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Assessing the ratio of physical form of slums settlements with social capital

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ABSTRACT

The social dynamics of cities have long been dependent on their spaces and places. On the one hand, human interactions, and relationships are formed by the city form and on the other hand, the body recovers its identity from existing social life. The more a city can communicate with its citizens through physical features, the more it will affect their social identity. Thus, the city form can have a considerable effect on the relationships and social capital among humans. Karaj city is the second immigrant city because of being close to Tehran Capital of Iran. Nowadays, the slumming phenomenon in Karaj has become a fundamental problem that the physical distinctions of the slum districts seem to have led to a change in the social capacities of the district. Based on the survey and using processed data extracted from the questionnaire in a quantitative model through SPSS software, physical characteristics and architectural spaces of Zurabad neighborhood of Karaj contribute to the decline in social capital of the people in this neighborhood to 79%, resulting from reducing people's trust in the neighborhood up to 84%, its people's security up to 85%, its people's sense of belonging up to 72% and in its people's participation up to 75%. These results indicate the urgent need for immediate attention to the body and context of this region that shapes each individual's social and individual identity over time.

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INTRODUCTION

According to the researches about the situation of settlements around the world, half of the world's population lives in the cities that in the middle of the recent century, according to the estimations of the UN Habitat 7 out of every 10 people will live in the cities (UN Habitat, 2009). About one billion, or in fact, 32 percent of the current urban population of the world lives in the slums. Unbalanced economy, centralization, increasing the growing

immigration from rural to urban areas have caused such a problem for the cities of Iran. Zurabad is a prominent example of these slums districts of Karaj Metropolitan that consist of 6.8 percent of Karaj's population with 0.2 percent of the total area of Karaj. Undesirable image, meandrous and narrow corridors and pathways, waste accumulation and lack of collecting them, sewage flow in the alleys and the lack of sanitation, high population density, lack of green and open spaces and accessibilities, lack of public sanitation and health, low-safety housing and so on are the main physical problems of these

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settlements. In the present paper, the consequences and various effects of expansion and construction of the texture of slum districts such as Zurabad of Karaj on the social capital formed among individuals and the quality of human interactions are studied. This study will have a considerable effect on the planning for the improvement of human relationships and the development of social interaction in the city's spaces. This study is conducted in Zurabad, Karaj- Iran at 2019.

Research Theoretical Framework

Social capital

The term social capital was first coined by Hanifan (1916), meaning everyday assets in the form of goodwill, friendship and fellowship, sympathy, and social intercourse among the individuals and families. Social capital is simply the product of human beings' acquaintance with one another and comes from familiarity and trust that leads to positive results in people's lives (Seydaei et al., 2009). Scholars of social areas poised various ideas about this concept. Coleman believes that "social capital is the types of different things that have two common features: all of them include an aspect of a social structure and facilitate the determined reactions of individuals who are in the structure." (Majedi and Lahsayizadeh, 2006). Fukuyama (2006), considers social capital as a set of norms in social systems that promote the level of cooperation of community members and lower the level of transaction and communication costs. Putnam considers social capital to be the various facets of social organizations such as trust, norms, and networks that can improve the efficiency of society by creating and facilitating harmonious facilities (Putnam, 2013).

Components of Social Capital

Social trust: trust is one of the most important components of social capital which is the goodwill towards others in interpersonal relationships, and fosters the participation, cooperation, action and interaction between members in socialized groups and also leads to the expansion and facilitation of one's social relationships with other individuals of the community (Qanee Rad and Hosseini, 2005). The presence of trust and social capital can maintain stability in society. In the other words, trust indicates that norms and networks are well established in a

society (Grootaert et al., 2005); there are two types of trust including the formal trust that is the trust in institutes and organizations and informal trust which includes interpersonal trust and trust in others.

Social Participation: social participation is one of the components of social capital meaning a purposeful and optional action with interactive characteristics between an actor and his/her social-environmental context which is satisfying and also, forms the relationships and creates the potential supportive networks (Bullen and Onyx, 2000). Participation includes types of group-individual actions to intervene in determining the fate of oneself and society and affect the decision-making processes about public affairs (Mosavi, 2006) and constitutes formal and informal participation. Associations and state organizations are of formal participation. Formal participation means participation, cooperation, and communication with state organizations and institutes in the form of membership, cooperation in activities and acceptance of executive responsibility. Informal participation means participation in informal affairs in the society which is measured in terms of religious and charity activities.

