

## Original Article

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## Measurement and evaluation of the level of place attachment in the neighborhoods of Ferdosiyeh city, Shahriar county

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### Abstract

The concept of sense of place attachment is a key aspect in human-environment interaction. Cities inherently provide a context for forming this interaction and fostering a deep bond between people and their surroundings. However, in the modern era, a dominant trend has emerged of creating anonymous and meaningless urban spaces, which has severely diminished citizens' attachment to their neighborhoods. This issue is more pronounced and significant in migrant-receptive cities with high socio-cultural diversity. Addressing this challenge, the primary objective of this research is to measure and evaluate the sense of place attachment in this context. This study examines the city of Ferdousieh as an example of a migrant-receptive city possessing distinct yet intertwined social, emotional, and physical dimensions. This applied research utilized a descriptive-analytical method with a relational and comparative approach. Data were collected via questionnaires and analyzed using descriptive and inferential statistics (including t-tests, correlation, regression, and ANOVA) in SPSS software. The statistical population consisted of residents of Ferdousieh city, totaling 30,577 people. A sample of 384 individuals was selected randomly from five different neighborhoods of the city using Cochran's formula. The findings revealed a significant correlation ( $r = 0.895$ ) between the various dimensions of place attachment in Ferdousieh, with these dimensions explaining 78.4% of the variance in this sense. However, citizens' assessments indicated that the level of these dimensions was below the desired standard. For a more precise explanation, a regression analysis model was applied. Its results showed that "place identity," with an impact factor of 0.778, had the most significant share in forming the sense of attachment, whereas "social bonds," with a factor of -0.131, had the least influence.

### Keywords

Ferdosiyeh city  
Place dependence  
Place identity  
Sense of place attachment  
Social bonds

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## 1. Introduction

According to a review of recent scientific sources (such as articles published in 2025), the concept of place attachment is still based on the classic definitions of environmental psychology. However, in recent years, its definitions have been enriched and become more practical by focusing on aspects of sustainability, climate change, digital technology, and socio-emotional interactions. Place attachment is defined as the emotional bond between individuals or groups and specific places. This concept not only strengthens the sense of belonging and identity but also increases the community's responsibility towards sustainable conservation and local development. This bond motivates positive long-term actions for preserving ecological, cultural, and social resources, and it interacts with social capital and place identity (Lin et al., 2025).

Place attachment, as the intersection of physical, functional, and subjective dimensions relative to place, transforms space into a place with unique emotional, sensory, and behavioral characteristics for individuals (Lewicka, 2011) and is a key theory in exploring the human-place relationship, creating a positive emotional relationship between people and place (Feng et al, 2022) and one of the most important aspects of the interaction between people and place to make residential environments safe, sustainable, and resilient. According to studies by Beyer et al. (2016), emotions and emotional experiences play a significant role in forming our mental image of a place and attachment to it. The attachment process is a psychological phenomenon that connects people to their environments at various scales, such as home, neighborhood, city, and country, and in specific places - in terms of diversity of uses - such as workplaces, educational institutions, public spaces, and recreational environments (Heydari et al, 2018). Residential environments represent a vital aspect of life and individual well-being as they provide the primary context for daily life and social interactions (Motalebi et al, 2023). Therefore, they are the most important places that individuals may become connected to throughout their lives (Bonaiuto et al, 2003). People's need to create a sense of attachment is linked to the sense of belonging to a place. It is inseparable from it (Javan Foruzandeh & Motalebi, 2011), which can revitalize declining urban neighborhoods at physical and social levels (Brown et al., 2003).

Place attachment is one of the fundamental factors in evaluating the human-environment relationship and

creating high-quality human environments, playing a vital role in increasing individual responsibility, participation, and quality of life. Conversely, the lack of attachment to a place leads to reduced investment in maintenance, increased living costs, and decreased utility of residential settlements (Motalebis et al., 2023). Place attachment is defined as a multidimensional emotional, cognitive, and behavioral bond between individuals or communities and specific environments (physical or virtual) that is strengthened through social interactions, personal memories, and digital experiences and shapes place identity, sense of belonging, and motivation to protect the place. This definition is adapted from an article titled "digital and physical place attachment in the age of virtual societies," which emphasizes the role of digital technologies (such as augmented reality and online communities) in enhancing or reconstructing attachment to physical or virtual places. This new perspective views place attachment as a dynamic phenomenon that evolves in response to technological changes and globalization (Smith & Johnson, 2025).

Although studies have been conducted on the sense of belonging in migrant-receptive metropolises, intermediate and transitional cities, such as Ferdosiyeh, which result from the merger of villages, have received less attention. Focusing on this specific context, this research aims to explore the complexities of forming place attachment in a space that simultaneously faces identity, social, and physical challenges. According to the research title and the discussions above, this research aims to measure and evaluate the level of place attachment in the neighborhoods of Ferdosiyeh city, subsequently identifying the most influential indicators of place attachment. In this regard, the primary objective of this research is to explore and measure the level of place attachment, examining the role of its components in local management, and to analyze the relationship between current local management patterns and indicators of place attachment. This will enable the performance of this civic institution to be enhanced more effectively.

### 1.1. Research questions and hypotheses

1. What relationship and correlation exist between the indicators of sense of place attachment and the neighborhoods in Ferdosiyeh city, and to what extent have these indicators contributed to the sense of place attachment in Ferdosiyeh city?
2. Which indicator of sense of place attachment has the most significant impact on the neighborhoods of Ferdosiyeh city?

It appears that there is a relationship between the indicators of sense of place attachment and citizens' sense of belonging to living in Ferdosiyeh city. Furthermore, it appears that the citizens' sense of place identity in the neighborhoods of Ferdosiyeh city has the most significant impact on their sense of place attachment.

The primary objective and innovation of the present research, unlike previous studies that have predominantly focused on metropolitan areas, is to measure and evaluate the level of sense of place attachment in the neighborhoods of Ferdosiyeh city, Shahriar county. Unlike other studies, this city hosts citizens from diverse cultures and is also receptive to migrants. This article aims to identify the indicators

derived from the theoretical framework and literature review.

## 2. Literature review

Examining the background of previous research provides the scientific foundation and necessity for the current study. By analyzing past studies concerning place attachment, the conceptual framework of the research can be solidified, and its knowledge gap can be identified. For greater clarity and to demonstrate the position of this research within the body of existing knowledge, the most important related studies have been compiled in Table 1 and subjected to comparative analysis.

