

# Factors Affecting Illegal Land-use Changes in Residential Areas: (Case Study: District 6 of Tehran)

Rama Ghalambordezfooly<sup>1</sup>, Fatemeh Hosseini<sup>2</sup>

[Received: 16 February 2022; 1st revision: 10 April 2023; 2nd revision: 14 June 2023; accepted in final version: 11 July 2023]

**Abstract.** *Today, understanding the trend of land-use changes and its contributing factors is one of the important issues in urban land-use planning and urban management policies. Not all land-use changes comply with urban development plan regulations. Illegal land-use changes, especially in residential areas, are often implemented to reduce the municipality tax for small businesses in large cities in Iran. This trend has become a source of income for municipalities through fine acquisition. The objective of this study was to identify the factors contributing to incompatible and illegal land-use changes in the case study of District 6 in Tehran. The research method used in this study was descriptive-analytical. The data was collected using a questionnaire and a field study. The data were analyzed using the Pearson correlation test and confirmatory factor analysis using the equation modeling technique in the LISREL software. According to the research findings, escape from the traffic scheme zone, with a coefficient load factor of 0.86, and economic profitability, with a coefficient load factor of 0.84, were the most important factors motivating illegal land-use changes in the residential areas in this case study (District 6, Tehran). The main conclusion of this research is the need for change in Tehran urban policies for mitigation of urban planning violations. Specially in this case, the impact of the traffic scheme zone in Tehran should be considered. Another suggestion is the adoption of new urban policies related to taxes on unauthorized activities in residential areas that can counteract the market response to possible changes.*

**Keywords.** *illegal land-use change, land-use change, residential area, zoning.*

**Abstrak.** *Saat ini, memahami tren perubahan tata guna lahan dan faktor-faktor penyebabnya merupakan salah satu isu penting dalam perencanaan tata guna lahan perkotaan dan kebijakan manajemen perkotaan. Tidak semua perubahan penggunaan lahan sesuai dengan peraturan rencana pembangunan perkotaan. Perubahan tata guna lahan ilegal, terutama di kawasan pemukiman, sering diterapkan untuk mengurangi pajak kota bagi usaha kecil di kota-kota besar di Iran. Tren ini telah menjadi sumber pendapatan bagi kotamadya melalui perolehan denda. Tujuan dari penelitian ini adalah untuk mengidentifikasi faktor-faktor yang berkontribusi terhadap perubahan penggunaan lahan yang tidak sesuai dan ilegal dalam studi kasus Distrik 6 di Teheran. Metode penelitian yang digunakan dalam penelitian ini adalah deskriptif-analitik. Pengumpulan data dilakukan dengan menggunakan kuesioner dan studi lapangan. Data dianalisis menggunakan uji korelasi Pearson dan analisis faktor konfirmatori menggunakan teknik pemodelan persamaan dalam perangkat lunak LISREL. Menurut temuan penelitian, melarikan diri dari zona skema lalu lintas, dengan faktor muatan koefisien 0,86, dan profitabilitas*

---

<sup>1</sup> Assistant Professor, Department of Urban Planning, Pardis Branch, Islamic Azad University, Pardis, Iran. (Corresponding Author) Email: Ramaghalambor@pardisiau.ac.ir

<sup>2</sup> Department of Urban and Regional Planning, Faculty of Built Environment, University of Malaya, Malaysia

*ekonomi, dengan faktor beban koefisien 0,84, adalah faktor terpenting yang memotivasi perubahan penggunaan lahan ilegal di kawasan pemukiman di daerah ini. studi kasus (Distrik 6, Teheran). Kesimpulan utama dari penelitian ini adalah perlunya perubahan kebijakan perkotaan Teheran untuk mitigasi pelanggaran tata kota. Khususnya dalam hal ini, dampak zona skema lalu lintas di Teheran harus dipertimbangkan. Saran lain adalah penerapan kebijakan perkotaan baru terkait dengan pajak atas aktivitas tidak sah di kawasan pemukiman yang dapat menangkalkan respons pasar terhadap kemungkinan perubahan.*

**Kata kunci.** *kawasan pemukiman, perubahan penggunaan lahan, perubahan penggunaan lahan ilegal, zonasi.*

## **Introduction**

Today, land is a precious commodity and any unplanned development or change in land use will have significant consequences for inhabitants of cities (Cronon 2011). In urban land-use development, planners manage the process and prepare rules. In addition to the planners, small businesses, stakeholders, institutions, managers, representatives of specific groups, owners, development agents, builders, and real estate consultants are involved in this process (Kaiser, Godschalk et al. 1995, Vischer 2003).

Land-use changes can benefit the inhabitants of a city in many respects, such as increasing physical activity (Heath, Brownson et al. 2006), but they may work in different directions. In some areas, organizations, people, or companies may benefit financially from any changes in urban land use. For example, small businesses prefer residential areas for their activities instead of commercial areas. They pay less tax and rent in residential areas than in commercial areas (Hills Jr and Schleicher 2010).

In practice, urban land-use planning, as the core of urban studies, is a process of using lands to enhance social welfare (Anguelovski, Shi et al. 2016). However, illegal land-use change to benefit businesses is rampant in big cities in Iran, especially in residential areas. The main incentives behind these changes are financial, as commercial and office units are mostly occupied, crowded, and polluted. When business owners can run their business with paying less tax or rent in a residential area without any control (Fischel 2004), land-use change is a better option for them.

