

Evaluating the Relationship Between Public Health Investments and the Financial Development of the Private Health Insurance Market in the Context of Marketing Signals

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Abstract: This study focuses on the impact of the increase in public, private, and university healthcare institutions within the new system shaped by the Health Transformation Program, which began in 2003, on the demand for private insurance. It aims to determine how the expansion of healthcare infrastructure affects consumer demand for insurance products and premium production. Using correlation and regression analyses, the relationships between the ratio of private health insurance policyholders to the population, real changes in insurance premiums, and the number of healthcare institutions (public, private, and university) were examined. According to the analysis results, the increase in the number of public healthcare institutions has a statistically significant effect on the real increase in private health insurance premium revenues. Contrary to traditional expectations, it shows that the increase in state investments is the fundamental dynamic driving the growth of the private health insurance market in Turkey. This unexpected result highlights the public capacity of health investments to act as a catalyst for increasing access to services and marketing initiatives in the field of health financing.

Keywords: Health Transformation Program, Public Investments, Private Health Insurance, Marketing Signal

Jel Codes: I13, G22, H5

Kamu Sağlık Yatırımları ile Özel Sağlık Sigorta Piyasası Finansal Gelişimi Arasındaki İlişkinin Pazarlama Sinyali Bağlamında Değerlendirilmesi

Öz: Bu çalışma, 2003 yılında başlatılan Sağlık Dönüşüm Programı ile şekillenen yeni sistem içerisinde kamu, özel ve üniversite sağlık kuruluşlarındaki artışın özel sigorta talebine olan etkisine odaklanmaktadır. Sağlık altyapısının genişlemesinin tüketicilerin sigorta ürünlerine olan talebini ve prim üretimini nasıl etkilediğini belirlemeyi amaçlamaktadır. Korelasyon ve regresyon analizleri kullanılarak, özel sağlık sigortası poliçesi sahiplerinin nüfusa oranı, sigorta primlerindeki reel değişimler ve sağlık kuruluşu sayıları (kamu, özel ve üniversite) arasındaki ilişkiler incelenmiştir. Analiz sonuçlarına göre, kamu sağlık kuruluşu sayısındaki artışın özel sağlık sigortası prim gelirlerindeki reel artış üzerinde istatistiksel olarak anlamlı bir etkisi vardır. Geleneksel beklentilerin aksine, devlet yatırımlarındaki artışın Türkiye'de özel sağlık sigortası pazarının büyümesini yönlendiren temel dinamik olduğunu göstermektedir. Bu beklenmedik sonuç, kamu kapasitesindeki sağlık yatırımlarının sağlık finansmanı alanında hizmetlere erişimi ve pazarlama girişimlerini artırmada bir katalizör görevi görebileceğini vurgulamaktadır.

Anahtar Kelimeler: Sağlıkta Dönüşüm Programı, Kamu Yatırımları, Özel Sağlık Sigortası, Pazarlama Sinyali

Jel Kodları: I13, G22, H5

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1. Introduction

In Türkiye, where the financing and sustainability of healthcare services have gained global importance in recent years, the market model is a typical example, with the combined financing of private health insurance, which offers public coverage through General Health Insurance and Social Security Insurance (SSK), and the growing market model (Balkanlı, 2017; Paz, 2019). The expansion of healthcare infrastructure, initiated with the Health Transformation Program in 2003, has further complicated the interaction between these two systems. While the number of private healthcare providers increases, public services fall short, or individuals demanding higher standards of care turn to private insurance. This has shifted the burden of public sector palliative care to private insurance, increasing the burden on social insurance (Zengin, 2015).

The increase in the number of hospitals in the public sector not only facilitates patients' access to health services but also increases individuals' confidence in the health system. However, the impact of this expansion on demand in the private health insurance market is gaining importance in terms of marketing. Accordingly, it is necessary to examine a statistical relationship between quantitative developments in the public sphere and the increase in private insurance premium incomes.

In the context of the expansion and marketing of insurance systems in Türkiye, it is imperative to adopt a more strategic approach to service delivery infrastructure. Strategic positioning of insurance products in line with fiscal policies within healthcare has the potential to influence consumer preferences in service marketing, thereby contributing to increased system sustainability.

This research evaluates the impact of quantitative increases in healthcare delivery infrastructure, particularly public investments, on private insurance revenues from a marketing perspective. The study tests the hypothesis that public investments play a catalytic role, indirectly stimulating private insurance demand through increased perceptions of service quality and trust in the system. The findings have the potential to offer strategic implications for policymakers and industry stakeholders.

2. Conceptual Framework and Literature Review

In this section, the theoretical framework of the research is examined under 3 headings. First, it is signal theory, which we consider as a predictor from a marketing perspective in terms of the relationship of research variables. The existing literature is discussed in terms of the impact of the expansion of public hospitals on the private insurance market after the signal theory. Finally, the financing structure of the Turkish health system was evaluated.

