terms of the purpose and descriptive-analytical method. The data were collected through a survey and field data using questionnaires, face-to-face interviews, and site observations. The samples of this study included households living in houses in the city of Arak. The samples were selected via random sampling based on Morgan's table. For the reliability coefficient, the questionnaire was distributed among 700 people. In analyzing the data, Spearman's correlation coefficient, mean, frequency distribution, skewness, elongation, and other statistical tests and Excel and SPSS software were used.

Conclusion: The results show that the physical and functional quality of architecture and demographic characteristics play a significant role in choosing housing. However, there are often significant differences between individuals' subjective ideal preferences and their chosen housing, such as preference for semi-open space, flooring type, window size, location of semi-open space entrance, spatial privacy, kitchen design, etc. These findings emphasize the importance of an in-depth understanding of the subjective values and housing preferences of housing residents.

Keywords: *Housing choice, physical and functional quality of housing architecture, household demographic characteristics, stated and revealed preferences, housing residents, prioritization and ranking.*

* Corresponding author: 08634132451, smr.miralaie@iau.ac.ir

1. m.mokhtari1043@iau.ac.ir

3. r.nasr@au.ac.ir

Introduction

• Statement of the problem

People often seek to choose the most suitable housing either for buying or renting. That is why it is significant for designers and planners to understand people's housing preferences (Jansen et al., 2011). As housing is improperly distributed and its demands outweigh its supply, providing housing quality aligned with citizens' needs in metropolitan areas has caused several challenges for housing designers (Ezennia & Hoskara, 2019). According to Olanrewaju and Woon (2019, 1), adequate housing supply reflects national development. It is estimated that more than 38 percent of the urban population of Iran lives in metropolitan areas, including Arak, and by 2026, 12 million housing units will be needed in Iran (Statistics Center of Iran, 2016); Therefore, avoiding unsuccessful experiences in satisfying users in mass constructions, which seems inevitable, requires understanding users' expectations, designing new housing in harmony with consumer needs and meeting their interests (Ahmadi & Charehjo, 2021; Bahmani & Ghaedrahmati, 2016; Mulliner & Algrnas, 2018; Rezaei Khaboushan & Nematimehr, 2015). One of the reasons describing the failure in the design of the interior spaces of current mass housing projects can be found in the scarce communication between architects and clients about their needs. Sometimes people only see the built houses after the project is completed, and the housing design is determined by architects only based on limited factors such as area or number of rooms (Al-Momani, 2000, 179-180). Reforming this structure is of particular importance because it creates a greater ability to attract customers and gives customers a sense of satisfaction with their choices. Research has also shown incorporating a mere view of professional designers does not lead to the desired outcome expected by users and fails to make them satisfied with the housing quality (Mulliner & Algrens, 2018; Schwanen & Mokhtarian, 2004; Vasanen, 2012). Designers should not decide based on their personal opinions, but their decisions should be modified based on the behavioral needs

and expectations of users and relevant research (Pourdehimi, 2011, 3).

According to the above-mentioned studies, architects, planners, and housing specialists cannot contribute to users' satisfaction with housing simply by relying on their knowledge; therefore, it is essential to examine what experts in the city have designed and what has been chosen by users to determine to what extent those designs have met users' expectations and to what extent their interests and expectations have been fulfilled. Understanding buyers' subjective preferences and comparing them with the current housing situation helps to identify the gap between supply and demand in the housing market and to modify supply to meet the needs of users.

Housing users have basic reasons and motivations based on which they choose their desired housing from the available options (Zinas & Jusan, 2012, 282). Adequate housing quality not only reduces crime, pollution, diseases, and costs, and increases health care for children and adults, recreation, but also improves the well-being of citizens (Baker et al., 2016; Hajdu et al., 2024; Swope & Hernández, 2019; Tangwa et al., 2024; Zarrabi et al., 2022).

• Content, time, and space

Housing selection is measured based on qualitative attributes of housing (Zinas & Jusan, 2012). Housing selection is also influenced by three general factors: the characteristics and specifications of the housing unit, the characteristics of the building's surroundings and access, and the demographic of the household (Aliu, 2024a; Jansen et al., 2011; Mulliner & Algrens, 2018). Qualitative attributes of housing are divided into two main categories in a general structure: Concrete attributes and abstract attributes. The first category refers to independent but observable characteristics of a product. In contrast, abstract characteristics are the intangible (non-physical) characteristics and dimensions of housing (Coolen, 2015). In this research, the focus has been on the tangible and objective dimensions of housing that is the physical and functional dimensions of the residential apartment. Such dimensions of an

apartment are the ones that architects can decide about their designs. However, in this study, the local and urban characteristics have not been taken into consideration. Moreover, questioning the objective attributes is simpler and more understandable for non-specialists.

Functional quality examines how spatial organization creates a more dynamic and humane environment in the house. This quality, through spatial hierarchy and multifunctionality, reinforces the continuity between spaces and enhances the contribution of the life quality of family life, and the housing environment. Some effective factors in this field include the creation of appropriate collective spaces, the definition of spatial boundaries and the provision of appropriate spaces for reception (Poordehghan et al., 2019, 89), and the privacy and separation of public and private spaces and the type of design to meet the needs of residents (Akbari et al., 2020, 15). Architectural function is a concept related to humans and their activities in the architectural space (Gharibpour, 2007, 74). The physical quality of housing deals with the objective and material characteristics and form of housing. Physical quality refers to features such as spatial dimensions and size and physical characteristics such as number of rooms, color, texture, type and type of housing, shape and form, and proportions of space and characteristics of the neighborhood unit (Akbari et al., 2020, 15). Based on previous studies, the physical and functional quality of residential apartment architecture focuses on attributes such as daylighting and ventilation, health-oriented features, spatial layout and design, quality of materials, dimensions and quality of interior space (Bao et al., 2023; Gao & Asami, 2011; Hofman et al., 2006; Irena & Jana, 2016; Mulliner & Algrens, 2018; Tervo & Hirvonen, 2020; Zarrabi et al., 2022). This study attempts to show how to design qualitative housing attributes at the scale of the interior space of housing for different households. Also, instead of focusing on the importance of each variable, the research is the first attempt to examine how to design the architecture of these attributes. For example, instead of asking

about the importance of semi-open space, this study explores the type of semi-open space and how it is placed in the architectural plan. This approach is more useful for architectural designers because awareness of the quality required by users can become a guiding principle for architects. This issue has less been in focus in mere rankings. This study is a cross-sectional study for which the data was collected from April to February 2024 in terms of time. The samples of the research were housing residents in all urban areas of the Arak metropolis. A total of 61 percent of the houses were apartments and the rest were detached villas, 27 percent of the respondents were in housing complexes with more than ten units, 28 percent were between 5 and 10 units, and the rest were in housing buildings with less than 5 units.

• Research purpose

This study draws upon two frameworks 'stated preferences' of users (their expectations and expectations from housing), which examine the current situation of housing choice, and their 'revealed preferences', which analyze the effect of physical and functional attributes of housing apartment architecture on the choice of housing desired by users. In doing so, this paper attempts to determine to what extent housing designs in the city correspond to what people have in mind while choosing housing. Based on the results of the study, except for economic constraints, this study examines how the gaps between the current state and the desired state of users can be closed or reduced. Housing satisfaction can be defined as the distance between the needs and desires of individuals and the realities perceived in the current housing context (Streimikiene, 2015). Align with this definition, the most satisfactory features of housing were determined, and in case of dissatisfaction, the person's choices were scrutinized. The results of this article can be used by residents, as well as architects, designers, planners, and urban policymakers, as well as housing scholars to improve housing design.

Research questions

Based on which housing quality (i.e. physical and functional attributes) have households chosen their

current housing? What physical and functional attributes have been stated by different families as their desired characteristics in housing selection? To what extent do the stated housing preferences and revealed preferences differ in terms of physical and functional attributes? Do age, income, and education affect the choice of housing attributes in the city of Arak?