The metropolitan city of Tehran, due to its position in the country as the capital city, is no exception when it comes to illegal land-use change. District 6 and 7 are the two main districts (mostly residential) located in the center of Tehran, which is close to the commercial zones of District 11 and 12. The main issue is the illegal movement of small business activities to residential zones (Arsanjani, Kainz et al. 2011), which causes problems in different ways. For example, traffic congestion during peak hours, vacant buildings at night, and even deteriorating social cohesion in the neighborhood (AZIZI 2006). The first step is to find out the main factors contributing to this phenomenon and then control it.

Land-use change is significant at the local level, so illegal land-use changes are primarily a local issue that reflects the quality of regulatory, political, and law enforcement institutions, which vary considerably from one place to another (Lewis and Marantz 2019: 449). Interestingly, some studies have shown that many violators accept fines as a cost of doing business (Wenneman et al. 2014). Lopez refers to the set of these phenomena from the perspective of unplanned development as ‘the hidden city’ (Lopez 2021: 314).

The present work examined the illegal use of territory in the event of a change in land use, specifically in a metropolitan region. The main aim of this study was to find the factors affecting illegal land-use change in District 6, Tehran.

### Theoretical framework

Based on Potsio & Ioannidis (2006), besides the particular local conditions that vary from country to country, there are some basic reasons that lead big groups of citizens out of the existing legal framework. These reasons are more or less common in every situation, such as:

- an old, conflicting, inconsistent, and complex legal structure;
- insufficient, outdated urban planning and zoning regulations;
- a lack of financing mechanisms for low-cost housing and businesses;
- special historic, political, social, and economic conditions;
- an inefficient, outdated, and complex administrative structure to deal with land management issues;
- missing spatial information;
- unnecessary bureaucracy; and
- insufficient, time-consuming, and conflicting mechanisms for legalization in cases of illegal land-use change (Potsiou & Ioannidis 2006).

Customizing these factors for Tehran conditions led to a conceptual model for factors affecting illegal land-use change in residential areas. In this concept, three dimensions are assumed, i.e., physical factors, socio-economic factors, and legal and regulatory factors. These dimensions address the ten factors that most affect illegal land-use change in residential areas based on a literature review. This conceptual model is shown in Figure 1.

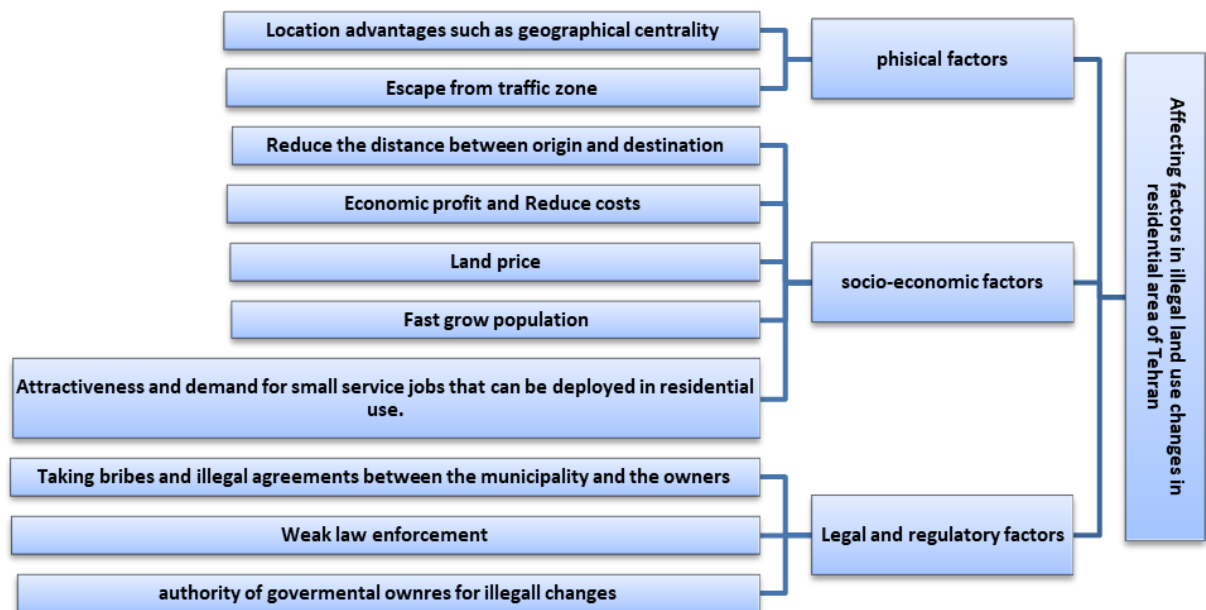


Figure 1. Research conceptual model.

### *Land-use change*

Today, land is such a precious and scarce commodity that any unplanned land development or land-use change has significant effects and consequences for the people, economy, city, and environment (Pauleit, Ennos et al. 2005). Understanding urban policies and their consequences are two of the most important challenges in urban studies (Hommels 2005, Monstadt 2009). Modeling urban land-use changes is important in recognizing and understanding urban dynamics. It can be considered an effective and essential tool for planners to help recognize the consequences of these urban policies (Herold, Couclelis et al. 2005).