2.1. Fundamentals of Signal Theory in Marketing and Consumer Behavior

Even if individuals do not have sufficient information about the organic structure and quality of the good or service, it is to facilitate persuasion with the decrease in information asymmetry and the increase in trust messages about quality, thanks to indicators such as certificates, advertisements, packaging, price, brand, etc. Therefore, the information contained in the messages sent by the institutions that hold the information power with a number of tools reduces the asymmetry between the receiver and the receiver of the message.

While the presence of positive signals increases attractiveness, negative signals can be disadvantageous (Choudhury, 2024, p. 98, 99). The impact of these signals is based on reliability and evidence; consumers respond positively to signals consistent with quality and authenticity (Wang et al., 2024, p. 113).

Within the scope of this study, the government's significant investments in healthcare infrastructure and efforts to improve service standards are interpreted as strong signals for the market and citizens. While not directly advertising, these signals suggest that the government is prioritizing health and that the overall quality and reliability of the system are being enhanced. Consequently, it can be hypothesized that increased trust in the

system and the perception of improvement in quality are motivational factors that encourage individuals to seek more comprehensive healthcare services and consider ancillary products such as private insurance.

In the research, investments in public health infrastructure and quality improvement efforts with developed service standards can be interpreted as strong signals for health entrepreneurs, health market and health customers. Although not intended for advertising, for example, these signals are signs that health is being prioritized in the public sphere and that the overall quality and reliability of the system is enhancing. As a result, it can be assumed that increased trust in the system and the perception of improved quality are motivational factors that encourage individuals to seek more comprehensive healthcare services and consider additional products such as private insurance.

2.2. The Effects of Public Hospital Expansion on the Private Health Insurance Market: A Dual Perspective in the Literature

The existing literature bases the impact of the expansion of public hospitals on the demand for private health insurance on different mechanisms and outcomes. But the common discourse surrounding interaction focuses mainly on two dominant mechanisms: substitution and complementarity effects (Colombo & Tapay, 2004; Okura, 2015, Besley & Coate 1991, Cutler & Gruber, 1996, Orhaner, 2017, Hou & Zhang, 2017).

In the literature, it is seen that there are two main approaches to the impact of strengthening public health services on the private insurance market.

Firstly, public healthcare organizations attract high-risk individuals, making private insurance institutions' customers a healthier and more cost-effective audience, leading to lower premiums (Liu, Lei & Zhu, 2021). For example, the expansion of Medicaid in the United States is similar to this situation (Sen & DeLeire, 2018, p. 1878). Secondly, the increase in the quality and quantity of public services causes a decrease in the need and value of private insurance for patients, resulting in a "substitution effect" that reduces demand (Okura, 2015, p. 36).

An alternative view is that no substitution relationship persists between public and private systems. Rather, these systems function in a complementary capacity. For example, in China, public insurance does not negatively impact the spread of demand for private insurance, suggesting that private insurance is positioned as a complementary option (Hou & Zhang, 2017, p. 360). Similarly, in Australia, a significant portion of privately insured individuals still use public hospitals, suggesting that no direct substitution has emerged between the two systems (Sullivan et al., 2002, p. 8; Walker et al., 2004, p. 5). These findings support the view that insurance-based services are being replaced by net segments that provide additional coverage to provide a complementary function, driven by expectations of much higher income or quality (Srivastava & Zhao, 2008).

2.3. Transformation and Financing Structure of the Turkish Health System

In Türkiye's health financing system, the Social Security Institution (SGK) provided universal coverage, while private health insurance companies offered optional dual coverage. This structure was expanded in 2003 with the Health Transformation Program and the General Health Insurance Law in 2008, allowing agreements between the Social Security Institution and private hospitals. However, in 2013, the Social Security Institution significantly impacted system dynamics by raising the ceiling for the differential fee that patients could receive from private hospitals to 200% (Ministry of Health, 2013).

In 2012, a key product emerged that increased demand for the private sector to cover these high differential fees offered for Supplementary Health Insurance (TSS). Individuals are voluntarily purchasing insurance to provide additional protection against disease risks (Balkanlı, 2017, p. 18; Avşar, 2010, p. 53), while the SGK has agreed to special additional costs at institutions (Balkanlı 2007, p. 47). Indeed, the rise in private insurance premiums has been reported as a significant factor in the Insurance Association of Türkiye (Başoğlu, 2021).

With these developments, the private sector is entering a field with competitive advantages such as shorter waiting times, freedom to choose a physician, advanced technology, and more comfortable services (Balkanlı, 2007, p. 44). The substantial increase in the number of policyholders and premium production after 2020 also demonstrates the growth potential of this market.

The central argument of this study is that there is a complementarity relationship, rather than a substitution relationship, between public and private systems (Hou & Zhang, 2017, p. 370). As posited by Arrow in 1963, the quality of the health system in general, and the concomitant enhancement of public confidence in its management following the implementation of such investments, results in an increase in the demand for greater protection against uncertainty with regard to health services (Arrow, 1963, p. 941). Consumers regard the public system, in which they place their trust, as a foundation, and regard private insurance as a complementary service that "enhances" this foundation.