Literature Review

Research on housing is related to various disciplines such as psychology, sociology, architecture, urban planning, economics, anthropology, and philosophy (Ruonavaara, 2018, 179). Research on the housing quality desired by households has focused on housing needs, housing choice, housing preferences, housing satisfaction, housing quality assessment and measurement, desirable housing, estimation, housing pricing, and housing aspirations (Moghimi & Jusan, 2015; Preece et al., 2020). Research has shown that the interior characteristics of housing and residential buildings, the characteristics of the surrounding environment of housing, and access and demographic characteristics are effective in choosing housing (Jackson & Archer, 2022; Mulliner & Algrens, 2018). Molin and his colleagues state that housing choices are influenced by housing preferences (Molin et al., 1996) and both are associated with housing characteristics (Collen & Hoekstra, 2001, 285). Since the terms housing choice and housing preferences are sometimes used interchangeably in studies (Aliu, 2024b, 117), this study has referred to these two areas pertinent to housing quality from the perspective of users in the literature. Also, the housing choice studies have been organized based on the revealed preferences of users (i.e. the choice of housing in the existing and available situation) and stated preferences (i.e. the expectations and preferences of users (Timmermans et al., 1994), or both simultaneously. Studies on the impact of housing quality on choice or preferences based on stated preferences have usually been based on surveys and questionnaires (Antoniou & Dimopoulos, 2018; Hofman et al., 2006; Moghimi

& Jusan, 2015; Moghimi et al., 2016; Mulliner & Algrens, 2018; Tervo & Hirvonen, 2020; Zarrabi et al., 2022) and revealed preference research have been based on analysis of existing housing information (Gao & Asami, 2011; Shekarian, 2015). Some studies have shown users pre-defined models and asked them for their opinions (Gao et al., 2013). Another way to categorize studies in this area is to examine housing preferences and choices with a set of variables (Ezennia & Hoskara, 2019; Hofman et al., 2006; Lee et al., 2010; Moghimi & Jusan, 2015; Mulliner & Algrnas, 2018) or to scrutinize the effect of a variable on housing choices, such as southern light and natural ventilation (Antoniou & Dimopoulos, 2018), apartment size and area (Gao & Asami, 2011), and lobby arrangement and common space between apartments (Lee et al., 2010). Research can be divided into two categories: research on the housing apartment environment (Hofman et al., 2006; Moghimi & Jusan, 2015; Zarrabi et al., 2021) and research on the environment adjacent to housing and access, or both together (Mulliner & Algrnas, 2018). There are two approaches to understanding the gap between what is designed and what is needed. One is a study that compares the current state of the house with what the user likes, and the other is a survey comparing the opinions of experts and designers with users. One of the few studies that examined both the current state and the opinions of users is a study in Turkey that aimed to explore the gap between expectations and the existing housing stock. The results showed that all groups of housing residents need better houses. The size of the house, kitchen design, amenities, storage, car parking, quality of materials, local amenities, and recreational areas contribute to greater satisfaction with the house (Gürsoy & Akıncı, 2024). Another article measuring the current state and users' opinions to examine the needs of the interior spaces of single-person houses in Helsinki showed that people are not satisfied with their current houses, especially those in one-room apartments (Tervo & Hirvonen, 2020). A study in Saudi Arabia aimed at comparing the opinions of users, experts,

and designers showed significant differences in the preferences of real estate professionals and housing users (Mulliner & Algrens, 2018). Another study examined the discrepancies in the views of architects, housing consultants, and clients regarding the two factors of southern light and natural ventilation (Antoniou & Dimopoulos, 2018). Another stream of research has focused on a model presentation method instead of a survey to ask people to decide between different plans. The results showed that privacy, southern light, storage, and number of rooms were the most important priorities for households (Gao et al., 2013). One of the existing studies on housing attributes in household choices and preferences was carried out by Hofman, et al. (2005) who examined the diversity in housing design and identified customer preferences for housing customization, stating that the type of kitchen, sanitary facilities, tiling, flooring, and interior walls were the top five priorities of respondents. In another article, financial considerations, private living space, and aesthetic aspects of the house were identified as the three most important factors (Opoku & Abdul-Muhmin, 2010). In another study, housing preferences were also scrutinized in Malaysia focusing on space organization and spatial features, including the appropriate layout of bedrooms, the number of bedrooms, the size of the living room, bathroom, and kitchen area, adequate ventilation, sunlight, and an easy-to-maintain and durable facade (Moghimi & Jusan, 2015). Zarrabi and his colleagues showed that variables related to mental health, such as natural light, visibility, sound, and open or semi-open space are important (Zarrabi et al., 2021).

Another research model used a presentation instead of a survey to understand how people decide about different layouts. The results showed that privacy, southern light, storage, and number of rooms were the most important priorities for households (Gao et al., 2013).

• Available studies in Iran

In a comparative study on housing selection criteria

between residents of two districts 1 and 19 in Tehran, it was concluded that in District 19, the economic dimension is of the highest importance, and in District 1, the physical dimension is of the highest importance (Faraji & Arvin, 2019). Another study in Mashhad showed that in smaller cities, people tend to have larger houses with more rooms (Heidari, 2018; Heidari et al., 2019). Shekarian showed that the level of education has a direct effect on housing selection in the studied region (Shekarian, 2015). Similarly, a study showed that variables such as the presence of children aged 18 and older, the frequency of home purchases, the reason for living in the city, and the level of social relations are effective factors in housing selection (Miralaei et al., 2019).

Literature review shows that there is a gap in the architectural features and housing units and most of the research has examined effective urban factors simultaneously, while for an architect-designer is important to measure the opinions of users in an area where he can exercise his opinion. Also, studies have either focused on stated or revealed preferences while each of the two methods has shortcomings. There is a need for a study that considers both aspects of the current situation and includes the expectations of users. Also, studies have categorized and ranked general housing attributes such as daylighting, area, and number of bedrooms, and have not scrutinized housing design and its details, which is the originality and innovation of this research.

• Theoretical foundation

The main goal of environmental design is not limited to aesthetic aspects but also includes creating a space that addresses the qualitative needs of users and creates an attractive environment that is in harmony with their behaviors and expectations. Design should be based on a deep understanding of the cultural and behavioral characteristics of users to effectively respond to their demands, this process is carried out by utilizing research and data available in each period (Pourdehimi, 2011, 3).

The needs and expectations of current residents regarding housing quality should be identified

because such housing quality affects the life quality of individuals (Streimikiene, 2015, 140). Although the ultimate goal of considering housing choices is to achieve the expected qualitative housing attributes of the household, there is no single definition for housing quality. According to Lawrence (1995), “housing quality is a complex concept because it is neither absolute nor static.” This concept is relative and may vary from one country to another and even from groups of people to another within the same country, at a given point in time and over long periods. Inadequate housing conditions should be considered as a technical, economic, and even political architectural problem (Lawrence, 1995, 1658).

American economist Paul Samuelson 1938 proposed the theory of “revealed preferences” based on the assumption that in economic theory, the current choices of individuals reflect their opinions and preferences about their qualitative attributes. The theory of “revealed preferences” in housing choice is used as a measure to examine housing choices in the past and focuses on the outcomes of the choice process in the current situation and deals with the objective outcome in the market assessment, while the theory of “stated preferences” with a long-term and idealistic perspective pays attention to the desires, housing aspirations and subjective ideals of individuals and refers to the hypothetical market behavior of housing choice (Council, 2015; Hasanzadeh et al., 2019; Timmermans et al., 1994; Van Ham, 2012; Vasanen, 2012). Housing choice is in practice a choice among the total set of real options available to households according to their needs, preferences, resources, and constraints, within the framework of the opportunities and constraints provided by the housing market and does not necessarily correspond to all their preferences (Van Ham, 2012, 42).

In the International Encyclopedia of Housing, the term “housing choice in reality” was coined as an alternative to the use of the term “housing choice” and is defined as “the ability to select a preferred option from a set of distinct options” (Brown & King, 2005; Van Ham, 2012). This acknowledges that distinct

options are not available to all those searching in the housing market and that for many, the choice set is limited (Van Ham, 2012, 42). Given such constraints that limit households’ housing choices, decisions do not always align with individuals’ preferences (Jarvis, 2003; Vasanen, 2012). To obtain stated preferences, people need to be asked about what kind of housing they want to live in and their reactions to hypothetical types of housing must be measured, but in reality, people change their preferences to make a realistic choice (Van Ham, 2012). However, experts criticize both the revealed and stated preference methods. For example, in criticizing the method of examining the expected housing attributes of the household based on choices made in the past, the choice of a house by the buyer is believed more of a transaction to obtain the available option in the current market situation, rather than required options (Al-Momani, 2000, 181). Therefore, examining the current housing choice situation does not reflect the entire attributes of the housing desired by the consumer, and there may be other hidden preferences in the choice of housing that are contrary to the stated preference in the current housing situation (Vasanen, 2012), and the existence of a conflict between the multiple demands of households from housing may ultimately not lead to an option that reflects their real expectations from housing (Schwanen & Mokhtarian, 2004).

