Nat Hazards (2015) 75:119–139
DOI 10.1007/s11069-014-1312-3

ORIGINAL PAPER

Determining of the local housing identity in urban transformation areas under disaster risk: Bursa, Turkey

Nilüfer Taş · Murat Taş

Received: 6 November 2013 / Accepted: 22 June 2014 / Published online: 2 July 2014
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Abstract Post-disaster permanent housing production and housing production for urban transformation in areas under disaster risk have gained importance in recent years in Turkey. Users' life styles must be taken into account in housing production. Users' life style is the main criterion defining the identity of the housings produced. This article aims to present the data needed in order to carry out quality practices which have identity and reflect users' life style in the production of post-disaster permanent housings and housing production for urban transformation in areas under disaster risk. Bursa is one of the cities with earthquake risk where urban transformation practices are compulsory. In this study, residents' living in selected areas with similar features in Bursa were asked for their opinions on sociocultural and physical features of housing and its surroundings, and their expectations regarding the production of new housings to be built were discussed. Data from the research study carried out by the authors were used in the article. According to data, the most significant factors identifying users' life style and reflecting on the identity of the housing were neighbor relations, open space use, spaces where basic needs are met, and living spaces used for meeting sum and winter needs. It was observed that creating settlements with identity and reflecting the features of local life increases user satisfaction.

Keywords Urban transformation of areas under disaster risk · Housing · Local housing identity · User satisfaction · Bursa, Turkey

1 Introduction

Housing production has been among the most important issues in Turkey in recent years. In order to meet the need for shelter after disasters, particularly earthquakes, many practices are carried out for such purposes as permanent housing production, housing production

N. Taş · M. Taş (✉)
Department of Architecture, Faculty of Architecture, Uludag University, Nilufer, Bursa, Turkey
e-mail: murattas@yahoo.com; murattas@uludag.edu.tr

within urban transformation practices to be realized in areas under disaster risk, and production by the government of mass housing for low- and middle-income groups.

The 1999 İzmit and Düzce Earthquakes, and later, the 2011 Van Earthquake, became turning points in the country in terms of their results. Measures were taken to reduce disaster risk in attempt to improve building stock, and especially housing, in urban areas. In this context, the most significant improvement in the production of quality housing in recent years was law number 6306, entitled, "The Act on the Transformation of Areas under Disaster Risk," which came into force in April 2012. The objective of this act is to transform areas under disaster risk and to transform risky buildings outside these areas into safe, healthy living environments in order to prevent loss of life from disasters (Ministry of Environment and Urbanization n.d.). To this end, urban transformation practices started primarily in cities that are situated in seismic zone 1, such as Istanbul, Bursa, Kocaeli, Sakarya, and İzmir. Housing production has taken on a new dimension with this law. Despite the improvements made, within these legal regulations, to reduce disaster risk in the existing building stock, post-disaster permanent housing production will remain on the country's agenda for a long time, since the work has just commenced and it will take considerable time to complete the urban transformation in all cities.

Identity is the feature of individuals or objects that makes them single and unique (Agre 1999). It is also a feature not only of individuals but also of the environment, society, and cities through which individuals express themselves and become distinct from others. The lifestyles of the users living in the city and in the housing reflect on both the city and the housing. In order to create settlements with identity, it is necessary to determine the housing quality, to identify the needs so as to conceive the relationship between housing and humans, and to reveal how the spaces are perceived by the users within the context of these relationships.

Housing where the basic need for shelter is met is a factor that regulates human life (Quarantelli 1995). Housing and its surroundings are among the basic indicators of the quality of life and the objective state of the individual. These indicators play a crucial role in providing an environment appropriate for individuals to sustain their existence and family life, renew themselves, and bring up their children as well as meeting the need for shelter. The ability of housing to offer these opportunities stands in close relationship with the urban environmental conditions where the housing exists. When feeling one's own identity and value in one's residence, the perception of housing that meets the requirement of ownership and makes a resident feel that he or she is valued will improve the quality of housing (Aydınlı 1995). Thus, the identity and quality of housing are closely related to each other.

Two important factors that determine the quality of housing are the local conditions of the housing and its immediate surroundings as well as the user needs. Factors differentiating housing areas in terms of qualitative characteristics involve two types of structure: the natural structure of the settlement, namely topography, climatic conditions, vegetation, and so on; and the social structure, including the economic structure, political structure, culture, social expectations and value system, manners and customs, way of life, human relations, material use, and production techniques. Social structure affects the formation of the physical structure of the housing. Questions such as who lives in the housing, which functions are performed there, and what the lifestyle of the inhabitants, the neighbor relations, and the social interactions are like need to be answered when determining the housing quality. In order to create a built environment with identity, it is necessary to take the qualitative values of the housing as parameters in the planning, design, and production stages and to manage them in the best way in order to take the users' way of life into

account and to consider possible (environmental, legal, economic, and technological) limitations. The method of assessing user satisfaction is used to determine the housing quality, according to Hong (2012), Ukoha and Bemish (1997), Salleh (2008), Mohit et al. (2010), and Kellekci and Berköz (2006). These studies deal with housing not only in regard to raising the quality of space but also on the scale of settlement in a wider frame; this includes the relationship between those living in the settlement, the neighborhood, the social infrastructure and open area facilities offered by the settlement, the access to and quality of education, health, and security, and the welfare services. For the production of quality housing, the physical and sociocultural features of the housing and its surroundings are searched as pieces of a whole. The users' way of life gains importance in the planning and design of the housing and its environment. Fulfillment of the needs of the housing residents and of their satisfaction promotes physical, psychological, and sociocultural happiness and the welfare of the individual/family and society (Lawrence 1987).

Discovering the preferences and expectations, with respect to housing, of a large number of families with diverse characteristics before producing housing for them will enable them to live in housing that is physically, economically, psychologically, socially, and culturally healthier. It will also be possible, when producing housing, to create a settlement with an identity that reflects local characteristics in order to meet the need for shelter that arises after a potential disaster. As an alternative to the notion of the "lack of identity" created by a "typical project," which becomes especially prominent in the production of permanent, post-disaster mass housing, it is necessary to analyze local architectural identity and to produce and support designs that suit this identity. The existence of different users causes a modification of typically produced housing over time. It will be a better approach to design and produce housing based on the users' needs and to provide opportunities for development. Since the time during which permanent, post-disaster housing can be designed and built needs to be short, in order to help life go back to normal in a short time, advanced knowledge on a local scale is needed in order to avoid quality and identity problems in the housing.