The hypothesis of this study can thus be formulated as follows: The positive perception of quality that arises from public health investments has a beneficial effect on demand for private health insurance, a complementary product.

3. Method

The research examines the effect of increased institutional capacity (including public, private, and university health institutions) in the provision of health services on the private health insurance rate/population ratio (demand) from a service marketing perspective and its relationship with the actual change in private health insurance revenues.

The research uses causal comparative and correlational designs, which are fundamental characteristics of quantitative research methodologies. In this context, the purpose, importance, problem, and subject of the research, its limitations, assumptions, model, hypotheses, data set, sources, and statistical analysis are discussed.

3.1. Purpose of the Study

The main purpose of this study is to analyze the effect of the increase in the number of public, private and university health institutions in Turkey on the demand for private health insurance (penetration rate) and premium income from the perspective of service marketing. The study aims to analyze this relationship and determine which corporate structures contribute more to the financial growth of the insurance system.

3.2. Importance of the Research

The main finding of the research is that public healthcare investments in Türkiye, rather than shrinking the private insurance market, serve as a catalyst that indirectly creates demand. This finding offers the following important implications for the literature and practice:

Academic Contribution: Provides an original analysis that combines service marketing and political economy perspectives on public-private healthcare relations.

For Policymakers: Public investments demonstrate that social services are not uniform over time and that the private sector can be a stimulator of economic growth.

For the Insurance Sector: Marketing strategies have generated general confidence in the quality of the public system, and growth beyond expectations will benefit from this resulting expansion.

3.3. Research Problem and Issue

This research is based on an analysis of the impact of the increase in the number of healthcare institutions (public, private, university) in Türkiye on private health insurance demand (number of policyholders) and premium revenues from a service marketing perspective. The fundamental question is which institutions within the expansion structure of the insurance sector will contribute to further growth and the development of strategic policy recommendations for the marketing of insurance products.

In this context, the present study seeks to address the following fundamental questions:

The present study seeks to ascertain whether the increase in the number of public, private, and university healthcare institutions has a statistically significant effect on private health insurance demand.

Which institutional framework, categorised as public, private, or academic, exhibits the most significant correlation with insurance market growth?

3.4. Limitations of the Study

The study is limited to the period 2010-2024.

The relationship between the number of public/private hospitals and insurance premiums was examined; variables such as hospital bed capacity and technological infrastructure were not included in the model.

Institutional data other than the data sources (TSB, TÜİK, OECD) could not be accessed.

3.5. Assumptions of the Study

The statistical reliability and validity of the data used were accepted.

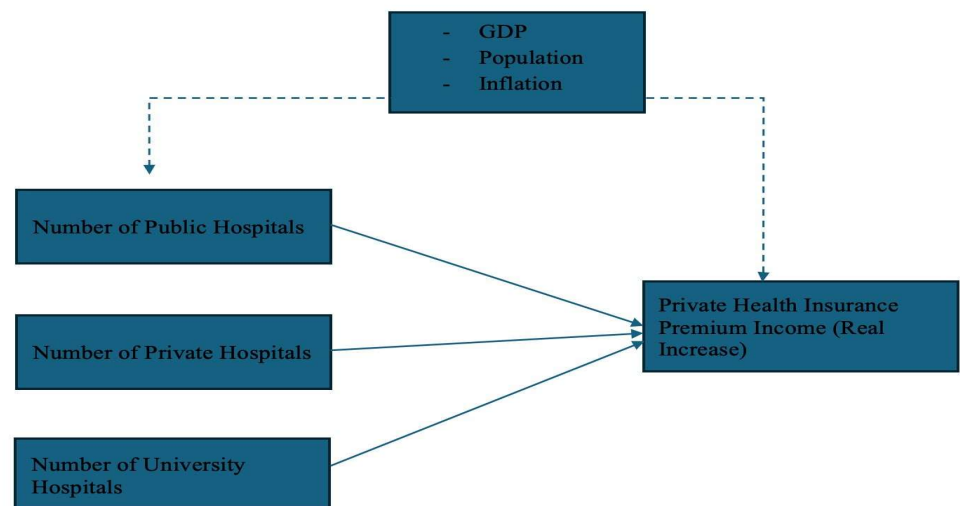
It is assumed that the increase in the number of healthcare institutions directly affects consumer behavior.

It has been assumed that sudden political changes in market conditions (e.g., epidemics, economic crises) will be excluded from the model.

