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The Rise of the Medical Real Estate Development in Sousse

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Abstract

The overall research is divided in two sections. The objective of theses two sections are is determining the ins and outs of the development of private medical real estate development in the city of Sousse. The 1st section aimed to identify the tenants based on the hypothesis that the development of the private health sector has evolved in synchronicity with the public sector, which is the result of the health policy carried out since independence. This research constitutes the 2nd part of the 1st section and is based on empirical analysis and field surveys with promoters, medical service providers and patients. It enabled us to validate the hypothesis that the growth of private medical real estate development in the city of Sousse was initiated by the development of private real estate development and the sanitary (medical and parmedical) sectors. The rise of these sectors was propelled after the promulgation of Law No. 90-17 of February 26, 1990, Law No. 91-63 of July 29, 1991 (relating to public and private sanitary organizations), the free trade agreement with the European Union of 1995 (introducing general measures for the liberalization of services including the sanitary (medical and paramedicam) sector and Decree No. 2007-120 (facilitating complementary activity for doctors public sector). In Sousse, the synergy between the real estate and health sectors has generated a spontaneous urban dynamic transforming the territory and often bypassing conventional and regulatory planning tools. The liberalization of the sanitary sector constituted an opportunity for the spontaneous development of the real estate market, the supply and demand of which are controlled by precise criteria of territorial attractiveness. Accessibility, location in high-class neighbourhoods, and proximity to public and private equipment and services, notably sanitary, are among appear to represent the main criteria that have conditioned the growth of private real estate development in the study areas.

Keywords: Real Estate Development, Private Medical Real Estate Development, Medical Service

1. Introduction

The 1990s national policy of liberalization concerned both the sanitary (medical and paramedical) and the real estate sectors. This policy came to fruition following the promulgation of Law No. 91-63 of July 29, 1991, relating to sanitary organization and Law No. 90-17 of February 31, 26, 1990 relating to real estate development. As a result, the private sanitary (medical and paramedical) sector began to compete

with the public sector. The same goes for the private real estate development sector which is beginning to occupy an increasingly important place in the development, urbanization and transformation of Tunisian cities. However, from the 2000s, we witnessed the proliferation of buildings exclusively or mainly intended for medical services. Private real estate development is entering a new real estate market intended for the medical service: private medical real estate development. In the three main Tunisian economic cities in the process of metropolisation; Tunis (the capital), Sfax and Sousse; the private medical real estate development as well as the public and private sanitary (medical and paramedical) sectors, have been booming since 2012. The number of buildings intended for private medical real estate development in Tunis reached a peak between 1990 and 2010 (Dhahbi, 2015, p 55) placing Tunis in the first position followed by Sousse and Sfax.

2. Problem

It has been noted in Sousse that a gradual change has been taking place in recent years regarding the use of buildings, from the function of housing to that of medical services. Approximately 70 % of office buildings are occupied by private medical service providers. Similarly, the majority of new or newly constructed buildings by private developers are intended for medical activities. This boom has resulted in the reconfiguration of the urban space of these cities. Obeying its own logic, private medical real estate development produces specific architectural, urban and landscape forms as well as a new urban aesthetic. It introduces a new way of making urban space: medical urbanism. This phenomenon, which characterizes the main Tunisian coastal cities of Tunis, Sfax and Sousse, aroused our interest, especially since it is specific to Tunisia, is relatively recent and is very little developed in the literature. We therefore took advantage of the Sousse case study to conduct research whose general objective is to determine the ins and outs of the rise of private medical real estate development. To this end, the study carried out by Dhahbi (2015), and the field survey carried out by Ftini (2022) served as a reference to deepen and develop research divided into two parts.

The global objective of Part 1 of our study is to identify the reasons behind the growth of private real estate development in the city of Sousse and to demonstrate that the latter was initiated by the development of the private sanitary (medical and paramedical) sector, particularly since its progressive liberalization (with the promulgation of Law No. 91-63 of July 29, 1991, relating to sanitary organization).

The specific objectives of the present article, constituting the 2nd section of Part1 are to:

- ⇒ Identify and characterize the three main stakeholders on whom relay the medical real estate market tendency, supply and demand: the developers, the medical service providers and the patients.
- ⇒ Understand the motivations, the logic of the stakeholders and the promoters ‘strategy
- ⇒ Identify the criteria of territorial attractiveness of Sousse in general as a spotted city and of the identified study areas for the medical real estate developers.

To achieve our goals, we have formulated the following assumptions:

Assumption 1: The crisis in residential real estate development and/or the increase of the demand in the private medical sector have oriented developers towards the medical and paramedical sectors and services. This means verifying whether the prosperity of the medical real estate market is the result of

the prosperity of the private medical sector or the adoption of a resilience strategy facing up to the unfavorable circumstances of the residential real estate development's crisis. If unvalidated, this hypothesis will allow us to identify what other stakeholders have encouraged the growth of medical real estate development.

Assumption 2: Private real estate production intended for sanitary (medical and paramedical) activities or services in a specific area did not result from voluntary planning policy but from the real estate supply and demand market, controlled by precise criteria of territorial attractiveness.

Assumption 3: Accessibility, proximity to all public and private facilities and services, proximity to sanitary facilities and location in high-class neighborhoods represent determining criteria of territorial attractiveness for the development of private medical real estate development.

3. Materials and Methods

This research is based on empirical analysis and field investigation. The data collected from the semi-structured questionnaires and the inventory will be processed with Excel software and supported by the cartographic analysis carried out using geographic information systems. The empirical analysis began with the in-situ identification and geographical delimitation of areas of Sousse city where the medical real estate development is particularly significant.

3.1. Definition of the Study Perimeter

The choice and delimitation of the study areas were carried out as follows: The approximate positioning of sanitary and medical and paramedical buildings in the city of Sousse was first carried out using the Google Maps application. Knowing that Google maps does not provide exhaustive data and cannot allow potential grouping areas to be defined with accuracy, it was necessary to use the database of medical service providers occupying buildings intended for medical promotion. The database of doctors provided by the regional medical council of Sousse enabled us to group all doctors through their professional addresses and consequently identify potential areas characterized by the predominance of the medical service. The geographical transposition between areas identified using addresses and Google Maps permitted to limit the potential areas of concentration of private medical activities. The choice focused on 4 most representative areas (referred as areas A, B, C and D), characterized by the condensation of real estate development buildings intended for medical and paramedical services (See Figure 3 and Figure 4). The field visit and the observation were decisive firstly to complete the information concerning existing medical services attributable to private real estate development (particularly for projects under construction) and then to confirm our choice of the four areas (A, B, C and D) where private real estate development is booming. The vocation of the 4 areas was identified basing on Sousse urban development plan (PAU of 2008) provided by Sousse regional direction of the Ministry of equipment, habitat and development (Ministère de l'équipement, de l'habitat et de l'aménagement du territoire).

The defined study perimeters have permitted us to target the surveyed samples of main stakeholders directly or indirectly participating in the production of these buildings.

3.2. Samples and Sampling of Surveyed Stakeholders

The real estate market specialized in the medical sector is regulated by the law of supply (of the real estate developer) and demands from both the medical service provider (medical staff) and the

beneficiary of the service (patient). The investigation must therefore take into consideration the three main stakeholders: the promoters, the medical service providers and the patients. The sampling of these three targeted stakeholders will thus be proceeded withing the 4 pre-defined perimeters:

- **The Real Estate Developers :** The objective of addressing semi-directive questionnaire to the private developers is to identify their motivations behind the exercise of the real estate development activity and behind the choice of promoting building intended for medical and paramedical services in the areas A, B, C and D (See Figure 3 and Figure 4).
  The sample developers were deducted from the list of doctors practicing in areas A, B, C and D. Thanks to the professional addresses of the doctors, 21 buildings spread over the 4 above indicated areas were identified. These 21 buildings intended for medical service were built by 19 real estate developers. Indeed, it turned out that 2 of the 19 developers built each two buildings. To this end, depending on the objective, our analysis will be based on the sample 19 real estate developers or on 21 real estate buildings.

- **The medical Service Providers :** The semi-directive questionnaire addressed to the medical service providers focuses on the criteria which motivated them to practice in the four study areas (A, B, C and D) within these rented or purchased medical real estate buildings.
  The list of doctors and dentists practicing in the four study areas was defined using the database provided by Sousse regional medical and regional dentists councils. This list was then verified on-site and supplemented by other types of sanitary service providers practicing withing the chosen buildings. The sample consisting of 162 respondents (See Table. 9) was limited to the medical service providers occupying the medical real estate buildings within areas A, B, C, D. Furthermore, it was noted that most private medical service providers occupying the buildings are doctors and dentists. However, the systematic door-to-door visits have sometimes encountered the reluctance of a large proportion of doctors due to sanitary circumstances (COVID 19). As a result, only a third of the entire sample identified on-site (i.e. a third of the premises in each building) could be approached. Likewise, we were denied access to an entire block of one of the buildings (the Olivier building identified on the map, see Figure 36).

- **The Patients :** The patient survey was based on the inventory. The latter aims to determine the origin of patients, the reasons for their visits to finally detect the advantages of the providers Supplied service within these specific areas and buildings. The inventory was carried out regularly during the mornings, during the spring and summer seasons of 2021.
  The survey enabled us to record 756 patients including 656 Tunisian nationals (86.66 % of the total sample of patients) in 15 of the 21 buildings located in the 4 chosen areas: A, B, C and D. To achieve a more efficient quest, we aspired to fairly distribute the total sample: divide the sample of 190 patients into the 4 areas or quest 50 patients per building. In practice and given the circumstances (Pandemic period: covid 19) this proved to be complex. However, we tried to stabilize the percentage of patients surveyed per building. Indeed:
  - The Area A sample includes 43 patients among 656 and represents 6.55 % of the total respondents. This sample concerns a single medical real estate building;

- The Area B sample includes 185 patients among 656 and represents 28.20 % of the total respondents. This sample is distributed across 5 medical real estate buildings. The average per building is therefore 5.64 %.
- The Area C sample includes 382 patients among 656. It represents 58.23 % of the total respondents spread over 9 medical promotion buildings. This corresponds to an average of 6.47 % of the total respondents per building.
- The Area D sample includes 46 patients among 656 and represents 7.01 % of the total respondents per building.

It should be noted however that the recourse to the archives of construction permits in the municipality of Sousse would have been more useful and simpler to understand the regulatory situation of real estate developers and understand the mechanisms of this sector. Unfortunately, the impossible access to this information forced us to follow the above-mentioned alternative.

4. Results and Discussion

4.1. Theoretical Context

Literature concerning the topic of 'private medical real estate development' is very little developed. This topic refers to a phenomenon which is specific to Tunisia, is relatively recent and little studied. Indeed, in the literature, there is (so far) only the study of Dhahbi (2015) related to the private medical real estate development applied to the city of Tunis. Nevertheless, it was possible in the first phase to identify the key concepts linked to our study such as the 'real estate development sector, the 'sanitary sector' and the 'medical service'. Likewise, it was useful to understand the regulatory and administrative procedures specific to the practice of private medical promotion, thanks to the collection of data from the Tunisian Union of Industry, Commerce and Crafts (UTCA) and the Agency for the Promotion of Industry and Innovation (APII).

4.1.1. The Real Estate Development

Promotion or 'real estate production' is According to Mourad Ben Jelloul (1999, p 7), 'consisting of all operations linked to the production of a built structure'. The author indicates that this production requires the intervention of promotional capital which converts the capital of the building industry from a form of housing to a form of merchandise. Pierre Merlin and Françoise Choay (1988, p 729) define real estate development as 'real estate construction most often intended for sale (generally in co-ownership)'. The same authors consider that the developer is an essential player, the conductor of a real estate transaction. Indeed, a developer must have skills in many areas to identify the needs of the local market, imagine the real estate project and supervise all construction operations until the keys are handed over to future lessors or occupants.

The term real estate developer appeared in 1954 with the French urban architect Fernand Pouillon, to replace the old term 'real estate business developer'. The promoter or developer-builder is 'a natural or legal person who takes the initiative and the financial risk of a real estate construction (generally in co-ownership) intended most often for sale' (Choay and Merlin 1988, p 730).
In French legislation, article 1831-1 of January 1, 1979, of the civil code defines the real estate developer as a constructor of buildings by assuming responsibility for legal, financial and administrative

monitoring. The promoter is generally a company which owns a land on which it is responsible for building or rehabilitating real estate intended for sale or rental (offices, housing, commercial premises, leisure facilities, establishments, services, particularly sanitary and medical services such as medical offices, laboratories of analysis or imaging centers).

In Tunisian legislation, the first article of Law No. 17 of February 26, 1990, of the official journal of the Tunisian Republic stipulates: 'A real estate developer is any natural or legal person who, carries out operations on a usual or professional basis and in accordance with current regulations for the purpose of selling or renting a property: subdivision and development of land intended mainly for housing, construction or renovation of individual semi-collective buildings for residential, commercial, professional or administrative use.'[i] The real estate developer is a specialist in the sale of built properties, not to be confused with the land developer, the investor, the developer, the developer or the subdivider. He can either lead and carry out his project under his own initiative, either as a project owner, or as a delegated project owner, being mandated by a project owner financing the project through a contract. In this case, the delegated project owner is responsible for controlling and monitoring the site until the project is entirely completed while respecting the project owner's constraints. The main mission of the developer is the creation and construction of real estate. The real estate can be whether newly constructed parks in different sectors such as residential, tourist, industrial, commercial, sanitary or renovated or transformed existing buildings.

4.1.2. The Medical Service Provider

According to Petit Larousse, sanitary is the state of someone whose body functions normally in the absence of disease. Medicine is the science which aims to preserve this health against diseases or to restore it from attacks of various natures. Even though in French literature, the adjectives sanitary and medical are commonly interchanged, the field of health and that of medicine can have different scopes. Indeed, the scope of the sanitary field is broader. It encompasses everything relating to the promotion of public health such as the quality of the environment, the living environment (hygiene, food safety, waste management, pollution), risk management (fire, earthquake, floods, etc.) or social well-being. On the other hand, the medical field only concerns health or medical and paramedical services. The medical services which include the diagnosis of illness, care, treatments and medical interventions of a preventive and curative nature to maintain and restore the health of patients, are deployed by health professionals (medical and paramedical: doctors, pharmacists, paramedical agents and technicians such as nurses, physiotherapists, etc.). Both in the public and private sectors, the provision of sanitary services (medical and paramedical) can be provided by two types of structure: hospital (with accommodation) and outpatient.

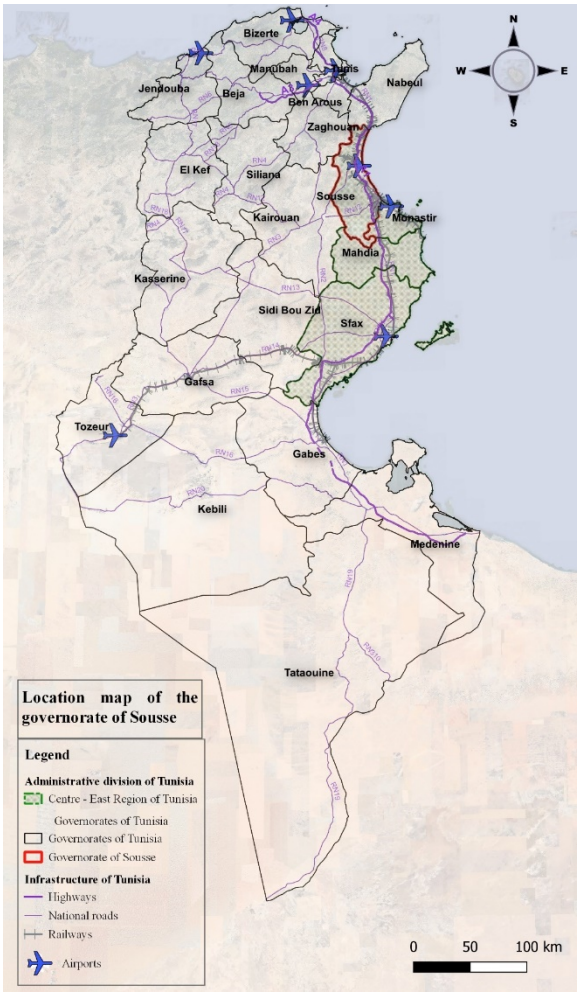
Medical and paramedical professionals can be:

- Freely practicing medical body, practicing in private establishments such as clinics, medical centers and laboratories, private offices or medical complex. Pharmacists are part of an industrial sector interdependent on the medicinal field: the pharmaceutical industry.
- Assigned full-time in public service and practice within public sanitary establishments (hospitals, basic or specialized sanitary center, etc.) or partially with the possibility of exercising in free practice within private establishments.

4.2. Empirical Context

- **The Center-East Region:** The Center-East region is located on Tunisia's eastern coast. According to the old administrative division preceding decree 589 of September 21, 2023, it included the four governorates of Sousse, Mahdia, Monastir and Sfax (See Figure 1). Along with the Greater Tunis region (each housing 24 % of the total Tunisian population), it represented the most populated regions in all of Tunisia.

Figure 1. Geographical Situation of the Tunisian Centre-East Region and Sousse Governorate
Source: Authors



- **The Governorate of Sousse:** The governorate of Sousse is limited by the governorates of Nabeul to the North, Zaghouan to the East, Mahdia to the West and Monastir to the South (See Figure 2). It covers an area of 2,669 km 2, or 1.6 % of the country's whole surface area, and runs along 75 km of the Mediterranean coast of the Tunisian Sahel (Digital Atlas of the Sousse Governorate, 2021). Housing 6 % of the total population and equalizing the governorates of Ariana and Ben Arous, the governorate of Sousse occupies the third position after the governorates of Tunis and Sfax (9 % each of the total population) followed by the governorate of Nabeul (7 % of the total population) (Equipment Directorate & DRCPS, 2021).

The governorate of Sousse covers 16 delegations (Akouda, Bouficha, Enfidha, Hammam Sousse, Hergla, Kalâa Kebira, Kalâa Seghira, Kondar, M'saken, Sidi Bou Ali, Sidi El Hani, Sousse Jawhara, Sousse Médina, Sousse Riadh, Sousse Sidi Abdelhamid, Zaouiet Ksiba Thrayet), 104 sectors and 17 municipalities (See Table. 1 and Figure 2).

- **The City and Metropolis of Sousse:** Administratively, Sousse constitutes the capital of the governorate of Sousse. The city of Sousse includes 6 delegations of its governorate (See Table. 1) : Sousse Khezama, Sousse Médina, Sousse Jawhara, Sousse Riadh, Sousse Sidi Abdelhamid and Sousse Hached. Sousse city municipal perimeter includes 5 municipal districts, 4 of which have perimeters which correspond to those of the delegations of the same name: Sousse Khzema, Sousse Médina, Sousse Jawhara and Sousse Riadh. The fifth district of Sousse Sidi Abdelhamid only covers part of the delegation of the same name (municipality of Sousse, 2023). Sousse constitutes the third largest municipality after Tunis and Sfax.

  The strategic geographical position of this coastal and port city at the crossroads linking the North to the South of Tunisia and its role as a central city functioning as an administrative and socio-economic pole, explain the rapid evolution of Sousse from a city to a regional metropolis.

  In 2014, the city of Sousse, considered as the capital of the Sahel, had an area of 48.54 km 2 ha and a density of 5,000 inhabitants/km 2. It concentrated most of the population of its governorate, i.e. 221,530 out of 674,971 inhabitants. Its constantly growing population demonstrates the demographic dynamics that characterize it and give it a considerable lead in its economic and urban development. Playing the role of the engine of development of its entire surrounding regions, the city of Sousse has evolved from the fourth largest Tunisian urban agglomeration after Tunis, Sfax and Nabeul to a regional metropolis commonly referred as the 'Greater Sousse' (See Table. 2). The 'Greater Sousse' includes the municipal districts of Sousse, Zaouiet Sousse, Akouda, Ezzouhour, Hammam-Sousse, Kalâa Kebira, Kalâa Seghira, Kssibet-Thrayet, M'saken and Messaadine (Ministry of Equipment, 2022).