**Table 1. A review of published research in the field of place attachment and related concepts over the last three decades**

Row	Researcher(s)	Field of activity	Position and distinction of the present study
1	Lalli, M. (1992)	A comprehensive discussion on place identity and its connection to urban identity.	The present study, instead of focusing solely on identity, examines the dynamic interaction of the three dimensions of identity, dependence, and social bonds within a specific context.
2	Scannell, L., & Gifford, R. (2010)	Presenting the tripartite theoretical framework (Person-Process-Place) for place attachment.	This research utilizes Scannell and Gifford's framework as its theoretical foundation and tests it in the context of an Iranian migrant-receptive city.
3	Lewicka (2011)	A systematic review of 40 years of research in the field of place attachment.	The present research examines Lewicka's findings in a different cultural and geographical context (Ferdosiyeh city).
4	Ramkissoon et al (2013)	Measuring the dimensions of place attachment and its relationship with pro-environmental behaviors.	While Ramkissoon focuses on environmental consequences, this article focuses on the socio-physical consequences of attachment at the neighborhood level.
5	Manzo and Devine-Wright (2020)	Compiling the latest theoretical and methodological advances in the field of place attachment.	Relying on this authoritative source, the present article operationalizes one of the proposed concepts in the field of research.
6	Lin, X et al (2025)	Investigating the role of place attachment in shaping sustainable behaviors towards cultural heritage.	In comparison, the present study focuses on attachment in contemporary residential environments, rather than necessarily in heritage sites.
7	Erfani (2022)	Presenting a tripartite framework for individual-community-place relationships in sustainable urban planning.	This research tests Erfani's conceptual framework on a micro scale (neighborhoods of an intermediate city) using a quantitative method.
8	Saemi et al. (2022)	Measuring place attachment in the historical worn textures of Tabriz.	Unlike Saemi's research, which focused on a historical context, this article studies transitional and newly developed urban contexts.
9	Karimi & Mousavi (2023)	Analyzing the impact of social capital on place attachment in migrant-receptive cities with a case study of Parand New Town.	This research, by focusing on Ferdosiyeh as a prominent example of the merger of former villages, examines the dynamics of place attachment in highly heterogeneous contexts. The primary distinction lies in the discovery of an "identity-oriented pattern," in contrast to conventional findings in stable cities.

Row	Researcher(s)	Field of activity	Position and distinction of the present study
10	Mohammadi & Razavi (2023)	Investigating the relationship between social capital and place attachment in the neighborhoods of Karaj city.	While the research of Mohammadi and Razavi focuses on the metropolis of Karaj, this article studies an intermediate city (Ferdosiyeh) with high migrant absorption.
11	Nouri et al. (2024)	Analyzing the role of the quality of the built environment on residents' attachment in new towns.	This article, in comparison, focuses on a city with an organic background (resulting from the merger of villages), not a planned new town.
12	Rezvani et al. (2024)	Measuring place attachment in heterogeneous urban contexts with a case study of marginalized neighborhoods in Tehran.	The present study, by discovering the "negative coefficient of social bonds," goes a step beyond classical research and reveals the role of identity conflicts arising from the merger of villages in place attachment.
13	Jafari & Shahandeh (2024)	Investigating the relationship between place identity and social sustainability in cities in transition.	Unlike research focused on metropolises, this study examines intermediate and transitional cities and has identified a different pattern of place attachment.
14	Antonsich, M. (2010)	Providing an analytical framework for "belonging" and examining its social barriers.	This research, by focusing on "avoidant attachment" as an emerging concept, contributes to the theoretical richness of place attachment in heterogeneous contexts.
15	Garcia et al. (2024)	Negotiation of place identity in rapidly changing urban contexts with a case study of a changing neighborhood in Barcelona.	The main distinction of this research lies in providing "neighborhood-based and operational suggestions" based on quantitative findings and the native characteristics of Ferdosiyeh city.
16	Chen et al (2024)	Digital place attachment and community formation in migrant neighborhoods.	This study, by integrating the theoretical framework of Scannell and Gifford with the unique characteristics of Ferdosiyeh city, provides a new understanding of place attachment in migrant-receptive contexts.
17	Smith & Johnson (2025)	Investigating place attachment in the age of virtual societies and digital technologies.	The present study, by focusing on more traditional physical and social dimensions of attachment, provides a complementary and comparative role for such research.

## 2.1. Theoretical framework of the research

Place attachment is defined as a multifaceted and dynamic bond between individuals or communities and specific spaces, whether physical or digital, which is rooted in emotional, cognitive, and behavioral interactions and reinforces place identity, sense of belonging, and sustainable behaviors. The framework of Scannell and Gifford (2010) in the form of Person, Process, Place (PPP), emphasizing the personal (personal meanings), processual (emotional-behavioral interactions), and place (environmental characteristics) dimensions, has evolved in recent studies such as Manzo and Devine-Wright (2020), who introduce attachment as a tool for confronting contemporary challenges like climate change and forced migration. Hernández et al. (2020) define it as a dynamic process with two dimensions: place dependence and place identity, which influence local decision-making. Quinn and Devine-Wright (2020) highlight its role in emotional responses to environmental disruptions such as floods or

unsustainable urbanization and propose a framework for integrating attachment into crisis management policies. Chen et al. (2025) introduce the "platform-embedded place attachment" framework, examining digital-physical bonds in the age of virtual communities and demonstrating that technologies like augmented reality can enhance attachment in online spaces. Tahina (2025) emphasizes the relationship between attachment and place identity, highlighting the importance of interdisciplinary approaches in preserving cultural heritage and social cohesion. Erfani (2022) presents a tripartite framework for individual-community-place relationships, considering attachment as part of the sense of place, along with identity and place satisfaction, as key in sustainable urban planning. These integrated frameworks introduce place attachment not only as a psychological bond but also as a lever for collective policy-making and sustainability, which, by strengthening community resilience, preserves place bonds in the face of global changes (Lin et al., 2025).

While these definitions may be suitable for describing a specific feeling towards a particular place, they have a weakness: excessive ambiguity, which makes it impossible to differentiate between attachment and other related concepts. For example, 'Residential Environment Satisfaction' is defined as 'the positive or negative feelings of residents towards the place where they live' (Weidemann & Anderson, 1985, p. 156). For this reason, it is essential to specify and limit its boundaries. To achieve this goal, we must reduce everything we understand as the core characteristics of the concept of attachment. Although these characteristics are implicitly mentioned in many theoretical and operational definitions of this concept, their clarity and transparency have rarely been emphasized. Suppose we incorporate this specific characteristic into the previous definition of place attachment (Shumaker & Taylor, 1983). In that case, it can be stated as follows: a positive emotional bond between individuals and a specific place, characterized by the individual's desire to maintain proximity to such a place. In this case, only one description of place attachment is seen despite the numerous names observed. Sarbin (1983) mentions the Spanish term "querencia," which reflects the observed frequency of people's desire to prefer staying close to a particular place. It is a natural tendency for humans and other creatures to seek out the place where they were born or to find a place where they feel comfortable and secure. However, considering this author's exception, place attachment is rarely described in such terms.