Social Security: means being secure or feeling that one's life, property, identity, and values are safe from threat, hurting damage, and the lack of concern to meet reasonable present and future needs. Sense of security is a psychosocial process that is not merely imposed on individuals but most individuals in the community play a fundamental role in its creation or elimination based on their needs, interests, demands and personal and mental abilities. Civil human needs security and peace of mind in order to live in a society and reach higher levels of social growth. There is a close relationship between social capital and social secure space and will affect some issues such as prevention and reduction of crimes, violence, and conflict in a society, substance abuse, committing suicide and other social problems (Fukuyama, 2006).

Social Solidarity: in a sociology view, solidarity is a phenomenon based on which, in the level of a group or a community, the members are interdependent and need each other mutually. Solidarity and cohesion are the sense of responsibility among some people or some groups who enjoy knowledge and will and has a moral meaning that ensures the existence of a reciprocal task or requirement. It also has a positive meaning which is the mutual solidarity

between functions, components and/or creatures in an organized whole (Putnam, 2013). Table 1.

Physical Form and social capital

Although cities are places for social interactions, these interactions are different considering the size of social groups, aims, group composition and so on. Social relationships can be formed in different places and environments. From the private realm of a house to residential complexes and open spaces, despite the scale, type, and location and so on, all play an important role in the social product of the city and formation of social capital. There are effective theories in this area that investigate the method of the relationship between the elements of urban form and social interactions of humans in the city (Krafta, 2013). Jacobs (1961), for example, emphasizes that the form of the city influences not only urban life but also social networks among people. She describes networks of people’s continued presence in small neighborhoods as the social capital of cities. In a study, Hillier and Hanson (1984) investigated the effect of environment on the identity of social behavior and indicated the relationship between interactions of social groups and boundaries and arrangement of urban plots. According to Hanson, changes in physical properties, even at the neighborhood scale, are not only changes in the spatial arrangement of residential areas, but also in how people use space to interact with and treat others. Hanson explains how in modern developed lands, the behavior is influenced by urban design. Hanson (2000), studied the culture of a community about moving within the neighborhood and the motions of residents to go from door to a situation where strangers or non-indigenous people are present, and suggests that if social communication does not happen properly, It means that the relationship between space and society is not well understood (Hanson, 2000). According

to the aforementioned, social activities and physical dimensions of the city are mutually related. On the one hand, differences and heterogeneity of physical dimensions and the form of urban neighborhoods in general, directly or indirectly, affect different social activities and functions. On the other hand, some of these activities, motions, and fluidity in the city causes a change in the base of its form. Therefore, factors such as accessibility, texture’s structure, population density and characteristics, land use, arrangement of functions, distribution of activities, social spaces and so on that shape the form and body of city’s neighborhoods, affect the formation of social capital among residents and will ensure the intensity and quality of social capital resulted from simultaneous presence of human, activity, and space.

Informal Settlement

Informal settlement focuses more on the temporary settlement in a place and illegal occupation and settlement of land. The informal settlement is one of the prominent faces of urban poverty that is formed within or suburb of cities, big cities in particular, in a self-paced way, without construction permission, and formal urban planning with an accumulation of low-income class and low levels of quality and quantity of life. It is called slumming, informal settlement, self-paced and unorganized settlements (Brueckner, 2013).

Physical Characteristics of Informal Settlements

Population growth in slums is almost twice the average of urban population growth. The population of these neighborhoods doubles per 5-7 years and their relative ratio is usually very high. In most of the cases, all family members live in the same room (Preparation of Tehran Province, 2009). Therefore, issues such as the surplus of households to urban neighborhoods and the reduction of the area of the residential

Table 1. Social capital indicators

Theorist	Social Capital Indicators
(Li et al., 2005)	Neighborhood units, social networking, civic engagement
(Bryant and Norris, 2002)	social participation, social commitment, empowerment, sense of community, social networks, social support and social interaction, trust, social cohesion
(Bullen and Onyx, 2000)	Community participation, community context, trust and security, neighborhood communication, interactions with friends and family, capacity to accept differences, bonding, value for life
(Putnam, 2013)	Awareness, participation and civic bodies
(World Bank, 1998)	Departments and networks, trust and cooperation, community activities, information and communication, cooperation
(Fukuyama, 2000)	Crime and crime rate, family breakdown, drug use, lawsuit and complaint

unit to the city in slums lead to increasing the gap of housing quantitative indices from the standard. Household density in a residential unit, individual density in a residential unit, individual density in a room, room density in a residential unit, an average of room numbers for every household, an average of built area and alike are important quantitative indices that undergo fundamental changes in these neighborhoods (Kimani-Murage and Ngindu, 2007).