Table 1. Delegations and Municipalities of Sousse Governorate and the Greater-Sousse
Source: Authors (Sousse Municipality 2023)

Governorate of Sousse		**Metropole of Greater Sousse**	**Date of the Creation of the Municipality**	**Municipality Population Size in 2014**
16 Delegations	17 municipalities	10 municipalities		
51. Sousse Médina	3111. Sousse		1984	174592
52. Sousse Riadh	3112. Kssibet - Thrayet ou Sousse et Thrayet		1985	11392
53. Sousse Jawhara	3113. Ezzouhour		1985	64532
54. Sousse Sidi Abdelhamid	3114. Zaouiet Sousse		1985	20992
55. Hammam Sousse	3115. Hammam Sousse		1984	42691
56. Akouda	3116. Akouda		1957	27200

57. Kalâa Kebira	3117. Kalaa Kbira		1921	59132
58. Sidi Bou Ali	3118. Zaouiet Sidi Bou Ali		2014	19693
59. Hergla	3119. Hergla			9343
60. Enfidha	3120. Enfidha		1957	27219
61. Bouficha	3121. Bouficha		1966	26763
62. Kondar	3122. Sidi El Heni		1994	13505
63. Sidi El Heni	3123. M'saken			84295
64. M'saken	3124. Kalaa Seghira			37791
65. Kalâa Seghira	3125. El Messâadine		1985	12930
66. Zaouïa Ksiba Thrayet	3126. Kondar		2014	13565
	3127. Gerimet Hicher		2016	22116
	3128. Chott Mariem		2016	7294

The Greater Sousse (See Figure 3) has significant potential in terms of road and transport infrastructure:

- The highway A1;
- Two national roads:

⇒ The RN1 road (or GP1) connects to the North, Sousse to Sidi Bou Ali and to the South, Sousse to M'saken;

⇒ The RN12 (or GP12) road connects Sousse to Kairouan;

- The regional road RR82 connects Sousse to the cities of Monastir and Mahdia;
- Four local roads:

⇒ RL818 connects the city center to Sahloul;

⇒ RL819 connects Sousse to Kalaa Sghira and Kalaa Kebira;

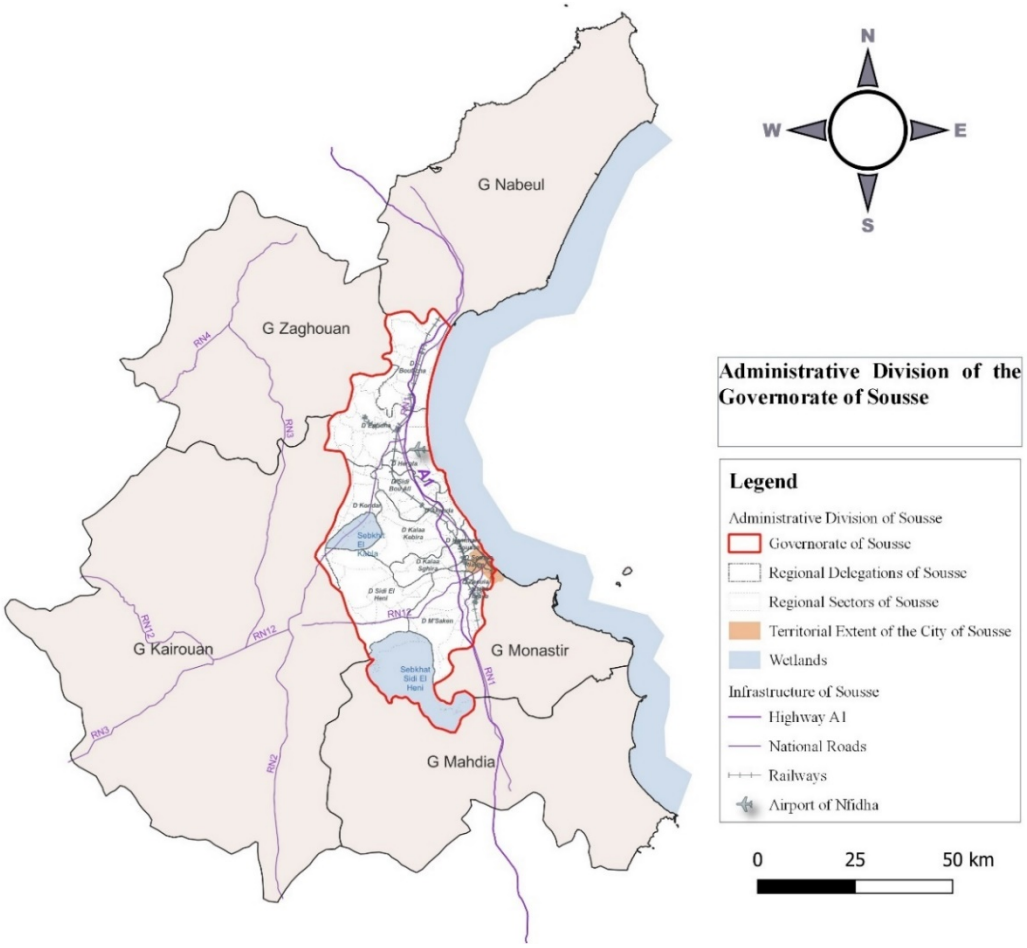
⇒ RL820 connects the barracks area to the city of Erriadh;

⇒ RL845 road serves Sousse to Hammam Sousse and Kantaoui tourist area.

The Greater Sousse has also

- Concentric belts and several exchange nodes: Boulevard Mohamed Karoui, the D4 ring road deviating from the RN1 road;
- The international airport of Enfidha;
- The deep-water port of Enfidha;
- The port of Sousse as being a commercial and pleasure port but where commercial exchanges prevail.

Figure 2. Administrative Division of Sousse Governorate
Source: Authors



Finally, the city and regional metropolis of Sousse have several assets. Sousse is at the same time a port, industrial, tourist and university city. It is an attractive city for both pleasure and business. This attractiveness is also reinforced by its significant public and private sanitary infrastructure. It was demonstrated in a previous article that the growth of the private sanitary sector in Tunisia was initiated by the sanitary policy which favored the polarization of the public sanitary sector in coastal areas and in the main large economic cities in the process of metropolisation: Tunis, Sousse and Sfax. The capital of Tunis alone has 13 university hospitals out of a total of 24 throughout the country (Directorate of Equipment & DRCPS, 2021). The liberalization of the sanitary (medical and paramedical) and real estate sectors around the 1990s further accentuated the polarization and metropolization of these cities. Indeed, the governorate of Sousse has, according to the Ministry of Health (Directorate of Equipment & DRCPS, 2021), 8 hospitals including:

- 2 university hospitals: Farhat Hached and Sahloul;
- 1 regional hospital in M'saken;
- 5 district hospitals with a capacity of 1460 beds and 101 basic sanitary centers.

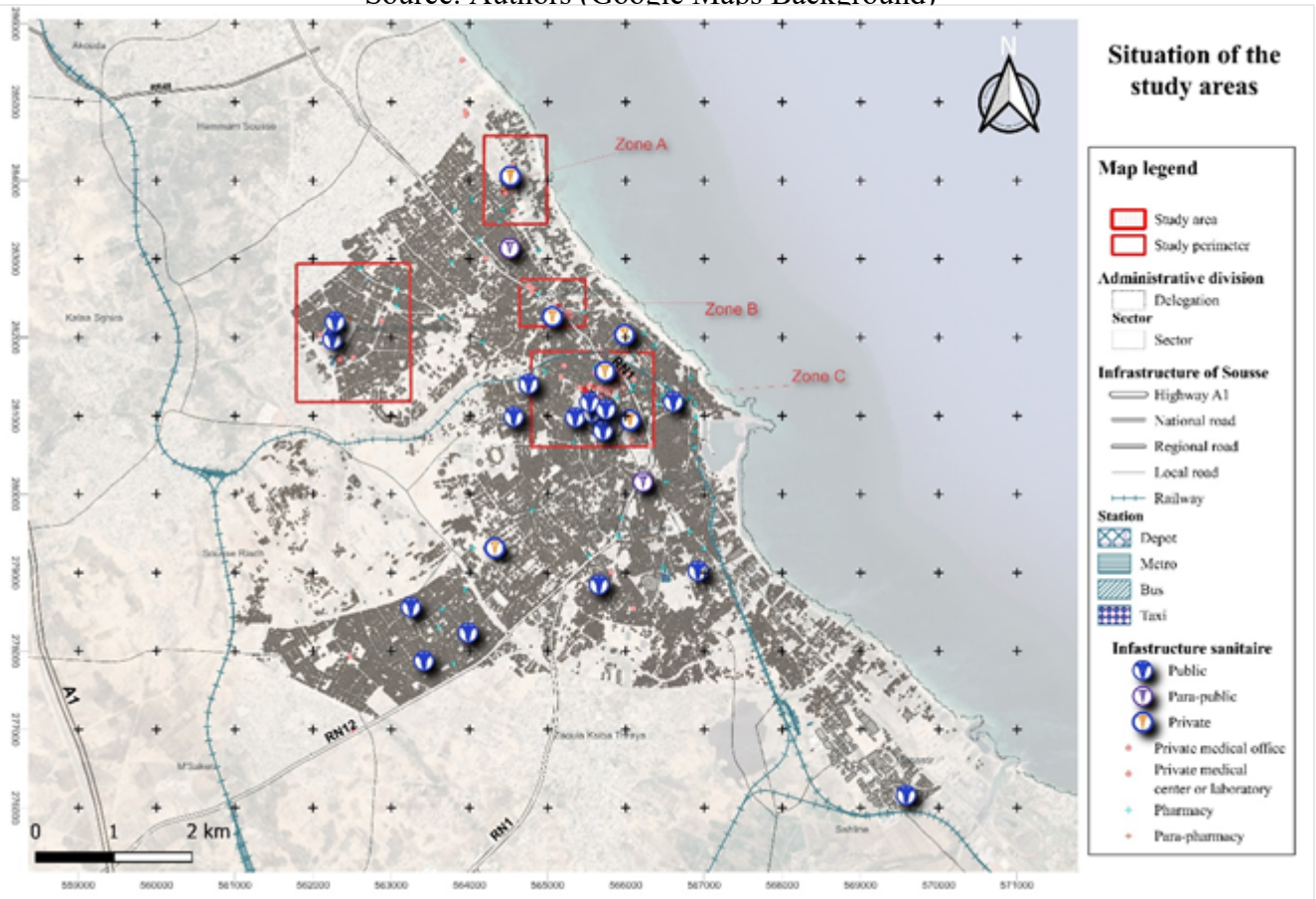
Figure 2. Limits of Greater Sousse and Sousse City
Source: Authors

Regarding the private sanitary sector, the governorate of Sousse benefits from:

- 9 private clinics, most of them of international scale;
- 139 pharmacies;
- 41 laboratories of analysis;
- 555 private medical offices in 2020 (Sousse regional council of doctors, 2021).

The city of Sousse, capital of its governorate, concentrates most of these public and private medical and paramedical sanitary services (see Figure 4).

Figure 3. Situation of the Study Perimeter and Areas in Sousse City
Source: Authors (Google Maps Background)



4.3. The rise of Medical Real Estate Development: Conjuncture and Logic of the Stakeholders

To analyze the reasons for the growth of private medical real estate development in the city of Sousse, we set out to verify one by one the three assumptions stated above, starting with assumption 1 supposing that the crisis in residential real estate development and the increase in demand in the medical sector have gradually oriented developers towards the medical and paramedical sector and services. This amounts to verify whether this shift to medical real estate development and the prosperity of the medical real estate market are the result of a strategy of resilience against coping with unfavorable circumstances of the residential real estate development crisis. To answer this assumption, the investigation will attempt to verify whether most developers were already operating in the housing sector and have moved towards the medical sector following the drop in demand for housing, solvency problems households and low profitability of investments. Failing to be validated, this assumption will allow us to know what other stakeholders have encouraged the growth of medical real estate development. Indeed, the development of real estate development intended for office buildings around the 2000s and the increase in demand from medical service providers may also have propelled the growth of medical real estate development.

4.3.1. Global Housing Crisis of the 2000s

The literature review revealed that since the 2000s, the housing sector has experienced a general decline in worldwide profitability due to the decline in purchasing power associated with the increase in the price of necessary raw materials. construction and land scarcity. This decline has caused a global crisis in real estate development, reflected in the severe increase in house prices. In the United States, for example, the increase in prices is estimated in nominal terms[1] at 60 % between 2000 and 2006 (Sorbe, 2009, p 115). This imbalance is also caused by the increase in demand and the scarcity of related supplies:

- Lack of building land;
- The increase in prices of construction materials;
- The tax system is not conducive to investments: property taxes and interest on loans influencing the increase in sums lent which fuels the real estate bubble.

The real estate crisis and the financial crisis are linked: The origin of the current financial crisis is undoubtedly real estate' (Nappi, Choulet, 2009, p 8).

In France, at the beginning of the 2000s, the real estate development's crisis was caused by the lack of housing compares to the demand which exceeded the estimation of the national institute of statistics and economic studies. The shortage of building land is one of the main causes of the lack of housing supply. As a result, France, like most industrialized countries, experienced a surge in prices in the real estate sector. In fact, housing prices between 2000 and 2008 increased by 73 % (Tabouret, 2012, p 57) and 3 % (Chauvet, 2018, p 20) between 2015 and 2016, leading to a freeze in transactions and a drop in sales of more than 17 % (Chauvet 2018, p 18) between 2009 and 2012.

4.3.2. Real Estate Crisis in Tunisia

- **A Crisis Reflected by the Drop in Sales and Real Estate Production:** In Tunisia, the real estate crisis began at the beginning of 2011 with a reduction in housing production. According to the sectoral analysis carried out in February 2020 by the financial rating agency PBR Rating (Pronoia By Reckon, 2020), developers have experienced a permanent deterioration in the sales rates of constructed buildings. This ultimately resulted in a reduction in production. Indeed:
  - Between 2010 and 2019 and particularly during 2011, we noticed a drop in private real estate production in residential buildings. In fact, from 2010 to 2011, housing production fell by more than half, from 14,000 housing units to 6,000 housing units;
  - Between 2012 and 2013, we noticed a slight revival in production. However, this remains low compared to that of 2010 and has not stabilized;
  - From 2013, we notice a decline in return, thus indicating the beginning of a crisis. This proves the instability of the real estate market and reflects the many problems facing developers.

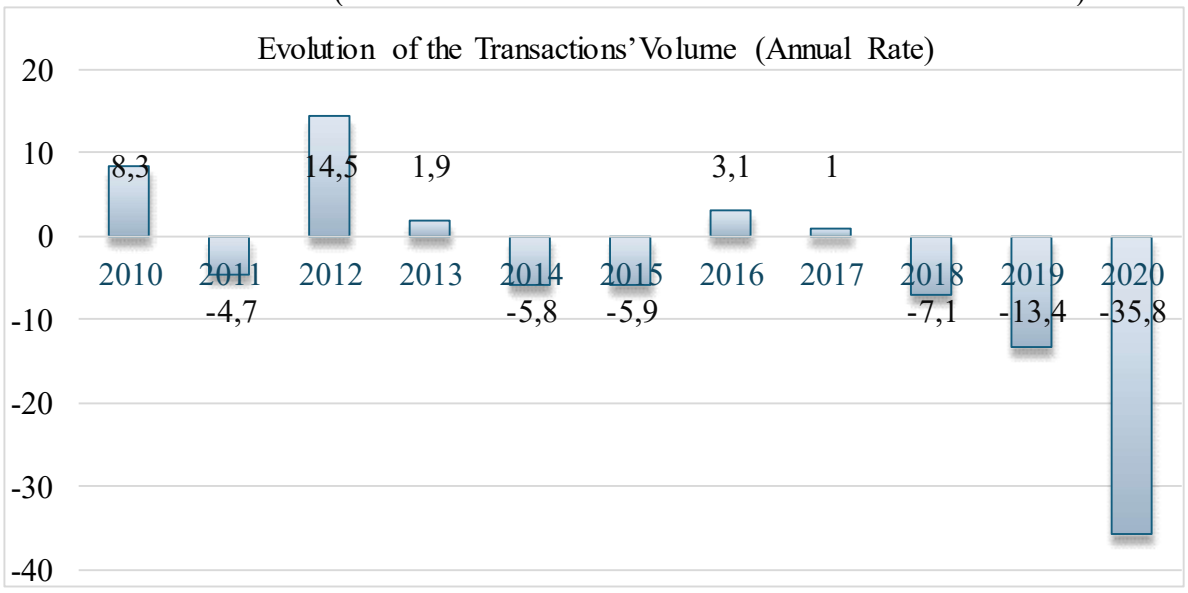
- **A drop in Production which Can Be Explained by the Complexity of the Production Process:** The drop and instability in real estate production in residential buildings is due to several causes. Among these causes, we can cite:
  - Lack of suitable land for construction;

1. Expressed in a current monetary unit which does not consider variations in real value.

- The shortage and increase in prices of construction materials;
- Problems of financing and encouraging investments for both real estate developers and individuals. Law No. 17 of 02/26/1990, being the main legal reference in the matter, frees the sector from the constraints caused by the old Law No. 47 of 07/02/1977, the ban on participation foreign to the capital of real estate companies and the limitation of the practices real estate development to housing without land development;
- The problems of slow, unreviewed and inappropriate administrative authorization procedures.

- **A Complexity of the Production Process which Leads to an Increase in Sales Prices and a Deterioration in Purchasing Power:** These stakeholders have the effect of increasing housing prices and therefore generating a drop in demand above all from low-income customers.
We are here faced with a phenomenon in a loop of cause and effect inducing a crisis in real estate development specialized in the supply of housing: a reduction in production which generates an increase in prices which in turn generates a rate of demand exceeding production.
According to INS statistics, the average annual expenditure per household to have access to housing (whether rental or property) increased from 2010 to 2015 from 635 DT to 1030 DT corresponding to an increase from 24,4 % to 26,6 %. These expenses occupy second place in the ranking of expenses in Tunisia after food. In addition, the deterioration in the purchasing power of the average Tunisian makes access to housing even more difficult.

Figure 4. Evolution of the Transactions' Volume (Annual Rate)
Source: Authors (Estimations of the General Direction of Habitat and PBR)



- **An Increase in prices Affected by the Increase in Land Prices and the Drop in Transaction Flows:** According to the General Directorate of Housing (Direction Générale de habitat du Ministère de equipment), the scarcity of buildable land has contributed to the increase in housing prices. Leading indicators show that in 11 years, from 2008 to 2019, the building land price index

has more than doubled, going from 64,8 points to 131,3 points. The increase in land prices has led to a drop in transaction volumes and a decline in the real estate market (See Figure 5):

- Since 2011, the transaction has decreased from 8,3 % in 2010 to -4,7 % in 2011 marking a 13 % drop in transaction volume;
- In 2012, we noticed a resumption of transactions coinciding with the increase in production;
- Between 2013 and 2015, transactions continued to decline;
- Between 2016 and 2017, there was a slight increase.

So, the formal 'real estate market is showing clear signals of a policy of inaction and crisis' (Pronoia by Reckon, 2020). The sector of private residential real estate development experienced a crisis due to several exogenous and endogenous stakeholders from 2011 onwards, despite the strong demand for housing by households.