Researchers, nongovernmental organizations, and users criticize mass housing projects produced for middle- and low-income groups in the care of government, as well as criticizing urban transformation practices and post-disaster permanent housing practices. The criticisms center upon issues such as the needs, lifestyle habits, and sociocultural and economic structures of users, the quality of life, and the sustaining of the identity of the city and the housing. Research carried out within this framework indicates that users generally refuse a physical environment that is inconsistent with their own sociocultural and economic structure, or they transform the environment to make it fit their own structure as soon as possible (El-Masri and Kellett 2001; Johnson 2002; Sanderson and Sharma 2008). Although this solves the problem in the short run, it also brings about serious problems in the development of cities, since users later become unhappy. Snarr and Brown (1982) point out that users taking part in the planning stage of the housing reconstruction will probably have a stronger sense of ownership and be more satisfied with the housing and, thus, will show less tendency to move elsewhere.

Permanent post-disaster housing practices and housing production within the context of preparations for reducing possible damages before a disaster are directly related to each other. The perception and editing of post-disaster reconstruction within the legal framework also directly affects the identity of spatial arrangements. A country in crisis must focus on the issue of the production of housing with standards in accordance with the economic conditions of the country. It is important to construct the housing in a short time, using the scarce resources at hand (material, equipment, labor, funds, etc.). A series of

problems arise in this usage as the result of a failure to provide optimum quality in any of the attempt–planning–programming, design, and construction stages, owing to factors such as constraints of time or financing, while striving to provide for the housing need quantitatively (Taş et al. 2007). It is likely that these settlements will pose problems such as weak user–outdoor relations, and widely similar plans, space types, and quality and identity.

This article discusses the overall results of the research project carried out by the authors in 2011–2013, in accordance with the aims and objectives within the framework of the objectives of the 2010–2014 Strategic Plan determined by the Bursa Metropolitan Municipality. These objectives included the structuring of urban spaces by considering their socioeconomic structures, the creation of more safe, sustainable, livable spaces, participation, and the reduction of risks to minimum by making preparations against disasters.

The aim of this paper was to determine the users' standards of judgment on and satisfaction with the physical features of housing and its environment (dimensional features of the housing, spatial requirements, conditions of physical environment, etc.) and with the sociocultural features of housing (privacy, esthetics, neighborhood, social infrastructure, use of open areas, customs, etc.), on the basis of qualitative characteristics affecting the formation of housing identity. The paper also aims to present data that will shed light on housing production that shows a regard for local life and user characteristics.

2 Urban developments and disaster risk in Bursa

Bursa is one of the cities going through a rapid industrialization and urbanization process. A heavy labor demand was created in particular by the establishment of new, mainly textile factories until the 1950s and of new branches of industry, particularly investments made in the automotive industry, after the 1960s. The first organized industrial site in Turkey was founded in 1961 and was put into service in 1966 in Bursa (Bursa Organized Industrial Zone n.d.). With these developments, urban population started to increase rapidly by 1960. At present, Bursa is the fourth largest city in Turkey by population (Turkish Statistical Institute 2012).

The change brought about by industrialization caused a transformation of housing areas. Since existing low-rise residential buildings were insufficient in number, they were demolished and replaced by high-rise apartment buildings. Low-income earners met their housing needs by building unhealthy housing in areas holding land registry with shared ownership in the plain and in squatter settlements. The housing is closely built and mostly high rise, with almost no space between buildings, and in some, light and air are let in only through the facade. The settlements were not built according to any plan. The roads are narrow, built only for the purpose of reaching the housing, and they lack urban infrastructure. Today, there are countless illegally built residential areas in Bursa Plain and on mountain slopes in the south. Increasingly unpreventable illegal housing that has caused the plain and the slopes of Uludag in particular to fall into ruins (squatters and illegal housing with land registry with shared ownership) are making their presence felt in the physical fabric of the city. The neighborhoods selected within the scope of the study are residential areas formed over time through similar developments (Figs. 1, 2, 3, 4, 5).

There are nearly 19 million housing units in Turkey. It is estimated that 40 % (6–7 million housing units) of the total building stock in Turkey needs renewal or reinforcement (Ministry of Environment and Urbanization n.d.). In Bursa, 10 % of the building stock is



Fig. 1 Examples of residential areas (İsıktepe)



Fig. 2 Examples of residential areas (Hocataskın and Mollaarap)



Fig. 3 Examples of residential areas (Alacahırka)

made up of safe buildings constructed after 1999, while the remaining 90 % were constructed using old methods. Furthermore, it is stated that 10–12 % of these buildings are collapse hazards; accordingly, nearly 40 thousand buildings have to be examined and, if



Fig. 4 Examples of residential areas (Alacahırka and Pınarbası)



Fig. 5 Examples of residential areas (Akpınar)

necessary, demolished (Statement of Bursa Metropolitan Municipality Mayor Recep Altepe, accessed 03.05.2013). These figures give an overall insight into both the production of safe living spaces before a potential earthquake and the number of buildings that needed to be constructed after the earthquake. This paper will be significant in specifying information that can create data for the housing production process for settlements with characteristics reflecting the identity of local life.

3 Research methodology

The stages of the research were preparing the survey questions, selecting the areas in which to conduct the survey, and conducting and evaluating the survey.

Survey areas were determined with the aim of producing and abstracting data that could be effective in determining the production of housing with identity, in urban transformation work. The number of research areas was expanded in order for the research outcomes to provide the opinions of the city as a whole. Neighborhoods were chosen that were formed in parallel with the expansion of Bursa over time. The settlement areas selected were those where people with similar demographic and socioeconomic structures live and which need

urban transformation. A large number of households were studied, so the results of the research could be generalized.

From among the areas recommended by Bursa Metropolitan and determined as urban transformation areas, nine settlement areas (Alacahırka, Pınarbası, Akpınar, Fethiye, Isıktepe, Karaman, Hocataskın, Meydancık, and Siteler) in three central districts were chosen in which to conduct the survey (Fig. 6). In accordance with the objectives of the 2010–2014 strategic plan of Bursa Metropolitan Municipality, conformity with the following criteria was sought while selecting these areas:

- Settlements with high disaster risk: Risk areas owing to soil properties and the lack of quality of the building stock in the superstructure.
- Settlements in the city and on the perimeter of the city: planned settlements in the city center and new residential areas, old squatter settlements, and newly developing squatter settlements in conformity with these criteria.
- Settlements where low- and middle-income earners reside.

The convenience sampling method, which is a nonrandom sampling method, was used in the survey. A total of 1,141 questionnaires were given in the nine different areas. The questionnaires included questions about the following categories: demographic characteristics of the families, space use in the housing, comfort features, esthetics, structural safety, location, immediate surroundings of the housing, realized and intended modifications to the housing by the user, transportation, use of social infrastructure areas, open space use, and neighbor relations.

4 Findings of the research and evaluation

The research was carried out to find an answer to the question, "What should the local housing identity be like" in housing production for urban transformation in areas with a disaster risk and in the housing to be built after a disaster. The data assessed were obtained from the survey prepared within the scope of this research. The acquired data were evaluated under the following headings: demographic characteristics of the families, space use in the housing, comfort features, esthetics, structural safety, location, immediate surroundings of the housing, realized and intended modifications to the housing by the user, transportation, use of social infrastructure areas, open space use, and neighbor relations.