Contrary to expectations, many other aspects have been included in its description. For example, the role that attachment plays in the development and formation of identity influences the sense of local community, among other things. Other aspects or characteristics are not inherent and definitive in relation to the concept of attachment. However, the tendency to stay in a specific place is an internal and inherent component of attachment. An important point to note is that the best conditions for attachment to occur are when people become attached not only to their home but also to their neighborhood and city simultaneously. In most cases, research has shown that the sense of attachment is high in some scales and low in others. Notable subjects are observed in conducted research on attachment. Firstly, the main variables of effective indicators in place attachment include the activities and capacities available in residential, commercial, and recreational spaces, among others. For example, in a commercial district,

variables that increase place attachment actually include variables such as 'accessibility,' which affect the economic capacities of the place (Shamsuddin & Ujang, 2008). Secondly, people who become attached to a place do not necessarily mean they live there (Knez, 2005). Thirdly, there is no decisive and specific output in measuring variables related to place attachment. Due to the widespread application of the concept of place attachment in diverse theoretical approaches, numerous definitions have been provided for it. Researchers describe this concept as a multidimensional bond that reflects the emotional, cognitive, and behavioral relationships between individuals and places that hold meaning for them.

However, the variables of this definition have a wide diversity. Human geographers, such as Lewicka (2020), have introduced place attachment as 'sense of place,' which is an emotional and universal bond that fulfills fundamental human needs. Some researchers, such as Raymond et al. (2021), consider the sense of place as a conceptual umbrella that encompasses subsets including place identity, place attachment, and place dependence. In migration and refugee studies, as seen in the research of Di Masso et al. (2022), the emphasis is on 'placelessness,' which examines attachment from the perspective of a deep longing for lost places. Urban sociologists and social researchers, such as Erfani (2022), analyze attachment at the scales of home, neighborhood, and city and consider it influenced by social characteristics (Mihaylov & Perkins, 2020), physical characteristics (Manzo & Devine-Wright, 2020), or a combination of both (Lin et al., 2025).

Additionally, Chen et al. (2025) highlight the role of digital technologies in strengthening place bonds through platform-based attachment, as they introduced it. This diversity in models and perspectives establishes place attachment as a dynamic and multidimensional concept with applications across various disciplines, including environmental psychology and urban planning. Diverse definitions reflect growing interest in place attachment and can be considered a sign of progress in the theoretical development of these concepts. Researchers have highlighted the processes, places, and individuals that encompass person-place bonds. However, these definitions remain scattered, and therefore, the theoretical development of these concepts has not only not been accepted so far, but a more general definition of place attachment has not yet been agreed upon.

By examining the commonalities among diverse

theoretical developments, the criteria for measuring human-place bonds have evolved to become variable and dynamic, influenced by the perspectives of researchers. Place attachment, place identity, and place dependence have been highlighted as the main

pillars of existing research. The model employed in the present research, for assessing sense of place attachment, is based on three indicators: place identity, place dependence, and social bonds, as shown in Figure 1.

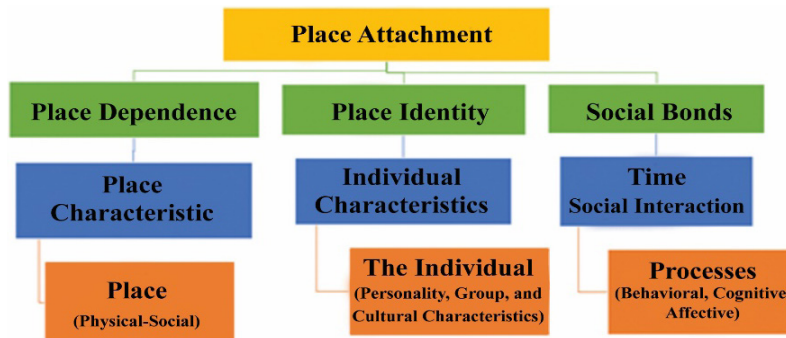


Figure 1. Theoretical research framework

After reviewing the theoretical framework of the research and its research background, the research

will proceed according to the following process, as illustrated in Figure 2.

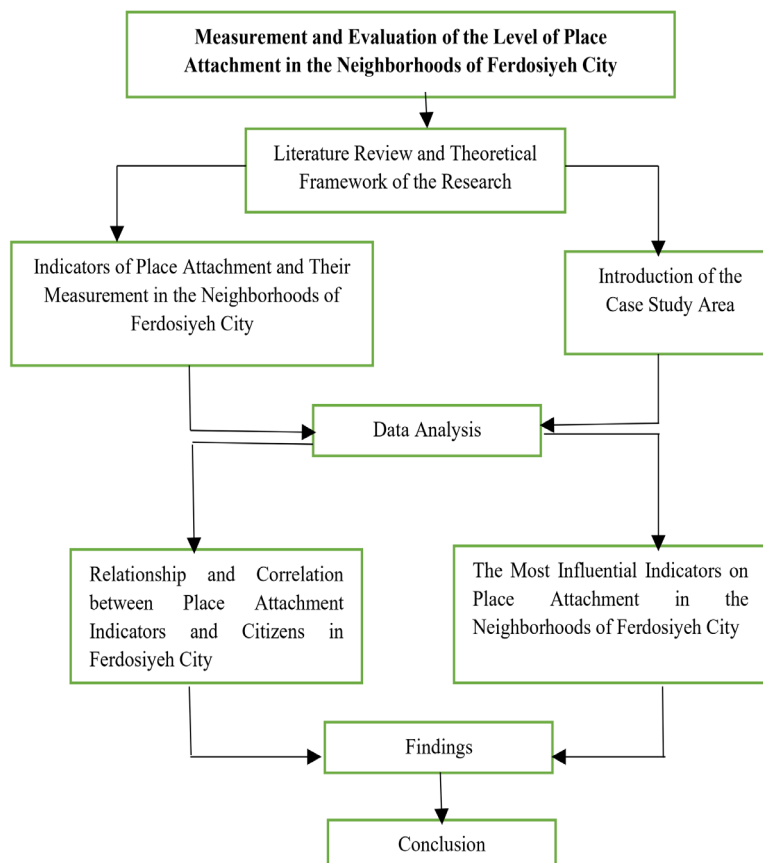


Figure 2. Phases of the assessment and evaluation model for sense of place attachment in the neighborhoods of Ferdosiyeh city.

### 3. Research methodology

This research investigates the indicators of place attachment in the neighborhoods of Ferdosiyeh city.