Research Methodology

Housing selection is closely associated with housing demand and how households react to the characteristics of a housing unit. In this study, the first pertinent studies were reviewed and important housing attributes in the research background were examined then the effective physical and functional quality attributes of architecture in housing selection were extracted from the literature review. Research in this field has often addressed factors related to urban development in architecture. They have also examined objective and subjective characteristics. However, to provide more practical results for architects, this research has only addressed the characteristics in

which the architect can make decisions about the physical and functional design of housing architecture, and in order to achieve greater credibility, non-experts were asked simple and objective questions. In this study, the expert survey method was used to confirm architectural attributes. For this purpose, the expert opinions of 5 members of the architecture faculty who had expertise and research background related to housing design were obtained. Given the qualitative nature of the research and the convergence of experts' views, this number was considered sufficient to achieve theoretical saturation and initial analysis of the attributes. The physical and functional attributes are divided into four categories: lighting, performance and plan, number and type of space, style, and final finish. The reliability coefficient and Cronbach's alpha were 0.75, which is acceptable. This questionnaire was conducted with an applied purpose and descriptive-analytical method. Data collection was survey and field so that the current housing situation was obtained from the site observation and face-to-face interviews and questionnaires, and in the section measuring the preferences and expectations of users, a questionnaire was used. The samples included people living in houses in the city of Arak. The sample size was selected using the simple random selection method based on the Morgan table. For the reliability coefficient, the questionnaire was distributed among 700 people, and finally, 565 people responded. Spearman's correlation coefficient was used for reliability because of the large number of data, and type of the data (i.e. ordinal data), and the non-normality of the data.

Means frequency distribution and variance, and other

statistical tests (such as Wilcoxon, Sign, and Friedman to ensure significance between different options and generalization of results to the statistical population) were analyzed using Excel and SPSS software. The questionnaire in the preferences section was prepared on a Likert scale with the highest score of 5 and the lowest score of 1.

• **Conceptual model and research indicators**

In the first stage of this research, the architecture quality (i.e. the physical and functional attributes) used for the housing apartment were examined. Then, the physical and functional attributes that were expected and preferred by the household were questioned. Finally, the gaps between the current situation and what was expected and preferred by the household were analyzed in the context of household characteristics (Fig. 1). Table 1 depicts the variables extracted from the research background, and Table 2 introduces the variables measured in the research.

Discussion

To compare what residents expect about the current conditions in choosing housing, the effective attributes in the design of residential units were analyzed with the help of Excel and SPSS software, and their significance for generalization to the statistical population was confirmed, and the frequency distribution of responses was compared in two cases: the current housing situation and the preferences of individuals in housing selection. As shown in the graphs, in many cases there are profound discrepancies between what residents prefer at the time of housing selection and the characteristics of the housing they live in. Streimikiene (2015), argues

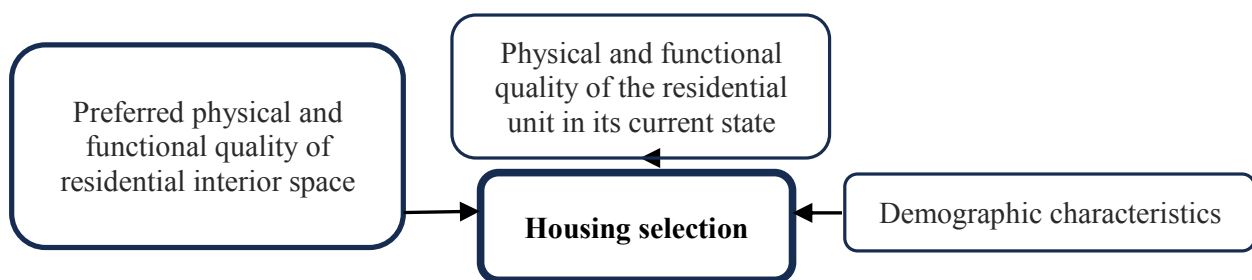


Fig. 1. Conceptual research model. Source: Authors.

Table 1. Variables affecting housing choice in the research background. Source: Authors.

Indicator	Sub-items	Research
Housing Unit Layout	Separation of private and public spaces	(Bao et al., 2023; Gan et al., 2019; Moghimi & Jusan, 2015; Moghimi et al., 2016; Mulliner & Algrnas, 2018; Olanrewaju & Woon, 2019; Opoku & Abdul-Muhmin, 2010; Zarrabi et al., 2021)
	Function and layout	(Bao et al., 2023; Gan et al., 2019; Hofman et al., 2006; Irena & Jana, 2016; Killemsetty et al., 2022; Moghimi & Jusan, 2015; Mulliner & Algrnas, 2018; Olanrewaju & Woon, 2019)
	Parents' bedroom	(Bao et al., 2023, p. 6)
	Kitchen layout (linear, open, closed kitchen)	(Bao et al., 2023; Gan et al., 2019; Gao et al., 2013; Gürsoy & Akıncı, 2024; Hofman et al., 2006; Irena & Jana, 2016; Tervo & Hirvonen, 2020; Zarrabi et al., 2021)
	Separate space for laundry	(Irena & Jana, 2016)
	Suitability of bedroom/kitchen to living room	(AlMomani, 2000; Collen & Hoekstra, 2001; Council, 2015; Gao et al., 2013; Gürsoy & Akıncı, 2024; Irena & Jana, 2016; Moghimi et al., 2016; Molin et al., 1996)
Daylighting	Natural light and Southern light index	(Antoniou & Dimopoulos, 2018; Bao et al., 2023; Gürsoy & Akıncı, 2024; Hair et al., 2021; Irena & Jana, 2016; Moghimi & Jusan, 2015; Mulliner & Algrnas, 2018; Zarrabi et al., 2021)
	Window size	(Gao & Asami, 2011; Kowaltowski & Granja, 2011; Moghimi & Jusan, 2015; Moghimi et al., 2016; Mulliner & Algrnas, 2018; Olanrewaju & Woon, 2019; Opoku & Abdul-Muhmin, 2010; Zarrabi et al., 2021)
Style, Materials, Final finishing	Flooring	(Gürsoy & Akıncı, 2024; Jackson & Archer, 2022; Olanrewaju & Woon, 2019; Tangwa et al., 2024; Zarrabi et al., 2021)
	Design style	(Jansen et al., 2011; Olanrewaju & Woon, 2019)
Size, Type, and Number of Spaces	Number of bedrooms	(Bao et al., 2023; Gan et al., 2019; Mulliner & Algrnas, 2018; Shekarian, 2015)
	Unit area	(Djafri et al., 2020; Gürsoy & Akıncı, 2024; Irena & Jana, 2016; Jackson & Archer, 2022; Olanrewaju & Woon, 2019; Tervo & Hirvonen, 2020)
	Semi-open space	(Collen & Hoekstra, 2001; Coolen, 2015; Ezennia & Hoskara, 2019; Gao et al., 2013; Zarrabi et al., 2021)
Demographic Characteristics	Age	(Alkay, 2015; Bao et al., 2023; Beer & Faulkner, 2008; Gao et al., 2013; Jackson & Archer, 2022; Lee et al., 2010; Opoku & Abdul-Muhmin, 2010)
	Education	(Aliu, 2024b; Ezennia & Hoskara, 2019; Jackson & Archer, 2022; Shekarian, 2015; Vasanen, 2012; Zarrabi et al., 2021)
	Average monthly income	(Alkay, 2015; Bao et al., 2023; Beer & Faulkner, 2008; Jansen et al., 2011; Lee et al., 2010; Vasanen, 2012)
	Age of building	(Ezennia & Hoskara, 2019)
	House price or rent	((Alkay, 2015; Bao et al., 2023; Gan et al., 2019; Kowaltowski & Granja, 2011; Shekarian, 2015)

that this gap leads to dissatisfaction. Familiarity with users' priorities helps architects and designers gain greater satisfaction from residents and also helps

housing planners fulfill the economic goals of the project for greater profitability. In addition, it should be noted that according to two surveys, the useful life of

Table 2. Questionnaire variables. Source: Authors.

Main Attributes	Sub-items
Housing unit layout design	Creating privacy for the balcony/terrace, balcony/terrace entrance, spatial ratio, separation of public and private space, lack of view towards the sink and stove, kitchen layout (such as closed, linear, open and semi-open kitchen), designing a separate space for the laundry, master bedroom for parents and distance between the child’s room and the parents’ room, proximity of the front entrance to the bathroom and kitchen door, whether the plan is on the same level or duplex
Ventilation and lighting	Natural light, dimensions and number of windows/standard-height windows, sunroom/kitchen/dining room
Size, number, and type of spaces in the housing unit	Number of bedrooms, unit area, semi-open space type
Quality and finishing materials	Cabinet style, flooring (parquet, mosaic, ceramic), decorations
Demographic characteristics	Age, education, average monthly income
Other	Building price, building age

housing in Iran is 18- 26 years and the other is between 25- 35 years (Hamed Rad & Shirzadi, 2020, 1858). Concerning the time of construction of buildings and the fact that every time the housing quality expected by the user changes, the overall structure of the older buildings in the city does not change in the same proportion; for this reason, the gap between the quality of selected housing and willingness of the user to choose over time. In other words, in many cases, people are forced to choose their housing from the available options built years ago by others with a different quality than they thought.