4.1 Demographic characteristics of families

In the settlements where the survey was conducted, 50.9 % of the respondents are male, and 65.6 % are married; 32.2 % of the respondents are mothers, and 33.5 % are fathers. Almost all of the respondents are literate; the proportion of those who are illiterate is only 1 %. Almost all of the respondents are employed, the unemployed only making up 3.7 %. As for family types, 86.6 % of the respondents live in a nuclear family. Family type and household size are a significant factor in determining the size of the housing. In general, families are made up of three, four, or five persons. According to the survey, families of four persons are predominant; four-person families make up 35.8 %.

The number of children in the family is a criterion taken into consideration in determining the organization of the housing space, size of the housing, housing selection, number of rooms, and the use of the housing's surroundings. Respondents to the survey have one, two, or three children in general; 33.2 % of the respondents have two children.

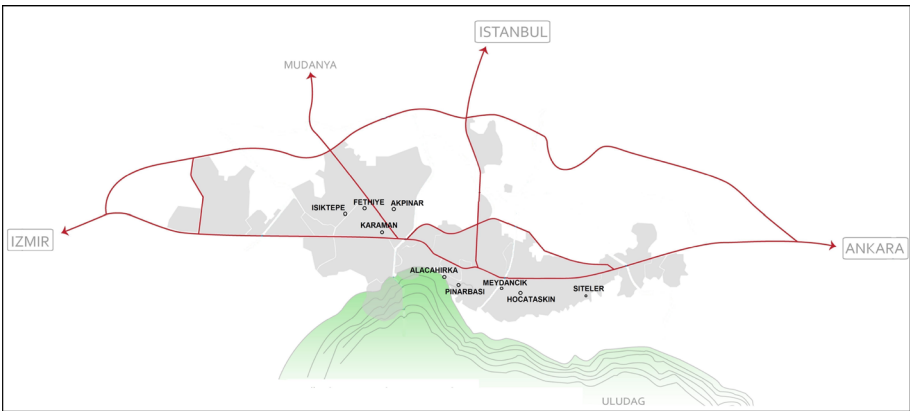


Fig. 6 Settlement areas in Bursa

Of the respondents, 65.8 % are owner-occupiers. In 51.4 % of the housing where the questionnaire was given, the number of employed persons in the households is one. Level of income is significant to the quality of the housing. The mean income level per month is 1,000 TL and above; 26.2 % of the respondents have a monthly income of 2,000 TL and above.

4.2 Space use in housing

A considerable part of human activity in daily life takes place in the housing, and housing constitutes a significant social area for the transfer of owned values (Gullberg 2000). The size of the areas used in the housing, their relationship with each other, their fitness for the intended purpose, and their fulfillment of additional needs are among the significant factors affecting satisfaction. According to the data, 52.5 % of the inhabited housing have two facades; 47.4 % have an area of 90–120 m^2, 37.9 % have one living room and three bedrooms, 29.03 % have one living room and two bedrooms, and 43.9 % of the respondents live alone in a flat. Nearly half of the respondents are satisfied with the size of housing (49.01 %) and the number of rooms (51.04 %).

The generally preferred (38 %) housing size is 120–150 m^2, and the preferred number of rooms is one living room and three bedrooms (42.2 %). The spaces in the housing are the living room, kitchen, bathroom, toilet, and bedrooms. The living room is generally used for receiving guests. It is also used as a sleeping space in which to put up houseguests. The living room is seen as a guestroom and is used for watching TV, living, and eating. Bedrooms are used for sleeping. The kitchen is primarily used for cooking. The bathroom and the toilet are separate spaces. The attic also has a featured place as a living area. In summer, it is used for living, preparing food for winter, and hanging out the laundry. The balcony is used for the same functions as the attic. There is no storage area in the housing; the attic in particular is used for this purpose. Although there is housing that faces in different directions, the preferred exposure is east and south (Figs 7, 8).

When designing the spaces, the living areas (living room, master bedroom, nurseries) and the wet areas (kitchen, bathroom, toilet) should be situated separately, and there should be storage to meet the needs that arise, depending on daily life, and to be used for storing foodstuff for winter. Providing storage areas in the housing could prevent the untidy

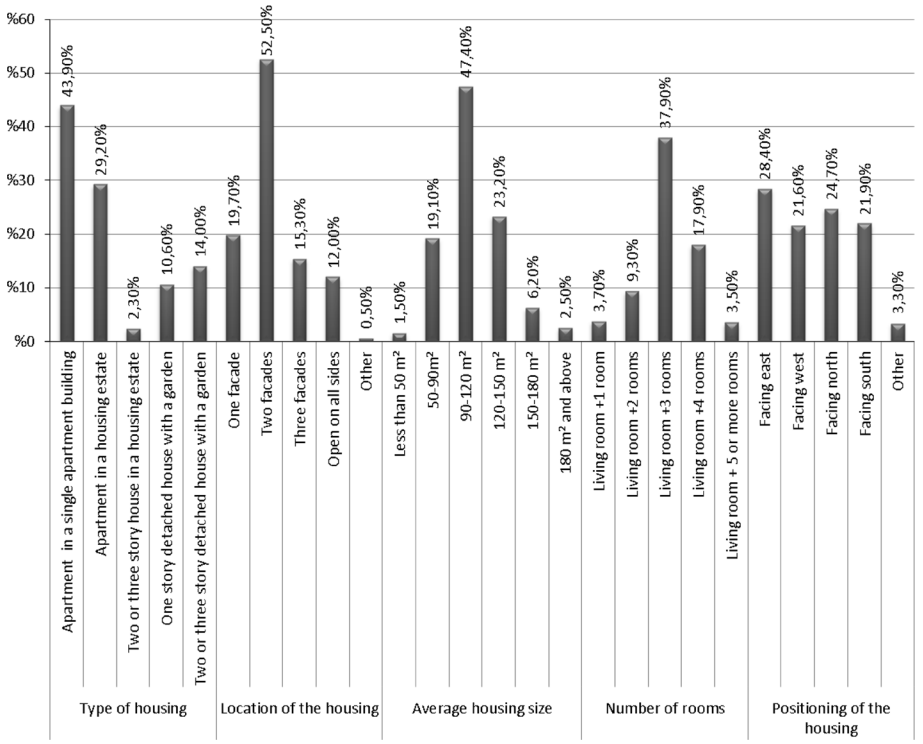


Fig. 7 Space use in the housing

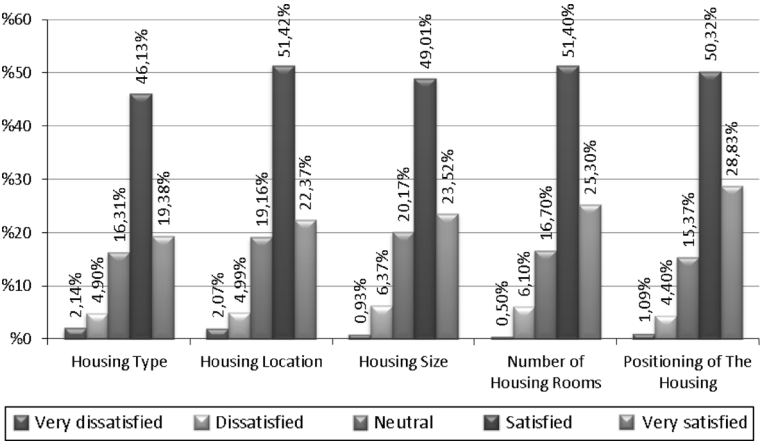


Fig. 8 Space use satisfaction in the housing

appearance of the facades as a result of balconies being enclosed by users. Since the research shows that the attic is a featured living area, housing to be built in the future should be designed in a way that enables the attic to be actively used. In order for the henna