- **Diversification of Private Real Estate Development is an Alternative and a Form of Resilience to the Housing Crisis:** In Tunisia, to overcome the crisis, developers have turned to diversifying their offer according to the types of target clientele. According to Aurélien Taburet (2012), several strategies are recommended to deal with the real estate crisis, including public-private partnership, speeding up the revision of urban development plans, restructuring and rationalizing the development of the real estate developer profession. As residential real estate development is affected by a decrease in transactions, it is recommended to look for other targets and markets, recreational property, serviced residences, university residences but also the office, which they never actually left' (Taburet, 2012, p. 45). According to Claude Taffin (1993, p. 153), investment 'for office real estate' is 'like a short-term investment, it has enabled the realization of sums of money large enough to mask the low returns' (Taffin, 1993, p. 153).

4.3.3. Medical Real Estate Development: a Resilient Solution to Cope with the Crisis

In response to the crisis of the residential real estate development, the Tunisian national strategy has been a resilience strategy geared towards finding a different type of clientele in the service and office automation sector. According to Chauvet Mathieu (2018), the economic crisis has not affected the office automation sector as much as the housing sector. Demand for housing supply is lower in the services sector than in the housing sector. Moreover, office construction, which is priced according to market-price profitability, has fewer constraints and risks than housing.

Between 2000 and 2021 in Sousse, several real estate developers invested in buildings for medical and paramedical services. This coincided with the onset of the crisis of residential real estate development. So, did the crisis lead to the boom of medical real estate development? The field survey of real estate developers revealed the relationship between the housing crisis and the move towards the medical sector. It revealed indeed:

- The shift of 52,63 % of the surveyed promoters towards medical real estate development (10 out of a total of 19) did not seem to be conditioned by the housing crisis. From 52,63 % of the type 'company', one among the 10 promoters, 10 % of promoters reject the existence of any relationship between the shift towards medical services and the crisis. This company specializes in medical real estate development and has achieved two previous medical real estate development projects. The latter states that the main reason for its achievements is to provide the medical and paramedical staff with offices situated near the clinic and minimizing the distance of displacement;

- 47,37 % of all surveyed developers (9 out of a total of 19) confirm that investment in medical real estate development is a chosen alternative to deal with the real estate crisis. It should be noted that 90 % of the 47,37 % belong to the category 'real estate development company'. See Figure 6.

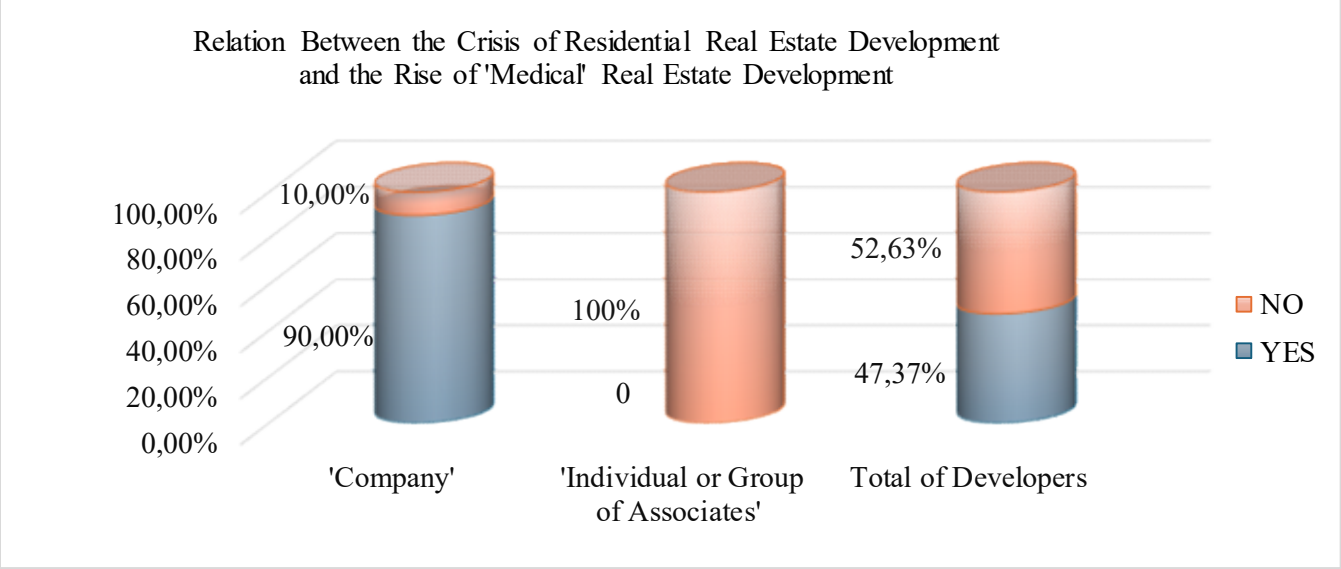
4.3.4. Medical Real Estate Development: Transition from Office Buildings to Medical Buildings

Regarding the direct or gradual shift of promoters towards the medical sector, the survey (considering the 21 buildings and not the 19 promoters) revealed:

- That 80,95 % of the sample of all categories directly orientated its production towards medical office buildings to achieve a greater profit. According to this group, the production of office buildings solely intended for the medical service facilitates the marketing procedure for offices and Supplies more profit. Of these 80,95 %, all surveyed promoters belong to the category 'person or group of persons' (i.e. 9 out of 9), 55,56 % (i.e. 5 out of 9 developers) are part of the medical staff (doctors, pharmacists, etc.). These 55,56 % claim that their primary motivation is to guarantee the rapid sale or rent of the real estate intended for applicants who belong to their network of professional contacts. The objective of this category is to meet the demand and needs expressed by an available and accessible clientele. This includes:
  - ⇒ Provide medical and paramedical buildings of different specialties, to facilitate the process of providing medical services to patients;
  - ⇒ Provide for colleagues in the medical profession buildings that make them benefit from various medical and paramedical services nearby;

Figure 6. Relation Between the Crisis of Residential Real Estate Development and the Rise of 'Medical' Real Estate

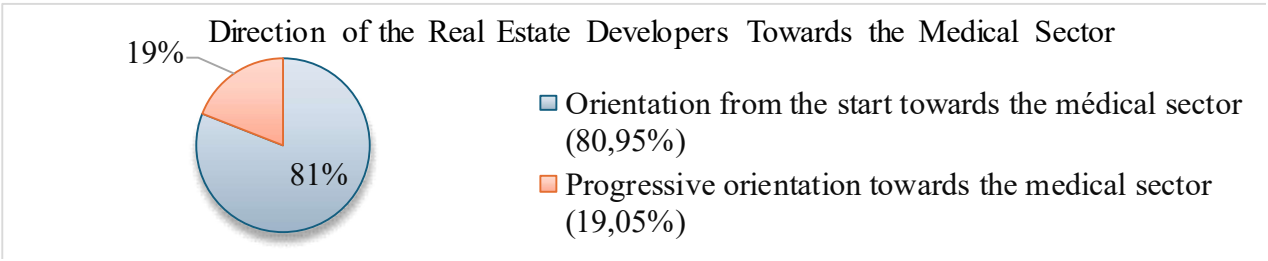
Source: Authors (Semi-directive Quest with Real Estate Developers)



- The survey also revealed that 19,05 %, or 4 buildings out of a total of 21, were not designed for the medical sector from the outset. They are office buildings, built as an alternative to address the housing crisis. The developers of these buildings claim that the reason for the occupation of their

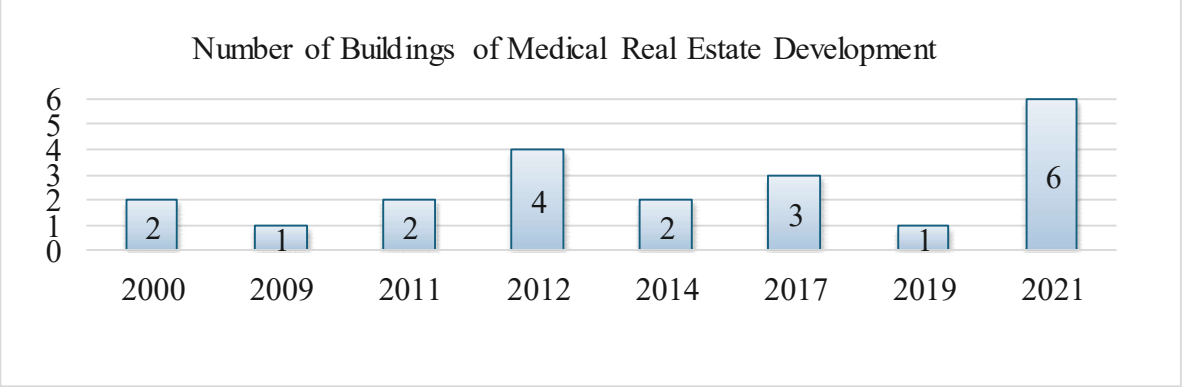
offices by medical or paramedical service providers was the proximity of Farhat Hached Hospital. They add that to their advantage, this proximity, which was not planned, has spontaneously attracted medical service providers (see Figure 7).

Figure 7. Direction of the Real Estate Developers Towards the Medical Sector
Source: Authors (Semi-directive Quest with Real Estate Developers



In addition, the field survey revealed that most of the buildings produced between 2000 and 2011 were previously office buildings. 3 out of 5 promotional buildings for the period 2000 to 2011 were spontaneously and progressively reallocated to buildings for medical service providers (see Figure 8). However, between 2012 and 2021 most of the built buildings (15 out of 16 buildings) were initially intended for medical services. Among the developers surveyed, one real estate company began the construction of a medical building in 2011 and another one in 2012. This shows that 2012 marked the beginning of the process of voluntary production of buildings for medical services. Proponents seem to have assumed that the sanitary (medical and paramedical) sector is highly remunerative, with high demand and desired profitability and profit.

Figure 8. Annual Number of Constructed Buildings by the Medical Real Estate Developers
Source: Authors (Semi-directive quest with real estate developers



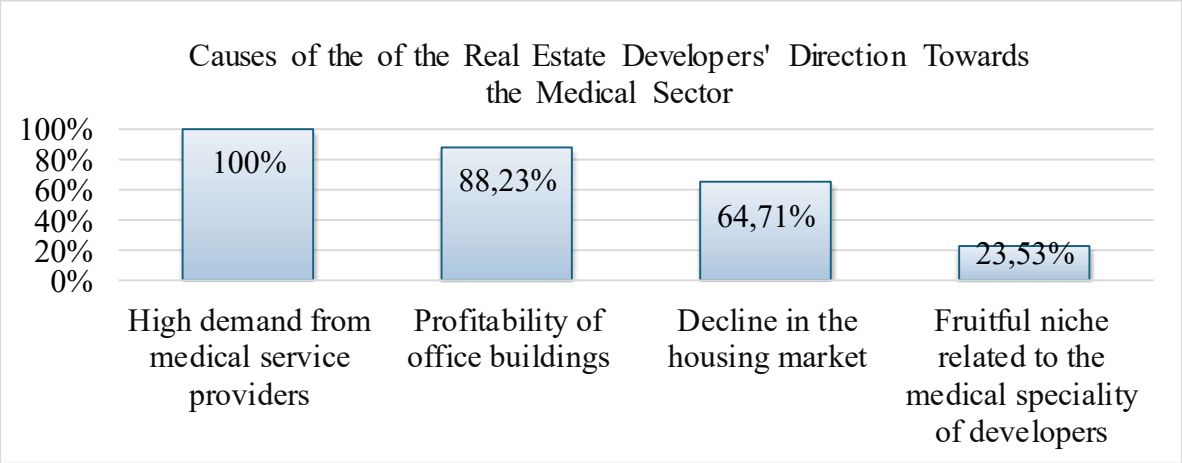
4.3.5. Medical Real Estate Development: the Rise of the Private Medical Sector as an Opportunity for the Real Estate Market

To identify all the causes that enhanced the growth of the medical real estate development, the survey focused more on the group of 84,21 % of developers who have directly invested in the production of buildings for medical services (see Figure 9). The latter produced 80,95 % of the total number of medical buildings. The questionnaire noted that of the 80,95 %:

- All 100 % of the surveyed developers confirm that the choice to invest in medical real estate is justified by 'high demand' from medical service providers;
- 88,23%, i.e. a large majority of this group surveyed believes that the ratio of expenses to earnings is highly advantageous. The second cause is therefore 'the profitability of office buildings;
- 64,71 % believe that it was 'the decline in the housing market' that motivated their decision to invest directly in the medical sector;
- 23,53 % of those surveyed claim to have chosen to invest in this fruitful niche because it is related to their medical profession (doctor, pharmacist, other). 'The professional specialty related to the field of sanitation and medicine' is therefore the fourth cause. These promoters have the advantage of knowing the sector and mastering the needs better than other categories of promoters. They are better able to market their buildings (sales, rental) through their private professional networks.

The first two causes, 'high demand from medical service providers' and 'profitability of service buildings', are in fact related: better profitability implies a thriving market and easy marketing of service buildings. Easy marketing is linked to high demand.

Figure 9. Causes of the Real Estate Developers' Direction Towards the Medical Sector (Sample of 21 Buildings).
Source: Authors (Semi-directive Quest with Real Estate Developers)

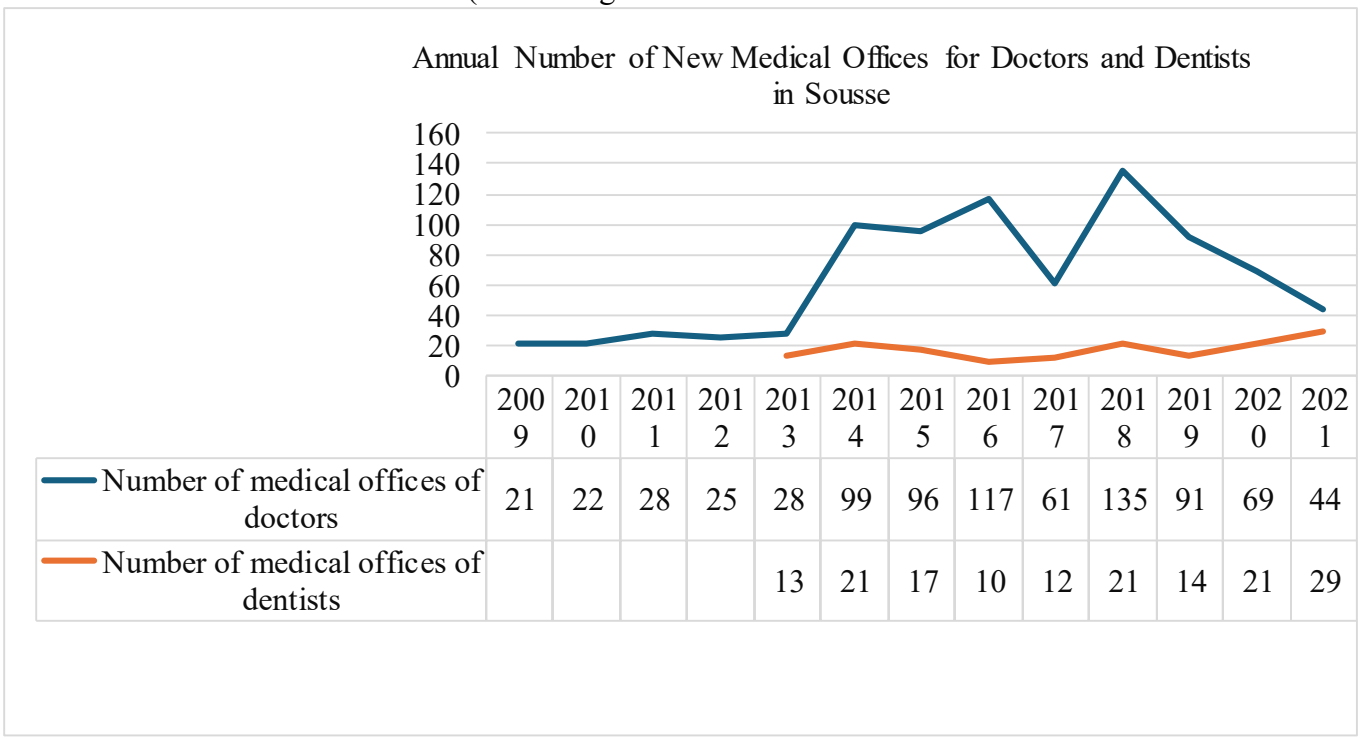


The summary of the questionnaires' results with developers (see Figure 9) highlights the close causal relationship between the development of the private medical sector that generates demand and that of the medical real estate development that provides supply. The following phase supports cause-and-effect relationships, from the rise of the private medical sector to private medical real estate development:

- **Strong Demand Due to the Increase in the Number of Specialists Practicing Independently:** The high demand reflects a growing need justified by the increase in the number of specialists practicing independently in the sanitary, medical and paramedical sectors. According to data from the Sousse medical and dentist regional councils, the number of private medical offices increased significantly from 2013 and 2014, peaking in 2016 and 2018 and decreasing again from 2018 to 2021. However, the number of offices of dentists appears to be evolving in a more stable curve, gradually increasing from 2019 to 2021 (See Figure 10).

- **A spontaneous Shift in Demand from Real Estate Development from Office Buildings to Medical Buildings:** According to data resulting from the semi-directive survey of real estate developers, about 19.05 % of total buildings, or a quarter of the firms for various services and offices end up being occupied at least 70 % by medical and paramedical service providers. The developers surveyed claim that this phenomenon is spontaneous: no marketing effort has been undertaken on their part to direct the market towards medical services. They pretend that the trend comes in response to urgent demand from medical service providers in the strategically and positively located study area: areas A, B, C and D.