Reduction of Housing Quality Indicators

Visible changes in quality indicators of the building are one of the irritating issues in these neighborhoods. Some of these issues include increase in the building age, non-standard building materials (using low-durable or second-hand building materials in these neighborhoods or unusual materials; for example, high ratios of 70% or 60% of these unusual materials are woods, tinfoil, and so on (Arimah and Branch, 2011). In addition, the inappropriate condition of buildings' façade is another issue which, nowadays, is considered in urban planning and planning system because one of the aims of urban planning is the beauty of the cities (Hiraskar, 1997). Another issue is the improper occupation of the building. Security and safety in the house occupation is another important and effective social and mental dimension of housing. Household living in a residential unit must feel secure of watching the landscape of its settlement and such matter will bring more mental peace for them. On the other hand, for those low-income groups who improve their housing conditions during the time, the security of possession right is of importance.

Unhealthy Sanitation Condition

The slums lack public and individual health to the extent of global and even national standards. Waste accumulation and not collecting them, home sewage in the streets and lack of sanitation, noise pollution, air pollution and so on are evident in these neighborhoods. Inadequate hygiene in the slums has led to the spread of various diseases and can challenge other urban areas (Mehta et al.2017).

Weak Educational and Welfare Facilities and Low Levels of Education and Literacy

The lack of appropriate funding for education and cultural centers in these areas has made the process of socialization among slums children and adolescents a

flawed and sterile process, a defect that is manifested in the high growth of social deviations. Children are often deprived of the opportunity to study and forced to work for low incomes (Census of India, 2011).

Roads Network Condition

Narrow roads network, high slopes in some networks, population density disproportionate to roads network, instability of the wall leading to the network, not failure to follow a special pattern (irregular pattern), self-paced of roads network and lack of pre-designed roads, and high traffic nodes in roads networks are the most important characteristics of roads network of slum settlements (Roy et al., 2014).

Cultural Characteristics

The culture of a law-breaking, low sense of belonging to the urban identity, Severe divergence with urban law, isolationism, feeling strange and alienated, and identity disorder are the most important cultural characteristics, rejection and slumming. Special subcultures prevail over the households living in slums and some communities are manifested in the heart of the society. These cultures are absorbed into the urban culture very late which, in addition to the cultural poverty of individuals, makes problems to influence them socially and culturally to execute various social programs such as health, family planning and so on (Salehi Amiri and Khodai, 2010).

Social Characteristics

Ethnic identity, committed to traditions, lack of specialty, lack of financial ability, prejudices about this class, discrimination and so on eliminate the context to participate in public institutions, social groups, and parties as a healthy and effective member and lead to their rejection. The pessimism towards the ruling class and the mistrust in the power-holders and those in power cause them to be aggressive, and these attributes lead them into a kind of social anomaly that manifest themselves their results even in different aspects of sexual behaviors and family bonds. Characteristics that are usually the forerunners of the formation of misbehavior and provide the readiness to perform misbehavior in individuals (Salimi and Davari, 2007).

Economic Characteristics

Slums have the lowest social and economic classes which are the main reason for their dissatisfaction

with daily life. The low social class of slums does not let them have access to legal opportunities in order to improve their situation. Most of them consider the structure of society to be the main cause of their unemployment and being employed in false jobs such as beggary, street peddling, mortgages and so on. In addition, low literacy and lack of professional skills and their inability to attend and join the formal economic relationship of the city and as a result, persistent unemployment, make the deviance ground for them more than other official citizens. Besides that, it must be added that we face a kind of valuable form of poverty and staying in poverty which is embedded in the lifestyle of slums. Despite a fair income in some of families, they also chose the poorest way of living which means, this kind of lifestyle is considered a positive situation for them and even though it seems tough condition, it is suitable for them at the same time and will be difficult to replace with another one (Parvin and Darvishi, 2015).

Case study: Zurabad neighborhood, Karaj

Karaj is one of the Metropolitans of Iran and also the capital city of Alborz Province. According to Iran census, (2016) the population of Karaj is 2712400 and is the second biggest immigrant city after Tehran. The first district of municipality subdivisions of Karaj is located in the northeast to east of Karaj that covers an area of more than 1,200 hectares with a population of about 195,000. According to the information provided on the Municipality of Karaj website, about 1.785% of the total area of the

area is the worn-out texture. The area in the south also includes the poor and the slums of Karaj by the name of Zurabad. The population density of Zurabad is very high, as it accounts for 0.2% of the total area of Karaj, with a share of 6.8% of the population. Sixty percent of local businesses of activists work as building workmen, with the remainder engaged in street peddling, sweeping and driving. More than 1500 children in the area are collecting and selling dry waste to the recycling units of Karaj Municipality. The population in this neighborhood has many different ethnic and geographical origins from across the country. Residential context has covered the whole hill to the summit except for the northern side which has remained as a forest park. The area of residential units depends on height. This ratio can be explained that in the height of more than 1460 meters, the area of residential units is reduced to less than 50 square meters and in 1480 meters height, it is reduced to 30 square meters. In total, 43.5% of residential units have an area of less than 50 square meters and 14.5% have an area of more than 150 square meters. The small size of residential buildings and their insufficiency in terms of hygiene and technically, multi-family dwelling in a residential unit, the steep slope of the area, especially in the northern part of the hill, and the lack of coherent urban subsystems and inadequate roadway coverage, unpleasantly displays uneven forms of housing on the heart of the city of Karaj in such a way that it can be seen from a very long distance. (Figs. 1 to 5)