Table 3 shows the frequency distribution of attributes related to “daylighting”. Although a small proportion of the houses surveyed have “height-to-height windows”, it was mentioned as a desirable preference from the perspective of residents in 69% of the responses. The reason for this could be that people prefer more light in the house, having a lighter view and facade. Also, the desire for sunlight and light is currently greater than the existing condition of the houses. This issue has improved in newly built houses due to the requirements of the National Housing Regulations, but in older houses, some spaces such as bedrooms have been deprived of light and sunlight.

Table 4 examines the difference in the means for “main space lighting” and “kitchen, bedroom, and living room sunlight” and shows the preferences of daylight

and sunlight and window design among respondents. The survey shows that enjoying “sunlight” in the living room is ranked first, in the kitchen, the second priority, and in the bedroom, is the last priority for people. This highlights the importance of living and communal space and its quality for Araki families. Also, contrary to popular belief, “kitchen sunlight” has achieved a relatively high ranking, as sunlight shining into the kitchen space brings a healthier space to the public’s mind. The results of this analysis are not consistent with other research on the importance of exposure and light perception from the perspective of users (Antoniou & Dimopoulos, 2018), but it is consistent with the research (Zarrabi et al., 2021) and (Gao et al., 2013) because in these studies, the attributes related to “lighting” were ranked at the top. In this table, by comparing the averages, it was found that the “desire to have a regular window” is at the bottom of the table. Another point is the lower desire for “bedroom sunlight”, which can be due to people’s preference for having a dimly lit and quieter space to have a comfortable sleep. In this table, the preference for “tall window” has the highest variance, which is an indication of the greatest difference in taste in this field, which is probably related to cultural differences among people, concerns about the view into the interior space, security issues, and safety of large glass. Also, the lowest variance is related to

Table 3. Frequency distribution of daylighting: A comparison between the current situation and preferences in housing selection. Source: Research findings. Source: Authors.

Index	Type of preferences	Percentage of frequency distribution
Window type	Revealed Preferences	Height 6% - Normal 94%
		Height 69% - Normal 31%
Sunlit Spaces	Revealed Preferences	The ratio of sunlight in the kitchen space compared to the area of other spaces is 31%
		The ratio of sunlight in the bedroom space compared to the area of other spaces is 30%
	Stated Preferences	The ratio of sunlight in the living room compared to the area of other spaces is 35%
		No sunny space in the house 4%
Daylighting	Revealed Preferences	Importance of sunlight in the kitchen compared to the area 34%
	Stated Preferences	The importance of sunlight in the bedroom compared to the area is 28%
Daylighting	Revealed Preferences	Importance of sunlight in the living room compared to the area 36%
	Stated Preferences	Daylighting in the bedroom, living room, and kitchen 65%
		Tendency to light the bedroom, living room, and kitchen 95%

Table 4. Difference in means for attributes to exposure and sunshine and ranking of related criteria. . Source: Research findings. Source: Authors.

	Minimum		Maximum	Mean	Std. Deviation		Variance	Skewness		Kurtosis
	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Natural light in the main space	1	5	4.72	0.024	0.579	0.335	-2.623	0.103	9.684	0.205
Sunlight in the living room	1	5	4.58	0.027	0.630	0.397	-1.543	0.103	2.935	0.205
Sunlight in the kitchen	2	5	4.47	0.031	0.730	0.533	-1.373	0.103	1.601	0.205
Tendency for larger windows	1	5	4.15	0.041	0.983	0.966	-0.849	0.103	-0.396	0.205
Prefer tall windows	1	5	4.13	0.045	1.070	1.145	-1.054	0.103	0.090	0.205
Sunlight in the bedroom	1	5	4.11	0.041	0.968	0.937	-0.959	0.103	0.367	0.205
Prefer regular windows	1	5	3.02	0.044	1.042	1.086	-0.020	0.103	-0.556	0.205

the “natural light” index, which has both the highest rank and the lowest dispersion, which indicates the consensus of the respondents and the high importance of this issue in the home, which is confirmed by the high negative skewness number of “natural light” and its high elongation number.

Table 5 shows the percentage distribution of the

frequency of the attributes related to the design and function of the housing unit, which are classified into two categories: The current situation and the preferences of the individuals. As it is clear, “a large living room compared to the bedroom” and “a large living room compared to the kitchen” as well as “proximity of the bathroom and kitchen entrance

door” to the front entrance of the house are estimated as desirable attributes, and the proximity of the answers in the preferences and the current situation indicates proximity to the users’ desires. However, attributes such as the “tendency to separate the public and private spaces of the house”, the desire to have a “parent’s bedroom” and correspondingly “distance between the parent’s bedroom and the child’s bedroom”, “no view of the sink and gas from inside the living room” and “the presence of a separate place for the washing machine” are among the items that require more attention in housing design, because a relatively large difference was observed between the current situation and the preferences. The preference for a “closed kitchen” is higher than the current situation, but overall, “open kitchen” is

more desirable, which is consistent with the results of the previous studies (Gürsoy & Akıncı, 2024) and (Hofman et al., 2006) on the importance of “kitchen design type” for residents’ satisfaction. Also, the desire and preference for duplex houses are higher than the current situation. In addition, the residents of the housing stated a higher preference for a “semi-open space entrance from the kitchen”. Also, the index of “semi-open space entrance from the living room” was not recognized as a desirable index in the plan design and obtained the lowest desire.

Table 6 shows the criteria of plan design by comparing the means to rank and prioritize attributes, and in this context, the highest score and importance was assigned to “access to semi-open space”. This result is consistent with the results of the previous

Table 5. Frequency distribution of housing plan design and its performance: A comparison between explicit and stated preferences in housing selection. Source: Authors.

Attributes	Housing selection	Frequency
A larger living room compared to a bedroom	Revealed Preferences	66%
	Stated Preferences	67%
A large living room compared to a kitchen	Revealed Preferences	68%
	Stated Preferences	63%
Separation of public and private space	Revealed Preferences	
	Stated Preferences	Separated 89% - Somewhat 9% Unseparated 2%
A view of the sink and gas from the living room	Revealed Preferences	Has a view 77% - Somewhat 9% - No view 14%
	Stated Preferences	Has a view 5% - Somewhat 12% - No view 83%
Kitchen design	Revealed Preferences	Open kitchen 87% - Closed kitchen 13%
	Stated Preferences	Open kitchen 55% - Closed kitchen 45%
Separate space for the washing machine	Revealed Preferences	Yes 10% - No 90%
	Stated Preferences	Separate space required 54% - Not required 46%
Master and separate room for parents	Revealed Preferences	Parents’ room 30% - No parents’ room 70%
	Stated Preferences	Parents’ room 96% - No parents’ room 4%
Is the plan level or duplex	Revealed Preferences	Duplex 10% - Flat 90%
	Stated Preferences	Duplex 45% - Flat 55%
Proximity of the sanitary service to the entrance	Revealed Preferences	Yes 76% - No 24%
	Stated Preferences	Close 81% - Not close 19%
Proximity of the kitchen to the entrance	Revealed Preferences	Yes 57% - No 43%
	Stated Preferences	Close 51% - Not close 49%
Preference for a semi-open space entrance	Revealed Preferences	Kitchen 27% - Bedroom 44%- Living room 29%
	Stated Preferences	Kitchen 56% - Bedroom 29% - Living room 15%

study (Zarrabi et al., 2021) on the residents’ priority in accessing semi-open spaces. Attributes of “spatial privacy and spatial independence” such as “parents’ bedroom design”, “separation of public and private space”, “no view of sink and gas”, and “semi-open space protected from people’s view from the public passage” had high ranks, which indicates a desire to maintain privacy and cultural preferences in the

interior of the house, which is consistent with the literature (Gao et al., 2013) and (Opoku & Abdul-Muhmin, 2010). Also, the “semi-open space entrance from the living room” received the lowest preference, which is probably due to the low utilization of the semi-open space. However, “proximity of the kitchen to the entrance” was not considered an important preference for the residents and was prioritized over

Table 6. Frequency distribution of plan design: A comparison between the current situation and preferences in choosing housing. Source: Authors.