Figure 10. Annual Number of New Medical Offices for Doctors and Dentists In Sousse
Source: Authors (Sousse regional councils of medical and dentists



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of medical offices of doctors	21	22	28	25	28	99	96	117	61	135	91	69	44
Number of medical offices of dentists					13	21	17	10	12	21	14	21	29

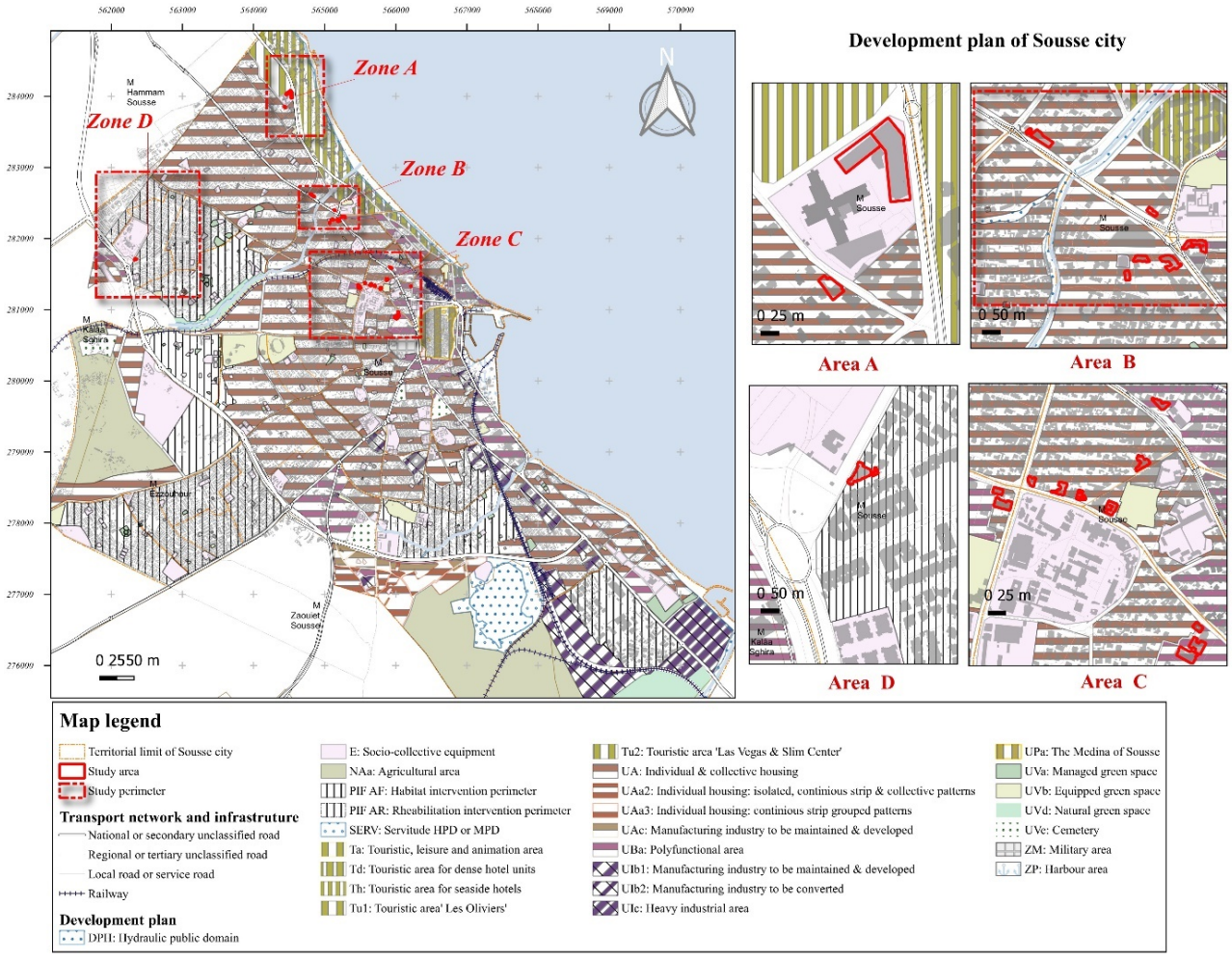
- **Developers' Adaptation to the Trend of the Real Estate Market and the Law of Supply and Demand:** The survey revealed that the high demand would have pushed one of the surveyed companies to focus exclusively on medical real estate development. This strong demand would also have encouraged another company previously specialized in the production of residential buildings to devote part of its production to medical and paramedical services. The manager of this company explains: 'Our first real estate development project was residential. For the second project, given the demand, we wanted to produce an office building for medical and paramedical services. For this purpose, we had acquired land that has a tourist vocation according to the urban development plan (PAU, 2008, see Figure 11). Steps had to be taken to convert the vocation of the building from 'hotel' to 'medical and paramedical building'. Just after we installed the project's billboards on the construction site, we were pleasantly surprised to receive visits from several doctors working in the clinics nearby, asking us to reserve cabinets for them. Most of these doctors work independently in private (External consultations) but also as partners or employees in private clinics. The location

near the clinics allows them to solve the transport constraint. Given the high demand (all offices were sold out, and we continue to receive requests to purchase medical offices). As a result, we decided to devote part of our activities to medical real estate development'.

Among the surveyed developers in the category of 'person or group of persons', a pharmacist explains how the circumstances almost led him spontaneously to carry out the profession of promoter: 'I originally wanted to move my pharmacy, which was in Sousse Bab Bhar area, to a more strategic location to increase the profitability of my activity. A strategic location implies proximity to medical and paramedical services. Moreover, when I was looking for land, several of my colleagues and acquaintances among the doctors were looking for apartments for their offices. That's how I came up with the idea of investing in the construction and promotion of a building in which I would place my pharmacy and consolidate various medical and paramedical services.' So that pharmacist has gone on to become a real estate developer. He invested in medical real estate development near Farhat Hached Hospital.

This choice comes in response to the needs expressed by his network of friends and colleagues in the medical field. This example explains why many medical and paramedical service providers with similar experiences switched to medical promotion. In this case, the medical promotion sector becomes an outlet for the medical profession, which enjoys a double advantage: being close to the applicant, knowing his needs.

Figure 5. Development Plan of Sousse and the Four Study Areas



4.4. Characterization of the Stakeholders of the 'Medical' Real Estate Market

This section focuses on the verification of assumptions 2 and 3 and will allow us to identify the criteria of supply (of medical services, real estate) and demand (of medical services, real estate) regulating the real estate market intended for the private medical sector. The next step is to identify the criteria that determine the territorial attractiveness of the medical real estate Supply and to verify whether accessibility, proximity to public facilities in general and sanitary facilities and services (public, private) in particular, and location in high-class neighborhoods are part of it. To test these assumptions, it is first necessary to characterize the three main stakeholders involved in the 'medical' real estate market: developers, doctors or service providers and patients.

Figure 12. Spread of Tunisian Patients by Provenance in the Study Perimeter

Source: Authors (Semi-directive Quest with Patients)

4.4.1. Characterization of Patients Determining Demand for Sanitary (Medical and Paramedical) Services

4.4.1.1. Tunisian Patients

- **Age and Gender:** The sample is composed of 294 women, 250 men and 112 children (44.82 % women, 38.11 % men and 17.03 % children) with an average age of 40 years (See Table. 2).

- **Spread of the Sample by Provenance:** This classification in the 4 study areas A, B, C and D of the patients by provenance allows us to identify the polarity of the medical services Supplied in our study areas (see Figure 12 and Figure 13).

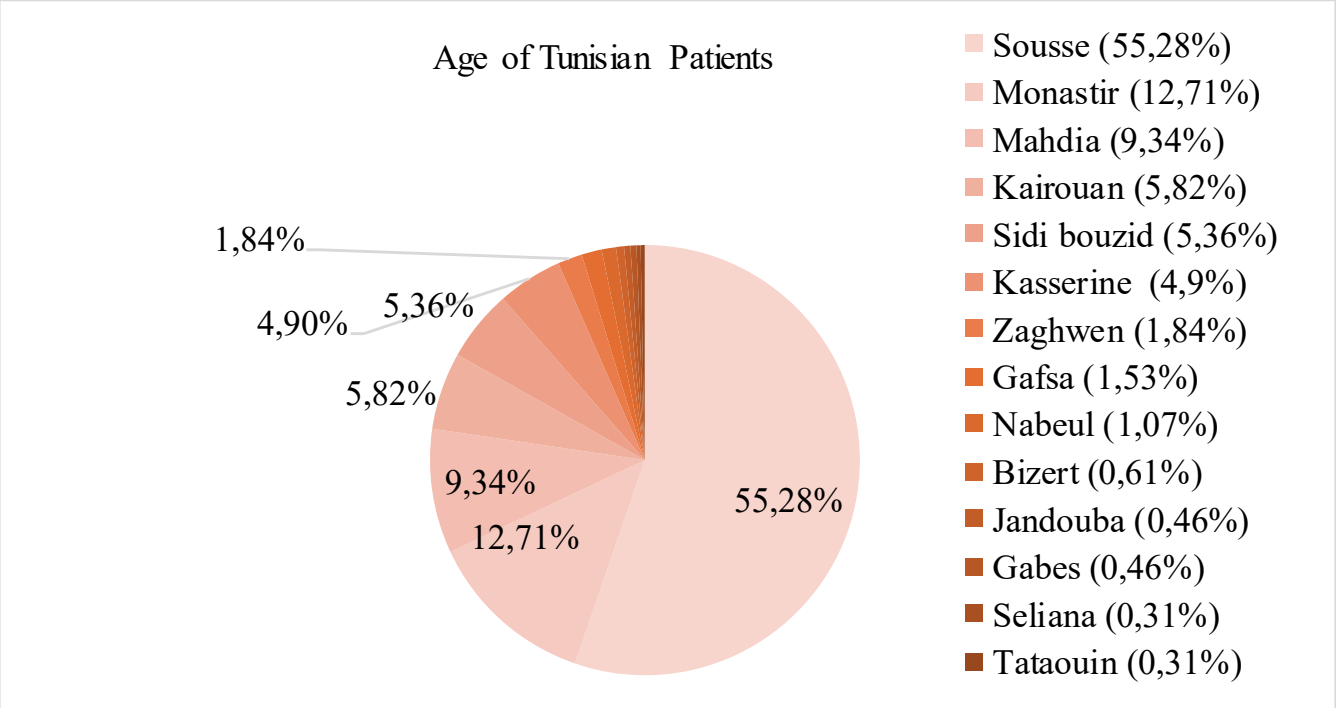


Table. 2. Age of Patients from Tunisia

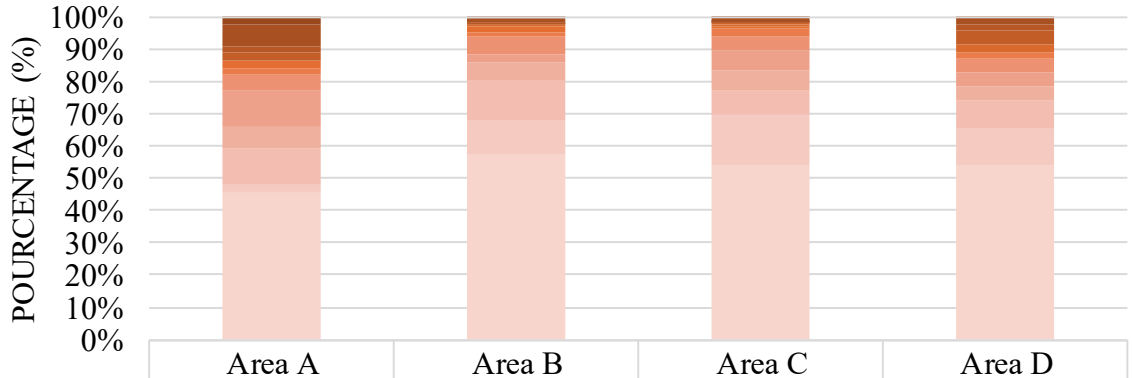
Source: Authors (Semi-directive Quest with Patients)

Age Group	[0-10]	[10-30]	[20-30]	[30-40]	[40-50]	[50-60]	[60-70]	[70-80]	[80-90]	Total
Number				0	12	15	18	15	3	656
Percentage (%)	12,5	8,23	13,57	14,48	10,52	17,68	12,81	6.55	3.66	100

4.4.1.2. Foreign Patients

Foreign patients account for 13,34 % of the sample surveyed (100 out of 756 patients). They are

Figure 6. Spread of Tunisian Patients by Provenance in the Four Areas A, B, C and D



	Area A	Area B	Area C	Area D
Tataouin	2,27%	0,55%	0,26%	0%
Gafsa	6,82%	1,11%	1,30%	2,17%
Gabes	2,27%	0,55%	0,26%	2,17%
Seliana	2,27%	0%	0,26%	4,35%
Jandouba	0%	0,55%	0,52%	0%
Bizert	0%	0,55%	0,52%	2,17%
Nabeul	2,27%	1,66%	0,78%	0%
Zaghwen	2,27%	1,11%	2,08%	2,17%
Kasserine	4,54%	5,52%	4,68%	4,35%
Sidi Bouzid	11,37%	2,76%	5,97%	4,35%
Kairouan	6,82%	5,52%	6,49%	4,35%
Mahdia	11,37%	12,16%	7,53%	8,70%
Monastir	2,27%	11,05%	15,06%	10,87%
Sousse	45,46%	56,91%	54,29%	54,35%

nationals of neighboring countries such as Libya (63 % of the sample of surveyed foreigners), Algeria (31 % of the sample of surveyed foreigners) and Mauritania (6 % of the sample of surveyed foreigners). These patients are distributed across the 4 study areas A, B, C and D as follows:

- Area A: 7 %, or 7 out of 100 patients in a single medical real estate building;
- Area B: 21 %, or 21 out of 100 patients distributed in 5 medical real estate buildings, hence an average of 4,2 % foreign patients per building;

- Area C: 68 %, or 68 patients out of 100 distributed in 9 medical real estate buildings, hence an average of 7,55 % per building;
- Area D: 4 % or 4 out of 100 patients in a single medical real estate building. (See Figure 14-Figure 18).

4.4.1.2.1. Patients from Libya (63%)

- **Age and Gender:** 31,75 % (20 women) and 68,25 % (43 men) are women with an average age of 60 (see Table. 3).
- **Affected Medical Service:** Most people from Libya come with family or friends, usually for a group visit to the same doctor. These patients consult specialists because of chronic conditions that require regular care and annual follow-up, such as:
  - Cardiovascular diseases (32 out of 63 patients);
  - Orthopedic (21 patients) and neurological diseases (7 out of a total of 63);
  - Endocrinal diseases (3 out of 63 patients).
- **Place, Duration and Frequency of Stay:** During their stays, the patients in question and their companions spend their stays in rental houses close to the places of care. This explains the development of seasonal rentals in these areas. Regarding the length of stay, except for 2 out of 63 Libyan patients, who travel from Sousse to Libya, the remaining stay varies from 3 to 10 days (see Table. 4)

Figure 7. Percentage of Foreign Patients by Country in the Study Perimeter
Source: Authors (Semi-directive Quest with Patients)

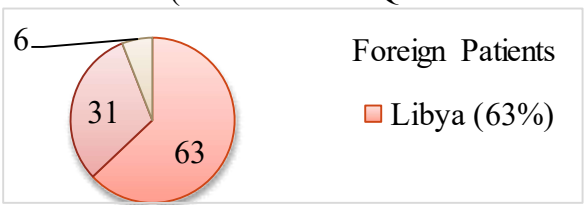


Figure 8. Percentage of Patients by Country in the Study Area A (6,93 % of Total Patients)
Source: Authors (Semi-directive Quest with Patients)

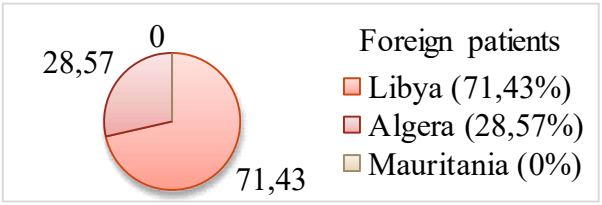


Figure 9. Percentage of Patients by Country in the Study Area B (21,78 % of Total Patients)
Source: Authors (Semi-directive Quest with Patients)

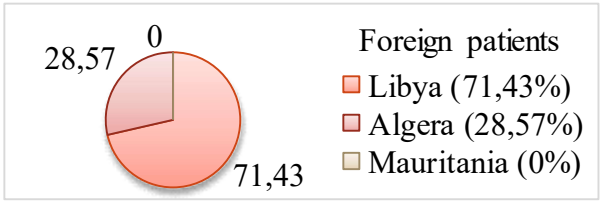


Fig 10. Percentage of Patients by Country in the Study Area C (68 % of Total Patients) Source: Authors (Semi-directive Quest with Patients)

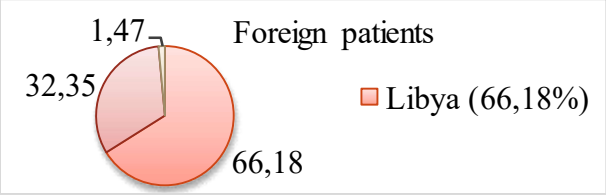


Fig 11. Percentage of Patients by Country in the Study Area D (4,04 % of Total Patients) Source: Authors (Semi-directive Quest with Patients)

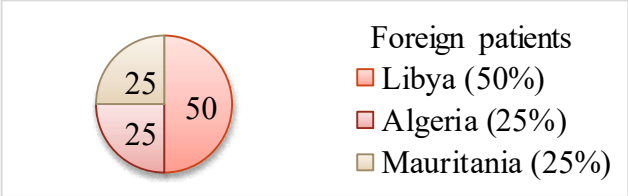


Table. 3. Age of Patients from Libya
Source: Authors (Semi-directive Quest with Patients)

Age Group	[30, 40]	[40, 50]	[50, 60]	[60, 70]	[70, 80]	[80, 90]	Total
Number	0	12	15	18	15	3	63
Percentage (%)	0	19,05	23,81	28,57	23,81	4,76	100

Table. 4. Duration of Stay of the Libyan Patients
Source: Authors (Semi-directive Quest with Patients)

Number of Patients	**Duration of Stay**
5	3 days
19	5 days
34	7 days
4	10 days
2	0 days

4.4.1.2.2. Patients from Algeria (31 %)

- **Age and Gender:** The sample of patients from Algeria consists of 48,39 % women (15 women) and 58,06 % men (16 men) with an average age of 50 years. This makes it a younger population than the category from Libya. The Table 5 shows the part of each age group.
- **Medical Concerned Service:** The most consulted doctors by Algerian patients are:
  - Cardiologists consulted by 16 out of 31 patients;
  - Ophthalmologists consulted by 10 patients on 31;
  - Neurologists consulted by 3 patients on 31;
  - Specialists in digestive surgery consulted by 2 patients on 31.

- **Location and Duration of Stay:** In contrast to patients from Libya, Algerians tend to spend their stays in hotels located near medical buildings, for a variable period of 5 to 10 days (see Table 6 below).

Table. 5. Age of Algerian Patients

Source: Authors (Semi-directive Quest with Patients)

Age Group	[20,30]	[30,40]	[40,50]	[50,60]	[60,70]	[70,80]	[80,90]	Total
Number	4	5	9	5	2	4	2	31
Percentage (%)	12,9	16,13	29,04	16,13	6,45	12,9	6,45	100

Table. 6. Duration of Stay of Algerian Patients

Source: Authors (Semi-directive Quest with Patients)

Number of Patients	**Duration of Stay**
8	5 days
18	7 days
5	10 days

4.4.1.2.3. Patients from Mauritania (6 %)

- **Age and Gender:** The sample of patients from Mauritania consists of 16.67 % women (1 woman) and 83.33 % men (5 men) with an average age of 55 years. (See Table. 7).
- **Medical Concerned Service:** In this category, the most consulted specialist doctors are divided as follows:
  - A cardiologist consulted by 4 patients;
  - An ophthalmologist consulted by 2 patients.
- **Location and Duration of Stay:** Among patients coming from Mauritania, 2 out of 6 spend their one-week stays in the nearby town of Monastir to enjoy the calm and relaxation. Wishing to combine business with pleasure, 4 out of 6 patients spent 5 days in hotels in Sousse near their doctor's office. Among the patients, 2 spent 3 days and refused to indicate their temporary residence. Overall, the stay of Mauritanian nationals varies from 3 to 7 days (see Table. 8).