In master plans, lands should meet the requirements for different sectors, including green space, health, education, sports (Foster, Swanson et al. 2003, Tegen, Werner et al. 2004, Caspersen, Konijnendijk et al. 2006, Perring, De Frenne et al. 2016). In between, land owners' and the municipality's requests for any changes in land use or regulation are called land-use changes (Ianoş, Sorensen et al. 2017, Rezaei and Rahimi, 2013, 80).

Land-use changes include changes in the type, distribution, and spatial patterns of activities (Agarwal 2002). In other words, it means a change in the type of land use, not necessarily its form. It usually means a change in the land's density and management system.

Today, special attention is paid to controlling land-use changes, mostly through policies. This requires sufficient and up-to-date information about the land-use changes, their causes, and their effects (Poorahmad, Seyfodini et al. 2011). These changes can lead to an imbalance in urban services, residential functions being threatened, incompatibility with the neighborhood, and deterioration of the functions of buildings (Scholz 2007, Dirmeyer, Niyogi et al. 2010, Guse, Pfannerstill et al. 2015).

Studies have shown that preventive rules, control measures, preventive actions, new structures, and form with function are the five main factors that affect land-use stability. The most important factors are preventive rules and control measures (Glaeser and Antal 1980, Sonak, Kazi et al. 2006, Kalali Moghaddam 2015, Urgesa, Abegaz et al. 2016).

Troisi analyzed unauthorized changes of land use within the framework of isomorphism and described how it can be coercive and mimetic. Although limited knowledge is available on whether and to what extent such actions are influenced by institutional or economic motivations, institutions and corporations clearly have wider opportunities for illegal land use than individuals (Troisi, 2022). As mentioned above, the main incentive for land-use change is financial. This will increase if authorities do not take action through laws and strategies.

### **Factors affecting land-use change**

The causes of land-use change vary between developed and developing countries (Reidsma, König et al. 2011). In developing countries, rapid population growth, poverty, and economic status are the key factors. From McLaughlin's point of view, phenomena, history, communications, and transportation are among the factors influencing land-use change (Dale and McLaughlin 1988, McLaughlin 2012). Chapin considered three groups of factors that effectively change land use: economic aspects, social aspects (such as people's interests in determining land use) and the relationships between these factors (Kaiser, Godschalk et al. 1995). In addition to these factors, some other aspects have been identified in case studies in different regions. For example, government (in most countries, the government is directly or indirectly involved in land-use determination), infrastructure, urban development, residential centers (Poorahmad, Seyfodini

et al. 2011, VahedianBeyki, Poorahmad et al. 2011). In addition, urban development, residential centers, infrastructure development, and communications can effectively change land use. Illegal changes in the use of land for residences, green space, education, or sports give financial benefits while violating public rights. This also leads to the deterioration of the environmental quality in residential areas.

Poor urban management systems and lack of planning to meet citizens' needs can cause illegal land-use changes. However, some organizations, such as municipalities, allow citizens to violate the law in exchange for fines. Density can be increased (against the law) by municipalities in return for fines imposed by legal authorities (Rezaei and Rahimi 2013). Therefore, this study investigated the factors contributing to land-use change in residential areas.

## **MATERIALS AND METHODS**

This study applied a descriptive analytical approach. Data was collected using a questionnaire and analyzed in the LISREL software. Pearson's correlation test and confirmatory factor analysis were run through the structural equation modeling technique in the software.

### *Survey design and data collection*

According to the results of the 2016 census, the population of District 6 was equal to 251,384 people. The sample size (number of households) was calculated using the Cochran sampling method. Based on a 95% confidence interval, a minimum sample size of 378 was calculated based on 250,000 people in the selected study area. Multi-stage (probability) sampling was selected for this research. A questionnaire was distributed between 9:00 am to 12:00 pm based on the random selection of households in the neighborhood. Those willing to cooperate were given 20 minutes to fill out the questionnaire about their feelings and observations related to the neighborhood.

The questionnaire was designed based on a theoretical framework (Figure 1), which follows the process of causal inference. In this way, based on previous research models and background conditions, factors that have contributed to illegal land-use change in the study sample can be identified. These factors include elements such as economic benefit, population growth, land value, and weaknesses in the law or their enforcement, as addressed in the related research literature. In addition, for the case study and based on the local context, factors such as escaping from the traffic scheme zone, reducing the distance between place of residence and workplace, cooperation, or complicity of the municipality in the application of illegal land use, could be examined. The questionnaire included twelve items related to these factors.

In terms of gender, 52% of the respondents were male and 48% were female. More than 36% of respondents were under the age of 45, and 30% were over the age of 45. Additionally, 7% did not disclose their age. The average age of the respondents was 41 years. In terms of education, it was found that approximately 50% of the respondents had a bachelor's degree or higher, and only about 2% were illiterate or had an elementary level of literacy. Regarding employment status, approximately 60% of the respondents were employed. The rest were students, retired, or homemaker, and only about 5.5% were unemployed.