The city was selected as a prominent case study due to its diverse citizenry and the existing potential for strengthening solidarity, empathy, and participation in

urban affairs. The present study is applied in nature and was designed using a descriptive-relational and comparative method, employing both library and field approaches.

The statistical population of this study comprises all residents of Ferdosiyeh city, with a population of 30,577, as reported in the 2021 Iranian census (Table 2). Given the heterogeneity of the neighborhoods, a stratified random sampling method was employed. For this purpose, Ferdosiyeh city was first divided into its five central neighborhoods (Ferdows, Abbasabad,

Mahmoudabad, Abdabad, and Khaveh) as sampling strata. Subsequently, considering the population share of each neighborhood within the total statistical population, as determined by data from the 2021 Iranian census, the sample size was allocated proportionally among them. In the final stage, respondents in each neighborhood were selected using simple random sampling. Out of 400 distributed questionnaires, 384 completed and analyzable questionnaires were returned, indicating a 96% response rate.

**Table 2. Statistical population and sample size in the neighborhoods of Ferdosiyeh city, Shahriar County**

Neighborhood	Population	Distributed questionnaires
Khaveh	8578	108
Abdabad	6640	83
Abbasabad	4322	54
Ferdows	9970	125
Mahmoudabad	1067	14
Total	30577	384

The theoretical framework of the research was developed in reference to previous studies on good urban governance. Following a review of prior research, analysis of relevant theories, and an understanding of the current state of the study population, the research indicators and variables were determined. The data collection tool was a questionnaire based on a five-point Likert scale. To ensure the validity of the instrument, specialists reviewed the initial version of the questionnaire, and after implementing necessary revisions, its reliability was assessed through a pilot test. The obtained Cronbach's alpha coefficients ranged between 0.81 and 0.92, indicating high reliability of the research instrument.

Furthermore, to examine the construct validity of the questionnaire and verify the accuracy of its factor structure, exploratory factor analysis (EFA) with varimax rotation was employed. The Kaiser-Meyer-Olkin (KMO) measure was 0.89, indicating sampling adequacy, and Bartlett's test of sphericity was significant ( $p < 0.001$ ). All items had factor loadings above 0.5, and the extracted three-factor structure

aligned well with the theoretical framework of the study (comprising the dimensions of place identity, place dependence, and social bonds), demonstrating satisfactory construct validity of the research instrument.

### 3.1. Variables and indicators

Following an examination of the meanings and definitions of place attachment and a review of the existing literature in this field, three components were utilized to measure and evaluate place attachment in the neighborhoods of Ferdosiyeh city. These same three components and their corresponding items have been used in previous studies conducted in other neighborhoods within metropolitan Tehran. The key distinction of the present study lies in its focus on neighborhoods located in Ferdosiyeh city, Shahriar County. This city is characterized by a high rate of immigration from various other cities, resulting in a citizenry with diverse cultural backgrounds and social perspectives. The indicators and variables used in this research to measure the level of place attachment in the neighborhoods are presented in Table 3.

**Table 3. Indicators and items for measuring the level of place attachment in neighborhoods**

Indicator	Variables (items)
Place identity	<ul style="list-style-type: none"> <li>• To what extent do you desire to continue living in your current neighborhood?</li> <li>• How many sweet and lasting memories do you hold from living in your home?</li> <li>• Within your living environment, to what extent are there specific places that captivate your heart and mind?</li> </ul>
Place dependence	<ul style="list-style-type: none"> <li>• If you were compelled to leave this neighborhood for any reason, how heartbroken would you feel?</li> <li>• To what extent do you find peace of mind and physical comfort in this living environment?</li> <li>• To what extent do you feel a sense of responsibility for protecting and maintaining this neighborhood?</li> </ul>
Social bonds	<ul style="list-style-type: none"> <li>• To what extent do you have friendly and empathetic bonds with your neighbors?</li> <li>• If a problem arises for someone, to what extent do you extend a helping hand to your neighbors?</li> </ul>

### 3.2. Ethical considerations and research limitations

This study was conducted in compliance with ethical principles, including obtaining informed consent from respondents and ensuring the confidentiality of information.

The most significant methodological limitation of this study is the lack of statistical control for key confounding variables—such as length of residence, tenure status (owner/renter), and precise migration history (native/migrant)—in the regression models. This necessitates caution in interpreting causal relationships.

Although these variables were considered in the final qualitative interpretation of the findings, it is recommended that future research incorporate them as control variables to enhance the reliability of the results. Furthermore, employing more advanced methods, such as Structural Equation Modeling (SEM), would lead to a deeper understanding of the causal relationships among the variables. Such an approach could contribute more effectively to neighborhood-based policymaking.

### 3.3. Study area and scope

Ferdosiyeh city, located within Shahriar County, spans an area of 329,000 square meters and is divided into five neighborhoods: Ferdows, Abbasabad, Mahmoudabad, Abdabad, and Khaveh (Figure 3). According to the 2021 national census, the city has a population of 30,577 residents, which constitutes the statistical population of the present study.

Ferdosiyeh is bounded by Shahriar City to the north, Vahidieh to the west, Asadabad District to the east, and Mostafa Khomeini Town to the south. The city's strategic position is derived from its location along major transportation corridors, with its access points serving as gateways to vital regional routes.

### The evolutionary path and formation of Ferdosiyeh city

Ferdosiyeh city, a prominent example of physical and social transformations in the periphery of the Tehran metropolis, is the result of the merger and development of several former rural settlements, including Ferdows, Abbasabad, Mahmoudabad, Abdabad, and Khaveh, over recent decades. This merger process has led to the formation of a heterogeneous fabric with a fragmented identity, where memories of rural life conflict with the requirements of new urban living. This characteristic makes the study of the “sense of place attachment” in this city a complex and essential issue.

- Demographic and social characteristics: according to data from the Iranian Statistics Center (2021), the population density in this city is approximately 12,335 people per square kilometer, indicating a relatively high density. The population growth rate in the five years leading up to 2021 averaged 2.1%, primarily due to high immigration from other provinces and surrounding areas. This immigration has led to significant ethnic and cultural diversity among the residents. Furthermore, the average household size in Ferdosiyeh is 3.4 people.
- Physical and economic characteristics: analysis of satellite imagery and field visits indicates that the fabric of the five neighborhoods is highly heterogeneous in terms of building quality, access to services, and green spaces. For example, the Ferdows neighborhood, which has benefited from more planned development, contrasts with the Mahmoudabad neighborhood, which still retains traces of its former rural fabric. The city's economy is primarily based on service activities, labor, and economic ties with surrounding cities, especially Shahriar.

Research necessity in this context: given its formation history, high immigration, and heterogeneous fabric, the fundamental question arises: how is the “sense of place attachment,” as a socio-emotional bond, formed under such conditions, and what factors influence it?