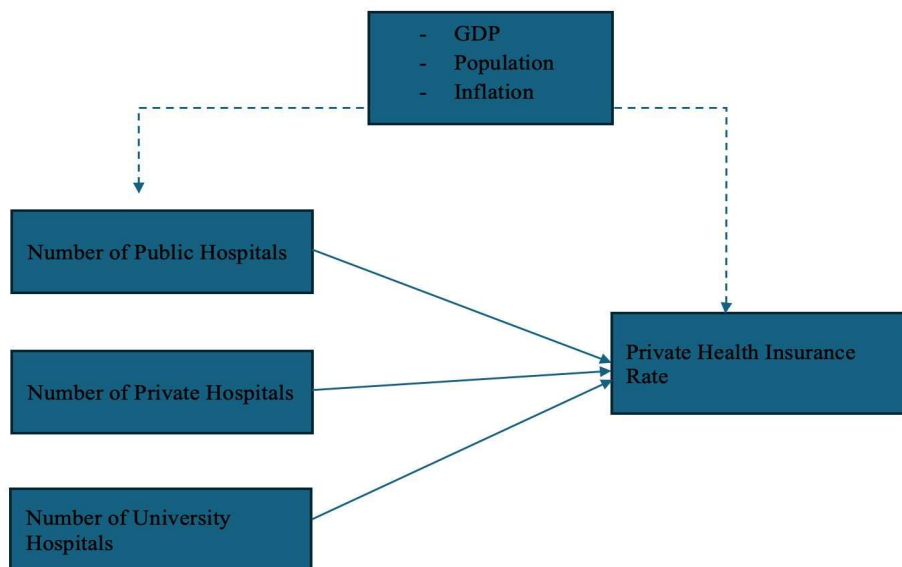
It is assumed that consumers make rational decisions and are sensitive to price/quality signals.

Research Models

Model 1:



Model 2:



3.6. Research Hypotheses

H₁: The increase in state-owned healthcare institutions positively affects the real change in private health insurance revenues.

H₂: There is a significant relationship between the number of public healthcare institutions and the private health insurance rate/population ratio.

H₃: The increase in university healthcare institutions positively affects the real change in private health insurance revenues.

H₄: There is a significant relationship between the number of university health institutions and the private health insurance rate/population ratio.

H₅: The increase in private healthcare institutions positively affects the real change in private health insurance revenues.

H₆: There is a significant relationship between the number of private healthcare institutions and the private health insurance rate/population ratio.

3.7. Data Set and Sources

The dataset, which covers the period from 2010 to 2024, was compiled from a variety of national and international institutions. The primary dependent variables of this study are the data on private health insurance premium production and the number of individuals covered by insurance. These data were obtained from the Turkish Insurance Association (TSB). The data concerning the number of hospitals, namely public, private, and university hospitals, which are regarded as independent variables, have been procured from the Ministry of Health and from the Council of Higher Education (YÖK). The data concerning the population has been obtained from the Turkish Statistical Institute (TÜİK). Moreover, the OECD Health Database was utilised for the purpose of comparative indicators. In order to guarantee the uniformity of statistical analyses, it is imperative that all economic values are subjected to an adjustment for inflation, utilising the year 2024 as a reference point.

3.8. Statistical Analysis

Data analysis was carried out using SPSS 25.0 software. Within the scope of the research, the relationships between the variables were first examined by correlation analysis. Then, linear regression analysis was performed separately to test the effect of each type of health institution on insurance revenues. The significance of the results was

evaluated at the 95% confidence level and p values less than 0.05 were considered significant.

4. Findings

When the data for 2010 and 2022 are examined in the research, it is seen that there is a remarkable increase in the private health sector and insurance premiums in Turkey.

The institutional growth process can be described as follows: The number of private healthcare institutions reached 572 in 2022, up from 489 in 2010. The clearest annual growth rate in the sector was 7% in 2012.

Within the borders of the Turkish Republic, the landscape of healthcare is characterised by the presence of 572 private institutions, in conjunction with 983 public institutions, according to data ascertained in 2022 (Turkish Ministry of Health). The aggregate number of healthcare facilities in Turkey stands at 35795.

There has been a marked increase in insurance premiums over time. Of these increases, the most significant is that of 42.87% on an annual basis, as observed during the course of 2023.