### *Questionnaire reliability*

Reliability refers to the degree of stability and coherence of the questionnaire's components. Measuring instruments should produce the same results under the same conditions. To assess the reliability of the questionnaire in this study, Cronbach's alpha method in the latest version of the

IBMSPSS software was used. The results from this run showed that the Cronbach's alpha coefficient value was 0.928, greater than the critical value of 0.7.

**Table 1:** Results of questionnaire reliability.

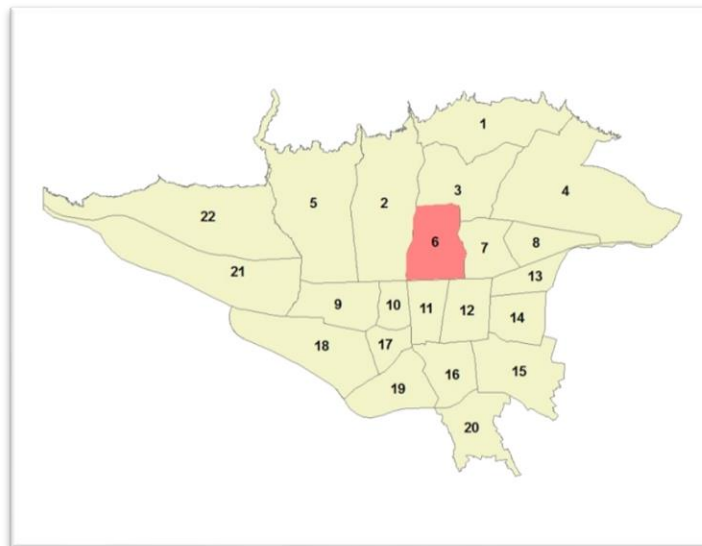
variable	Number of items	Cronbach's alpha coefficient
Factors affecting incompatible user deployment	12	0/928

### Data analysis

Data analysis was done in two parts: descriptive and inferential. First, the descriptive analysis of the research variables was analyzed using the mean and the standard deviation. The data related to the theoretical framework was analyzed by using the structural equation modeling (SEM) technique for factor analysis in LISREL, version 8.8.

### Study area

District 6 of Tehran Municipality is one of the 22 districts of Tehran and is among the oldest areas in the northern part of the city center. It is bounded by Districts 3 to the north, District 7 to the east, Districts 11 and 12 to the south, and District 2 to the west. This area is connected from three sides to the west, east, and north by the three main highways of Tehran (Chamran, Modares, and Hemmat Streets), and to the south by the largest east-west axis of the city, Enghelab Street.



**Figure 2.** Location of District 6 among the urban districts of Tehran.

### Illegal land use changes in the study area

The study area is one of the most important areas of Tehran, with 3.5% of the total area of Tehran, while more than 31% of government buildings, public and private institutions and banks, and the main organs of the country are located in this area. It has led to a high density of activities and traffic problems.

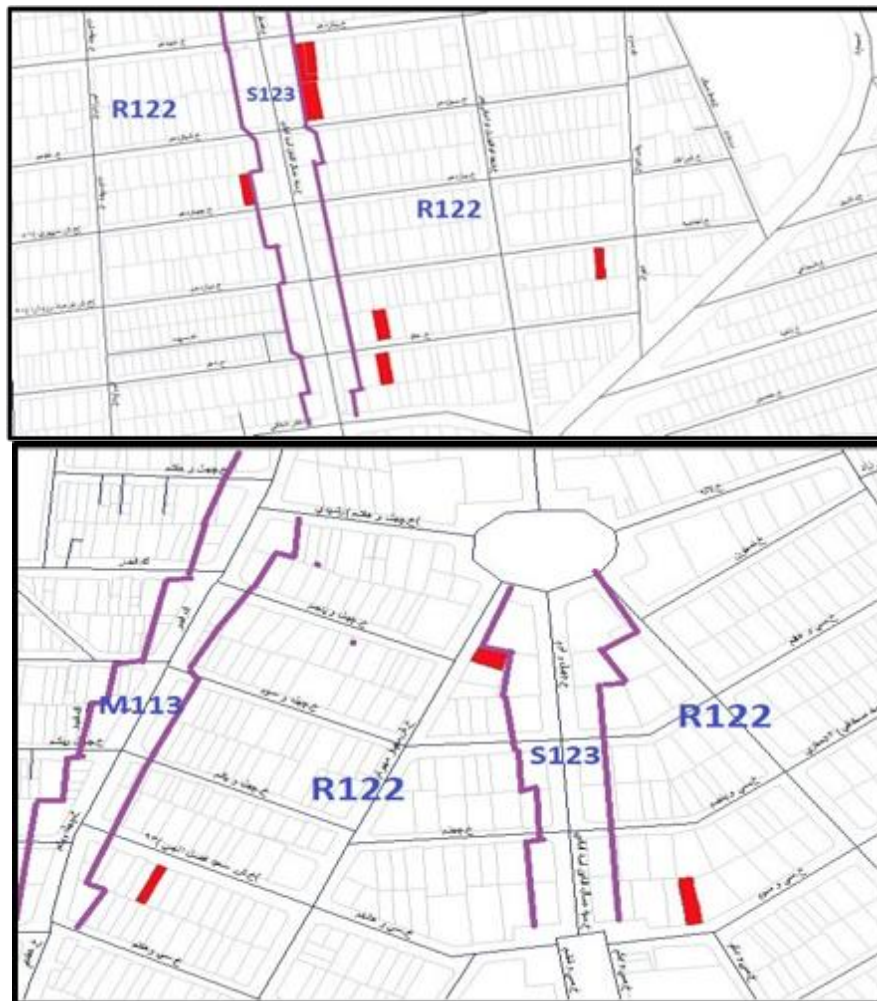
The focus of the illegal land-use changes is shown by drawing circles in Figure 3. Most of them occurred in residential areas, where accurate and separate information is not available in the planning data.