Therefore, the findings of this research not only assess the current situation but also provide a deeper understanding of the socio-physical dynamics in evolving peripheral cities of metropolises.

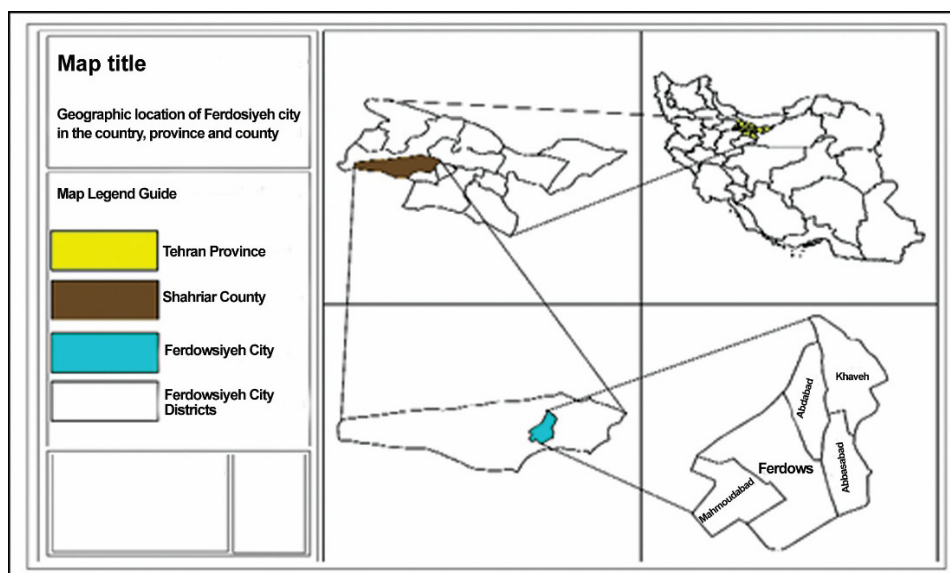


Figure 3. The geographical location of Ferdosiyeh city in the country, province, and county

## 4. Findings

### 4.1. Descriptive findings

Based on the research findings, the mean age of residents in the neighborhoods of Ferdosiyeh city, Shahriar County, is 36 years; the youngest is 21 years old, and the oldest is 71 years old. Regarding gender, 54.8% of the participants were male, and 45.2% were female. In terms of education, 20.1% had a diploma, 27% had an associate degree, 42.5% had a bachelor's degree, 10.2% had a master's degree, and only 0.3% held a doctorate.

### 4.2. Analytical findings

#### Assessment of the level of place attachment in the neighborhoods

The use of the sample mean compared to the population mean is justified when the population standard deviation is unknown, or when the aim is to compare the mean of a quantitative variable from the sample with a specific hypothetical value. In this study, to test the first hypothesis, a one-sample t-test was used. The sample's perspectives on each indicator of place attachment in the five neighborhoods were compared with the median value to gauge the depth of urban governance indicators in the neighborhoods

of Ferdosiyeh city. The findings are presented in Table 4.

- Place Identity Indicator: For the assessment of the Place Identity index in the neighborhoods of Ferdosiyeh city, three items were considered. According to the five-point Likert scale, the theoretical median was set at 12.9. The results of the one-sample t-test indicated that the observed mean (12.13) with a 95% confidence interval (11.98-12.28) is significantly lower than the median ( $t(383) = 17.62, p < .001$ ). This finding indicates that, from the residents' perspective, the sense of identity-based belonging and psychological attachment to the neighborhoods of Ferdosiyeh is not at a desirable level.

- Place dependence indicator: For the evaluation of the Place Dependence index in the neighbourhoods of Ferdosiyeh city, three items were considered. Based on the five-point Likert scale, the theoretical median was determined to be 13.1. The results of the one-sample t-test revealed that the mean place dependence (12.18) with a 95% confidence interval (12.10-12.26) is significantly lower than the median ( $t(383) = 25.47, p < .001$ ). This finding indicates that, from the residents' perspective, the level of emotional and functional dependence on the neighbourhoods of Ferdosiyeh is not at a desirable level.

- Social bonds indicator: for the assessment of the Social Bonds index in the neighbourhoods of Ferdosiyeh city, two items were considered. According to the five-point Likert scale, the theoretical median was set at 17. The results of the one-sample t-test showed that the observed mean (11.01) with a 95% confidence interval (8.77-13.25) is lower than the

median. However, this difference is not statistically significant ( $t(383) = 1.79, p = 0.075$ ). This finding suggests that although the quality and intensity of social relationships and cohesion in the neighbourhoods of Ferdosiyeh may not be at a desirable level from the residents' perspective, this weakness is not statistically confirmed.

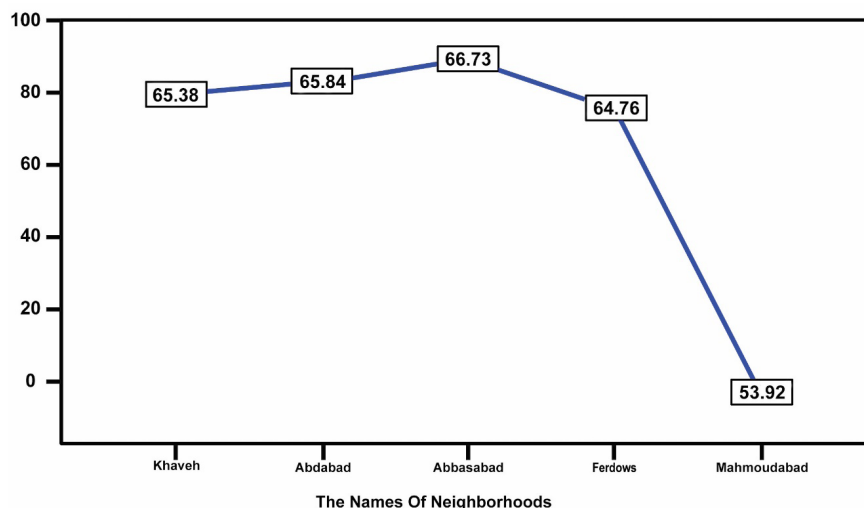
**Table 4. One-sample t-test of the level of place attachment**

Dimensions	Number of items	Mean	Significance level	T-test	Lower limit	Upper limit	Average limit
Place identity	3	12.13	$P < 0.001$	17.62	11.98	12.28	12.9
Place dependence	2	12.18	$P < 0.001$	25.47	12.10	12.26	13.01
Social bonds	2	11.01	$P = 0.075$	1.79	8.77	13.25	17

### Mean level of place attachment in the neighbourhoods

For all indicators across the neighbourhoods, the mean of each indicator in different neighbourhoods was measured using Analysis of Variance (ANOVA). The structure of the statistical hypotheses is such that the  $H_0$  hypothesis indicates the equality of the mean of the indicator in question across all neighbourhoods. If the test result leads to the rejection of this hypothesis, it can be concluded that the means of this

indicator differ across different neighbourhoods. In each case, before conducting the ANOVA, a chart of the means was created for a descriptive display of the differences between the various neighbourhoods. Mean place attachment in the neighbourhoods: Based on Figure 4, the mean place attachment reveals significant differences in various neighbourhoods. To assess the significance of these differences, Analysis of Variance was applied. The findings of this analysis are presented in Table 6.