Table 1. Number of Healthcare Institutions in Turkey Between 2000 and 2020

Number of Inpatient and Outpatient Healthcare Institutions, 2000-2022							
Years	Total	Inpatient Institution Total	Affiliated with the Ministry of Health	University	Private	Other(1)	Non-residential healthcare institution (2)
2000	10,747	1,183	861	42	261	19	9,564
2001	10,581	1199	870	43	267	19	9,382
2002	9,685	1156	774	50	271	61	8,529
2003	9,183	1174	789	50	274	61	8,009
2004	9,038	1,217	829	52	278	58	7,821
2005	8,870	1,196	793	53	293	57	7,674
2006	9,831	1,203	767	56	331	49	8,628
2007	11,839	1317	848	56	365	48	10,522
2008	13,818	1,350	847	57	400	46	12,468
2009	15,205	1389	834	59	450	46	13,816
2010	26,993	1,439	843	62	489	45	25,554
2011	27,997	1453	840	65	503	45	26,544
2012	29,960	1,483	832	65	541	45	28,477
2013	30,116	1,517	854	69	550	44	28,599
2014	30,176	1528	866	69	556	37	28,648
2015	30,449	1,533	865	70	562	36	28,916
2016	32,981	1,510	876	69	565	-	31,470
2017	33,585	1,518	879	68	571	-	32,067
2018	34,559	1,534	889	68	577	-	33,025
2019	34,595	1,538	895	68	575	-	33,057
2020	34,621	1,534	900	68	566	-	33,087
2021	34,941	1,547	908	68	571	-	33,394
2022	35,795	1,555	915	68	572	-	34,240
(1) Between 2002 and 2015, hospitals belonging to the Ministry of National Defense and municipalities, which are outside the scope of the Ministry of Health, universities, and the private sector, were classified as "Other." In 2016, hospitals affiliated with the Ministry of National Defense were transferred to the Ministry of Health and included in the Ministry of Health's figures between 2016 and 2022. Between 2016 and 2022, hospitals belonging to municipalities were included under the "Other" group and were included in the "Private" sector.				(2) Health Centers, Family Medicine Units, Health Houses, Tuberculosis Control Dispensaries, Child, Adolescent, Women's, and Reproductive Health (ÇEKÜS) Units (AÇSAP Centers), Cancer Early Diagnosis, Screening, and Education Centers, Private Polyclinics, and Private Medical Centers are included in the total. For the period prior to 2000, reliable data could not be obtained. With the "Public Health Center and Affiliated Units Regulation" published on 05/25/2018, the name of the Mother and Child Health and Family Planning (AÇSAP) Center was changed to the Child, Adolescent, Women's and Reproductive Health (ÇEKÜS) Unit.			

Table 1 shows data on the number of inpatient and outpatient health institutions in Turkey and changes in health institutions over time. An analysis conducted in 2000 revealed that there were 861 health institutions, 42 state university hospitals, 261 private

hospitals and 19 hospitals in the other group affiliated to the Ministry of Health. In 2022, the total number of inpatient health institutions was 1,555, the number of outpatient institutions was 34,240, and the total number of health institutions was 35,795.

In 2022, the number of public health inpatient institutions was 983 and the number of private health institutions was 572. In 2016, municipal hospitals and Ministry of National Defense hospitals, which were included in the other group, were made affiliated to the Ministry of Health. The increase in the number of hospitals in the other group in 2002 was due to the fact that the hospitals under the jurisdiction of the Ministry of National Defense started to be evaluated in this group.

The first significant increase in the number of private health institutions was observed in 2005 with the opening of 15 new private health institutions. The most significant increase in the number of private hospitals was observed in 2009 with the establishment of 50 new private health institutions, with an increase of 12.5%. While the proportion of private health inpatient institutions constituted 22% of the total number of health institutions in 2000, this figure was determined as 36% in 2022.

Table 2. Number of Private Healthcare Institutions, Private Health Insurance Premium Amounts, and Rates of Change in Turkey

Year	Number of Private Healthcare Institutions	2010 Indexed Change (%)	Annual Change (%)	Private Health Insurance Premium Received (TL)	2010 Indexed Change (%)	Annual Change (%)	Real Change (%)	Number of Private Health Insurance Policyholders *1000	Private Health Insurance Policyholders / Total Population
2010	489	0.0	0.0	1,675,377,354	0.0	-	-	2041	2.8
2011	503	2	2	1,998,946,945	19	19.31	-	3,419	4.6
2012	541	10	7	2,237,162,750	33	11.91	5.42	4,131	5.5
2013	550	12	1	2,472,374,040	47	10.55	2.93	4,304	5.6
2014	556	13	1	2,929,632,073	75	18.49	9.54	4,483	5.8
2015	562	14	1	3,436,530,446	105	17.27	7.78	4,279	5.4
2016	565	15	0.5	4,226,366,352	152	22.98	13.31	6,101	7.6
2017	571	16	1	5,024,664,774	199	18.98	6.31	5,445	6.7
2018	577	17	1	6,244,361,483	272	24.23	3.27	6,763	8.3
2019	575	17	-0.3	8,358,100,508	398	33.85	19.68	7,493	9
2020	566	15	-1	10,095,658,299	502	20.79	5.40	6,382	7.6
2021	571	16	0.8	13,078,386,991	680	29.54	-4.80	8,904	9.5
2022	572	16	0.1	30,058,996,315	1694	129.84	39.91	10,357	12.1
2023	-	-	-	70,761,799,630	4,123	135.41	42.87	-	-
2024 (October)	-	-	-	104,095,758,435	6,113	47.10	32.61	-	-

As shown in Table 2, the number of private health institutions in Turkey is documented from 2010 to 2024, along with the amount of premiums collected for private health insurance during the same period. Annual rates of change are determined on the basis of 2010. The number of private health institutions increased from 489 in 2010 to 572 in 2022. Between 2010 and 2022, a 16 percent increase in the number of health institutions was observed.