**Figure 3.** Location of illegal land-use changes in residential zones based on a detailed plan of Tehran.

Details and descriptions of some residential areas that have acquired non-residential uses are shown in the maps below. The Tehran detailed plan is divided into four parts: residential areas (R), commercial (S), mixed (M), and green spaces (G). The rules are different for each zone. For example, in areas with residential characteristics (R), planning permits are issued only for residential use and neighborhood-scale services. Special conditions apply for buildings with twelve floors or more. Also, the 'commercial' area (S) is the part of the city with most commercial buildings and activities and is very dense. Building permissions are issued for commercial, office, service, and industrial use. Residential permits in this area are only given to a few places with a residential function. The height of the buildings should be between two and twelve floors or even more. This means that high-rise buildings are allowed in this zone.

Figure 4 shows that zone S123 is allocated to Asadabadi Street and its parallel streets, including Ibn Sina Street. Zone R122 is allocated to Farahanipour Street and Mehran Street, and M113 to Jahanara Street. Land-use changes occurred in Asadabadi Street and mostly in near zones S123 and M113, which has caused heavy traffic during peak hours. This was one of the main reasons for the dissatisfaction of the citizens of the Yousefabad neighborhood. According to a field analysis on Asadabadi Street, many banks and financial institutions are the main reasons for short trips.



**Figure 4:** Sample of detailed map for zoning and distribution of illegal land-use changes in the residential zone of Asadabadi Street (Yousefabad neighborhood).

Most land-use changes occurred on the main axes, such as Mirzai Shirzai, Fatemi, Shahid Motahari, and Ghaem Magham Farahani Streets, or the parcels near these streets. All of these were located within the traffic scheme zone. Because of the traffic scheme, short trips by residents were made almost impossible. As a result, residents felt forced to rent out their residential units or sell them to be used as administrative or commercial units. It is noted that over time, residential textures (R) were gradually surrounded by administrative and commercial uses.

Based on the parcels audit database of Tehran Municipality and validation through the field survey, the main locations of illegal land use change in this case study have been shown in Figure 4 and Figure 5. The Amirabad neighborhood and the University of Tehran hostel are located northwest of the region. Factors such as stable residential identity and ease of access resulted in fewer land-use changes in these areas.