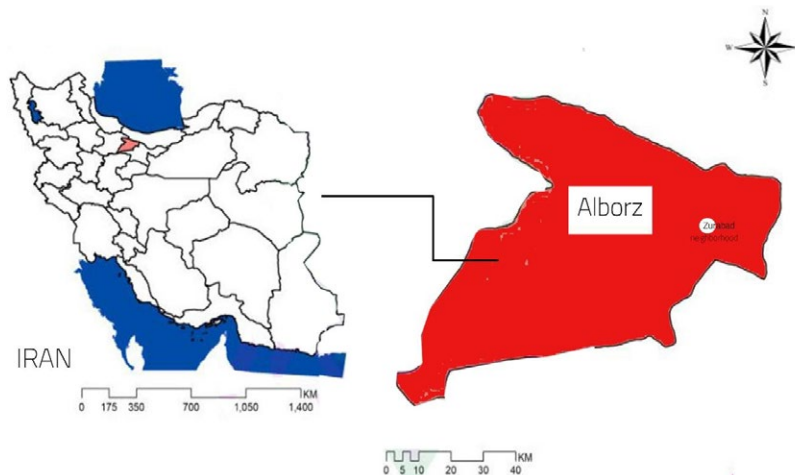


Fig.1: Iran, Alborz province (Map of karaj, 2019)

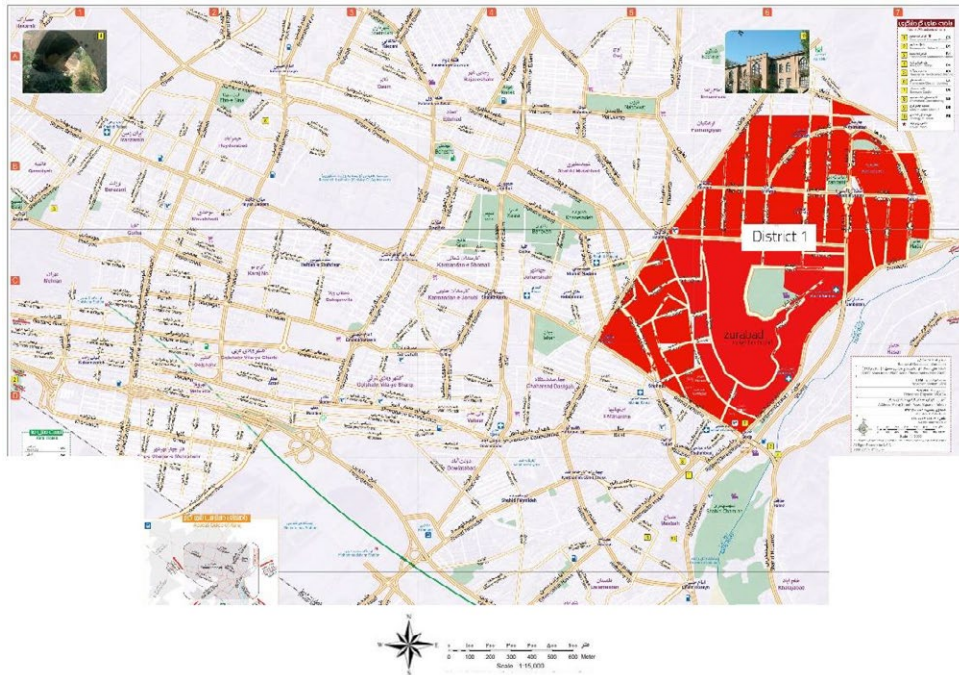


Fig.2: Karaj city, District 1 (Map of karaj, 2019)