An analysis of the number of private health institutions reveals a steady annual increase until 2020. In 2020, a decrease was observed from 575 to 566. It has been determined that the premiums collected were 1,675,377,354 TL in 2010 and 104,095,758,435 TL in 2024. As of 2024, the amount of premiums collected has increased by 6113 percent compared to the amount collected in 2010. The most significant annual increase in premiums was observed in 2023 with 135.41 percent. When annual changes are examined, taking into account inflation, the highest real change was observed in 2023 with 42.87%. While the number of private health insurance policyholders was 2.041 million in 2010, it was determined as 10.357 million in 2023. While the proportion of private health insurance policyholders in the total population was recorded as 2.8% in 2010, it is estimated that this figure will increase to 12.1% by 2023.

The number of private health institutions and private health insurance policyholders in our country is increasing every year. The increase in investments in private health institutions, the practices implemented by private health institutions to increase their market share and customer satisfaction in a competitive environment, and the improvements in quality standards can be counted among the reasons for the increase in demand for private health insurance.

Table 3. Number of Healthcare Institutions, Number of Hospital Beds, and Number of Hospital Beds per Person (1000 People) Between 2010 and 2022

Years	Total Number of Healthcare Institutions	Number of Inpatient Healthcare Facilities	Non-Inpatient Healthcare Institutions Number	Total Hospital Beds	Private Hospital Number of Beds	Number of Hospital Beds per Person (*1000)
2010	26,993	1,439	25,554	200,239	28,063	2.72
2011	27,997	1453	26,544	194,504	31,648	2.60
2012	29,960	1483	28,477	200,072	35,767	2.65
2013	30,116	1517	28,599	202,031	37,983	2.64
2014	30,176	1528	28,648	206,836	40,509	2.66
2015	30,449	1533	28,916	209,648	43,645	2.66
2016	32,981	1510	31,471	217,771	47,143	2.73
2017	33,585	1518	32,067	225,863	49,200	2.79
2018	34,559	1,534	33,025	231,913	50,196	2.83
2019	34,595	1538	33,057	237,504	51,167	2.86
2020	34,621	1,534	33,087	251,182	52,230	3.00
2021	34,941	1547	33,394	254,497	53,805	3.01
2022	35,795	1555	34,240	262,190	55,069	3.07

Source: TÜİK

As shown in Table 3, the dataset covers a range of metrics related to healthcare infrastructure, including the number of inpatients and outpatients, the number of private hospital beds, the total number of hospital beds, and the number of hospital beds per thousand people. In 2010, the total number of hospital beds was 200,239, of which 28,063 were private beds. The number of hospital beds per thousand people was 2.72. In 2022, the total number of hospital beds was 262,190, of which 55,069 were private beds. This corresponds to a rate of 3.07 hospital beds per thousand people. In 2010, the proportion of private hospital beds accounted for 14% of the total number of beds. By 2022, this figure had risen to 21%. It is clear that between 2010 and 2022, there was a steady year-on-year increase in the number of private hospital beds.

Table 4. Indicators Related to Health Expenditures (2010-2023)

Years	Total Health Expenditure (Million TL)	Health Expenditure Per Capita (TL)	Total Health Expenditure / GDP (%)	Public Health Expenditure / Total Health Expenditure (%)	Private Health Expenditure/Total Health Expenditure (%)
2010	61 678	843	5,3	78,6	21,4
2011	68 607	924	4,9	79,6	20,4
2012	74 189	987	4,7	79,2	20,8
2013	84 390	1 108	4,6	78,5	21,5
2014	94 750	1 228	4,6	77,4	22,6
2015	104 568	1 337	4,4	78,5	21,5
2016	119 756	1 511	4,6	78,5	21,5
2017	140 647	1 751	4,5	78,0	22,0
2018	165 234	2 030	4,4	77,5	22,5
2019	201 031	2 434	4,7	78,0	22,0
2020	249 932	2 997	5,0	79,2	20,8
2021	353 941	4 206	4,9	79,2	20,8
2022	606 835	7 141	4,0	76,4	23,6
2023	1 244 237	14 582	4,7	77,5	22,5

As seen in Table 4, the highest recorded health expenditure occurred in 2023, representing a significant increase compared to previous years. Per capita health expenditure in 2023 was found to be 14,582 TL (Turkish Lira). As can be seen from the data, the ratio of public health expenditures to Gross Domestic Product was found to be 4.7%. Furthermore, the public sector accounted for 77.5% of total health expenditures, while private health expenditures accounted for 22.5%. No significant change was observed in the total shares of public and private sectors in health expenditures between 2010 and 2023.