	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis			
	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Access to semi-open space	2	5	4.56	0.028	0.675	0.455	-1.504	0.103	1.813	0.205
Designing the parents’ bedroom separately	1	5	4.52	0.031	0.733	0.537	-1.719	0.103	3.280	0.205
Existence of a distance between the child’s and parent’s bedrooms	1	5	4.48	0.030	0.708	0.502	-1.565	0.103	3.333	0.205
Separation of public space from private	1	5	4.39	0.031	0.744	0.554	-1.288	0.103	2.111	0.205
No view of the kitchen sink and gas stove	1	5	4.28	0.037	0.870	0.758	-1.218	0.103	1.189	0.205
Preserving the view of the semi-open space	1	5	4.11	0.040	0.961	0.923	-0.998	0.103	0.451	0.205
The existence of an obstacle to the terrace	1	5	3.89	0.045	1.069	1.142	-0.730	0.103	-0.268	0.205
Entrance to the semi-open space from the kitchen	1	5	3.88	0.045	1.071	1.146	-0.764	0.103	-0.230	0.205
Flat plan inside the house	1	5	3.70	0.046	1.091	1.189	-0.418	0.103	-0.754	0.205
Proximity of the bathroom to the entrance	1	5	3.69	0.047	1.111	1.233	-0.644	0.103	-0.426	0.205
Duplex house	1	5	3.46	0.054	1.273	1.621	-0.242	0.103	-1.188	0.205
A large living room compared to a large bedroom	1	5	3.38	0.042	1.006	1.012	-0.719	0.103	-0.050	0.205
Open kitchen design	1	5	3.26	0.043	1.030	1.060	-0.265	0.103	-0.682	0.205
A larger living room compared to the kitchen	1	5	3.23	0.042	0.995	0.990	-0.586	0.103	-0.276	0.205
The existence of a separate space for the washing machine	1	5	3.17	0.054	1.278	1.633	-0.041	0.103	-1.196	0.205
Closed kitchen design	1	5	3.15	0.050	1.181	1.395	0.057	0.103	-0.977	0.205
Washing machine outside the kitchen	1	5	3.11	0.057	1.352	1.827	0.019	0.103	-1.332	0.205
Entrance to the semi-open space from the bedroom	1	5	2.91	0.049	1.169	1.367	0.099	0.103	-0.990	0.205
Proximity of the kitchen to the entrance	1	5	2.72	0.046	1.082	1.171	0.485	0.103	-0.511	0.205
Entrance to the semi-open space from the living room	1	5	2.50	0.046	1.091	1.190	0.636	0.103	-0.226	0.205

“proximity of the bathroom door to the entrance.” Similarly, “separate space for washing machine” was ranked low and less important.

Table 7 shows the frequency distribution of style and type of materials and decorations. “Modern style in interior design” obtained a relatively higher rank than the current situation. This point is consistent with the tendency to “less decorations in the interior space” of the house because a simple and less decorated space is a feature of the modern style. Although “ceramic flooring” constitutes a significant share among the flooring materials of the current situation, “parquet” and wood materials have obtained a higher rank among the stated preferences. The reason for this can be attributed to the abundance of ceramic and stone materials and the fact that flooring is more expensive than wood. Paying attention to the flooring indicator and finding it important is consistent with the previous research (Hofman et al., 2006) on the importance of flooring. The highest variance is related to the “washing machine location outside the kitchen” indicator and shows a high variety of answers. The reason for this is that the health sensitivity of some families is based on health principles highlighting that the washing machine space should not be located inside the kitchen sanitary space due to contamination, but some other families are not aware of the importance of this issue or do not consider it necessary. The lowest variance is related to “access to semi-open space” in the house, which, along with the high average, shows the importance of having a semi-open space in housing. The index “the presence of a parent’s room and creating a distance between the parent’s room and the child’s room”

has a high elongation and a more negative skewness than the others. This is due to the consensus and high concentration of data on this index and the selection of options in favor of the presence of this space, which is related to cultural contexts. Relatively high negative elongation was reported for the two indices “flat plan without steps” and “duplex plan”, which shows that most people have chosen different and different options. The reason for the wide range of responses could probably be the problems of the elderly and disabled in using stairs, the concerns of families with small children about the many stairs inside the unit, and the reluctance of these groups compared to other people who desire this style of home design.

According to Table 8, “modern cabinet style” has been declared as one of the priorities of people, and in general, a tendency towards “less and lighter decorations” is seen in this table, which is due to the tendency towards modern style design. Similarly, unlike in the past, when the use of carpet to completely cover the space was widespread, currently there is less tendency towards this type of floor covering, and the greater variance of this index indicates the difference between old and new views in this field.

Table 9 shows the frequency distribution of attributes related to the type, size, and number of housing interior spaces in comparison between revealed and stated preferences. The tendency to have more “house area” increases in line with the “number of bedrooms” index, so that, contrary to the existing conditions, houses with a large “area” and a large “number of bedrooms” are more desirable, which is consistent with the research of (Gürsoy & Akıncı, 2024) and (Gao et al., 2013). It was

Table 7. Frequency distribution of the style, materials, and decorations: A comparison between revealed and stated preferences in housing selection. Source: Authors.

Indicator	Housing choice	Percentage frequency distribution
Cabinet style	Revealed preferences	Modern style 40% - Classic style 18% - Others 42%
	Stated preferences	Modern style 52% - Classic style 31% - Others 17%
Flooring type	Revealed preferences	Ceramics 72% - Parquet 7% - Mosaic or carpet and rug 21%
	Stated preferences	Ceramics 35% - Parquet 44% - Mosaic or carpet and rug 21%
Home decorations	Revealed preferences	A lot of and elaborate decorations 3% - Few and light decorations 51% - No decorations 46%
	Stated preferences	A lot of and elaborate decorations 16% - Few and light or simple decorations 84%

Table 8. Differences in means for attributes related to style, materials, and decorations, and ranking of related criteria. Source: Authors.

	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis			
	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Modern cabinet style	1	5	4.19	0.036	0.850	0.722	-0.903	0.103	0.478	0.205
Simple and light decorations	1	5	3.87	0.036	0.858	0.737	-0.677	0.103	0.651	0.205
Parquet flooring	1	5	3.60	0.047	1.114	1.241	-0.421	0.103	-0.731	0.205
Ceramic flooring	1	5	3.33	0.046	1.097	1.204	-0.167	0.103	-0.796	0.205
Classic cabinet	1	5	3.25	0.048	1.129	1.275	0.013	0.103	-0.786	0.205
Carpet flooring	1	5	2.68	0.052	1.240	1.538	0.406	0.103	-0.867	0.205
A lot of decorations	1	5	2.64	0.045	1.077	1.159	0.355	0.103	-0.525	0.205

Table 9. Frequency distribution of the type, size, and number of interior spaces of housing: A comparison between stated and revealed preferences in housing selection. Source: Authors.

Indicator	Housing choice	Percentage frequency distribution
Type of semi-open space	Revealed preferences	Balcony 80% - Terrace 20%
	Stated preferences	Balcony 41% - Terrace 59%
Number of bedrooms	Revealed preferences	1 bedroom and less 32% - 2 bedrooms 56% - 3 bedrooms and more 12%
	Stated preferences	1 bedroom and less 2% - 2 bedrooms 41% - 3 bedrooms and more 57%
House area (square footage)	Revealed preferences	Under 60 square meters 10% - 60 to 90 percent 48% - 91 to 120 square meters 28% - 120 meters and above 14%
	Stated preferences	Under 60 square meters 2% - 60 to 90 percent 13% - 91 to 120 square meters 41% - 120 meters and above 44%

also observed that “houses under 60 square meters” and with “one-bedroom” only received 2% of the desirability. It should be noted that the limitation in the current area of the house is more related to the economic conditions of the household than any other issue. In the present study, it was concluded that with the increase in “age”, “education” and income, the area and the number of bedrooms take a relatively upward trend. Regarding the choice of semi-open space type, there is a greater preference for having a “terrace” as opposed to a “balcony”, which is different from the current situation. It seems that the terrace space has gained more popularity due to its greater visibility, the possibility of seeing the sky, and a wider perspective. Of course, the high preference for semi-open space to be protected from the view of the passageway is somewhat at odds with the preference for a terrace.

Table 10, by comparing the attributes of size and number of interior spaces, it can be concluded that “three-bedroom house and more” has a higher importance than the indicator “area above 120 meters”. This indicates that the bedroom is more practical in the lives of housing residents. Another

point is the lack of desire for small houses among housing residents in Arak, so “one-bedroom houses” and “areas below 60 meters” obtained the least desirability, which is consistent with the result of the previous study (Teruo & Hirvonen, 2020) regarding the lack of desirability of one-bedroom houses.

Correlation and Significant Relationship Between Qualitative Variables of the Interior Space of Housing and Demographic Variables

• The relationship between the education of housing residents and their revealed and stated preferences in housing selection

This section presents the significance, intensity, and direction of the correlation of attributes related to demographic criteria on qualitative attributes in housing selection. Due to the large number of data and their non-normality, Spearman correlation coefficient analysis was selected. The important point is to transform several nominal variables based

Table 10. Difference in means for attributes related to type, size, and number of interior spaces and ranking of related criteria. Source: Authors.