**Figure 5.** Sample of locations of illegal land-use change in residential zones of the case study.

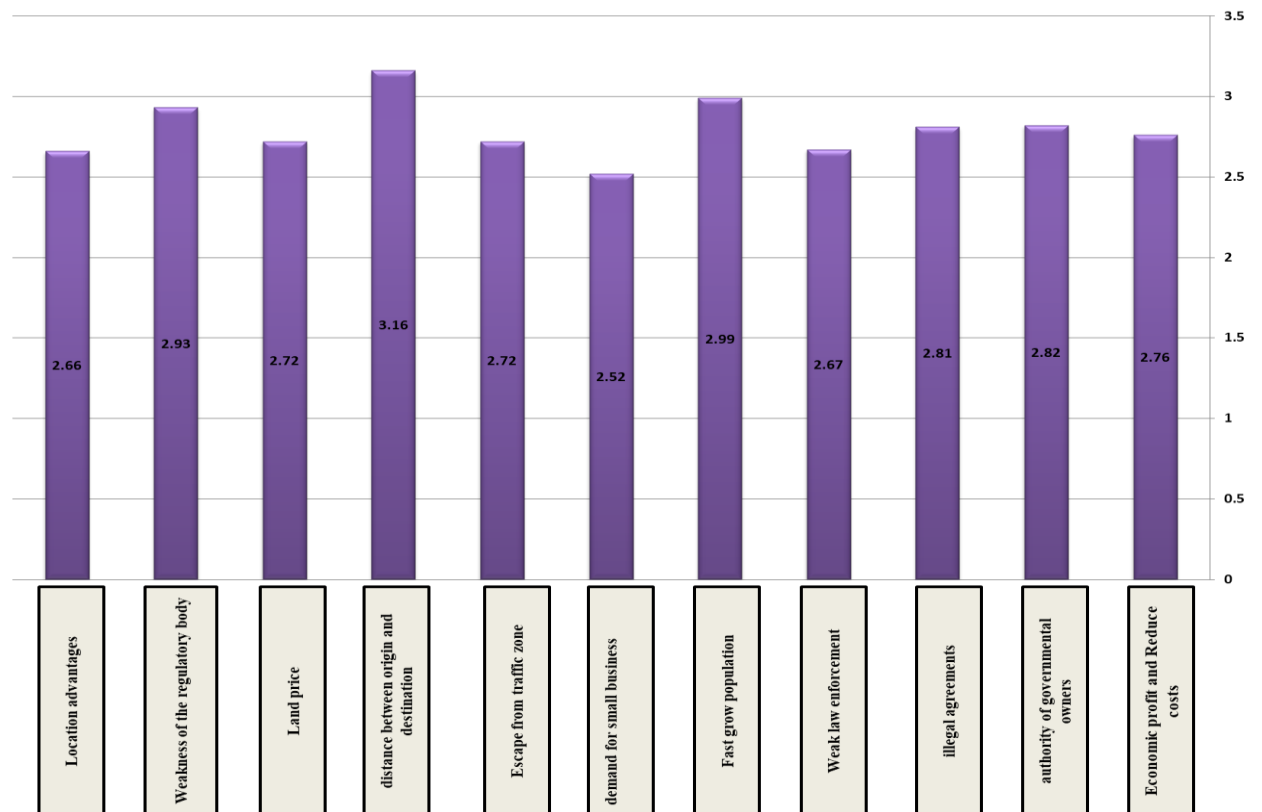
## Results and discussion

### *Descriptive statistics*

The main results of the descriptive analysis are shown in Figure 6. The average score of the questionnaire for each of the factors indicates that reduced distance between origin and destination, fast growing population, and legal weaknesses were more important than the other factors for illegal land-use change. The traffic scheme was 'even/odd', thus restricting trips and resulting in higher cost of living for residents. This factor has changed the place for the residents, especially those who live in rentals. Consequently, it has encouraged the owners of residential properties to rent their property out for unauthorized use.

Moreover, the impact of increased traffic and its related problems exponentially increased migration from the area, providing more opportunities to turn residences into office space. Because of these conditions, it is highly necessary that regulatory bodies in the region, such as the municipality and other decision-makers in the field of urban planning, pay attention when agreeing to change residential use to office use or other uses in a residential area to earn money for the city or implement traffic restriction zones. They should ask themselves how much pressure will the costs of implementing such agreements and plans put on the citizens living in the area?

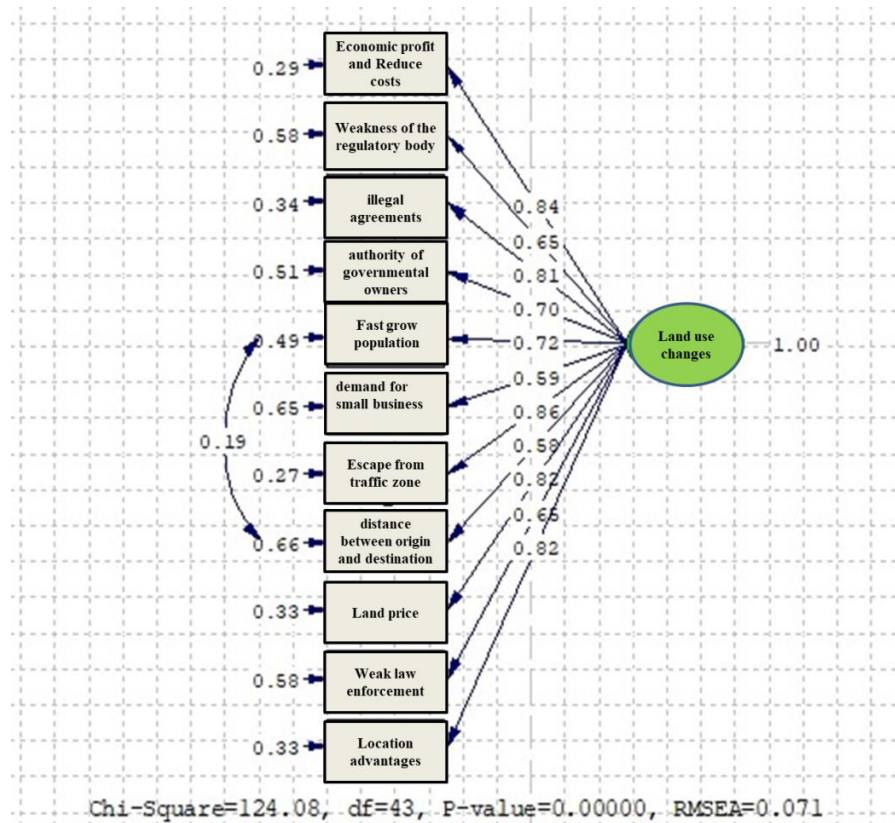
This can also be seen in Figures 3 and 4. Some cases of land-use change occurred in residential areas (R) in District 6 of Tehran Municipality near the main administrative and governmental offices of the city and the traffic scheme zone (especially near Shahid Motahari, Fatemi, and Azadi Streets). Below is a magnification of the location of these changes of land use in residential areas.



**Figure 6.** Average score for each factor based on the descriptive analysis.

### *Inferential statistics*

The results of the inferential analysis were slightly different from those of the descriptive analysis. According to the results of running the structural equation modeling (SEM) technique, the first effective factor was escape from the traffic scheme zone, with a confirmatory factor load of 0.86. Despite the difference in results, the factors related to transportation issues were the most important factors for the respondents in both the descriptive and the inferential analysis. The second most important factor was the economic profitability resulting from the change, with a confirmatory factor load of 0.84. Certainly, a significant part of the unauthorized conversion of residential units and apartments to office-service units was its high added value for the owners. The purchase and sale prices of office-service units located in residential complexes was on average 20 to 50% higher than that of other units in the complex.