Table. 7. Age of Patients from Mauritania

Source: Authors (Semi-directive Quest with Patients)

Age Group	[20,30]	[30,40]	[40,50]	[50,60]	[60,70]	[70,80]	Total
Number	1	1	0	1	1	2	6
Percentage (%)	16,67	16,67	0	16,67	16,67	33,32	100

Table. 8. Duration of Stay of Patients from Mauritania

Source: Authors (Semi-directive Quest with Patients)

Number of Patients	Duration of Stay
2	7 days
4	5 days
2	3 days

4.4.2. Characterization of Medical Service Providers Determining Real Estate Demand

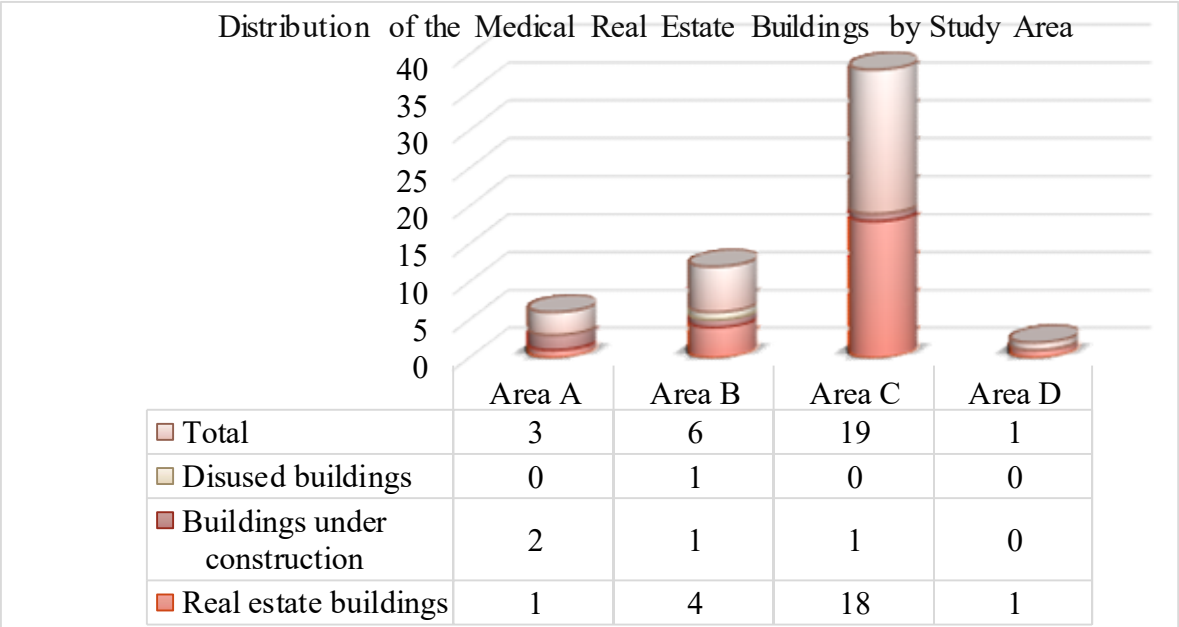
- **Type of Medical Benefit:** The surveyed sample is characterized by a majority of specialized doctors practicing independently (87.04 of the total number of doctors occupying the medical real estate buildings being the subject of our study). It's also worth noting a significant proportion of dentists.
- **Type of Occupation of the Real Estate Development Buildings:** 73,46 % of the surveyed sample (119 out of 162 doctors), stated that they had started their career in the occupied office (within the buildings located in the 4 study areas A, B, C and D). The other 26,54 % (43 out of 162 doctors) have moved from a previous medical office to the one occupied in the study areas. In addition, encompassing the highest number of real estate development buildings (19 buildings), area C attracts a larger share of doctors who have already practiced elsewhere (26,56 %). Area C is followed by area B (encompassing 6 buildings, attracting 15,52 % of doctors who have already practiced elsewhere) and then area A (encompassing 3 buildings and attracting 8,57 % of doctors who have already practiced elsewhere). The condensation of buildings in an area appears to encourage the relocation of service providers to that area. (See Figures 19 and 20).

Table. 9. Sample of Medical Service Providers

Source: Authors (Semi-directive quest with medical service providers)

Medical Service Providers	Doctor		Dentist	Total
	Generalist	Specialist		
Number	6	141	15	162
Percentage (%)	3,70	87,04	9,26	100

Figure 19. Distribution of the Medical Real Estate Buildings by Study Area
Source: Authors (Semi-directive Quest with Medical Service Providers)



	Area A	Area B	Area C	Area D
Total	3	6	19	1
Disused buildings	0	1	0	0
Buildings under construction	2	1	1	0
Real estate buildings	1	4	18	1

4.4.3. Characterization of Real Estate Developers Determining the Real Estate Supply

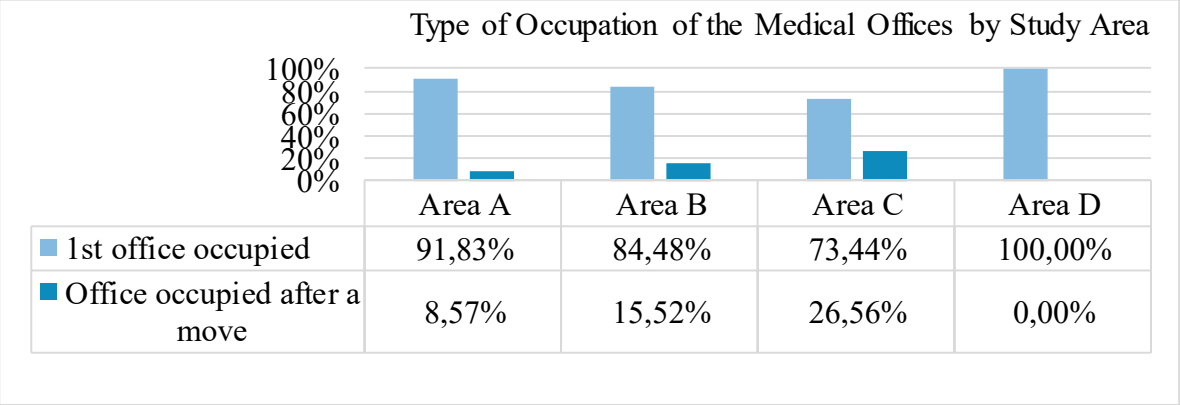
- **Profile of Developers:** The survey indicates that the sample includes two categories of real estate developers dedicated to medical services:
  - The type 'person or group of persons' in number of 9 (i.e. 47,36 % of total respondents). These are individuals or groups of individuals investing in medical real estate projects. Among this

Figure 10. Type of Occupation of the Medical Offices by Study Area
Source: Authors (Semi-directive Quest with Medical Service Providers)

category, there are two profiles:

- ✓ 4 medical professionals (21,05 % of the total respondents): These are developers who have received university training in medicine or a related field (doctors, pharmacists or other) or have only sporadically, as a lucrative investment, practiced the profession of developer;
- ✓ 5 non-medical profiles (26.31 % of total respondents) from businessmen and women.

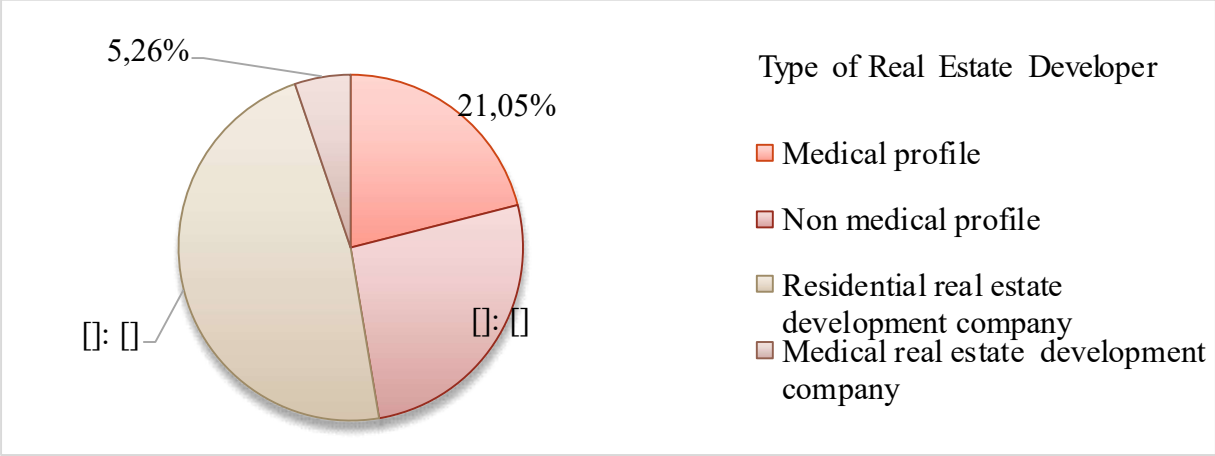
Figure 20. Type of Occupation of the Medical Offices by Study Area
Source: Authors (Semi-directive quest with medical service providers)



	Area A	Area B	Area C	Area D
1st office occupied	91,83%	84,48%	73,44%	100,00%
Office occupied after a move	8,57%	15,52%	26,56%	0,00%

- The type 'real estate development companies' includes 10 members (59,63 % of the total respondents) specialized in real estate development for medical services. See Figure 21

- **Sources of Financing for Developers:** Following articles 18 and 19 of Law 90-17, developers of the type 'real estate company' may benefit from advantages and incentives through the registration related to the constitutive acts of the company and through acts affecting capital increases. The semi-directed interview revealed that depending on the status of the 'company', the capital may vary from 10,000,000 Dinars to 3,600,000,000 Dinars. The company may also benefit from the exemption from payment of taxes up to a maximum of 35 % of the income and is entitled to benefit



from the advantages relating to registration at the fixed rate on the preliminary sale deed.
The financing in the form of a loan is granted as a medium-term cash advance to finance the first expenditure of the operation, particularly the study. Moreover, all the surveyed developers received bank loans to start construction. This advance may include an additional period in the event of construction or marketing delays. For the granting of credit, all Tunisian banks apply the same rules with a maximum of 70 % of the project cost. To this end, all the promoters surveyed state that they have been self-financed. Some developers claim that self-financing comes from the sale of land that enabled the purchase of land in an area deemed more suitable for medical promotion. Other developers, such as those of the 'person or group of persons' type, have built their real estate projects on their own land located in potential areas.

Among the developers, 64,71 % have used their sales or rental advances to finance their real estate projects. These are the developers who commercialized their projects before their completion. The Table. 10. below summarizes the funding sources used by proponents. It should be noted that any real estate developer has an interest in minimizing the capitalization of a real estate transaction to reduce its risk exposure. According to the law 'After signature of the promise of sale by both parties, the buyer may grant advances to the real estate developer against a bank guarantee, or a guarantee issued by an insurance company to the buyer under the conditions laid down in the general specifications of the real estate development'[2].

Table. 10. Sources of Funding for Medical Real Estate Projects

Source: Authors (Semi-directive Quest with the medical service providers)

Type of Financing	Self Financing	Credit	Advance	Land Property	Capital
Type of Developer	Both types	Both types	Both types	Type 'Person or group of persons'	Type 'Society'
	100 %	100 %	66,67 %	52,94 %	47,06 %
			42,86 % for the type 'society' / 23,81% for the types 'Person or group of persons'	11,11 % sell their land to invest in another land intended for medical real estate development / 88,89 % in their land	

Reasons of Stakeholders Regarding the Choice of the Study Areas

4.4.4. Reasons of Tunisian Patients

4.4.4.1. Reasons of Tunisian Patients from the Northern Region

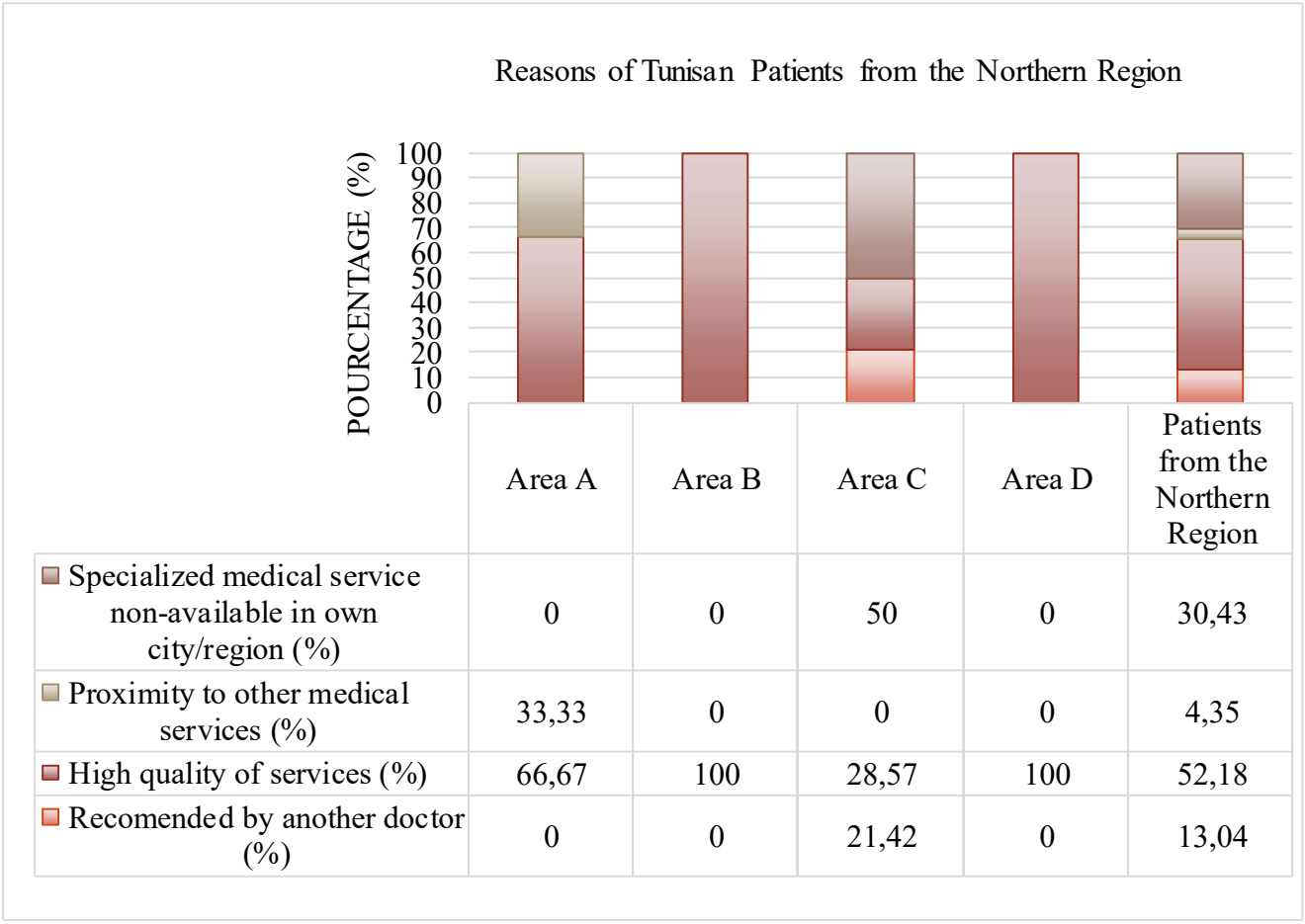
The analysis of the reasons of the influx of Tunisian patients to the medical service providers practicing in the medical real estate building of the study areas, reveals that a majority of 52,18 % of patients from

2. Art. 12 of Law 17 of the 26th of February 1990 (Reviewed by Law n° 62 of 31 July 2009)

the north move to have access to high quality services while 30,43 % to have access to specialized medical services non-available in own city/region (See Table. 11).

Figure 22. Reasons of Tunisian Patients from the Northern Region

Source: Authors (Semi-directive Quest with the Patients)



	Area A	Area B	Area C	Area D	Patients from the Northern Region
Specialized medical service non-available in own city/region (%)	0	0	50	0	30,43
Proximity to other medical services (%)	33,33	0	0	0	4,35
High quality of services (%)	66,67	100	28,57	100	52,18
Recomended by another doctor (%)	0	0	21,42	0	13,04

Regarding the Spread by study area of patients from the Northern region, it appears that in area A, B and D, the majority of patients are motivated by the high quality of medical services. Indeed 66,67 % moved to area A, 100 % to areas B and D for the high quality of the medical service. In Area C, 50 % of the patients are motivated by the presence of specialized medical services non-available in their own city/region (See Figure 22).

Figure 22. Reasons of Tunisian Patients from the Southern Region
Source: Authors (Semi-directive Quest with the Patients)

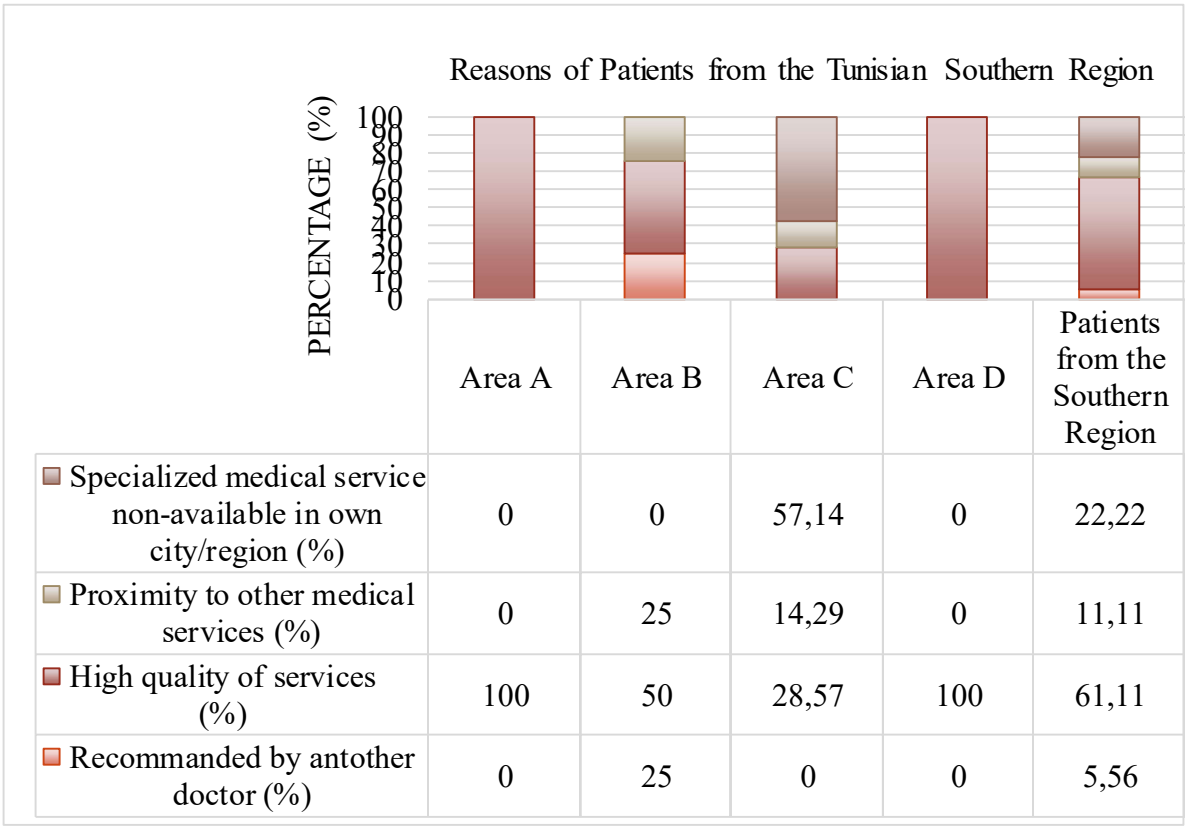


Table. 11. Reasons of the Tunisian Patients from the Northern Region
Source: Authors (Semi-directive Quest with the Patients)

	Percentage by Reasons			
Region	Recommanded by Antother Doctor	High Quality Services	Specialized Medical Service is non-Available in Own City/Region	Proximity to Other Medical Services
Zaghouan	25	25	50	0
Bizerte	25	75	0	0
Nabeul	42,86	42,86	0	14,28
Jendouba	0	33,33	66,67	0
Seliana	0	75	25	0
Northern Region	13,04	52,18	30.43	4,35

4.4.4.2. Reasons of Tunisian Patients from the Southern Region

As for patients from the Southern region, 61,11 % moved mainly to have access to high quality medical and paramedical services. Poor sanitary services in their region, followed by scarce specialist care, appear to be the main reason for patients' displacement of the Southern region to Sousse city (see Table. 12).

Regarding the reasons for using services by study area, 100 % of respondents in Area A, 100 % in Area D, and 50 % in Area B pretend they had moved to have access to high-quality medical services. The choice of area D appears to be motivated by the diversity of available medical specialties (see Figure 23).

Table. 12. Reasons of Tunisian Patients from the Southern Region
Source: Authors (Semi-directive Quest with the Patients)

	Percentage by Reasons			
Region	Recommanded by Antother Doctor	High Quality of Services	Specialized Medical Service is Non-Available in Own City/Region	Proximity to Other Medical Services
Gabès	0	50	0	50
Tataouine	0	66,67	33,33	0
Gafsa	9,09	63,64	27,27	0
Southern Region	5,56	61,11	22,22	11,11

4.4.4.3. Reasons of Tunisian Patients from the Central Region

The resort to the medical services within the medical buildings located in our 4 study areas by patients from the Central Region is motivated by the high quality of the services (31,78 %), the access to various specialized medical services (26,17 %), the proximity of other medical services (23,36 %) and finally by the recommendation from another doctor (18.69 %). See Table. 13.