	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis			
	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Three bedrooms or more	1	5	4.33	0.042	1.003	1.006	-1.494	0.103	1.433	0.205
House over 120 square meters	1	5	4.11	0.049	1.167	1.361	-1.088	0.103	0.043	0.205
House 90 to 120 square meters	1	5	3.85	0.051	1.205	1.452	-0.907	0.103	-0.083	0.205
Having a terrace	1	5	3.73	0.049	1.168	1.364	-0.543	0.103	-0.763	0.205
Two bedrooms	1	5	3.67	0.049	1.156	1.335	-0.741	0.103	-0.131	0.205
Having a balcony	1	5	3.34	0.047	1.124	1.263	-0.069	0.103	-0.878	0.205
House 60 to 90 square meters	1	5	2.56	0.049	1.171	1.371	0.234	0.103	-0.868	0.205
One-bedroom	1	5	1.60	0.031	0.733	0.538	1.566	0.103	3.716	0.205
House under 60 square meters	1	5	1.48	0.036	0.858	0.736	2.507	0.103	7.071	0.205

on individuals’ preferences and desirability into ordinal variables before starting the test. Spearman correlation analysis showed that there is a directional relationship with weak to moderate intensity between the “education” index and housing preference and current situation attributes. These relationships are statistically significant due to the low P value, indicating that the probability of this relationship being observed by chance is very low. Thus, it was determined that qualitative attributes of architecture (i.e. the physical and functional) were examined and that demographic characteristics play a significant role in housing choice.

In the preferences revealed in the current situation: Thus, by examining the P value, the relationship between “higher education” with “larger house area” and “more bedrooms” was reported to be significant and moderate in terms of intensity. The significance of the “number of bedrooms” index with the “education” index was also observed in the study (Shekarian, 2015). The studies showed that the relationship between education (in order of intensity from large to small) and the attributes of “light and sparse decorations”, “modern cabinet style”, “semi-open entrance from the kitchen”, “parquet flooring type”, “more light-filled spaces” is also significant (Table 11). In this study, the value of p was below 0.⁰¹

and the intensity of the correlation coefficient was reported to be between 0. 2 and 0. 3 and positive. The important point is that all of these mentioned attributes were the highest desirable attributes from the perspective of housing residents stated in preferences, which sometimes other people did not achieve, but people with high education and higher income lived in houses with more favorable conditions (the average correlation coefficient was between 0. 3 and 0. 4 and a significant relationship between high education and higher income, more expensive houses and ultimately higher housing desirability was obtained according to this research in the current situation).

Also, in the section on stated preferences, the “increasing education” index found an inverse relationship with “preference for a house with few bedrooms” (R= -0.342). The other items are as follows: a significant and inverse relationship with “house with a small area” and “many decorations”, “ceramic flooring and”, “classic cabinet” and a direct relationship with “house with three bedrooms and more”, “larger windows”, “separation of parent and child space”, “natural light”, “sunshine” and “large reception area (between 0. 3 and 0.1).

Investigating the relationships between the age of housing residents and their revealed and stated preferences in housing selection

Table 11. Correlation ranking of revealed preferences of qualitative attributes of interior space of housing in the current state of houses in relation to education levels. Source: Authors.

Current Situation	More rooms	Larger areas	Fewer decorations	Modern Cabinets	Semi-open space in the kitchen	Parquet
Correlation Coefficient	+0.322**	+0.301**	+0.266**	+0.255**	0.227**	+0.214**
Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
N	565	565	565	565	565	565
**Correlation is significant at the 0.01 level (2-tailed) *Correlation is significant at the 0.05 level (2-tailed)						

The age of the head of household affects the selection of some housing quality attributes. Spearman correlation analysis showed that there is a weak to moderate positive or negative relationship between increasing age and some housing preference attributes.

In the preferences revealed in the current situation: “Increasing age” and “larger house area” showed a weak but statistically significant correlation ($R = 0.249^{**}$, $p < 0.01$), which may be attributed to longer years of income generation and increased purchasing power among older individuals. Increasing age is significant with a higher “number of bedrooms”, “number of light-filled spaces”, and “sunlight” (correlation coefficient between 0.1 and 0.3).

However, in the stated preferences section, the tendency for a house over 90 square meters and more bedrooms decreases with increasing age; similarly, the preference for a duplex house and the preference for having a separate parental room become significant and decrease. This may be due to the elderly’s lower ability to use stairs and manage a large house and the lack of need for a child’s bedroom.

Examining the income of housing residents on revealed and stated preferences in housing selection

In the preferences revealed in the current situation, “increased income”, “higher education”, “higher house price”, “greater house desirability”, “larger house area” and “more bedrooms” have a significant and positive relationship showing a coefficient between 0.3 and 0.5, which is consistent with the research (Opoku & Abdul-Muhmin, 2010). Similarly, there is a significant but weak relationship between “increased income” and “modern and light

decorations”, “parquet flooring”, “more light”, “modern cabinet style”, “semi-open space entrance from the kitchen” and “more sunlight”, “semi-open terrace space type” and “separation of public and private space” respectively.

In the housing stated preferences section, With increasing income, with a weak correlation coefficient and a p-value below 0.01, a direct relationship was observed with "the number of bedrooms", "larger area", and "modern and light decorations", respectively.

Conclusion

The choice of a house by housing residents often represents a trade-off between different qualitative attributes, reflecting what is available rather than what is desired. Both stated and revealed preference methods have weaknesses, suggesting that neither approach alone is fully comprehensive for understanding housing decisions. Stated preferences can be unreliable due to their hypothetical nature, while revealed preferences may not capture actual preferences due to market constraints. Therefore, integrating both methods provides a more comprehensive view of housing preferences, potentially capturing both ideal and actual aspects of housing choice. Combining stated and revealed preferences can also help reconcile inconsistent empirical results. This integrated approach is needed to understand the complex interaction between individual preferences, market conditions, and the built environment; therefore, this study addresses the issue of housing choice from both stated and revealed preferences perspectives, which reduces the gaps and problems of using each method separately.

In two stages, individuals were asked what house they currently live in, and with what physical and functional architectural features, and in the next stage, they were asked to describe their aspirations, ideals, and demands for housing. This perspective can reduce the gaps and shortcomings of previous research and reveal the gap between what causes satisfaction with housing and what currently exists.

Daylighting attributes: This study showed when it comes to housing selection, a high percentage of Araki households “increase the size of windows”, had a tendency to increase the use of “height-sized windows”, had a greater preference for “sunlight in the kitchen” and “Daylighting all main spaces”, and had a lower preference for “sunlight in the bedroom” and “normal-sized windows”.

Regarding attributes related to plan design: they had a greater preference for “placing the entrance to the semi-open space from the kitchen”, “large reception”, “greater separation of public and private space”, “decreasing visibility towards the sink and gas”, “considering a separate place for laundry”, “the presence of a parent’s bedroom” and “the presence of a distance between the parent and child’s room”, and a lower preference for “the entrance to the semi-open space from the reception”. A tendency to “increase the size of duplex houses” was reported among housing residents compared to the current situation, however, ultimately the tendency for “level plan” was greater than the duplex plan. Also, “proximity of the bathroom to the entrance” gained much higher importance than “proximity of the kitchen to the entrance”. About attributes related to style, materials, and decorations: “modern style in cabinetry” was more popular than “classical style”. Although most houses use “ceramic flooring” in the current situation, “parquet flooring” is more popular. “A lot of elaborate decorations” was not very desirable in the current situation and in the stated preferences. About the type, size, and number of interior spaces of the housing: “more space” and “more bedrooms” were more important, and in general, although, in the current situation, most of the semi-open spaces were in the form of “balconies”,

“terrace” was more popular. “A higher number of bedrooms” was more desirable than “a larger area”.

In general, based on stated preferences, among the four attributes of “daylighting”, “design style”, “plan design” and “number and size of spaces” in this article; “daylighting of main spaces, sunlight in the living room and then the kitchen”, “modern design style and minimal and light decorations and parquet flooring”, “access to semi-open space and preservation of spatial independence” and “house with three or more bedrooms and large area” obtained the highest rankings.

In response to the last question, it was found that “increased income” had a significant and positive relationship with “higher education” and “higher house price”, “greater desirability of the house”, “larger house area”, and “more bedrooms”. A significant and direct positive relationship was reported between “higher education” and “larger house area”, “more bedrooms”, “fewer decorations”, and “modern cabinet style”. While the relationship between “increasing age” and “larger house area”, “more bedrooms”, and “better daylighting” in the current housing conditions of residents was found to be positive and statistically significant, in general, the preference for “larger houses”, “more bedrooms”, “duplex layouts”, and “a separate bedroom for parents” tends to decline with age, primarily due to age-related and physical limitations.