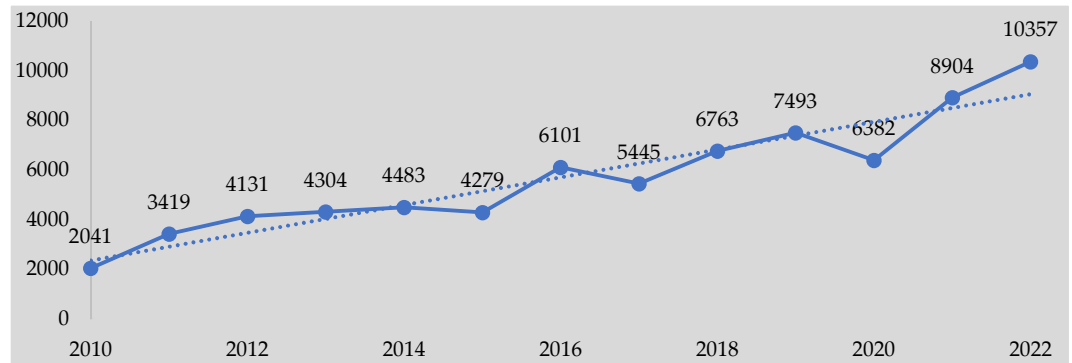


Figure 1. Number of People with Private Health Insurance in Turkey According to OECD Data (Millions) (OECD Health Services Statistics)

As demonstrated in Figure 1, the figure for private health insurance policyholders increased from 2,424,000 in 2010 to 3,012,000 in 2022. A marked decrease in the number of private health insurance policyholders was observed in 2020. This decline represents the most significant change observed in the data. It is hypothesised that the decline may be attributed to the emergence of a novel coronavirus, namely SARS-CoV-2, in 2020.

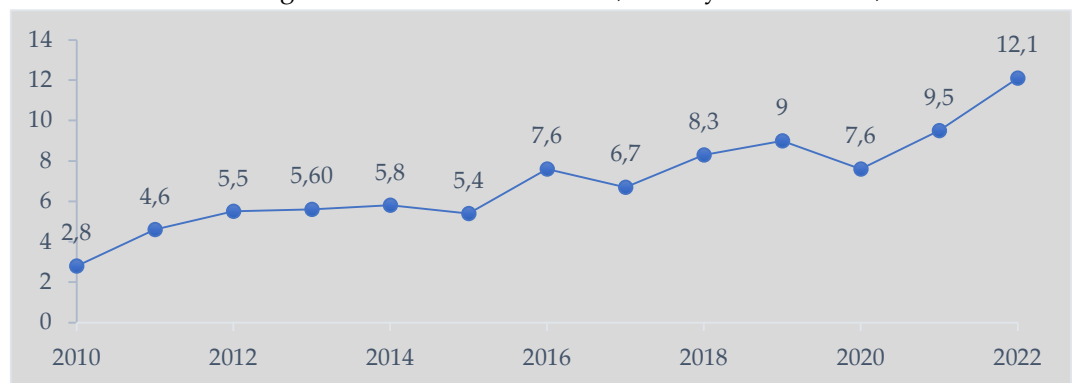


Figure 2. Ratio of Private Health Insurance Policyholders to Population in Turkey According to OECD Data (Source: OECD Health Services Statistics)

The results presented in Figure 2 suggest that the expansion of the private health insurance sector in Turkey has been predominantly influenced by demand and product dynamism rather than by the development of physical infrastructure, indicated by an augmentation in institutional capacity. At the core of this phenomenon is "supplementary health insurance" (SHI), which was introduced in 2012 and resulted in a precipitous increase in the insured rate when it was incorporated into the statistics in 2016. As a matter of fact, while the number of insured persons increased from 2 million to over 10 million in the period under review, the ratio of insurance to the population increased from 2.8% to 12.1%.

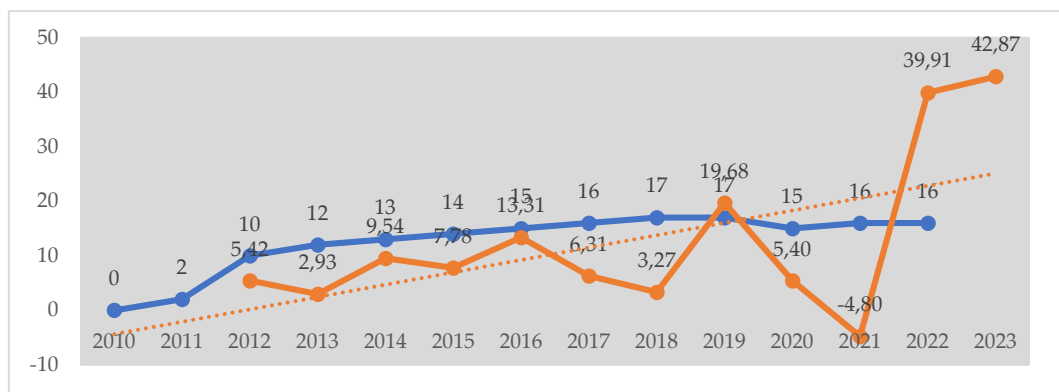


Figure 3. Real Growth Rate of Private Health Insurance Premiums in Turkey and Change Rate in the Number of Private Healthcare Institutions Compared to 2010 (OECD Health Services Statistics).