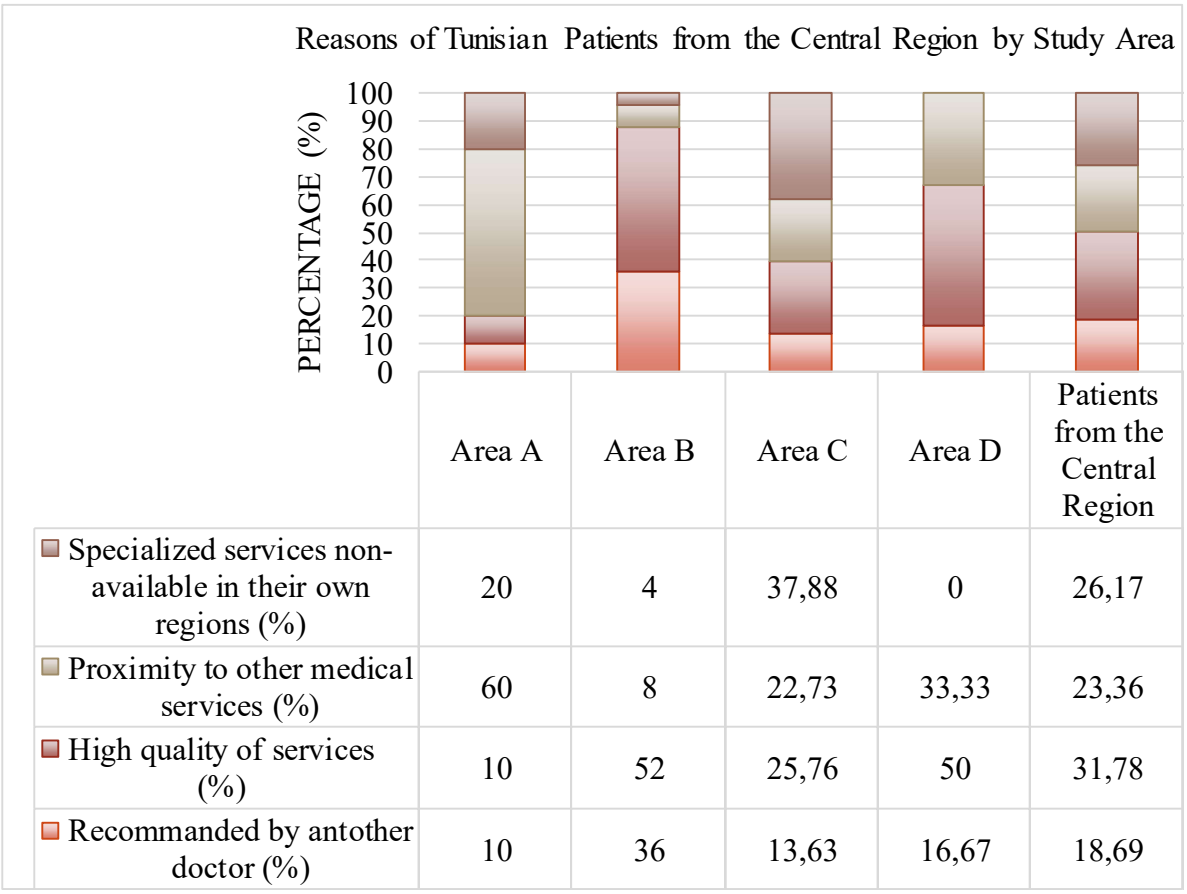
Compared to the study areas, 60 % of patients from the Central region chose to go to Area A because of the proximity of the various medical services. The choice of areas B and D is motivated by the presence of high-quality services (52 % for area B and 50 % for area D). The choice of area C is motivated by the provision of specialized services non-available in their own regions (37.88 %). See Figure 24.

Table. 13. Reasons of Tunisian Patients from the Central Region
Source: Authors (Semi-directive Quest with the Patients)

	Percentage by Reasons			
Region	Recommanded by Antother Doctor	High Quality of Services	Specialized Medical Service is Non-Available in Own City/Region	Proximity to Other Medical Services

Kairouan	23,08	46,15	21,15	9,62
Sidi Bouzid	8,58	25,71	25.71	40
Kasserine	21,88	25	34,37	18,75
Central Region	18,69	31,78	26,17	23,36

Figure 24. Reasons of Tunisian Patients from the Central Region
Source: Authors (Semi-directive Quest with the Patients)



	Area A	Area B	Area C	Area D	Patients from the Central Region
Specialized services non-available in their own regions (%)	20	4	37,88	0	26,17
Proximity to other medical services (%)	60	8	22,73	33,33	23,36
High quality of services (%)	10	52	25,76	50	31,78
Recommanded by antother doctor (%)	10	36	13,63	16,67	18,69

4.4.4.4. Reasons of Tunisian Patients from the Sahel Region

Regarding the reasons for the use of these medical buildings in the study areas by patients from the Sahel region, it appears that 43,05 % of patients are motivated by the accessibility, ease of transport and short duration of the trip, while 32,25 % are motivated by the high quality of the services (see Table. 14).

According to patients in the Sahel, the choice of area A is based on accessibility and ease of transport while the choice of areas B and D is justified by the presence of high-quality services (52 % for area B and 50 % for area D). The reason for choosing Area C is the presence of specialties non-available in the city of origin (50%). See Figure 25.

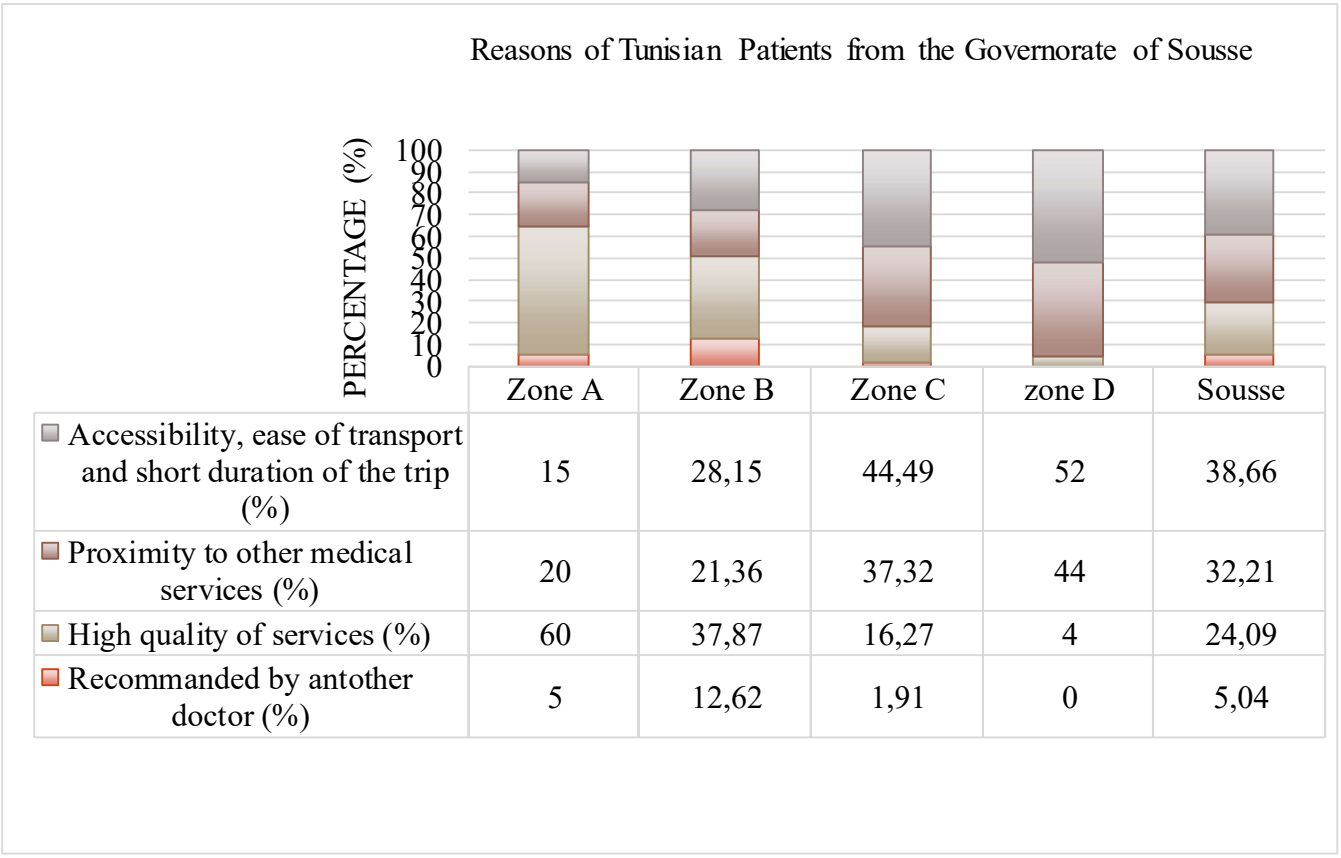
Figure 25. Reasons of Tunisian Patients from the Sahel Region
Source: Authors (Semi-directive Quest with the Patients)

Table. 14. Reasons of Tunisian Patients from the Sahel Region
Source: Authors (Semi-directive survey with the patients)

Region	**Percentage by Reasons**			
	Recommanded by Antother Doctor	High Quality of Services	Accessibility, Ease of Transport and Short Duration of the Trip	Proximity to Other Medical Services
Monastir	5,95	33,33	50	10,72
Mahdia	16,67	28,33	33,33	21,67
Sahel Region	10,42	31,25	43,05	15,28

4.4.4.5. Reasons for Patients from the Governorate Of Sousse

Figure 26. Reasons of Tunisian Patients from the Governorate of Sousse
Source: Authors (Semi-directive Quest with the Patients)



	Zone A	Zone B	Zone C	zone D	Sousse
Accessibility, ease of transport and short duration of the trip (%)	15	28,15	44,49	52	38,66
Proximity to other medical services (%)	20	21,36	37,32	44	32,21
High quality of services (%)	60	37,87	16,27	4	24,09
Recommanded by antother doctor (%)	5	12,62	1,91	0	5,04

Regarding the recourse to Supplied medical services within the buildings of the study perimeter, by patients from Sousse governorate, the analysis revealed 3 main reasons: the first reason is the reduction in the distance between their homes and the medical office (34,18 % of respondents), the second reason is the availability and proximity of other medical services (32,21 % of respondents) and the third reason is the high quality of services (24,09 % of respondents). See Table. 15.

Moreover, the analysis showed that the attractiveness of patients from the Sousse governorate differs slightly by study areas:

- For area A, patients are motivated mainly by the high quality of services (60 % of respondents), to a lesser extent by the proximity of other medical services (20 % of surveys) and by the proximity of their home to the medical office (10 % of surveys).
- For area B, patients are attracted by the high quality of services (37,87 % of respondents) but also by the proximity of their homes to the medical office (24,27 % of surveys) and by the proximity and availability of other medical services (21,36 % of surveys);
- For Area C, patients are mainly motivated by the proximity of other medical services (42,58 % of surveys), the accessibility and proximity of the doctor's office (37,32 % of surveys) and finally by the high quality of the medical services (16,27 %);

- For Area D, patients are driven by the proximity of other medical services (44,36 % of surveys), by the accessibility and ease of transport (28 % of surveys) and finally by the proximity of their homes to the medical offices (24 % of respondents). See Figure 26.

Table. 15. Reasons for Patients from the Governorate of Sousse

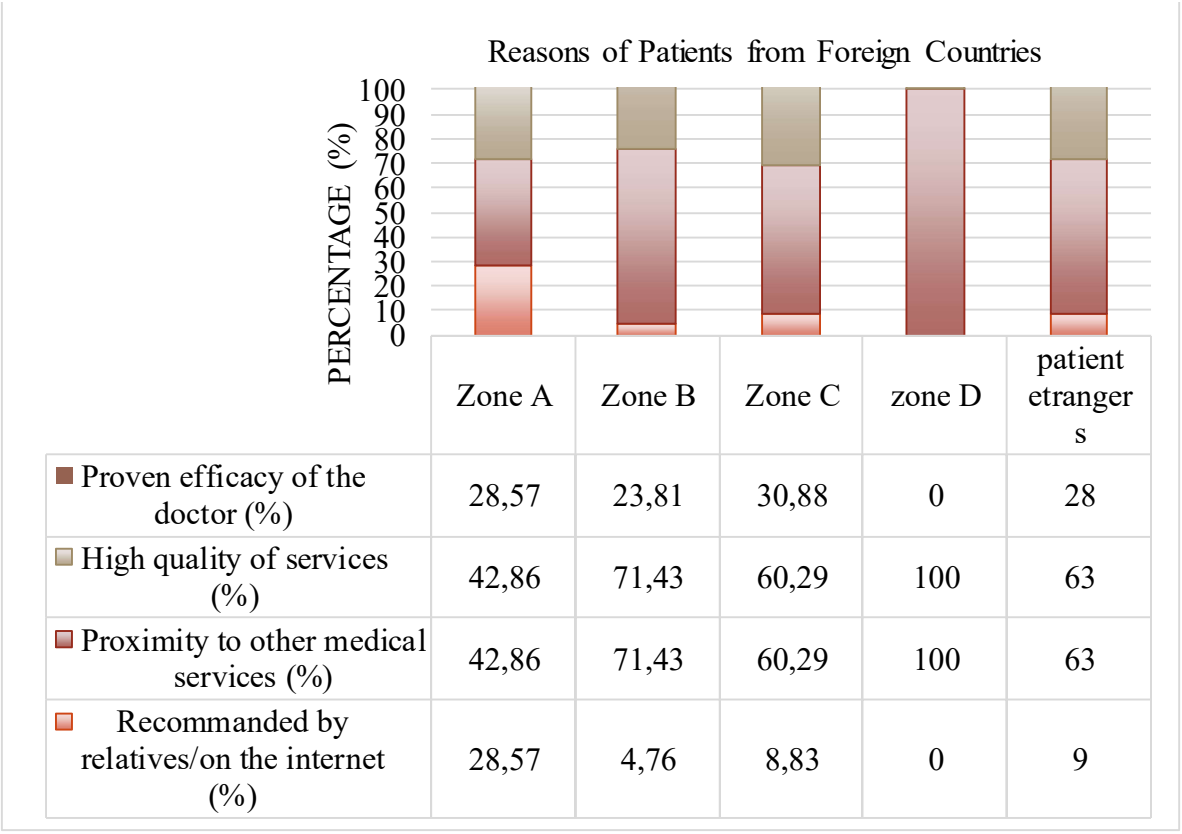
Source: Authors (Semi-directive survey with the patients)

Reasons	Recommanded by Antother Doctor	High Quality of Services	Proximity to Other Medical Services	Accessibility, Ease of Transport and Short Duration of the Trip
Percentage (%)	4,48	24,09	32,21	39,22

4.4.5. Reasons for Patients from Foreign Countries

Figure 27. Reasons of Patients from Foreign Countries

Source: Authors (Semi-directive Quest with the Patients)



	Zone A	Zone B	Zone C	zone D	patient etranger s
Proven efficacy of the doctor (%)	28,57	23,81	30,88	0	28
High quality of services (%)	42,86	71,43	60,29	100	63
Proximity to other medical services (%)	42,86	71,43	60,29	100	63
Recommanded by relatives/on the internet (%)	28,57	4,76	8,83	0	9

The main reason for the use of medical services within the buildings located in the 4 study areas A, B, C and D. Regarding the foreign patients, is the high quality of existing medical services and the proximity to other medical services (63 % of respondents). The second reason is the proven efficacy and competence of the doctors justifying the customers' loyalty (28 % of respondents). The recommendation

through the internet or family referral as proof of the doctor's good reputation is the last reason for attracting patients to these service providers (see Figure 27).

4.4.5.1. Reasons for Patients from Libya

The reasons behind the patients' choice to seek treatment in these buildings are distributed as follows: The majority of patients (71,43 %) prefer to receive treatment in these areas because of the proximity of nearby other medical services. One of the patients alleged at the interview: everything a patient needs is right here on site, whether it's ultrasound imaging, analyzing, buying medication... it's a lot less trouble and saves us time.' The proximity of paramedical services is an undeniable advantage for patients from foreign countries, since they suffer from diseases (cardiovascular, endocrinology) requiring specific equipment (see Table. 16).

Table. 16. Reasons for Patients from Libya to Seek Treatment in these Buildings
Source: Authors (Semi-directive survey with the patients)

Reasons	Proximity to Other Medical Services	High Quality of Services	Proven Efficacy of the Doctor	Recommanded by Relatives/on the Internet
Percentage (%)	71,43	20,63	20,63	7,94

4.4.5.2. Reasons for Patients from Algeria

Concerning the Algerian patients, the reasons behind the he recourse to these medical buildings in the study areas are distributed in order of importance as follows: proximity to medical services, good reputation and competence of doctors and recommendation from a doctor (see Table 17 below).

Table. 17. Reasons for Patients from Algeria to Seek Treatment in these Buildings
Source: Authors (Semi-directive survey with the patients)

Reasons	Recommanded by Relatives/on the Internet	Proximity to Other Medical Services	Proven Efficacy of the Doctor
Percentage (%)	12,5	46,88	40,62

4.4.5.3. Reasons for Patients from Mauritania

Patients from Mauritania choose these 4 study areas for the following reasons:

- 66,67 % (i.e. 4 people) for the proximity to other medical services;
- 33,33 % (i.e. 2 patients) for the high quality of services. See Table. 18.

Table. 18. Reasons for Patients from Mauritania to Seek Treatment in these Buildings
Source: Authors (Semi-directive survey with the patients)

Reasons	Quality of Services	Proximity to Other Medical Services
Percentage (%)	66,67	33,33%

4.4.6. Reasons and Criteria Determining the Choice of an Office by the Medical Staff

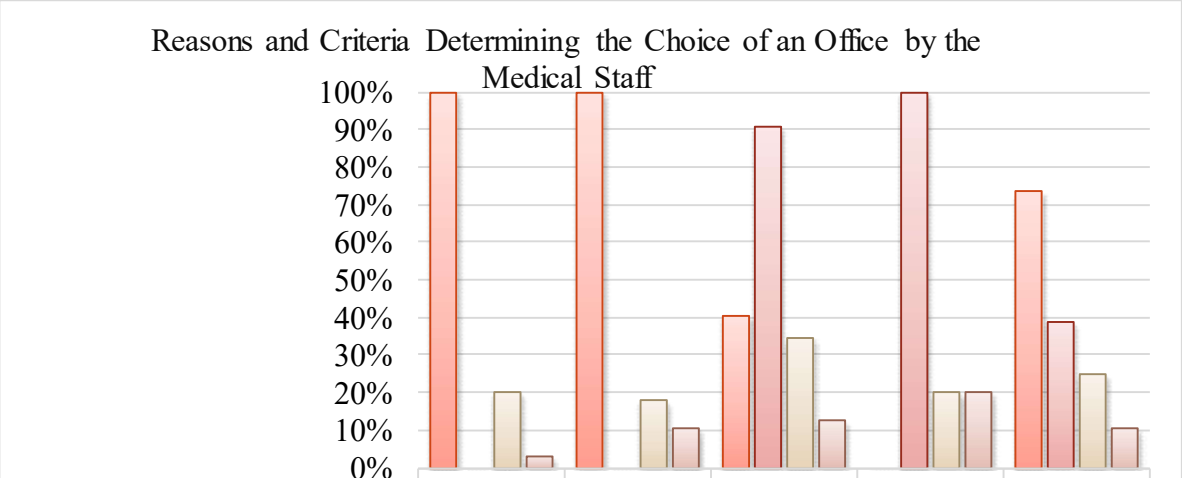
The criteria according to the total surveyed 162 doctors regarding the choice of an office (purchase or rental) are classified as follows (see Figure 28):

- Proximity of the buildings to the clinic (73,46 % of doctors surveyed);
- Proximity to hospitals (38,89 % of doctors surveyed);
- Proximity to other medical and paramedical services (24,69 % of doctors surveyed);
- And the availability of premises (10,49 % of doctors surveyed).