Suggestions for future research

Given the cultural differences, it is recommended that this research be conducted in different contexts.

References list

- Ahmadi, P., & Charehjo, F. (2021). Investigating the Level of Residents’ Satisfaction with the Residential Quality of the Mehr Housing Project Focusing on Sustainable Housing Indicators. *Spatial Planning*, 11(1), 151-178. <https://doi.org/10.22108/sppl.2020.116756.1378>
- Akbari, S., Nourtaghani, A., & Pazhuhanfar, M. (2020). The Components of Preferential Attributes of Residents in the Meaning Structure and Means-End Studies. *Armanshahr Architecture*

- & *Urban Development*, 13(32), 1-23. <https://doi.org/10.22034/aaud.2020.120048>
- AlMomani, A. H. (2000). Structuring information on residential building: a model of preference. *Engineering, Construction and Architectural Management*, 7(2), 179-190. <https://doi.org/10.1108/eb021143>
 - Aliu, I. R. (2024a). *Empirical Perspectives on Residential Quality and Housing Preferences*, In M. Angelidou, F. Farnaz Arefian, M. Batty, S. Davoudi, G. DeVerteuil, M. Jesús, G. Pérez, D. B. Hess, P. Jones, A. Karvonen, A. Kirby, K. Kropf, K. Lucas, M. Mareto, A. Modarres, F. Neuhaus, S. Nijhuis, V. Manuel, A. Oliveira, C. Silver, G. Strappa, I. Vojnov, C. van der Laag Yamu, & Q. Zhao. *Urban Book Series*, Vol. Part F2210, 53-67). https://doi.org/10.1007/978-3-031-47432-3_4
 - Aliu, I. R. (2024b). Residential Quality and Revealed Housing Preferences in Lagos, In I. R. Aliu (Ed.), *Urban Private Housing in Nigeria: Understanding Residential Quality and Housing Preference Dynamics in Metropolitan Lagos* (pp. 117-155). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-47432-3_7
 - Alkay, E. (2015). Housing Choice Structure: Examples of Two Different-size Cites From Turkey. *International Journal of Strategic Property Management*, 19(2), 123-136. <https://doi.org/10.3846/1648715x.2015.1029563>
 - Antoniou, D., & Dimopoulos, T. (2018). *Southern Orientation and Natural Cross Ventilation: Mind the Gap(s) What Clients, Valuers, Realtors and Architects Believe A Qualitative Approach* (Master thesis, Neapolis University Pafos). <https://www.researchgate.net/publication/321110085>.
 - Bahmani, A., & Ghaedrahmati, S. (2016). Evaluating the Mehr Housing Project in terms of Adequate Qualitative Indicators (Case Study: Mehr Housing Project of 22 Bahman, Zanjan). *Journal of Geography and Regional Development*, 14(1), 47-65. <https://doi.org/10.22067/geography.v14i1.41052>
 - Baker, E., Lester, L. H., Bentley, R., & Beer, A. (2016). Poor housing quality: Prevalence and health effects. *Journal of Prevention & Intervention in the Community*, 44(4), 219-232. <https://doi.org/10.1080/10852352.2016.1197714>
 - Bao, X., Zhang, T., Dewancker, B. J., He, J., & Liu, S. (2023). Exploring the Unit Spatial Layout Preference for Urban Multi-Unit Residential Buildings: A Survey in Beijing, China. *Sustainability*, 15(15), 12013. <https://www.mdpi.com/2071-1050/15/15/12013>
 - Beer, A., & Faulkner, D. (2008). Demographic change and housing choice. *Australian Planner*, 45(3), 14-16. <https://doi.org/10.1080/07293682.2008.9982668>
 - Brown, T. I. M., & King, P. (2005). The Power to Choose: Effective Choice and Housing Policy. *European Journal of Housing Policy*, 5(1), 59-97. <https://doi.org/10.1080/14616710500055729>
 - Collen, H., & Hoekstra, J. (2001). Values as determinants of preferences for housing attributes. *Journal of Housing and the Built Environment*, 16(3), 285-306. <https://doi.org/10.1023/A:1012587323814>
 - Coolen, H. (2015). Affordance Based Housing Preferences. *Open House International*, 40(1), 74-80. <https://doi.org/10.1108/OHI-01-2015-B0011>
 - Council, A. (2015). *Housing Choice and Preference: A Review of the Literature* (No. Tr2015/019). Auckland Council technical report.
 - Djafri, R., Mohamed Osman, M., Suzilawati Rabe, N., & Shuid, S. (2020). Investigating quality of life by residents of social housing in eastern Algeria: a structural equation modelling. *Journal of Engineering, Design and Technology*, 18(6), 1907-1926. <https://doi.org/10.1108/JEDT-03-2020-0070>
 - Ezennia, I. S., & Hoskara, S. O. (2019). Exploring the Severity of Factors Influencing Sustainable Affordable Housing Choice: Evidence from Abuja, Nigeria. *Sustainability*, 11(20), 25, Article 5792. <https://doi.org/10.3390/su11205792>
 - Faraji, A., & Arvin, M. (2019). Comparative assessing of housing dimensions selection in urban areas (A case study of zones 1 and 19 of Tehran). *Urban Structure and Function Studies*, 5(17), 115-141. <https://doi.org/10.22080/shahr.1970.2113>
 - Gharibpour, A. (2007). *Honar-ha-ye Ziba*, 30(30). https://jhz.ut.ac.ir/article_18055.html
 - Gan, X., Zuo, J., Wen, T., & She, Y. (2019). Exploring the Adequacy of Massive Constructed Public Housing in China. *Sustainability*, 11(7), 1949. <https://www.mdpi.com/2071-1050/11/7/1949>
 - Gao, X., & Asami, Y. (2011). Preferential size of housing in Beijing. *Habitat International*, 35(2), 206-213. <https://doi.org/https://doi.org/10.1016/j.habitatint.2010.09.002>
 - Gao, X., Asami, Y., Zhou, Y., & Ishikawa, T. (2013). Preferences for Floor Plans of Medium-Sized Apartments: A Survey Analysis in Beijing, China. *Housing Studies*, 28(3), 429-452. <https://doi.org/10.1080/02673037.2013.759542>
 - Gürsoy, Ö., & Akıncı, N. F. (2024). Examining housing quality in Turkey through resident preferences and their housing conditions: a survey study. *Property Management*, 42(2), 273-292. <https://doi.org/10.1108/PM-06-2021-0039>
 - Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). An Introduction to Structural Equation Modeling. In J. F. Hair Jr, G. T. M. Hult, C. M. Ringle, M. Sarstedt, N. P. Danks, & S. Ray (Eds.), *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook* (pp. 1-29). Springer International Publishing. https://doi.org/10.1007/978-3-030-80519-7_1
 - Hajdu, T., Kertesi, G., & Szabó, B. (2024). Poor housing quality and the health of newborns and young children [Article]. *Scientific Reports*, 14(1), Article 12890. <https://doi.org/10.1038/s41598-024-63789-z>
 - Hamed Rad, M. A., & shirzadi javid, A. A (2020). BIM-based