night and wedding customs to persist in the residence and its surroundings, social spaces should be created within the residential blocks, and the garden should be arranged assuming that such events will take place there.

4.3 Comfort features in the housing

In most of the areas where the study was carried out, there is no thermal insulation or waterproofing in the housing. According to the data, however, 44.6 % of the external walls and 44.51 % of the roofs in the housing of the respondents have insulation. There are ventilation shafts in bathrooms and kitchens. On the whole, roofs have drip edges and downpipes (70.25 %). However, 61.26 % of the roofs do not have waterproofing. While nearly half of the housing has steel doors (51.37 %) for security, 76.44 % have no special measures such as electronic locks with code entry or keycards on exterior doors (Fig. 9).

Of the respondents, 23.07 % stated that they have a room with no air circulation. Similarly, 56.75 % stated that they have rooms that do not receive natural light. There is leakage or dampness as well as smirch on the external walls (62.24 %), foundation–basement walls (65.05 %), roof (65.72 %), bathroom–toilet–kitchen walls (67.84 %), and flooring (68.95 %) of the housing.

There are noise (64.13 %) and privacy (70.29 %) problems with next-door, downstairs, and upstairs neighbors in more than half of the housing. In the same proportion of housing, dwellers complain about the noise from exterior doors and windows (62.95 %). It is stated that there are problems with the elevators and installations in more than half of the housing in all areas (Fig. 10).

Floor-standing boilers are a general preference (41.04 %) for heating; the fact that the dwellers have a limited income could be a key factor in their preference of these boilers (Fig. 11). For hot water, combi boilers (75.52 %) are generally preferred. As for the kitchen, the general preference (67.22 %) is to use natural gas for cooking.

Housing design and construction gain in importance when attempting to eliminate the problems mentioned by the respondents. While positioning residential blocks, measures are to be taken to ensure that the housing receives sunlight and has sufficient air circulation and to provide visual privacy and the right positioning of balconies in relation to one another. In the execution, attention should be given to thermal insulation and waterproofing, elevators conforming to standards, installations, and the use of quality joinery in wall openings in order to prevent noise, all of which have a direct influence on user satisfaction.

4.4 Esthetic features of the housing

According to the data, 59.4 % of the respondents defined their housing generally as ordinary/plain high-rise buildings without architectural quality. A large proportion of the respondents are satisfied with the architectural esthetics of the housing. The fact that 65.8 % of the respondents are owner-occupiers could have an effect on the satisfaction with the architectural esthetics of the housing. For housing image, low-rise buildings with a garden are the preferred building form in all of the areas. Respondents prefer buildings with two housing units on each story.

“Comfort” and “privacy” come to the forefront as the upsides of living in detached housing, whereas “loneliness” and “costliness” are stated as the downsides. As for living in an apartment building, “security” and “having people nearby” are suggested as the advantages, while “noise” and “difficulty in making a decision” are considered as the disadvantages (Fig. 12).