**Figure 7.** Factor loads and causal relations coefficients of standardization of the structural equation modeling.

Another important point is that the office units in residential complexes encouraged homeowners to set similar pricing for office-service uses. Moreover, many homeowners increased the price range of their property by imitating the offer of buying or selling or renting out neighboring offices. This trend can eventually lead to rising real estate prices in the urban areas concerned. Moreover, it can be expected that the speed of establishing an unauthorized user will be accelerated if the urban management does not deal with this phenomenon.

According to the research findings, the factor that ranked next was the effect of the region's location in the center of Tehran and the price of land, with a confirmatory factor load of 0.82. Figure 3 and the mentioned pictures show the use change near Motahhari, Fatemi, Azadi and Seyed Jamaluddin Asadabadi Streets, which constitute one of the central axes of Tehran.

### Conclusion

In conclusion, this study identified two main results regarding urban policies in Tehran. Firstly, the implementation of traffic scheme restrictions has resulted in illegal land-use changes in the border areas of the traffic scheme zone, despite its overall benefits. Secondly, economic profits were found to be the second factor driving land-use changes, suggesting the need for a new tax policy to discourage unauthorized activities in residential areas. These findings are consistent with previous studies, but also highlight the importance of local context in shaping land-use changes.

Also, the results are comparable with those from previous studies. As mentioned above in the presentation of the theoretical framework, the factors found in the literature review can be divided into two categories: factors that follow global trends, and factors that follow local contextual

conditions. The survey results indicated that the causes of illegal land-use changes in this study were mostly influenced by local contextual factors. For example, the results are consistent with Azizi (2006), although dissimilarities with global studies can also be found. Specifically, the results of this research align with McLaughlin's findings in 2012 and Kaiser's in 1995. Transportation has been identified as an influential factor in both McLaughlin's study and the results of the present study. Furthermore, Kaiser's socio-economic classification mentioned in the literature review can be generalized for this research as well. In contrast, Guse's findings in 2015 regarding the imbalance of urban services as a factor was not observed in the results of this research.

The implications of our findings suggest several policies that could be considered to prevent the negative impacts of land-use changes on residential areas. These should include better coordination between municipal and other agencies' laws and regulations, developing stricter laws, increasing public awareness of citizenship rights, increasing access to intelligent information systems for tracking violations, and decentralizing government institutions.

Additionally, this study recommends reviewing the zones from the perspective of proximity in a detailed plan, determining the type of activity in some areas, creating facilities for knowledge-based companies and administrative centers in other parts of Tehran, outsourcing to private companies for monitoring unauthorized land-use changes, and revising rules and conditions of the traffic scheme policy with consideration of its impact on residential neighborhoods. These policies, when implemented, could help prevent illegal land-use changes in Tehran and potentially serve as a model for other urban areas facing similar challenges.

## **Statements and Declarations**

### **CONFLICTS OF INTEREST**

The authors declare no potential conflicts of interest regarding the publication of this work. In addition, ethical issues, including plagiarism, informed consent, misconduct, data fabrication and, or falsification, double publication and, or submission, and redundancy, have been fully complied with by the authors.

**Funding:** The authors received no financial support for the research, authorship, and/or publication of this article.

## **References**

- Agarwal, C. (2002). "A review and assessment of land-use change models: dynamics of space, time, and human choice."
- Anguelovski, I., et al. (2016). "Equity impacts of urban land use planning for climate adaptation: Critical perspectives from the global north and south." *Journal of Planning Education and Research* **36**(3): 333-348(16 pages).
- Arsanjani, J. J., et al. (2011). "Tracking dynamic land-use change using spatially explicit Markov Chain based on cellular automata: the case of Tehran." *International Journal of Image and Data Fusion* **2**(4): 329-345(16 pages).
- AZIZI, M. M. (2006). "Sustainable Residential Neighborhood: The Case Study of Narmak Neighborhood, Tehran." *QUARTERLY HONAR-HA-YE-ZIBA*,27(5):35-46(12 pages).
- Caspersen, O. H., et al. (2006). "Green space planning and land use: An assessment of urban regional and green structure planning in Greater Copenhagen." *Geografisk Tidsskrift-Danish Journal of Geography* **106**(2): 7-20(14 pages).