As for doctors who chose to move from a previous one to the study areas (A, B, C et D) and who represent 26,54 % of the total, the criteria are (see Figure 29):

- for 68,96 %, the accessibility of the new premises to potential clients at the local, regional, national and international levels (particularly with a view to encouraging the influx of patients from neighboring countries such as Libya and Algeria);
- for 58,62 %, the proximity to hospitals, clinics and other medical services. According to these doctors, the proximity of their offices to analysis laboratories, imaging centers (etc.) is crucial to the smooth running of their professional activities;
- for 41,38 %, the availability and proximity of high standard facilities and services;
- for 37,93 %, the availability of premises and the move from renting to owning.

Figure 28. Reasons and Criteria Determining the Choice of an Office by the Medical Staff
Source: Authors (Semi-directive survey with the medical service providers)



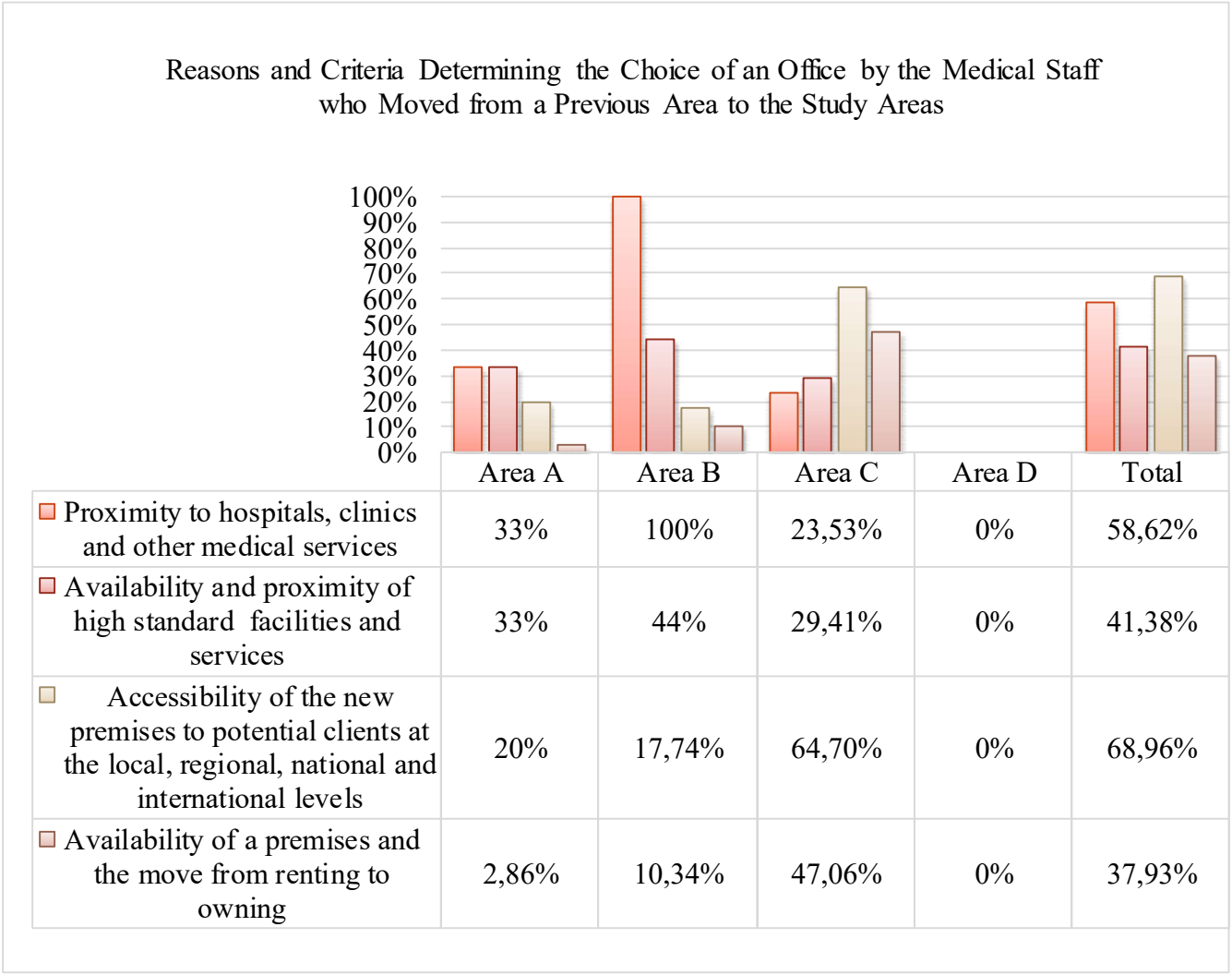
	Area A	Area B	Area C	Area D	Total
Proximity to clinics	100%	100%	40,63%	0%	73,46%
Proximity to hospitals	0%	0%	90,63%	100%	38,89%
Proximité to other medical services	20%	17,74%	34,38%	20%	24,69%
Availability of a permises	2,86%	10,34%	12,50%	20%	10,49%

4.4.6.1. Proximity of the Private Medical Offices to the Hospital Infrastructure

The proximity of the private medical offices to the public and private hospital infrastructures (hospitals, clinics) is the most important criterion when choosing an office to provide medical or paramedical services. This explains the increase in demand for these areas located close to public or private sanitary infrastructures (hospitals, clinics) and, by the same token, the growth in private real estate development activities specializing in office- buildings to meet this demand. As the majority of offices subsequently became used for medical and paramedical services, real estate development specialized in commercial-office building orientated some areas their activities towards medical real estate development to adapt to the supply and demand market (see Figure 28 and Figure 29).

Figure 29. Reasons and Criteria Determining the Choice of an Office by the Medical Staff who Moved to Areas A, B, C and D

Source: Authors (Semi-directive survey with the medical service providers)



	Area A	Area B	Area C	Area D	Total
Proximity to hospitals, clinics and other medical services	33%	100%	23,53%	0%	58,62%
Availability and proximity of high standard facilities and services	33%	44%	29,41%	0%	41,38%
Accessibility of the new premises to potential clients at the local, regional, national and international levels	20%	17,74%	64,70%	0%	68,96%
Availability of a premises and the move from renting to owning	2,86%	10,34%	47,06%	0%	37,93%

4.4.6.2. Proximity to Sousse Faculty of Medicine

The field survey revealed that the implementation of the medical offices close to Sousse Faculty of Medicine is a criterion as important as the proximity to a hospital or clinic. This is particularly clear in:

- Area C: area C is located next to the Faculty of Medicine. 37,5 % of doctors practicing in area C studied in Sousse, 66,66 % of them at Sousse Faculty of Medicine. During the interview, these doctors confirmed that the location of their practices was justified by their attachment to the faculty where they did all their university studies;
- Area B: 67,27 % of doctors practicing in this area stated that they had studied in Sousse. 53,35 % of these doctors pretend that the location of their offices is motivated by the proximity to Sousse Faculty of Medicine (see Figure 28-32).

The Faculty of Medicine is a factor in increasing demand for medical practices and a criterion of territorial attractiveness. This finding is confirmed by an analysis of the distance between the 4 study areas (A, B, C and D) and Sousse Faculty of Medicine, which varies between 0.2 km and 4.6 km (see Table 19 and Figs. 30-34).

1.1.1.1. Proximity to Other Medical and Paramedical Services

The fact of centralizing in the same place a wide range of complementary sanitary, medical and paramedical services, improves and facilitates access to the various types of healthcare, thereby increasing the influx of visitors. This proximity also benefits the networking of medical service providers, as it develops cooperation, increasing the customer base and facilitating professional practice. The presence of pre-existing sanitary facilities is likely to enable the medical service providers to benefit from an existing clientele.

Table. 19. Distance between the Study Area and Sousse Faculty of Medicine (Km)
Source: Source: The authors (Google Maps background)

Study Area	**A**	**B**	**C**	**D**
Distance between the Study Area and Sousse Faculty of Medicine (Km)	4,1≤D≤4,6	1.7≤D ≤2.2 (25 Min at walking distance)	0,2≤ D ≤1,8	D = 4,5

Figure 12. Distribution of Surveyed Doctors Working in Area A According to the Location of their University of Medical Studies
Source: Authors (Semi-directive survey with the medical service providers

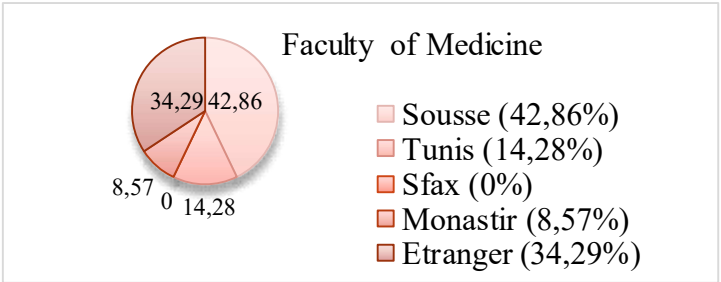


Figure 13. Distribution of Surveyed Doctors Working in Area B According to the Location of their University of Medical **Studies**
Source: Authors (Semi-directive survey with the Medical Service Providers

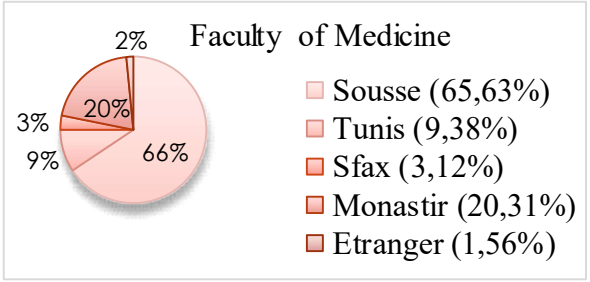


Figure 14. Distribution of Surveyed Doctors Working in Area C According to the Location of their University of Medical Studies
Source: Authors (Semi-directive survey with the medical service providers

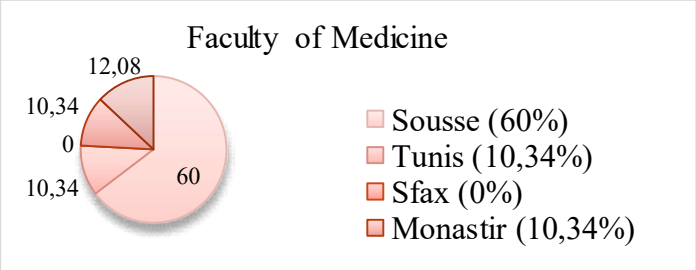


Figure 15. Distribution of Surveyed Doctors Working In Area D According to the Location of their University of Medical Studies
Source: Authors (Semi-directive survey with the medical service providers

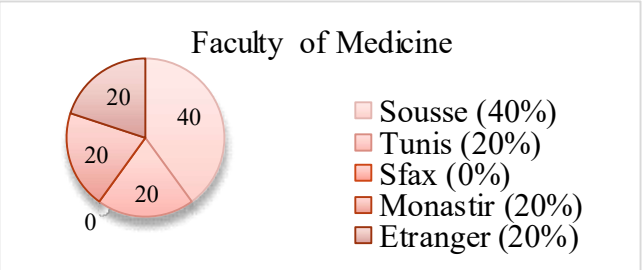


Table. 20. Percentage of Doctors Surveyed Working Nearby Medical Public Facilities
Source: Authors (Semi-directive survey with the medical service providers)

Outside Tunisian Territory	**Inside Tunisian Territory**					
	Sousse			Monastir	Greater Tunis	Mahdia	Bizerte
14.52	77.15 %			9,67	3,22	0,81	0,81
	Farhat Hached Hospital	Sahloul Hospital	Sousse Faculty of Medicine				

1.1.1.2. Professional Practice Dictates Proximity

This choice seems to be dictated by professional practice. The majority of doctors surveyed, i.e. 76,54 %, alternate between working in public and private, in hospital, university hospital facilities and clinics (public practice), and outpatient facilities (private independent practice). 77,15 % of these 76,54 % of doctors surveyed work in public hospitals in Sousse. As a result, locating their practices close to the public or private hospitals where they work is an inevitable and strategic choice. This proximity enables them to facilitate their professional practice while maintaining and renewing their clientele.

Accessibility to the private clinic as a major territorial landmark with an international, national or inter-regional reach is decisive for the career of a medical services provider.

The survey revealed that the proximity of a building to a public or private hospital is a criterion shared by developers and doctors (see Figure 28 and Figure 29). The majority of the doctors surveyed, i.e. 77,15 % work alternately in the hospitals of Farhat Hached, Sahloul and in Sousse Faculty of Medicine (see Table 20). Similarly, for developers, proximity to hospitals and clinics is one of the most important criteria determining the choice of location for real estate projects intended for the medical service (see Table 21).

1.1.1.3. Proximity Dictated by the Interdependence of the Medical and Paramedical Sectors

This choice also seems to be dictated by the interdependence of the various services specializing in the medical and paramedical sectors. According to one of the doctors surveyed (among those who have chosen to relocate for this reason), proximity to hospitals, private clinics and other medical and paramedical services is in demand by doctors and patients alike. This can make things easier for them when they need to undergo major medical procedures in a nearby hospital or clinic that is easily accessible and better equipped.

1.1.1.4. Diversity of Services, Local Economy, Agglomeration Economy

Doctors who have moved from their office located in one area to another represent 26,54 % of the total and are those who generally have a better grasp of the criteria likely to attract the most customers. Indeed, 27,59 % of the sample of doctors who had moved abandoned buildings with a predominant medical vocation to set up in new buildings:

- Totally dedicated to medical services (100 %): they are looking for a local or (proximity) economy;
- Located close to other neighborhoods where services and particularly medical services are centralized: they are looking for agglomeration economy.

1.1.1.5. Property Standing, Neighborhood and economy of Scale

48,27 % of the samples moved to higher-status buildings, while 24,14 % chose more luxurious medical and office buildings. Similarly, a significant proportion of doctors moved from deprived neighborhoods to higher-status areas with a better living environment and better accessibility. The increase in the number of visitors to these locations increases the likelihood of being visited: they are looking for economies of scale.

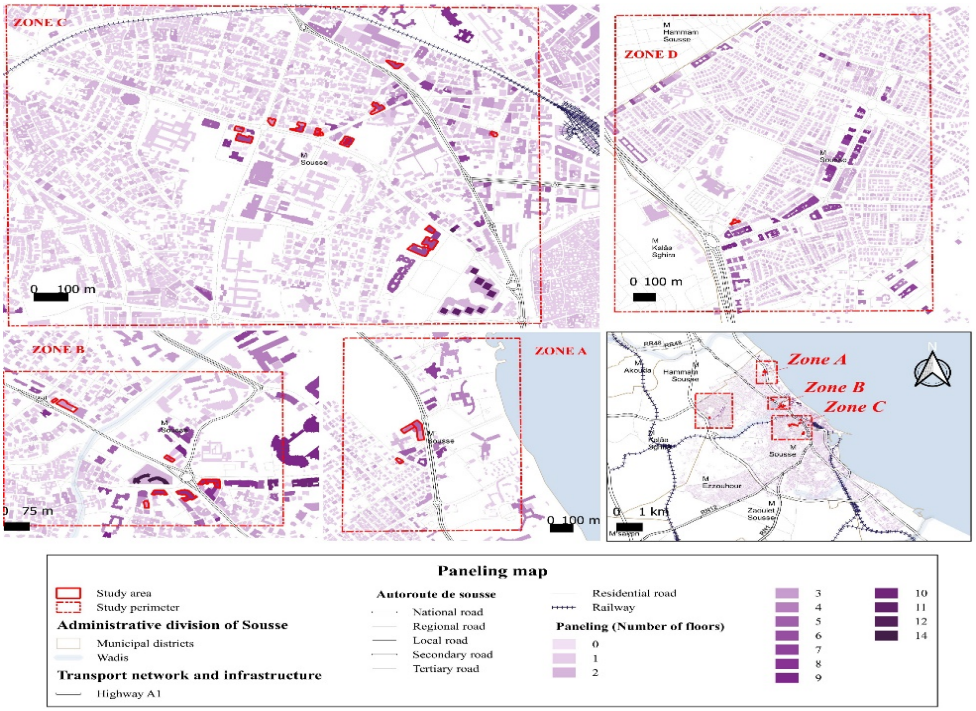
Table. 21. Criteria for the Implementation of Medical Real Estate Building
Source: Authors (Semi-directive survey with the real estate developers)

Criteria	Proximity and Short Distance between the Office and the Hospital Infrastructure	Accessibility of the Area
Percentage (%)	68,42	52,38
Number of developers	12	11

1.1.2. Criteria for the Implementation of Medical Real Estate Building

The survey of real estate developers showed that the implementation of the medical real estate buildings is primarily determined by their proximity to a public or private hospital infrastructure (clinic, hospital) and by the accessibility of the buildings notably to the service providers. See Table. 21 below.

Figure 35. Paneling of the Medical Real Estate Developments Buildings in the Study Areas A, B, C, D. Source: Authors (Google-Maps background)



1.1.2.1. Proximity to Hospital and to 'University Hospital's Infrastructures

The superposition of collected data (from Google-Maps, Sousse Regional Medical Council and the field survey), confirmed that the implementation of the private medical offices and buildings in Sousse city has taken place in the vicinity of public or private sanitary infrastructures. Figure 38 and Figure 39 show that the medical services are closely located to Sahloul and Farhat Hached University Hospitals (CHU) in Areas C and D, and to the Olivier and Essalem private clinics in Areas A and B.

1.1.2.2. Accessibility and Implementation on Major Roads and Around Nodes

Cartography and on-site observation have proven that all the medical real estate development buildings are located either on a primary, secondary road, or at crossroads. Among the implementation criteria, the sitting of buildings along a major road seems to be of major importance to take advantage of better traffic flow and accessibility (see Figs. 35-39). This importance was verified through a case study of a building. This latter did not face onto a main road and ended up being abandoned by medical service providers (see Figure 41). Today, 50 % of the offices have been abandoned. 24,29 % of the building's offices are occupied by medical service providers: one office occupied by a doctor specialized in surgery, one office occupied by a doctor specialized in dental surgery and a dental prosthesis laboratory. According to Chauvet Mathieu (2018), the implementation of buildings in areas served by major roads is essential for real estate development specializing in commercial- office buildings

Figure 17. Implementation of Area A
Source: Authors (Google-Maps background)

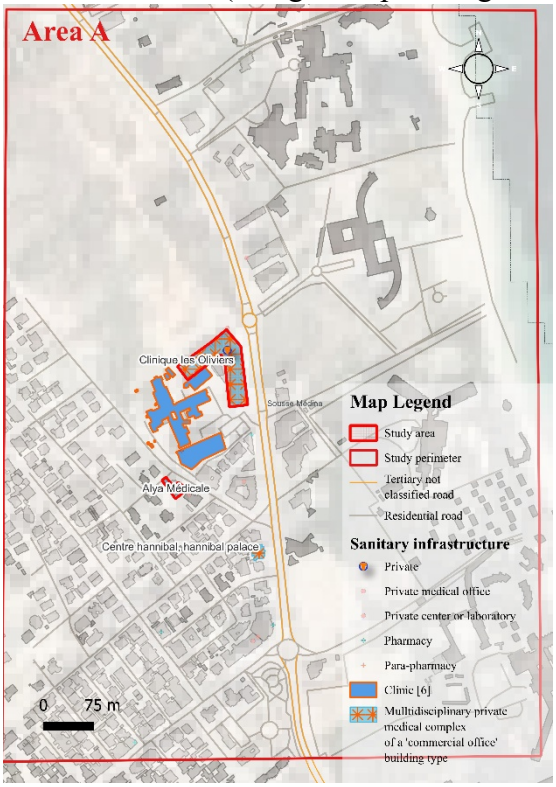
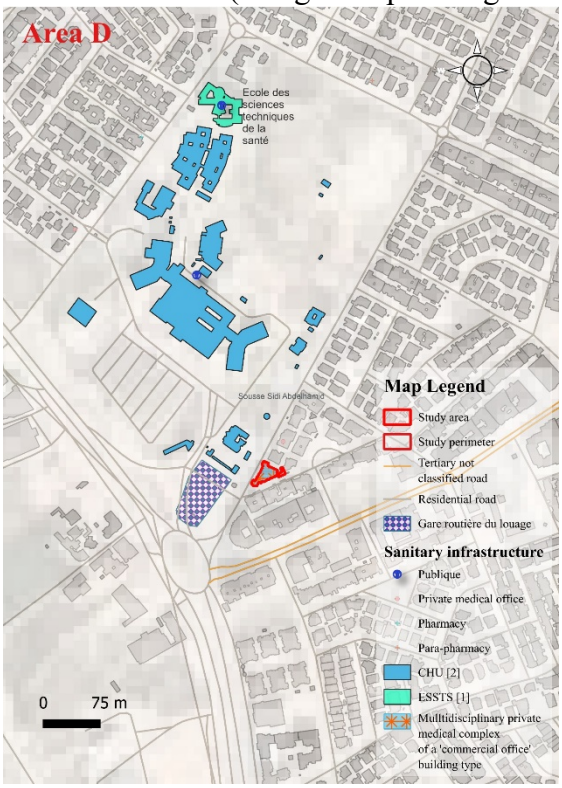


Figure 16. Implementation of Area D
Source: Authors (Google-Maps background)



Despite its proximity to the Farhat Hached hospital (previously validated as a determinant criterion for both doctors and developers), the location of one of the buildings on a deteriorated tertiary road that does not have a large flow of traffic affects its accessibility and attractiveness to patients (see Figure 33 and Figure 35). It should be remembered that good accessibility is a decisive criterion for both 78,92 % of promoters and 68,69 % of doctors who have moved (see Figure 40 and Figure 42).