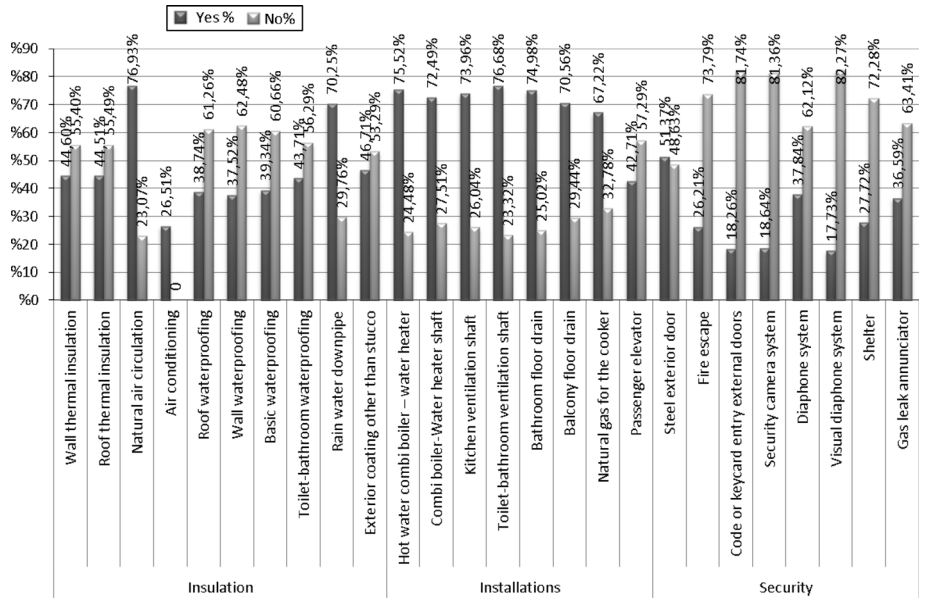


Fig. 9 Comfort features in the housing

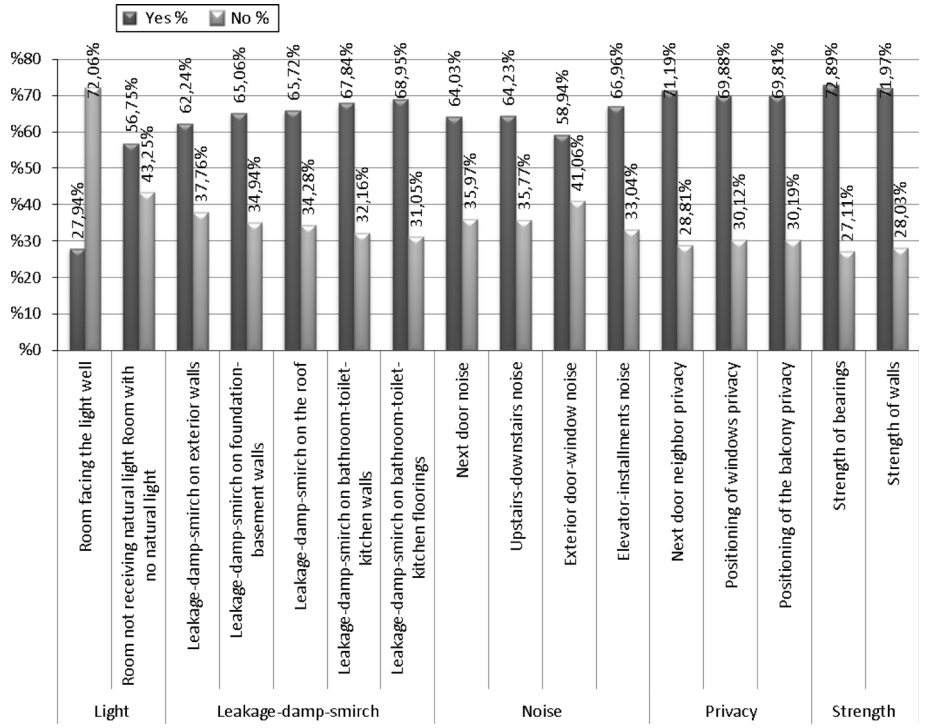
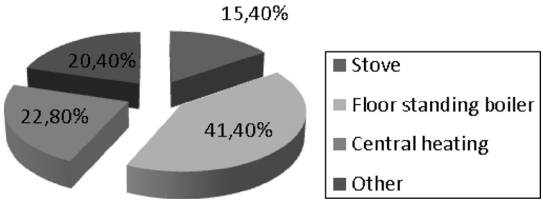


Fig. 10 Complaints about comfort features in the housing

Fig. 11 Heating preference



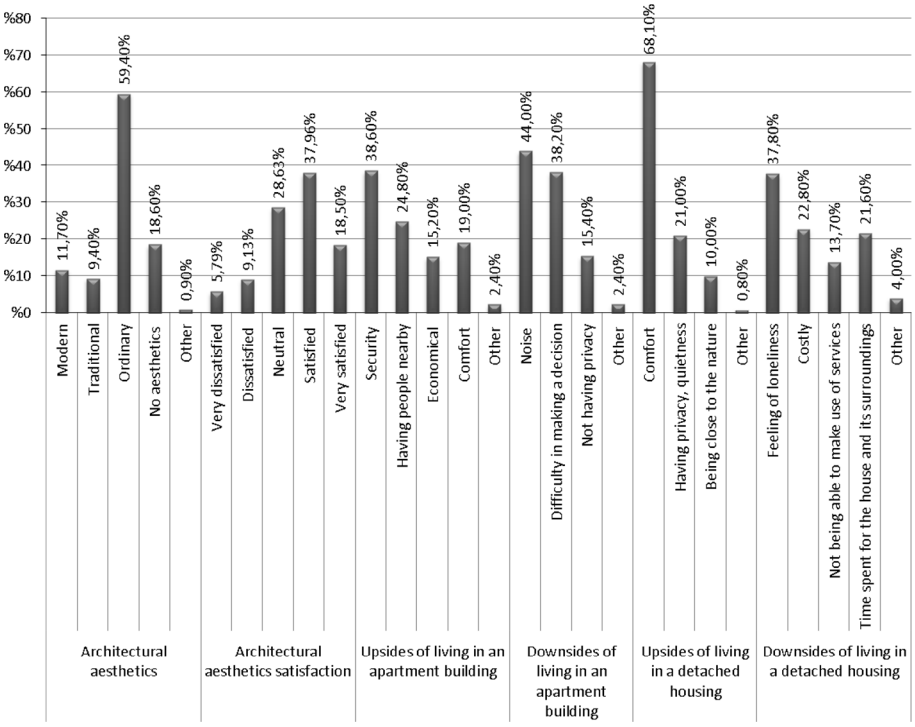


Fig. 12 Esthetic features of the housing

It is stated that the housing image is a reflection of the opinions, requirements, and behaviors of the users, and this directly influences people's expectations and thus their feelings of satisfaction (Rapaport 1990). In future settlements, buildings should be constructed at a density that will enable social relations, with attention to their positions in relation to one another. Architectural designs with low-rise spatial organization and with gardens will enable the production of housing and housing groups that provide comfort and visual privacy.

4.5 Structural safety features of the housing

In order to ensure the livability of the housing and its surroundings, people's lives and property should not be at great risk (Habitat 1996). There is a considerable amount of complaining about load-bearing systems (columns, beams, and flooring) and wall strength.

Of the respondents, 54.7 % are not satisfied with the earthquake resistance of their housing, and 32 % are moderately satisfied (Fig. 13). In a city like Bursa, located in a first-degree seismic zone, this outcome is a serious issue that requires consideration and the taking of measures.

4.6 Realized and intended modifications to the housing by the user

According to the data, interior walls were not demolished, added, or removed, and no change was made to installations, wall coating, or bathroom–toilet ceramic components. Those who stated that they have made modifications said that the reasons for the changes were wearing, the quality of materials, esthetics, and difficulty of use. Generally, floor coverings were changed. The reasons for those changes were wearing, the quality of material, and esthetics.

Complaints are made about leakage and dampness as well as the insulation of installations, walls, and roofs of the housing. The level of income of the family is decisive of the quality of the housing where they live and the modifications they intend to make.

4.7 Location

According to the data, the criteria of choice regarding location when buying new housing are the following: easy access to the city center, proximity of the housing to the place of work, and medical facilities, in order of significance. Respondents stated that the housing they reside in is, on the whole, close to the city center and to their workplaces. The major factor affecting the preference of the location of the housing is transportation and access. Of the respondents, 31.4 % stated that the ideal housing should be situated in the city center, while for 29.4 % of the respondents, it should be in an area with a nice view (Fig. 14).

4.8 Immediate surroundings of the housing

The main reasons for residing in a certain neighborhood are neighbor relations, relationships with relatives, and relationships with fellow townspeople. Bursa is a city that receives migration due to the facilities it offers. Although study areas with different characteristics were selected, the answers received were generally identical in every area. The answers indicate that social solidarity affects the choice of a neighborhood. Those immigrating to the city prefer places where their relatives and townspeople reside.

On the whole, there is dissatisfaction with the surroundings of the housing. The complaints creating dissatisfaction with the immediate surroundings of the housing are noise (88.19 %), stench (91.17 %), polluted air (82.07 %), privacy (89.53 %), and security and theft (90.64 %) problems in the immediate environment, and problems in accessing the city center or other important places (terminal, hospital, etc.) (90.85 %), ugly images of the environment (90.37 %), problems related to high tension lines, base station, etc. (88.19 %), infrastructure problems (sewer system, clear water, power line, natural gas, etc.) (87.87 %), road problems (90.20 %), and disaster problems (flooding, the risk of a strong southwest wind [lodos], or earthquake) (89.90 %) (Fig. 15).