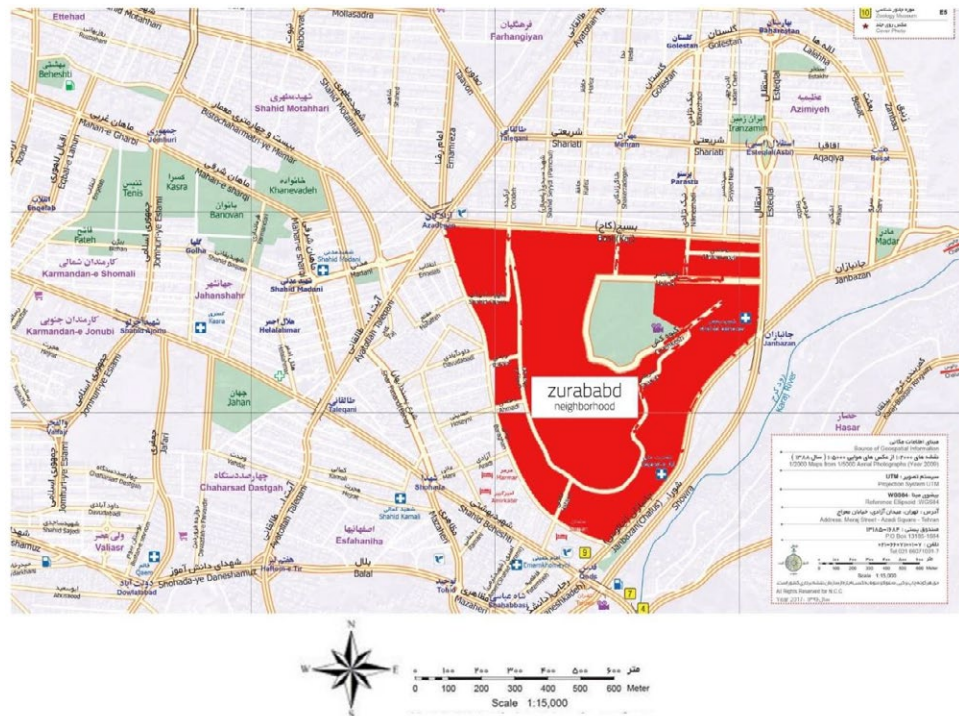


Fig.3: District 1, Zurabad Neighborhood (Map of karaj, 2019)



Fig.4: Karaj, View of Zurabad Neighborhood (Mehrnews, 2015)



Fig. 5: Karaj, View of Zurabad Neighborhood (Mehrnews, 2015)

MATERIALS AND METHODS

Methodology

The current study is conducted based on the survey method. The theoretical part of the study is dedicated to the documents to codify the research frame. In the analytical part, to precise the effective indicators on social capital, while employing documentary studies, the participatory discussions are used in the form of concentrated groups. According to these indices, a questionnaire was made to collect information about the social capital of residents with 30 closed-ended questions. First, the data obtained were described using statistical tables and their related information were presented. Then, one sample t-test and Friedman test were used to test the hypothesis and research question.

RESULTS AND DISCUSSION

Social capital, as one of the sources of human relations, has an important role in the dynamics and development of social dimensions among the inhabitants of the city. This paper attempts to examine the interplay of the urban body and social capital of slums. For this purpose, different aspects of the form of suburbs and their impact on social capital variables were studied. The results show that there is a direct relationship between the components of social capital and the physical characteristics of the slums so that the main components such as trust and security, participation and solidarity, and sense of belonging in a neighborhood like Zurabad of Karaj are all influenced by the physical characteristics. As the results of the tables clearly show, the "formal trust component" has been affected most. The 84% decline in trust in official institutions indicates that the general public and their real needs have no impact on the formulation and

implementation of urban planning, and they do not perceive a significant change in enhancing their quality of life. The lack of public and welfare services in the neighborhood, the lack of legal ownership of the land, and other sectional decisions from the 90s to organize this settlement and the uncertainty of officials and the municipality have caused the lack of sense of real belonging among the residents for a long terms to the place and residents consider themselves temporary residents of this neighborhood, and consequently another major component of social capital formation in Zurabad of Karaj is in poor condition. The 72% tendency of people to leave their neighborhoods and not take care of the appearance of their buildings and neighborhoods is due to the lack of sense of belonging. The lack of belonging and trust in the upstream institutions has led to the decline of another important pillar of social capital in the neighborhood, namely participation. The improvement of the social identity of each settlement depends on the formation of social and community networks that can fulfill the goals of social capital, which is welfare, physical and cultural-social development. The lack of attitude of the authorities towards the influence of the people and their participation has eliminated the development grounds in Zurabad of Karaj. According to a field interview, it was found that 75 percent of 120 interviewees were not willing to participate in any public planned programs by the municipality and upstream institutions. As a result of this lack of trust and formal participation, the other component of social capital, public security, will no longer be formed. Based on the results of this field research at Zurabad Karaj neighborhood level, despite the security at the micro-level and interpersonal the and presence of children and women in the neighborhood, the lack of spatial and physical organization of Zurabad and lack