- approach for Estimating life cycle costs of building in conceptual design phase using Iran's national price list. *Amirkabir Journal of Civil Engineering*, 52(7), 1853-1874. <https://doi.org/10.22060/ceej.2019.15688.6000>
- Hasanzadeh, K., Kytä, M., & Brown, G. (2019). Beyond Housing Preferences: Urban Structure and Actualisation of Residential Area Preferences. *Urban Science*, 3(1), 21. <https://www.mdpi.com/2413-8851/3/1/21>
 - Heidari, A. A. (2018). Investigation of housing preferences criteria in three scales of apartment, building, and neighborhood (Case study: Mashhad city). *Haft Hesar Journal of Environmental Studies*, 6(23), 19-30. <https://www.magiran.com/paper/1842311>
 - Heidari, A. A., Sadvandi, M., Damshenas, E., & Damshenas, E. (2019). Prioritization Indices Related to Residential Preferences of People in Three Scales of House, Apartments and Neighborhoods, Case Study: Views of Residents in Three Cities of Mashhad, Neyshabour and Torbat-e Jam. *Armanshahr Architecture & Urban Development*, 11(25), 57-68. https://www.armanshahrjournal.com/article_85049.html
 - Hofman, E., Halman, J. I. M., & Ion, R. A. (2006). Variation in Housing Design: Identifying Customer Preferences. *Housing Studies*, 21(6), 929-943. <https://doi.org/10.1080/02673030600917842>
 - Irena, B., & Jana, Z. (2016). The apartment with the best floor plan layout: Architects versus non-architects. *Critical Housing Analysis*, 3(1), 30-41. <https://doi.org/10.13060/23362839.2016.3.1.264>
 - Jackson, A., & Archer, C. D. (2022). Factors influencing Jamaican householders' housing choice [Article]. *International Journal of Housing Markets and Analysis*, 15(5), 1053-1071. <https://doi.org/10.1108/IJHMA-05-2021-0059>
 - Jansen, S., Coolen, H., & Goetgeluk, R. (2011). *The Measurement and Analysis of Housing Preference and Choice*. Springer. <https://doi.org/10.1007/978-90-481-8894-9>
 - Jarvis, H. (2003). Dispelling the Myth that Preference makes Practice in Residential Location and Transport Behaviour. *Housing Studies*, 18(4), 587-606. <https://doi.org/10.1080/02673030304247>
 - Killumsetty, N., Johnson, M., & Patel, A. (2022). Understanding housing preferences of slum dwellers in India: A community-based operations research approach. *European Journal of Operational Research*, 298(2), 699-713. <https://doi.org/https://doi.org/10.1016/j.ejor.2021.06.055>
 - Kowaltowski, D. C. C. K., & Granja, A. D. (2011). The concept of desired value as a stimulus for change in social housing in Brazil. *Habitat International*, 35(3), 435-446. <https://doi.org/https://doi.org/10.1016/j.habitatint.2010.12.002>
 - Lawrence, R. J. (1995). Housing Quality: An Agenda for Research. *Urban Studies*, 32(10), 1655-1664. <https://doi.org/10.1080/00420989550012294>
 - Lee, Y., Kim, K., & Lee, S. (2010). Study on building plan for enhancing the social health of public apartments. *Building and Environment*, 45(7), 1551-1564. <https://doi.org/https://doi.org/10.1016/j.buildenv.2009.11.017>
 - Miralae, S. M., Mohammadi, M., & Sameti, M. (2019a). Housing choice with emphasis on demographic characteristics of homeowner households using the experimental discrete choice method in Isfahan city. *Journal of Urban Research and Planning*, 10(37), 97-112. <https://doi.org/20.1001.1.22285229.1398.10.37.8.2>
 - Moghimi, V., & Jusan, M. B. M. (2015). Priority of structural housing attribute preferences: identifying customer perception. *International Journal of Housing Markets and Analysis*, 8(1), 36-52. <https://doi.org/10.1108/IJHMA-11-2013-0057>
 - Moghimi, V., Jusan, M. B. M., & Izadpanahi, P. (2016). Iranian household values and perception with respect to housing attributes. *Habitat International*, 56, 74-83. <https://doi.org/10.1016/j.habitatint.2016.04.008>
 - Molin, E., Oppewal, H., & Timmermans, H. (1996). Predicting consumer response to new housing: A stated choice experiment. *Netherlands journal of Housing and the Built Environment*, 11(3), 297-311. <https://doi.org/10.1007/BF02496593>
 - Mulliner, E., & Algas, M. (2018). Preferences for housing attributes in Saudi Arabia: A comparison between consumers' and property practitioners' views. *Cities*, 83, 152-164. <https://doi.org/https://doi.org/10.1016/j.cities.2018.06.018>
 - Olanrewaju, A., & Woon, T. C. (2019). An exploration of determinants of affordable housing choice. *International Journal of Housing Markets and Analysis*, 10(5), 703-723. <https://doi.org/10.1108/IJHMA-11-2016-0074>
 - Opoku, R. A., & Abdul-Muhmin, A. G. (2010). Housing preferences and attribute importance among low-income consumers in Saudi Arabia. *Habitat International*, 34(2), 219-227. <https://doi.org/https://doi.org/10.1016/j.habitatint.2009.09.006>
 - Poordehghan, H., Shahcheraghi, A., & Mokhtabad, S. M. (2019). Evaluation and Analysis of the Theoretical Principles of Desirable Housing According to the Opinions of the Citizens [Research]. *Journal of Housing and Rural Environment*, 38(165), 81-96. <https://doi.org/Doi:10.22034/38.165.81>
 - Pourdehimi, S. (2011). Culture and housing. *JHRE*, 30(134), 3-18. <http://jhre.ir/article-1-2-en.html>
 - Preece, J., Crawford, J., McKee, K., Flint, J., & Robinson, D. (2020). Understanding changing housing aspirations: a review of the evidence. *Housing Studies*, 35(1), 87-106. <https://doi.org/10.1080/02673037.2019.1584665>
 - Rezaei Khaboushan, R., & Nematimehr, M. (2015). Quality Assessment of Residential Environment with Quality of Life Indicators The Case of Mehr Housing Complex in Pardis New Town. *Soffeh*, 25(2), 53-70. https://soffeh.sbu.ac.ir/article_100254.html
 - Ruonavaara, H. (2018). Theory of Housing, From Housing, About

Housing. *Housing, Theory and Society*, 35(2), 178-192. <https://doi.org/10.1080/14036096.2017.1347103>

- *Statistics Center of Iran*, 2016, <https://www.amar.org.ir>.
- Schwanen, T., & Mokhtarian, P. L. (2004). The Extent and Determinants of Dissonance between Actual and Preferred Residential Neighborhood Type. *Environment and Planning B: Planning and Design*, 31(5), 759 - 784. <https://doi.org/10.1068/b3039>
- Shekarian, E. (2015). A novel application of the VIKOR method for investigating the effect of education on housing choice. *International Journal of Operational Research*, 24(2), 161-183. <https://doi.org/10.1504/IJOR.2015.071493>
- Streimikiene, D. (2015). Quality of life and housing. *International Journal of Information and Education Technology*, 5(2), 140-145. <https://doi.org/10.7763/IJET.2015.V5.491>
- Swope, C. B., & Hernández, D. (2019). *Housing as a determinant of health equity: A conceptual model*. *Social Science & Medicine*, 243, 112571. <https://doi.org/10.1016/j.socscimed.2019.112571>
- Tangwa, M. W., Epo, B. N., & Baye, F. M. (2024). Maternal education and child malnutrition in Cameroon: Does housing quality matter? *Social Sciences & Humanities Open*, 9(7), 100901. <https://doi.org/10.1016/j.ssaho.2024.100901>
- Tervo, A., & Hirvonen, J. (2020). Solo dwellers and domestic spatial needs in the Helsinki Metropolitan Area, Finland. *Housing Studies*, 35(7), 1194-1213. <https://doi.org/10.1080/02673037.2019.1652251>
- Timmermans, H., Molin, E., & Van Noortwijk, L. (1994). Housing choice processes: Stated versus revealed modelling approaches. *Netherlands Journal of Housing and the Built Environment*, 9(3), 215-227. <https://doi.org/10.1007/BF02496997>
- Van Ham, M. (2012). Economics of Housing Choice. In S. J. Smith (Ed.), *International Encyclopedia of Housing and Home* (pp. 42-46). Elsevier. <https://doi.org/https://doi.org/10.1016/B978-0-08-047163-1.00094-1>
- Vasanen, A. (2012). Beyond stated and revealed preferences: The relationship between residential preferences and housing choices in the urban region of Turku, Finland. *Journal of Housing and the Built Environment*, 27(3), 301-315. <https://doi.org/10.1007/s10901-012-9267-8>
- Zarrabi, M., Yazdanfar, S.-A., & Hosseini, S.-B. (2020). COVID-19 and healthy home preferences: The case of apartment residents in Tehran. *Journal of Building Engineering*, 35, 102021. <https://doi.org/10.1016/j.jobbe.2020.102021>
- Zarrabi, M., Yazdanfar, S.-A., & Hosseini, S.-B. (2022). Usage of lifestyle in housing studies: a systematic review paper. *Journal of Housing and the Built Environment*, 37(2), 575-594. <https://doi.org/10.1007/s10901-021-09883-4>
- Zinas, B. Z., & Jusan, M. B. M. (2012). Housing Choice and Preference: Theory and Measurement. *Procedia - Social and Behavioral Sciences*, 49, 282-292. <https://doi.org/https://doi.org/10.1016/j.sbspro.2012.07.026>

COPYRIGHTS

Copyright for this article is retained by the author(s), with publication rights granted to the Bagh-e Nazar Journal. This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>).



HOW TO CITE THIS ARTICLE

Mokhtari, M., Miralayi, S.M., & Nasr Isfahani, R. (2025). An Investigation of the Impact of Physical Quality and Architectural Function of Housing Interior Space on Housing Choice: A Comparison Between Stated and Revealed Preferences in Arak. *Bagh-e Nazar*, 22(146), 39-58.

DOI: [10.22034/bagh.2025.510132.5776](https://doi.org/10.22034/bagh.2025.510132.5776)

URL: https://www.bagh-sj.com/article_223950.html?lang=en