**Figure 4. Mean place attachment in the neighborhoods**

As observed in Figure 4, the highest mean place attachment belongs to the Ferdows neighborhood, and the lowest belongs to the Mahmoudabad neighborhood. This finding can be analyzed in light of the evolutionary path and physical and social characteristics of these neighborhoods. The Ferdows neighborhood, which has benefited from planned

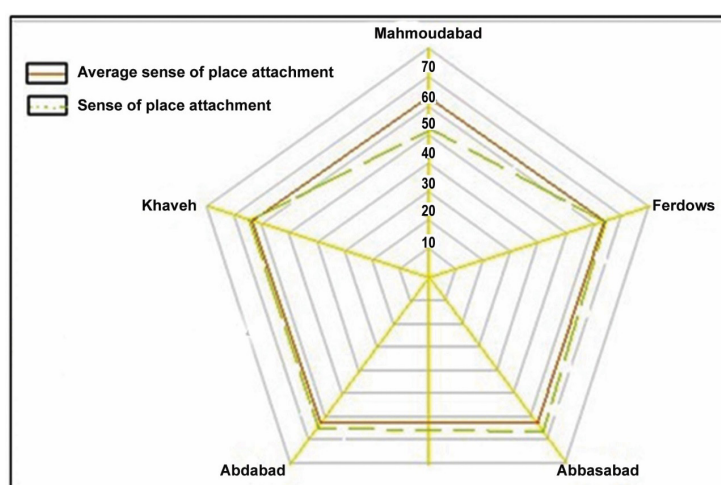
development and renovation, likely offers better facilities and a higher quality of life, which can lead to a strengthened attachment among its residents. In contrast, the Mahmoudabad neighborhood, which has still preserved some of its rural identity and might be in a lower position in terms of access to urban services, faces a lower level of attachment. This contrast

highlights the importance of both “physical and identity” as factors influencing place attachment. functional characteristics of place” and “historical

**Table 5. ANOVA results for comparing the mean place attachment in neighborhoods**

Components	Sum of squares	Degrees of freedom	Mean squares	F-test	Significance level
Regression Effect	1900.294	4	475.073	9/873	P < 0.001
Residual	16263.601	338	48.117	-	-
Total	18163.895	342	-	-	-

As observed in Table 5, the P-value is less than 0.05; therefore, the  $H_0$  hypothesis can be rejected, confirming that the highest mean place attachment belongs to the Ferdows neighborhood and the lowest to the Mahmoudabad neighborhood.



**Figure 5. Mean level of place attachment at the neighborhood level**

According to Figure 5, the neighborhoods of Abbasabad, Abdabad, Khaveh, Ferdows, and Mahmoudabad have the highest levels of place attachment, respectively.

As observed in the chart above, the highest mean place attachment is found in the Ferdows neighborhood, and the lowest is in the Mahmoudabad neighborhood. This finding can be analyzed in light of the evolutionary path and physical and social characteristics of these neighborhoods. The Ferdows neighborhood, with its more planned development

and greater modernization, likely has residents with a longer length of residence and a higher rate of homeownership, offering better amenities and a higher quality of life that can strengthen residents' attachment. In contrast, the Mahmoudabad neighborhood, which has retained some of its rural identity, may experience higher population turnover (higher internal migration rate) and be in a lower position regarding access to urban services, resulting in a lower level of attachment.

**Table 6. Distribution of relative frequency (%) of place attachment dimensions in the five neighborhoods of Ferdosiyeh city**

Neighborhood	Assessment level	Place identity	Place independence	Social bonds
Percentage				
Khaveh	Very Low	26.9	20.4	33.3
	Low	27.8	16.7	31.5
	Moderate	31.5	38	21.3
	High	13	16.7	6.5
	Very High	0.9	8.3	7.4
Abdabad	Very Low	15.7	1.2	9.6
	Low	30.1	9.6	9.6
	Moderate	42.2	45.8	48.2
	High	7.2	33.7	15.7
	Very High	4.8	9.6	16.9
Abbasabad	Very Low	13	0	18.5
	Low	29.6	18.5	14.8
	Moderate	31.5	46.3	33.3
	High	24.1	31.5	27.8
	Very High	1.9	3.7	5.6
Ferdows	Very Low	16.8	1.6	17.6
	Low	36	12	11.2
	Moderate	29.6	50.4	38.4
	High	16	28	0.8
	Very High	1.6	8	32
Mahmoudabad	Very Low	0	0	35.6
	Low	43	0	35.8
	Moderate	42.8	64.3	0
	High	14.2	28.6	14.3
	Very High	0	7.1	14.3

Based on the findings from Table 6, it can be concluded that:

- Place identity: In the neighborhoods of Abbasabad, Khaveh, and Abdabad, it is at a moderate level, whereas in the neighborhoods of Ferdows and Mahmoudabad, it is at a low level.
- Place dependence: in all neighborhoods—Khaveh, Abdabad, Abbasabad, Ferdows, and Mahmoudabad—it is at a moderate level.
- Social bonds: in the Khaveh neighborhood, it is very low; in Mahmoudabad, it is low; and in Abdabad,

Abbasabad, and Ferdows, it is at a moderate level.

#### 4.3. Hypothesis testing

To investigate the role of the constituent factors of sense of place attachment in the neighborhoods of Ferdosiyeh city, a multiple linear regression analysis using the enter method was employed. In this analysis, place identity, place dependence, and social bonds were considered predictor variables, while the sense of place attachment served as the criterion variable.

**Table 7. Regression analysis of indicators affecting the sense of place attachment**

Statistical Index	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate	F	Sig.
Regression Model	0.895	0.784	0.781	8.44	158.87	P < .001

Based on Table 7, the correlation coefficient between the indices in predicting the sense of place attachment at the neighborhood level is  $r = 0.895$ . According to the adjusted coefficient of determination ( $r^2 = 0.784$ ), approximately 78.4% of the changes in the sense of place attachment are explained by the indices (place identity, place dependence, and social bonds).