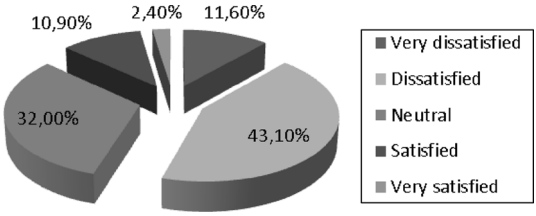


Fig. 13 Structural safety features of the housing

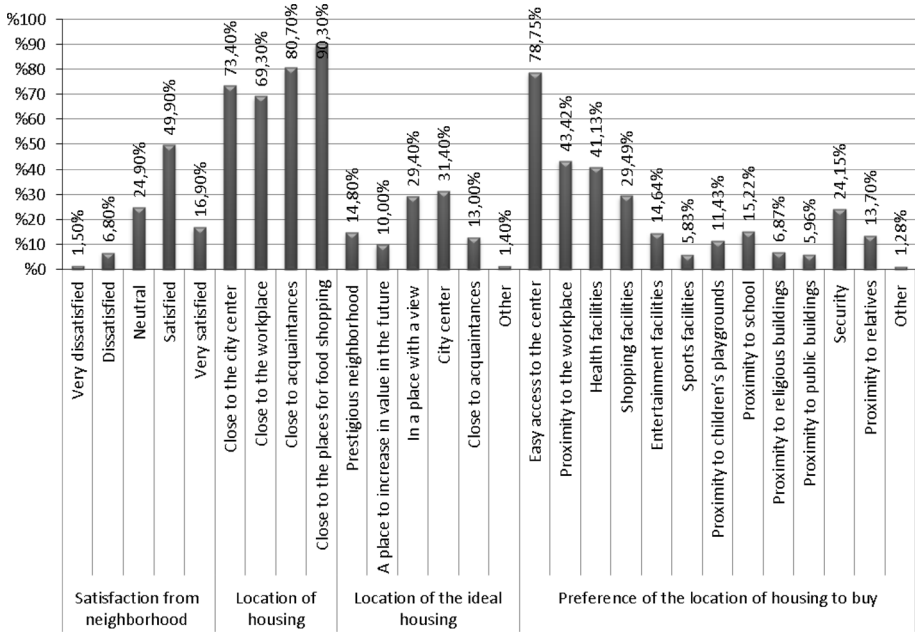


Fig. 14 Location

4.9 The use of social infrastructure areas

There are recreational facilities in the surroundings of the housing such as parks, children's playgrounds, public training centers, marketplaces, supermarkets, shopping malls, medical centers, post offices, outdoor sports facilities, indoor sports facilities, swimming pools, cafes–restaurants–patisseries, primary schools, religious facilities, banks–ATMs, and municipal service buildings or offices of headman–police stations. According to data from the respondents, among the most commonly used facilities, education facilities rank first, shopping facilities and religious facilities rank second, and parks and outdoor playgrounds rank third. Social facilities that are needed or preferred, in order of importance, are places for shopping, health facilities, and parks and green areas (Fig. 16).

The inadequacies in social systems (areas needed for education, health, sports, open space activities, etc.) are among the main problems of settlement and urbanization in Turkey (The Ninth Development Plan Settlement—Urbanization specialization commission report 2007). The availability of social infrastructure areas, where people can get together and interact in a mass housing settlement on the scale of a neighborhood, contributes to satisfaction with the

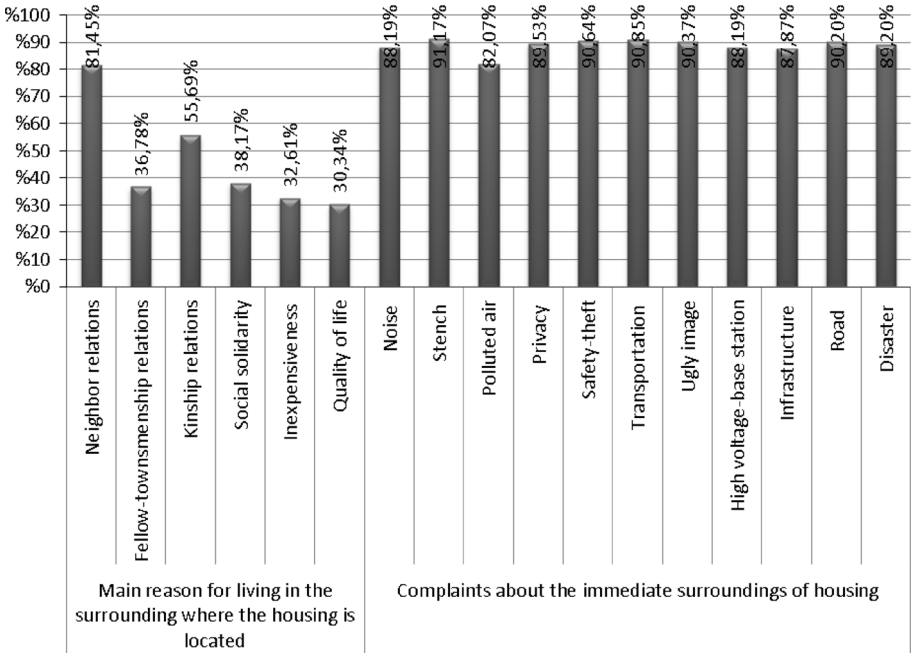


Fig. 15 Immediate surroundings of housing

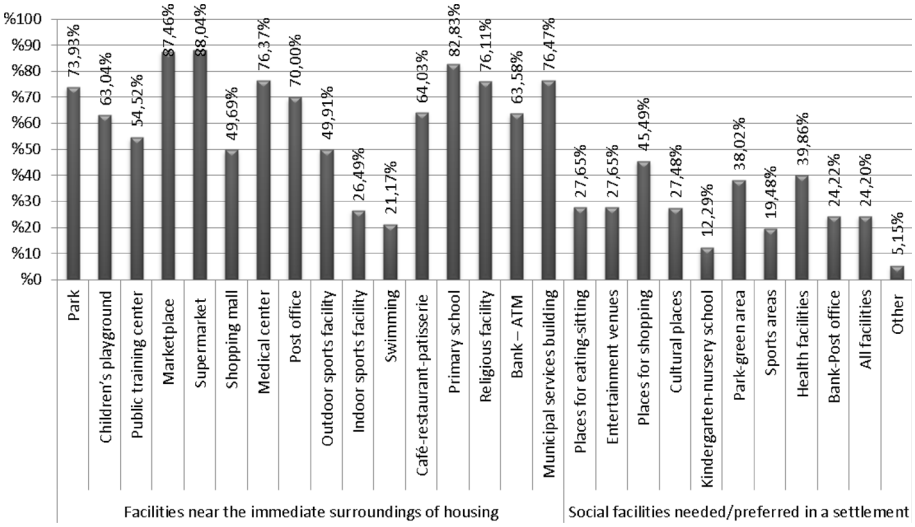


Fig. 16 The use of social infrastructure areas

housing and its environment. The availability of social infrastructure areas where the young, especially, can spend their spare time gains in importance. Allowing for such social infrastructure areas in future settlements and their coming into use at the same time as the housing will increase satisfaction. In the settlements where permanent housing was constructed after

the 1999 Marmara earthquake, such social infrastructure areas were not yet in use, which evidently caused dissatisfaction (Taş et al. 2007).