Ultimately, the summary of the analysis seems to confirm that the supply and choice of developers regarding the implementation of medical buildings are dictated by the demand of medical service providers.

Table. 22. Criteria for the Implementation of Medical Real Estate Building
Source: Authors (Semi-directive survey with the real estate developers)

Criteria	Proximity and Short Distance between the Office and the Hospital Infrastructure	Accessibility of the Area
Percentage (%)	68,42	52,38
Number of developers	12	11

Table. 23. Criteria for the Implementation of Medical Real Estate Building
Source: Authors (Semi-directive survey with the real estate developers)

Criteria	Proximity and Short Distance between the Office and the Hospital Infrastructure	Accessibility of the Area
Percentage (%)	68,42	52,38
Number of developers	12	11

Table. 24. Criteria for the Implementation of Medical Real Estate Building
Source: Authors (Semi-directive survey with the real estate developers)

Criteria	Proximity and Short Distance between the Office and the Hospital Infrastructure	Accessibility of the Area
Percentage (%)	68,42	52,38
Number of developers	12	11

Figure 18. Implementation of Area **C**
Source: Authors (Google-Maps background)

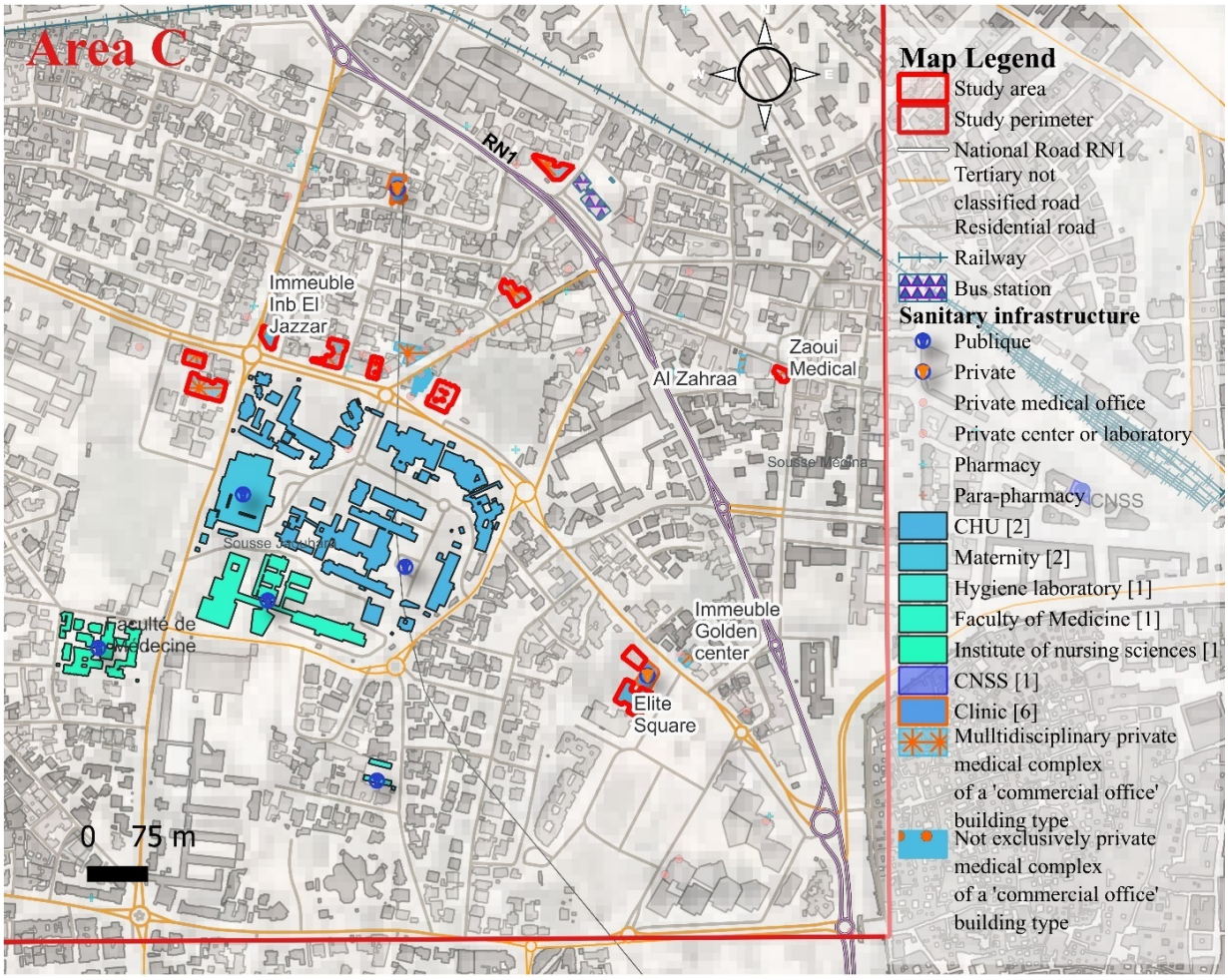


Figure 19. Condition of the Street and Quality of the Urban Environment
Source: Authors

Figure 20. Disused Offices in the Medical Real Estate Development Building
Source: Authors

Figure 21. Facade of the Medical Real Estate Development Building
Source: Authors

2. Conclusion

To analyze the reasons behind the boom in private medical real estate development in Sousse city and understand its logic, we set out to verify the following three assumptions:

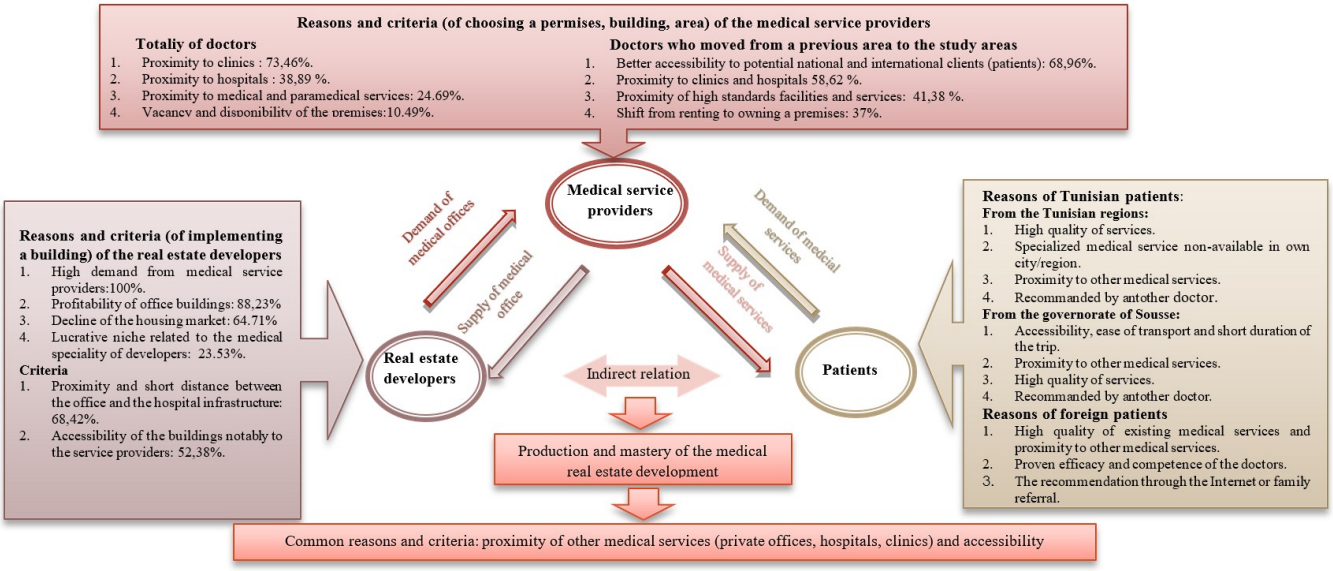
- Assumption 1: The crisis in residential real estate development and/or the increase in demand in the private medical sector have directed developers towards the medical and paramedical sector and services. This amounts to verifying whether the prosperity of the medical real estate market is the result of the prosperity of the private medical sector or whether it is the adoption of a resilience strategy to cope with the unfavorable conditions of the residential real estate development crisis. If failing validation, this assumption will allow us to identify what other stakeholders have encouraged the growth of medical real estate development.

Assumption 1 has been verified and validated: the analysis showed that medical real estate development is an activity that began to develop with the privatization of the medical sector. Initially, it was commercial office buildings that began to be occupied mainly by sanitary service providers. The growing demand for doctors' offices prompted developers to turn their attention to the production of buildings for medical and paramedical services. The gradual shift by these developers, motivated by greater profitability, implicitly confirms the existence of a crisis regarding residential real estate development. It became an alternative way to cope with the 2000s crisis. The effects of this crisis were:

- Indirect, so that the focus on the medical sector was spontaneous through the preponderance of medical and paramedical services in commercial office buildings;
- Direct, so that the promoters' shift towards the medical sector was intentional, strategic and planned from the outset.

Figure 22. Medical Real Estate Development and The Market's Supply and Demand Cycle

Source : Authors



Furthermore, the growth of the private medical sector was not solely conditioned by the crisis but also by the growth of the private medical sector. The developers who have decided to invest directly in medical real estate development (representing 52.63 % of the total surveyed developers) had in fact seized the opportunity Supplied by the boom in the medical sector. A large proportion of these were specialists in the sanitary sector. This choice was motivated by the insurance of a guaranteed profit from a booming sector.

However, we can confirm that in both cases, we can say that it was a spontaneous or voluntary strategy of resilience to cope with the crisis of residential real estate development, caused by cyclical uncertainties. The field survey revealed that the majority of projects were carried out from 2011 onwards (corresponding to the Tunisian revolution and marking the start of the economic crisis), with two peaks in 2012 and 2021. The first peak, in 2012, will mark the start of specialization of the real estate development companies in the production of buildings exclusively intended for medical and paramedical services. The second peak in 2021 corresponds to the construction of 4 buildings in the same year.

- Assumption 2: Private real estate production intended for sanitary (medical and paramedical) activities or services in a specific area did not result from voluntary planning policy but from the real estate supply and demand market, controlled by precise criteria of territorial attractiveness.

Assumption 2 was verified and validated: The liberalization of the real estate development and the sanitary sectors has paved the way for the development of two service supply markets: sanitary services and real estate development services. Any market is conditioned by two interdependent parameters: the supply of and demand for services. Like any market, the medical real estate development market obeys the logic of supply and demand and depends mainly on these three stakeholders: the developer, the medical service provider and the patient. The supply of service from the medical real estate developer must meet the needs of the medical service providers, who in turn must meet the needs of the patients. The choice of a given territory for the implementation of buildings must meet the needs of the developer, the service provider and the patient.

The Supply is conditioned by the demand, which in turn is conditioned by the quality, profitability and competitiveness of the supply. The influence of a market is therefore temporally, spatially and even territorially dependent. The liberalisation of the sanitary sector has provided an opportunity for the development of the real estate market. The synergy between these two sectors has generated a spontaneous urban dynamic that is transforming the area, often bypassing conventional and regulatory planning tools. It has anticipated the introduction of a new logic of spatial composition that simultaneously obeys the requirements of fluctuating markets in the supply and demand of sanitary and real esatet development services. This sometimes unconventional cohort of stakeholders competes with the initiatives of the state, at the risk of compromising its policies on spatial control and development. Its interventions revolve around the service Supply, which is ultimately presented in its entirety as a territorial Supply. The supply is determined by the attractiveness of the area (see Figure 43). The analysis has shown that the rise of private medical real estate development in a specific area obeys the territorial attractiveness criteria defined by the three main stakeholders. This attractiveness means profitability for the service provider and quality for the service seeker.

- Assumption 3: Accessibility, proximity to all public and private facilities and services, proximity to sanitary facilities and location in high-class neighborhoods represent determining criteria of territorial attractiveness for the development of private medical real estate development.

Assumption 3 was also verified and validated: The survey enabled us to identify the criteria that determine regional attractiveness and the choice of a region to meet the needs of each of the three stakeholders. The most recurrent criteria (mentioned by the 3 stakeholders) among all is the proximity to other facilities and services, particularly sanitary medical and paramedical services; a university (Faculty of Medicine) or a public or private hospital structure: (hospital or clinic). It should be noted that some Tunisian clinics have a national or even international reputation due to the high quality of their services. Accessibility and implementation on a main road network are important criteria for promoters, sanitary (medical and paramedical) service providers and patients alike. Finally, it is worth mentioning that this work has only focused on the three main stakeholders defining supply and demand trends in the medical real estate development market, which generates a spontaneous, autonomous mode of urban composition referred to as ‘medical urbanism’. However, other stakeholders such as land, and property speculators and formal or informal mediators could play an important role in the supply and demand market and represent an interesting subject for further research.

Similarly, this study has identified another potential theme that deserves to be developed in the future: the impact of real estate development on territorial planning, focusing on the link between medical real estate and tourism developments. In Sousse, several hotels now include paramedic facilities. Similarly, several private sanitary (medical and paramedical) services are banking on leisure activities and international tourism to develop both the tourism and medical sectors. It would therefore be appropriate to study this phenomenon, especially as it is becoming necessary to take sanitary risks into account in tourism and other sectors. Completed study will enable us to broaden our research to explore the ins and outs of private medical real estate development and shed more light on the link between territorial attractiveness and its role as a trigger for spatial restructuring.

Bibliography

1. Ben Jelloul, M. (1999). (PDF) Bizerte : Promotion foncière et immobilière et croissance de l'espace urbanisé. FSHS Tunis. https://www.researchgate.net/publication/341100099_Bizerte_Promotion_fonciere_et_immobilière_et_croissance_de_l'espace_urbanise
2. Chauvet, M. (2018). La création de valeur des promoteurs immobiliers : Proposition d'une méthodologie d'évaluation. [Mémoire, université Bordeaux]. https://www.fimeco-walter-allinial.com/sites/fimeco/files/memoire_m_chauvet.pdf
3. Citron, P. (2016). Sous la direction de Sylvie FOL Présentée et soutenue publiquement par Paul CITRON le 9 décembre 2016. Université Paris 1 Panthéon-Sorbonne.
4. Dhahbi, T. (2015). Espace et santé dans le Grand Tunis (الصحة و مجال في إقليم تونس الكبرى) [thèse de doctorat]. Université Tunis, 255 p.
5. Dhaher, N. (2020). Santé et urbanisme : Quels liens et quelle place pour la santé dans la ville tunisienne ? Villes en Parallèle, 49(1), 276-289. https://doi.org/10.3406/vilpa.2020.1818
6. Ftini, S. (2022). Promotion médicale privée dans la ville de Sousse. Vers un urbanisme médical. [Mémoire de Master sous la direction de Leila Ayoub]. Université de Carthage.
7. Gaumer, B. (2016). Regard d'observateurs médicaux sur l'état sanitaire de la Tunisie sous le Protectorat français (1881–1956). Canadian Bulletin of Medical History. https://doi.org/10.3138/cbmh.22.1.83
8. Lopez, A., & Bréchat, P.-H. (2016 a). La planification en santé : Un essai à transformer. Les Tribunes de la sante, 50(1), 93-111.
9. Mériaudeau, R. (1988). Pierre Merlin, Françoise Choay. —Dictionnaire de l'urbanisme et de l'aménagement. Revue de Géographie Alpine, 76(3), 304-305.
10. Ingrid, N-C. (2009, mars). Retour sur la crise immobilière américaine. IEIF - réflexions immobilières, volume (n° 48), 1-8. https://ingridnc.files.wordpress.com/2012/12/crise-us.pdf
11. Oueslati, N. H. (2004). Centres urbains secondaires dans le district de Tunis : Organisation, fonctionnement et évolution. Université de Tunis, Faculté des sciences humaines et sociales de Tunis. https://books.google.tn/books?id=Ihi2AAAAIAAJ
12. Pringle, J., & Saba, S. (1981). Langage médical et politique locale : L'urbanisme et la santé à Marseille à la fin de l'Ancien Régime. Annales du Midi, 93(154), 397-417. https://doi.org/10.3406/anami.1981.1973
13. Rouland, B., Jarraya, M., & Fleuret, S. (2016). Du tourisme médical à la mise en place d'un espace de soins transnational. L'exemple des patients libyens à Sfax (Tunisie). Revue francophone sur la santé et les territoires. https://doi.org/10.4000/rfst.651
14. Sorbe, S. (2009). Éclatement de la bulle sur le marché immobilier américain. Economie prevision, 188(2), 115-122.
15. Taburet, A. (2012). Promoteurs immobiliers privés et problématiques de développement durable urbain [Géographie. Université du Maine]. https://theses.hal.science/tel-00763235v1
16. Taffin, C. (1993). Crise immobilier une leçon à retenir. Revue d'économie financière : La crise financière de l'immobilier, volume (hors-série), 151-164. https://www.persee.fr/docAsPDF/ecofi_0987-3368_1993_hos_3_1_1930.pdf
17. Documents officiels:
18. Direction des équipements & DRCPS. (2021). La carte sanitaire 2021.

19. JORT (journal officiel de la république Tunisie). Article 1 de la Loi n° 17 du 26 Février 1990, du journal officiel de la république tunisienne
20. Ministère de l'Équipement, de l'Aménagement du Territoire et du Développement Durable. (2014, octobre). Pour une nouvelle stratégie de l'habitat Logement locatif et logement produit par la promotion privée Aspects juridiques et fiscaux Diagnostics et recommandations. http://www.mehat.gov.tn/fileadmin/user_upload/LogementLocatifEt LogementProduitParLaPromotionPriveeAspectsJuridiquesEtFiscauxNBelaidOct2014.pdf
21. PBR Rating. (2020, Février), Analyse sectorielle Secteur de la promotion immobilière en Tunisie. https://www.pbrrating.com/assets/docs/ES-Promotion-Immobiliere-PBR-Rating.pdf
Plan d'aménagement urbain de la ville de Sousse (2008).