Table 2: Frequency distribution of Respondents' employment

Variable	Items	Number	Percentage	Valid Percentage
Employment status	Self-employed	42	35	46.7
	Official	6	5	6.7
	Employee	6	5	6.7
	Worker	27	22.5	30
	Practitioner/ Nurse	3	2.5	3.3
	Teacher	3	2.5	3.3
	Unemployed	3		3.3
Total	90		75	100
Unanswered	30		25	
Total	120		100	

of public and community space in the neighborhood and inappropriate access network and the direct and indirect daily experiences of people from a variety of phenomena such as theft, beatings, murder, drug trafficking along with the large immigrant population at the neighborhood level have hampered public security in the neighborhood. Slum means removing all of these factors from a human being, resulting in a low level of social indicators, leading to the elimination and reduction of important indicators such as social capital (Vilar and Cartes, 2016).

Data description

According to the data collected from the questionnaires, distribution frequency of sex ratio is that 63 (52.5%) were male and 57 (47.5%) were female and 96 (80%) were married and 24 (20%) were single. Also, 6 (5%) respondents were up to 20 years old, 21 (17.5%) were between 21 and 30 years old, 33 (27.5%) were between 31 and 40 years old, 30 (25%) were between 41 and 50 years old, and 30 (25%) were over 50 years.

According to Table 2, 42 (46.7%) of respondents

were self-employed, 6 (6.7%) were officials, 6 (6.7%) were employees, 27 (30%) were workers, 3 (3.3%) were practitioner/ nurse, 3 (3.3%) were teachers, and 3 (3.3%) were unemployed.

Given the high number of respondents out of 100 (120), the study population was considered normal according to Stevens and Pituch, (2002). As a result, parametric tests are suitable for testing the research hypothesis.

Testing Hypotheses

Main Research Hypothesis: The current state of the physical and architectural spaces of the slum neighborhood of Zurabad of Karaj play a role in reducing the social capital of its people. According to Table 3 and one-sample t-test, it is observed that the average index calculated for the current status of physical and architectural spaces of Zurabad slum neighborhood of Karaj in decreasing social capital of the population was 3.96, at the α level of 0.05 and $P < 0.05$ and $t = 37.58$ with 119 degree of freedom, which is higher than the hypothetical average level and t value is critical; thus, the present status of physical

Table 3: Results of test for the current state of physical and architectural spaces of the slums neighborhood of Zurabad of Karaj in reducing the social capital of people of the neighborhood.

Variables	Number	Degree of freedom	Mean	Standard Deviation	Sig	t-statistics
State of physical and architectural spaces of slums neighborhood of Zurabad of Karaj in reducing the social capital of its people.	120	119	3.96	0.28	0.000	37.58

Table 4: Test results for the current state of physical and architectural spaces of the slums area of Zurabad of Karaj in reducing people's trust (formal-informal of the neighborhood).

Variables	Number	Degree of freedom	Mean	Standard Deviation	Sig	t-statistics
Neglecting of officials to the illegal constructions of the neighborhood.	120	119	4.3	0.95	0.000	14.86
neglecting of officials to the reinforcement of neighborhood's houses	120	119	4.85	0.35	0.000	56.51
The current state of architectural and physical spaces of the slums neighborhood of Zurabad of Karaj in reducing people's trust of the neighborhood.	120	119	4.57	0.5	0.000	33.89
no willing to provide a house for neighbors' wedding ceremony	120	119	3.05	1.16	0.63	0.47
security reduction as a result of Afghani's people presence in this neighborhood	120	119	4.62	0.58	0.000	30.65
The state of architectural and physical spaces of the slums area of Zurabad of Karaj in reducing the informal trust of its people.	120	119	3.83	0.61	0.000	14.82
The state of architectural and physical spaces of the slums area of Zurabad of Karaj in reducing its people's trust.	120	119	4.2	0.34	0.000	38.24

and architectural spaces of Zurabad neighborhood of Karaj contribute to the decline in social capital of the people in this neighborhood to 79%.

First Research Hypothesis: the current state of physical and architectural spaces of slums neighborhood of Zurabad of Karaj plays a role in reducing people’s trust (formal-informal) of this neighborhood.

Based on the data in Table 4 and according to the one-sample t-test, it is observed that the average index calculated for the current status of the physical architectural spaces of Zurabad slums neighborhood of Karaj in decreasing people’s trust in this neighborhood was 4.2, at the level of $\alpha=0.05$. And $p < 0.05$ and $t = 38.24$ with 119 degree of freedom, which is higher than the hypothetical mean level and t value is critical; as a result, the current state of physical and architectural spaces of Zurabad slums area of Karaj play an important role in reducing people’s trust in the neighborhood up to 84%. Moreover, $P>0.5$ was higher than the hypothetical mean of population for informal and formal trust and the related items except for “not willing to provide house for neighbors’ weddings”, indicating the effect of these factors in reducing people’s trust (formal-informal) of this neighborhood ($p<0.05$).