- Cronon, W. (2011). *Changes in the land: Indians, colonists, and the ecology of New England*, Hill and Wang.
- Dale, P. F. and J. D. McLaughlin (1988). *Land information management*, Oxford University Press.
- Dirmeyer, P. A., et al. (2010). "Impacts of land use change on climate." *Int. J. Climatol* 30(13): 1905-1907(**17 pages**).
- Fischel, W. A. (2004). "An economic history of zoning and a cure for its exclusionary effects." *Urban Studies* 41(2): 317-340(**17 pages**).
- Foster, D., et al. (2003). "The importance of land-use legacies to ecology and conservation." *BioScience* 53(1): 77-88(12pages)
- Ghalambordezfooly, R., & Hosseini, F. (2019). The spatial correlation between social capital and crime: A case study of the new town of Pardis, Iran. *Environmental & Socio-economic Studies*, 7(4), 62-68(**17 pages**).
- Glaeser, B. and A. B. Antal (1980). Factors affecting land use and food production. A contribution to ecodevelopment in Tanzania.
- Guse, B., et al. (2015). "Dynamic modelling of land use change impacts on nitrate loads in rivers." *Environmental Processes* 2(4): 575-592(**18 pages**).
- Heath, G. W., et al. (2006). "The effectiveness of urban design and land use and transport policies and practices to increase physical activity: a systematic review." *Journal of physical activity and health* 3(s1): 55-76(**23 pages**).
- Herold, M., et al. (2005). "The role of spatial metrics in the analysis and modeling of urban land use change." *Computers, environment and urban systems* 29(4): 369-399(**21pages**).
- Hills Jr, R. M. and D. Schleicher (2010). "The steep costs of using noncumulative zoning to preserve land for urban manufacturing." *The University of Chicago Law Review*: 249-273(**15 pages**).
- Hommels, A. (2005). "Studying obduracy in the city: Toward a productive fusion between technology studies and urban studies." *Science, Technology, & Human Values* 30(3): 323-351(**29 pages**).
- Ianoş, I., et al. (2017). "Incoherence of urban planning policy in Bucharest: Its potential for land use conflict." *Land Use Policy* 60: 101-112(**17 pages**).
- Kaiser, E. J., et al. (1995). *Urban land use planning*, University of Illinois press Urbana.
- Kalali Moghaddam, Z. (2015). "An investigation of the factors affecting land use changing of agricultural lands (Case study: rural areas of Rasht Town-Iran)." *Journal of Research and Rural Planning* 4(1): 113-132(**20 pages**).
- Lewis, P. G., & Marantz, N. J. (2019). What planners know: Using surveys about local land use regulation to understand housing development. *Journal of the American Planning Association*, 85(4), 445-462.
- Lopez-Casado, D. (2021). *Hidden City: The Footprint of Illegal Urbanisation in Spain*. *Hidden Geographies*, 313-334.
- McLaughlin, R. B. (2012). "Land use regulation: Where have we been, where are we going?" *Cities* 29: 50-55(**6 pages**).
- Monstadt, J. (2009). "Conceptualizing the political ecology of urban infrastructures: insights from technology and urban studies." *Environment and planning A* 41(8): 1924-1942(**17 pages**).
- Pauleit, S., et al. (2005). "Modeling the environmental impacts of urban land use and land cover change—a study in Merseyside, UK." *Landscape and urban planning* 71(2-4): 295-310(**17 pages**).
- Perring, M. P., et al. (2016). "Global environmental change effects on ecosystems: The importance of land-use legacies." *Global Change Biology* 22(4): 1361-1371(**17 pages**).
- Poorahmad, A., et al. (2011). "Migration and land use change in Islamshahr." *Journal of Geographical Studies in Arid Regions* 2(5): 131-152(**17 pages**).

- Potsiou, C., & Ioannidis, C. (2006, March). Informal settlements in Greece: The mystery of missing information and the difficulty of their integration into a legal framework. In Proceedings of the 5th FIG Regional Conference, Accra, Ghana.
- Reidsma, P., et al. (2011). "Methods and tools for integrated assessment of land use policies on sustainable development in developing countries." *Land Use Policy* 28(3): 604-617(**17 pages**).
- Rezaei, M., Rahimi, E. (2013). The causes of land use change and its impact on municipal services in urban detailed plans, Case Study Marvdasht.. *Journal of Research and Urban Planning* , 4(13), 77-96(**17 pages**).
- Scholz, R. (2007). "Assessment of land use impacts on the natural environment. Part 1: an analytical framework for pure land occupation and land use change (8 pp)." *The International Journal of Life Cycle Assessment* 12(1): 16-23.
- Sonak, S., et al. (2006). Factors affecting land-use and land-cover changes in the coastal wetlands of Goa, *Citeseer*: 44.
- Tegen, I., et al. (2004). "Relative importance of climate and land use in determining present and future global soil dust emission." *Geophysical research letters* 31(5).
- Troisi, R. (2022). Illegal land use by Italian firms: An empirical analysis through the lens of isomorphism. *Land Use Policy*, 121, 106321.
- Urgesa, A. A., et al. (2016). "Population growth and other factors affecting land-use and land-cover changes in north-eastern Wollega, Ethiopia." *Tropical Agriculture* 93(4): 298-311(**14 pages**).
- VahedianBeyki, L., et al. (2011). "The Effect of Physical Development of Tehran on Land Use Change in the Area." *Journal of New Attitudes in Human Geography (Human Geography)* 4(1): 29-46(**17 pages**).
- Vischer, J. (2002). "Post-occupancy evaluation: A multifaceted tool for building improvement." *Learning from out buildings: A state-of-the-practice summary of post-occupancy evaluation: 23-34*(**12 pages**).
- Wenneman, A., Roorda, M., & Habib, K. (2014). Illegal Commercial Vehicle Parking, Parking Demand, and the Built Environment. In *Canadian Transportation Research Forum*.