Furthermore, the regression model is significant because the f-value is significant at the 0.05 level ( $p < .001$ ,  $f = 158.87$ ). Thus, it can be said that the indices (place identity, place dependence, and social bonds) can explain 78.4% of the changes in the sense of place attachment at the neighborhood level.

**Table 8. Regression coefficients for predicting sense of place attachment**

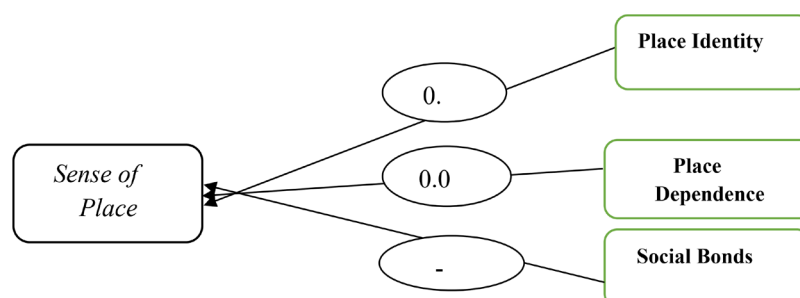
Statistical index	B	Std. Error	Beta	T	Sig.
Regression model					
Place identity ( $x_1$ )	2.737	0.209	0.778	20.104	P < .001
Place dependence ( $x_2$ )	0.028	0.147	0.007	0.189	0.850
Social bonds ( $x_3$ )	-0.737	0.136	-0.131	-3.651	P < .001
Constant coefficient	53.22	10.524	-	-	-

Table 8 reveals the standardized ( $\beta$ ) and unstandardized (B) coefficients of the variables. The t-value and its corresponding p-value (or significance level) measure the statistical significance of the coefficient for each variable. The significance level of the coefficients of place identity, place dependence, and social bonds is less than 0.05; therefore, all remain in the regression model. The standardized coefficients indicate that place identity, with  $\beta = 0.778$ , has the highest share, and social bonds, with  $\beta = -0.131$ , have the lowest share in predicting the sense of place attachment at the neighborhood level. It is worth mentioning that the constant coefficient has also become significant in predicting the variable "sense of place attachment" ( $p$

$< .05$ ). Based on the unstandardized coefficients, the following regression equation can be formulated to predict the sense of place attachment based on the effective factors:

$$\text{Sense of place attachment} = 53.22 + 2.737 (X_1) + 0.028 (X_2) - 0.737 (X_3)$$

For greater clarity in interpreting the relationships, the effects of the independent variables were examined based on the standardized regression coefficients ( $\beta$ ). Since standardized regression coefficients ( $\beta$ ) are used in this analysis and these coefficients are also standardized, the effects of different variables can be compared with each other, and the most effective one can be determined.



**Figure 6. Standardized regression coefficients ( $\beta$ ) affecting the sense of place attachment**

Based on the results of the multiple regression analysis (Figure 6), place identity, with a beta coefficient of 0.778, is the strongest positive predictor of the sense of place attachment. After that, the place dependence, with a beta coefficient of 0.007, shows a very small and non-significant influence. In contrast, social bonds, with a beta coefficient of -0.131, have a significant negative relationship with place attachment. Therefore, it can be concluded that among the variables studied, place identity is the most effective factor in explaining the sense of place attachment in the neighborhoods of Ferdosiyeh city.

## 5. Discussion and summary

The findings of this study can be interpreted as a psychological reflection of the urban integration process and the forced transition from rural to urban life. The formation of Ferdosiyeh city through the merger of former rural settlements has led to a clash between the residents' "collective memories" and the new "physical-social realities." This confrontation has created a structural identity dissonance, manifesting itself in the observed paradox (the negative impact of social bonds). Therefore, the pattern of place attachment in Ferdosiyeh can only be understood by considering this historical background and the psychological impacts resulting from forced displacement and integration.

- Historical-psychological explanation of village integration: the findings can be seen as a psychological reflection of the urban integration process and the forced transition from rural to urban life. The formation of Ferdosiyeh city through the merger of former rural points has caused a clash between the residents' "collective memories" and the new "physical-social realities." This confrontation has created a structural identity dissonance, manifesting in the observed

paradox (the negative impact of social bonds). Therefore, the attachment pattern in Ferdosiyeh is only comprehensible by considering this historical context and the psychological effects of forced relocation and integration.

- Place identity as the cornerstone of attachment: the strongest predictor of place attachment in this study was place identity, with a beta coefficient of 0.778. This finding, analyzed based on Scannell and Gifford's (2010) three-dimensional framework, suggests that in transitional contexts like Ferdosiyeh, the cognitive-symbolic dimension of attachment supersedes its affective and behavioral dimensions. In other words, residents become attached to their neighborhood more through the symbolic meanings, collective memories, and sense of identity continuity that the place evokes for them, rather than through functional dependence (e.g., access to services) or even unstable social bonds. This is particularly evident in neighborhoods like Ferdows, which have undergone more planned development, allowing for the gradual formation of a new urban identity.

- Explaining the paradox of social bonds: one of the thought-provoking findings of this study is the negative coefficient of social bonds ( $\beta = -0.131$ ) in predicting place attachment – a result that appears to contradict established theoretical foundations at first glance. This outcome cannot be easily dismissed or merely attributed to methodological error. Instead, it should be interpreted as a key indicator of the specific social dynamics at play in Ferdosiyeh. Considering the city's migrant-receptive and heterogeneous context, born from the merger of several former villages, social networks are often organized based on pre-existing kinship and ethnic ties (originating from the source villages). Table 9 illustrates the components of Ferdosiyeh's urban dynamics.

**Table 9. Components of Ferdosiyeh's urban dynamics**

Dynamic component	Explanation	Manifestation in Ferdosiyeh
Migration flows	Continuous movement of people into the city	Influx of new residents with diverse cultures into neighborhoods
Identity interactions	Clash and intermingling of different cultures	Confrontation between the values of old and new residents
Shifts in social networks	Transformation of relationships and social bonds	Weakening of traditional ties and formation of new relationships
Redefinition of collective identity	Process of forming a new urban identity	Tension between former rural identity and new urban identity

In fact, in a city formed from the merger of former population centers with independent identities, social networks are often in-group and reproduced based on kinship and ethnic ties from the villages of origin. Under such conditions, interactions at the level of the new neighborhood may transform, not into an arena for strengthening solidarity, but into a field for clashing identities or superficial, forced interactions. This can even intensify feelings of nostalgia and longing for the more authentic social relationships of the place of origin. This interpretation aligns with the concept of “avoidant attachment”. It serves as a warning that in heterogeneous contexts, the quantity of social interactions does not necessarily lead to a positive quality of attachment.