Second Research Hypothesis: the current state of physical and architectural spaces of the slums area of Zurabad of Karaj plays a role in reducing its people’s security.

According to Table 5 and based on the one-sample t-test, it can be seen that the indicator average calculated for the current state of physical and architectural spaces of the slums area of Zurabad of Karaj in reducing its people’s security is 4.27 at the $\alpha= 0.05$ and $P<0.05$ and $t=31.14$ and with 119 degree of freedom, which is higher than the hypothetical mean of average level and t value is critical; therefore, it can be seen that the current state of physical and architectural spaces of the slums area of Zurabad of Karaj plays a role in reducing its people’s security up to 85%.

Also, the mean of all related items is higher than the hypothetical mean of the population, indicating the effect of these factors on the reduction of security of neighborhood people ($P<0.05$).

Research Third Hypothesis: the current state of architectural and physical spaces of the slums area of Zurabad of Karaj plays a role in the sense of belonging of its people.

According to the information presented in Table

Table 5: Test results for the current state of architectural and physical spaces of the slums area of Zurabad of Karaj in reducing the security of its people

Variables	Number	Degree of freedom	Mean	Standard Deviation	Sig	t-statistics
Necessary security for women and children in cozy and deserted spaces and the form of alleys and streets of the neighborhood.	120	119	4.17	0.83	0.000	15.38
Reducing the neighborhood’s security in case of the presence of commercial and administration land uses beside residential land uses.	120	119	4.6	0.7	0.000	24.93
Feeling worried about the presence of children and adolescents due to insecurity in public spaces in the neighborhood	120	119	4.05	0.54	0.000	21
The state of physical and architectural spaces of the slums area of Zurabad in reducing the security of its people	120	119	4.27	0.44	0.000	31.14

Table 6: Test results for the current state of the architectural and physical spaces of the slums area of Zurabad of Karaj in reducing the sense of belonging of its people

Variables	Number	Degree of freedom	Mean	Standard Deviation	Sig	t-statistics
abandoning the neighborhood because of the appearance of house and neighborhood in case of having financial eligibility by residents	120	119	3.1	1.5	0.46	0.72
Lack of confidence between residents because of the appearance of the house and neighborhood.	120	119	3.62	1.02	0.000	6.7
Lack of comfort and peace among the neighborhood’s people in their houses and neighborhood.	120	119	4.07	0.93	0.000	12.57
The state of architectural and physical spaces of the slums area of Zurabad in reducing the sense of belonging among the neighborhood’s people.	120	119	3.6	0.66	0.000	9.86

Table 7. Test results for the current state of the physical and architectural spaces of the slums area of Zurabad of Karaj in reducing the neighborhood's people's participation

Variables	Number	Degree of freedom	Mean	Standard Deviation	Sig	t-statistics
Residents' neglect to renovate their home due to informal ownership and lack of documentation	120	119	3.72	1.02	0.000	7.72
lack of cooperation in organizing the facades of neighborhood buildings due to lack of facilities dedicated by the municipality	120	119	3.67	1.03	0.000	7.12
lack of volunteer activity with neighbors in creating educational and learning spaces in the neighborhood	120	119	3.95	0.92	0.000	11.25
The state of the architectural and physical spaces of the slums area of Zurabad of Karaj in reducing the formal participation of neighborhood people.	120	119	3.78	0.51	0.000	16.62
Neglecting to turn part of the deserted and abandoned spaces between houses into semi-public open spaces such as a park and lack of solidarity among neighbors.	120	119	3.55	1.05	0.000	5.72
lack of creating a workshop for Female-headed households in the neighborhood	120	119	3.55	1.05	0.000	5.72
lack of space in houses and forcing residents to construct an illegal shed in the yard or rooftops	120	119	4.75	0.48	0.000	39.17
The state of architectural and physical spaces of the slums area of Zurabad in reducing the informal participation of its people	120	119	3.77	0.5	0.000	16.83
The state of architectural and physical spaces of the slums area of Zurabad in reducing its people's participation	120	119	3.77	0.37	0.000	22.65

Table 8: Ranking and prioritizing the current state of architectural and physical spaces in the slums area of Zurabad of Karaj in reducing the social capital indicators

Factors	Rating Mean
Formal trust	5.25
Informal trust	3.15
Security	4.46
Sense of belonging	2.44
Formal participation	2.8
Informal participation	2.9