4.10 Open space use

Time spent in the housing and its surroundings is the primary means of strengthening social relations and the sense of belonging (Zahle 1996). While offering benefits for the city ranging from improvement of urban ecology and climate to reducing air and noise pollution on the one hand, large- and small-scale open, green areas also move people away from the conditions of everyday life and allow for their physical and mental improvement (Habitat 1996).

According to the survey data, open spaces are used effectively in all settlements. In order of importance, open spaces are used for sitting–resting and as playgrounds, gardens, and parking areas. Areas in the housing and its surroundings are generally used by women and are considered spaces where they can get together. The children and youth use these areas as playgrounds.

The responses to the question regarding the customary habits realized in the housing and its immediate surroundings show that activities such as washing carpets and wool, preparing food for winter, henna night, and wedding feasts are maintained.

Teenagers prefer to spend their free time in the open spaces and gardens in the neighborhood. Younger children also play in the open spaces, in gardens, and on the street. The gardens and the open spaces are also used for growing vegetables. These requirements should be considered while creating new residential areas (Fig. 17).

4.11 Neighborhood

In mass housing settlements, communication with neighbors is a significant factor that affects the individual's social interaction and shapes the satisfaction with the housing and the settlement (Yüksel et al. 1996). Fifty percent of the respondents to the questionnaire, in all areas, stated that they wish to live together with their present neighbors in the future, and nearly half of the respondents pointed out that they do not intend to move to another place. According to the data, one-third of the respondents in all of the areas see their neighbors every day and are satisfied with the frequency of these meetings. The most common way of meeting neighbors is home visits. They also meet in open spaces and by chance in shared areas in the building. The issues that create conflict among neighbors are noise, cleaning, and quarrels among children (Fig. 18).

4.12 Transportation

In terms of livability, the main target in urban life is to ensure freedom of movement for people (Habitat 1996). Efficient transportation in daily life is important for improving the quality of life and for the happiness of the individual. Efficient transportation infrastructure is effective in both increasing the productivity of commuters at work and providing a good balance between their career and personal life. Similarly, ensuring an adequate and economical transportation infrastructure for commuting between school and home is significant in terms not only of the performance and development of the youth but also of the family economy. Furthermore, adequate and economically affordable transportation increases the public's urban mobility, thus both contributing to their access to utilities and

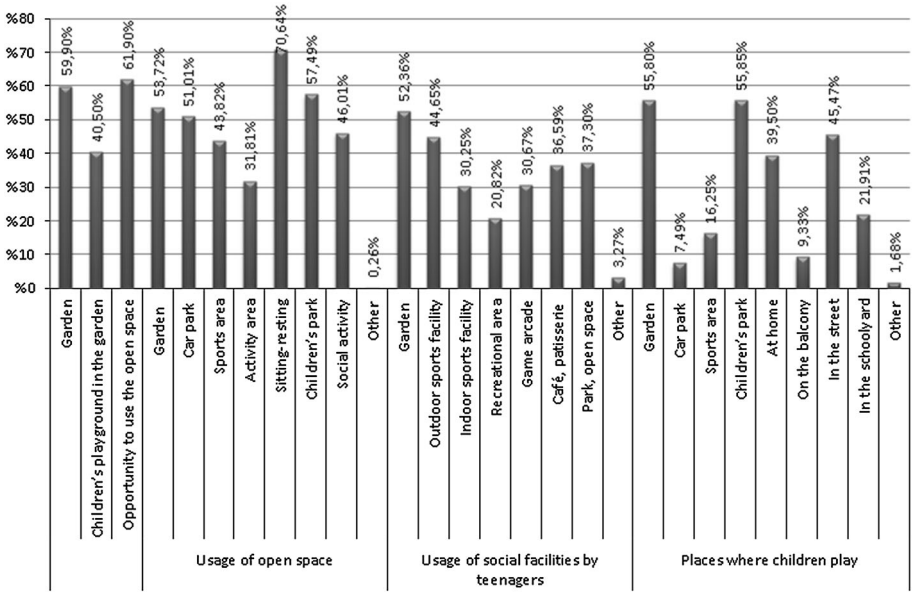


Fig. 17 Open space use

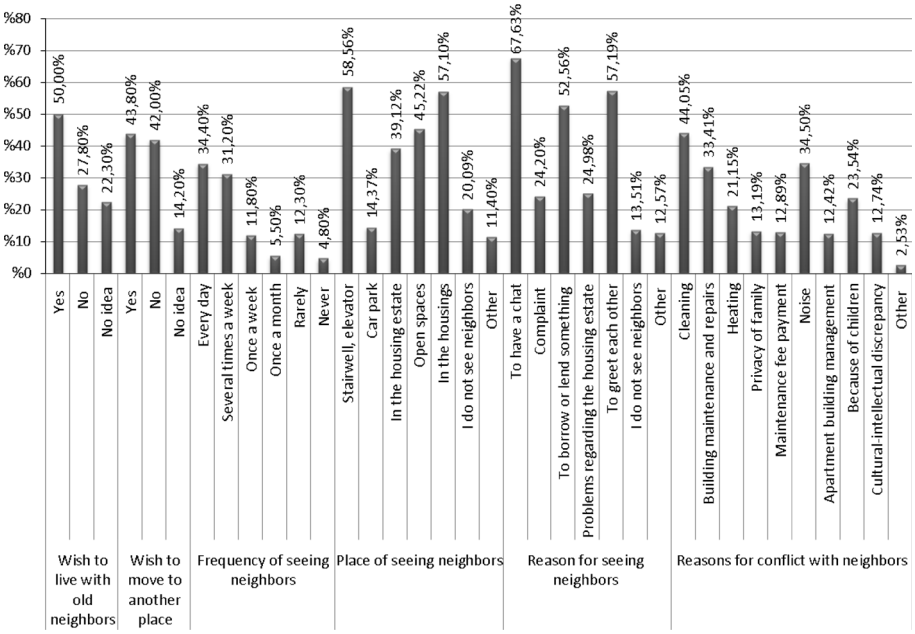


Fig. 18 Neighborhood

promoting social relations by means of visits among households. Consequently, it is safe to say that transportation is one of the components promoting social integration in every part of society (Türkoğlu et al. 2008).