The negative coefficient for social bonds may indicate that in Ferdosiyeh’s migrant-receptive context, an increase in social interactions at the neighborhood level does not necessarily lead to increased attachment. On the contrary, due to the high cultural diversity, these interactions might even diminish the sense of belonging.

- Inter-neighborhood Differences as a Mirror of Urban Transformation: The significant difference in attachment levels among neighborhoods, particularly between Ferdows neighborhood (highest mean) and Mahmoudabad (lowest mean), objectively reflects the heterogeneity in the urban development process. Ferdows neighborhood, benefiting from more planned development and likely a more stable residential fabric, has provided the opportunity for the gradual formation of identity and attachment. In contrast, Mahmoudabad, which still retains traces of its rural identity, likely faces greater infrastructural challenges and higher population mobility rates, making it difficult to form stable bonds with the place. This gap increasingly highlights the need for differentiated, neighborhood-based policymaking in Ferdosiyeh.

Although this study could not statistically control for important confounding variables such as length of residence, ownership status, and migration history in the regression model – a limitation of the current study – the powerful influence of place identity ( $\beta = 0.778$ ) suggests that this construct plays a fundamental role in shaping place attachment in Ferdosiyeh. This role is most likely independent of the effects of demographic variables. This argument is strengthened when considering that the sense of identity, especially in transitional contexts like Ferdosiyeh, is a deeper and more stable phenomenon than transient demographic

characteristics. However, for greater scientific caution, the present interpretation has been provided while considering the probable role of these uncontrolled variables.

## 6. Conclusion and recommendations

This comprehensive study, with the primary objective of measuring and explaining the level and pattern of sense of place attachment in the five neighborhoods of Ferdosiyeh city and the applied goal of identifying the hierarchy of influence of physical, social, and psychological indicators on this phenomenon, was conducted. The research findings, collected using quantitative methodology from a sample of 384 residents, reveal a complex and multifaceted picture of the residents’ relationship with their living environment. Understanding this picture requires simultaneous attention to three key realities: the absolute dominance of place identity, the marginal role of functional dependence, and the paradoxical effect of social bonds.

A) place identity: the backbone of attachment in a transitional city: the most important achievement of this study is the identification of place identity as the most decisive and stable factor of place attachment, with a beta coefficient of 0.778. This finding, analyzed based on Scannell and Gifford’s (2010) theoretical framework, indicates that in transitional and migrant-receptive urban contexts, such as Ferdosiyeh, which results from the merger of former rural centers, the cognitive-symbolic dimension of attachment absolutely dominates its affective and functional dimensions. In other words, residents become attached to their neighborhood more through the deep meanings, collective memories, sense of identity continuity, and feeling of belonging that the neighborhood creates for their personal and collective identity, rather than through access to neighborhood services (functional dependence) or even unstable social relations (social bonds). This pattern is clearly evident in the inter-neighborhood differences, where the Ferdows neighborhood, with its more planned development, has better facilitated the gradual formation of a new urban identity and has the highest level of attachment.

B) social bonds: from a cohesion factor to a catalyst for conflict: in contrast, a far more complex and alarming finding is the negative and significant coefficient of social bonds ( $\beta = -0.131$ ). This result, which initially contradicts classical theoretical foundations and

studies conducted in stable contexts, becomes significant in light of the unique characteristics of Ferdosiyeh city. It seems that in such a heterogeneous context, the existing social networks – primarily organized based on kinship and ethnic ties from the villages of origin – have not only failed to become a platform for solidarity and cohesion but have turned into a factor preserving identity fault lines, intensifying social conflicts between different resident groups (old and new, native and migrant), and even strengthening a sense of nostalgia and longing for more authentic social relations in the place of origin. This situation indicates a structural social incompatibility at the neighborhood level, where a quantitative increase in interactions does not necessarily – and in some cases – lead to a qualitative increase in attachment. This finding explains the concept of “avoidant attachment” in the context of migrant-receptive cities in Iran.

C) place dependence: a marginal role in the shadow of identity: the place dependence indicator, with a beta coefficient of 0.007, played a very faint and non-significant role in the final model. This result indicates that the quality of neighborhood services and amenities (functional dimension) has a negligible impact on shaping the attachment of Ferdosiyeh residents, compared to the symbolic and identity meanings (cognitive dimension). This could be due to the relative homogeneity of service levels across neighborhoods or the different priorities of residents in transitional contexts.

In summary, it can be stated that the model of place attachment in Ferdosiyeh city follows an identity-oriented pattern. This pattern is the final answer to the main research question, showing that the most effective indicator is place identity; however, this identity is intricately intertwined with the city’s social dynamics. This conclusion carries two essential messages for urban planners and managers:

1. Absolute priority to identity-building policies: designing and implementing a “comprehensive plan for instilling identity in Ferdosiyeh neighborhoods”, focusing on reviving historical names, installing unique visual landmarks, documenting collective memories, and strengthening shared symbols, should be at the forefront of urban development programs.

2. Redefining community-based programs: programs based on social participation should move beyond merely quantitative and recreational activities towards creating joint participatory projects among different resident groups (such as collective beautification projects or tree planting) to pave the way for creating new collective memories and strengthening a shared place identity.

This research is a step towards understanding the complexities of the human-place relationship in Iran’s evolving cities. It shows that without strengthening place identity, no program for sustainable urban development in contexts similar to Ferdosiyeh will succeed.

Based on the research findings regarding the differing levels of place attachment in the five neighborhoods and the unique evolutionary history and characteristics of Ferdosiyeh city, the following recommendations are presented at three levels:

A) macro-level recommendations for the city:

- Develop a “plan for instilling identity in Ferdosiyeh neighborhoods,” emphasizing the strengthening of shared visual and architectural symbols while respecting the historical background of each neighborhood.
- Establish a “museum or house of oral history of Ferdosiyeh” to document and keep alive the collective memories and the process of transition from village to city.
- B) specific recommendations for neighborhoods with low attachment (e.g., Mahmoudabad):
- Implement “participatory redevelopment” projects and improve the quality of public spaces (e.g., street lighting) with the direct participation of residents to create a sense of ownership.
- Organize festivals and local events centered on the neighborhood’s native foods and rituals to strengthen social bonds and local identity.

C) recommendations for neighborhoods with medium and high attachment (e.g., Ferdows and Abbasabad):

- Strengthen “neighborhood committees” for decision-making regarding local management and budgeting of small-scale projects.
- Create and expand “pedestrian and bicycle paths” connecting different neighborhoods to service centers and urban attractions.

## Authors' Contributions

Zahra Khodaei (100%): Theoretical Framing, Methodology, Data Collection & Analysis, Research, Review & Editing.

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## Conflict of Interest

The author has declared no conflict of interest.

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