Table 9: Results of Friedman Test to prioritize ranks

Numbers	120
χ^2	219.47
Degree of freedom	5
p	0.000

6 and based on the one-sample t-test, it can be seen that the indicator mean calculated for the current state of the physical and architectural spaces of the slums area of Zurabad of Karaj in reducing the sense of belonging of its people is 3.6 in the $\alpha = 0.05$ and $p < 0.05$ and $t = 0.86$ with 119 degree of freedom, which is higher than the hypothetical mean of average level and t value is critical; therefore, the current state of the physical and architectural spaces of the slums area of Zurabad of Karaj plays a role in reducing its people's sense of belonging up to 72%. Also, the mean of all related items except the "abandoning the neighborhood because of the appearance of

house and neighborhood in case of having financial eligibility by residents, ($P > 0.05$) is also higher than the hypothetical mean of population, indicating the effect of these factors in reducing the sense of belonging of this neighborhood's people ($P < 0.05$).

Research Fourth Hypothesis: The current state of the architectural and physical spaces of the slums area of Zurabad of Karaj plays a role in reducing the participation (formal-informal) participation of its people.

According to Table 7 and based on one-sample t-test, it can be seen that the indicator mean calculated for the current state of the architectural and physical spaces of the slums area of Zurabad of Karaj in reducing people's participation is 3.77 at the level of $\alpha = 0.05$ and $P < 0.05$ and $t = 22.65$ with 119 degree of freedom, which is higher than the hypothetical mean of average level and t value is critical; therefore, the current state of the architectural and physical spaces of the slums area of Zurabad of Karaj plays a role in its people's participation up to 75%. Also, the mean of formal and informal participation and all the related items except for the "neglecting the transformation of a part of deserted and empty spaces between houses to public spaces such as parks and the lack of solidarity among neighbors" item ($p > 0.05$), is higher than the hypothetical mean of population, indicating the effect of these factors in reducing

the participation (formal-informal) of its people ($P < 0.05$).

Fifth Research Hypothesis: The current state of the architectural and physical spaces in the slums area of Zurabad of Karaj in reducing the indicators of social capital (formal-informal trust, sense of belonging, formal-informal participation) can be prioritized.

According to Friedman's test conducted for ranking the current state of the architectural and physical spaces in slums area of Zurabad of Karaj in reducing indicators of social capital (formal-informal trust, security, sense of belonging, formal-informal participation), according to Table 8, formal trust with 5.25 in the first priority, security with 4.46 in the second priority, informal trust with 3.15 in the third priority, informal participation with 2.9 in the fourth priority, formal participation with 2.8 in the fifth priority and sense of belonging with 2.44 is the sixth and last priority. Also, according to Table 9, the value of $\chi^2 = 219.47$ with the significant level of $p = 0.000$ and lower than 0.05, is valid. Thus, the current state of architectural and physical spaces in the slums area of Zurabad of Karaj caused the most reduction first in the formal trust and then in the security and the least reduction occurred in the sense of belonging of neighborhood's people.

CONCLUSION

New development policies show that today, social capital, by employing link networks, norms and mutual trust across contexts and grounds, enables the participation of collective activities in pursuit of common themes such as fighting poverty in different dimensions. The idea that enables social capital to be expanded is to design and plan for the purpose of keeping people in the places for a long time and engaging with the habitat as an identity creator agent repeatedly. This study found that the physical and architectural features of Zorabad of Karaj prevent the long-term residence of the inhabitants and engaging with context. As a result, none of the main indicators of social capital are formed in this neighborhood. So this idea should avoid an 85% drop in trust (formal and informal) and improves the sense of belonging (which 72% dropped), by maximizing participation based on the human capacity and physical and non-physical capacities of this context. Creating a platform for the

formation of public communication networks, along with the provision of public and welfare services, is one of the most important indicators of this idea. This idea generally should avoid the negative 75% impact of physical disruption on social capital in Zurabad neighborhood, Karaj.

SUGGESTIONS

The emergence of a high social capital housing model that can provide cost-effective and practical architecture over time and step by step has become a necessity for such areas. The incremental housing model is one of these models that can be suggested as a revival idea for Zurabad neighborhood of Karaj. Benefiting from maximum participation at different levels is one of the inherent features of the incremental pattern. Participation brings about public empowerment and increases public trust. Such a dynamic participation provides an opportunity for the emergence and identification of intrinsic potentials among people. Incremental housing has proved capable of giving low-income home-seekers what they cannot provide themselves: well-serviced land, infrastructure, and foundational structures for a sturdy and extensible house. They enable structures and additional housing support to be tailored to existing building systems and knowledge, and respect people's preferences. Examples such as incremental housing strategy in Chile in 2003, elemental in India in 2008, and Arana comprehensive housing in India in 1989 designed at the global level, were based on this pattern.

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CONFLICT OF INTEREST

The author declares that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy have been completely observed by the authors.

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