In all of the settlements where the survey was conducted, 48.9 % replied to the question about car ownership by stating that they do not own a car, while 47.8 % stated that they own a car and added that there are no parking areas available. Today, the problem of parking areas in settlements needs a solution. The means of transport available in the surroundings of the housing for accessing the city center or other areas are as follows, in order of preference: buses (88.68 %), shared taxis (76.06 %), pedestrian walks (64.80 %), minibuses (57.39 %), the rail system (53.13 %), and cycle lanes, as the least preferred (27.97 %). Shared taxis, locally called "dolmush," are a widely used means of transport in Bursa (Fig. 19).

There are not many complaints about transportation. The availability of various means of transport from the settlement to the city center increases satisfaction. An increase in the number of public transport vehicles is among the expectations of the dwellers. The preference for public transport vehicles should be considered as an opportunity, and the development of public transport in the city should be promoted.

5 Overall evaluations and conclusion

According to data from the survey conducted in settlements selected for the research, these settlements have similar characteristics. Although the purpose of this study was to identify the local housing identity for housing production in urban transformation of areas under disaster risk, the obtained data and results can also be used for housing production in urban transformation for renewal purposes. The field study yielded the following outcomes.

In housing settlement plans, patterns of garden use and the areas that are needed should be taken into consideration. According to the data, the basic parameters defining a local way of life are neighbor relations and open space use. Planning density is determined based on an increasing need for residences. A rich and lively urban life should be created by providing adequate density for land in the housing areas and by paying attention to the size of blocks. Roads and housing blocks should be located by considering their relations with the topography. With respect to climatic influences, open spaces should be created that are appropriate for the users' customs and lifestyle habits and where users can gather, sit, and play sports and where children can play. Sociocultural elements such as houses, streets, and yards reflect the characteristics of traditional urban life. Research has shown that these elements provide a strong space effect and visual satisfaction and that courtyards and squares that provide a feeling of being encompassed strengthen social interaction (Yüksel et al. 1996). Moreover, private gardens can be designed for users to maintain and can act as places where they can do farming on a small scale. In the settlements that were constructed after the 1999 İzmit Earthquake, public spaces such as parks and sports and recreation areas built to create a green environment were designed without considering the width and real frequency of use; thus, they interrupted life and led to a loss of liveliness in the permanent housing areas, even though such spaces are expected to vitalize life (Yürekli and Saylağ 2003). Settlement planning should include shopping facilities, health facilities, parks and green areas, school buildings, and religious facilities. Transportation facilities between the city center and other settlements should also be created.

Housing designs are needed that can provide living conditions consistent with user profiles and space use patterns and that can offer appropriate sizes for use based on the population density. It is necessary to determine the appropriate number of rooms for a family's structure and its needs. The size and number of needed spaces, balconies, and attics vary depending on the sociocultural life in the settlements. For this reason, housing

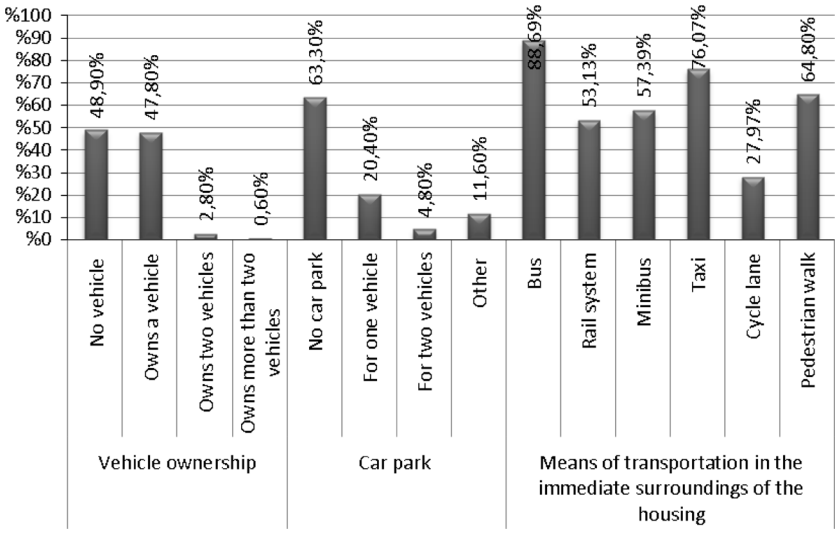


Fig. 19 Transportation

should be designed only after obtaining information about space use and half-open space use habits. For example, in some permanent housing built in Gündoğdu–Kocaeli after the 1999 earthquake, the level of satisfaction was low, because the number of rooms was insufficient, there were no storage areas, the bathroom and toilet were designed as a single space, and the number of balconies was insufficient (Taş et al. 2007). According to the results of the survey for this study, the housing preference of the respondents is low-rise housing with a living room and three bedrooms, with an area of approximately 120 m^2. Since the respondents have a limited income, they prefer floor-standing boilers for heating. Housing should have storage areas because of the users' strong relations with fellow townspeople, houseguests who stay for a short time, the numbers of children, and the habit of storing food for winter. It will be pertinent to design the bathroom and the toilet to be used as separate spaces. The loft should be designed as a usable area. The architectural design should include balconies that are used for the same functions as the attic.

The interior arrangement should ensure privacy, paying attention to the locations of rooms and their relations to one another to allow independent study, and the arrangement should also ensure privacy among the blocks by means of residence block arrangements. Noise is viewed as a significant problem in housing, according to the data. In order to prevent problems with next-door, downstairs, and upstairs neighbors, sound insulation is necessary in flooring and in the walls separating the housing. In order to prevent noise from installations, kitchen, bathroom, and toilet solutions should be developed by collecting installations at common vertical points and through overlapping the installations in the design.

Building quality is important for ensuring physical quality and safety. It is necessary to use durable, good quality materials and to pay attention to workmanship in order to prevent leakage and dampness and scouring on the roof, walls, and flooring of the housing, not to mention noise and heat loss from the joinery. With accurately designed, good quality materials and workmanship, it is also possible to produce disaster-safe buildings that satisfy users.

Whether respondents wish to become homeowners or tenants in the urban transformation area and whether they desire that neighborhood housing be included in urban transformation practices were questions also raised as part of the research. General results show that the total number of those who said no and those who had no opinion is higher than the number of respondents who said yes. According to the data, respondents do not have much information regarding urban transformation. Therefore, the public should be informed about such practices in detail.

In order to ensure identity, quality, and satisfaction, housing to be built after a potential disaster or within the urban transformation of areas under disaster risk should be structured considering sociodemographic, socioeconomic, and cultural features as well as space use habits.

Acknowledgments This article was prepared using the data from "Determining the Local Housing Identity to Generate Data for Post-Disaster Permanent Housing Production Process in Bursa Metropolitan Area," supported within the framework of "Collaboration Agreement on Implementation and Support of Academic Research, to be conducted at Uludag University, on Issues within Duty and Responsibility Area of Bursa Metropolitan Municipality," which was conducted by the first author. We would like to thank the consultants, the researchers who contributed to the completion of the research project, and the students who collected the data from the survey.

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