The data show that even in periods when the number of private health institutions remains the same, there is an upward trend in the number of insured patients and total insurance premiums. It is clear that there are fluctuations in real growth rates in insurance premiums on an annual basis. When the annual fluctuations in insurance premium amounts are examined, a consistent upward trend is observed. Although there was a significant increase in the amount of premiums by an average of 55% between 2019 and 2021, it remained negative in real terms. The reason for the sudden fluctuations in the real growth rate of insurance premiums from year to year is the inflationary environment.

An examination of changes over time reveals that although the number of private health institutions has remained stable, there has been an increase in the number of private health insurance policyholders and the amount of premiums. Between 2014 and 2016, 14 new insurers entered the supplementary health insurance market. The use of private health insurance has increased over time, primarily due to the widespread introduction of supplementary health insurance, the raising of quality standards in private healthcare institutions, and the maintenance of supplementary health insurance premiums at a reasonable level.

Table 5. Relationship Between the Number of Public, Private, and University Healthcare Institutions and Real Insurance Revenue and the Number of Private Health Insurance Policyholders

	Number of Public Healthcare Institutions	Number of University Healthcare Institutions	Number of Private Healthcare Institutions	Number of Private Health Insurance Policyholders/Total Population	Real Change
Number of Public Health Institutions	1	0.511	,765**	,915**	,552*
Number of University Health Institutions	0.511	1	,829**	0.483	0.171
Number of Private Healthcare Facilities	,765**	,829**	1	,771**	0.318
Number of Private Health Insurance Policyholders / Total Population	0.915**	0.483	0.771**	1	,657**
Real Change	,552*	0.171	0.318	,657**	1
(**: p<0.01, *: p<0.05)					

The most striking finding is the statistically significant, positive, and very strong relationship ($r=0.915$, $p<0.01$) between the number of public institutions and private health insurance demand. Furthermore, the effect of the number of public healthcare institutions on real insurance revenues is also positive, moderate, and significant ($r=0.552$, $p<0.05$). These results demonstrate that public investments increase the general perception of quality and health awareness, triggering a risk-protection reflex in individuals, and that private insurance has a complementary product aspect. Therefore, the public plays an indirect regulatory and demand-generating role in the private insurance market. While there is a strong and positive relationship ($r=0.771$, $p<0.01$) between the number of private

institutions and insurance demand, this relationship was found to be statistically insignificant on the institutions' real revenues ($r=0.318$, $p>0.05$).

This supply-income disconnect may be due to factors such as the suppression of real incomes due to high inflation and the cost impact on insurers of high-risk individuals being included in the insurance pool. University hospitals' demand or real incomes are not statistically significant. No impact has been determined.

Table 6. Effect of the Number of Public Healthcare Institutions on the Real Change in Insurance Revenue

	Regression coefficients	Standard regression coefficients	t	p
Constant	-237.586		-2.259	0.042
Number of State Health Institutions	0.285	0.552	2,384	0.033
R	R-squared	Adjusted R-squared	F	p
0.552	0.304	0.251	5.684	0.033

Regression analysis confirmed that the number of public health institutions has a statistically significant and positive effect on private health insurance real income ($p=0.033$). The regression coefficient of the model ($\beta=0.285$) indicates that each unit increase in the number of public institutions is associated with a 0.285 unit increase in private insurance real revenues. This finding strengthens the hypothesis that government health investments create a "dual effect": these investments both increase public service capacity and indirectly support the private insurance sector. As confidence in the quality of the public system increases, private insurance becomes more attractive not as a substitute but as a complementary financing tool to the public foundation.

Despite the limited explanatory power of the model ($R^2\approx 0.25$), this result is important in revealing the indirect impact of public infrastructure on the private insurance system. The findings are also important for public decision-makers in the field of health. Because it is seen that public investments are not only a mechanism for the provision of social services, but also a tool that affects the private sector. Future research should examine in more detail the causal links between the expansion of public institutions, general health demand, and the tendency of citizens to turn to private health insurance.

Table 7. Effect of the Number of University Health Institutions on the Real Change in Insurance Revenue

	Regression coefficients	Standard regression coefficients	t	p
Constant	-68.354		-0.525	0.609
Number of University Health Institutions	1,205	0.171	0.625	0.543
R	R-squared	Adjusted R-squared	F	p
0.171	0.029	0.000	0.390	0.543

The regression coefficient for the number of university health institutions is 1.205. However, the p-value for this coefficient is 0.543. This finding indicates that the observed result is not statistically significant at the 0.05 level of significance. In addition, the resultant t-value of 0.625 indicates that the hypothesis that the coefficient is equal to zero has not been proven to the extent that there is compelling evidence to support this. The findings of the present study demonstrate that fluctuations in the number of university hospitals have a negligible effect on the observed increase in insurance revenues.

Table 8. The effect of the number of private healthcare institutions on the real change in insurance revenue

	Regression coefficients	Standard regression coefficients	t	p
Constant	-83.351		-1.046	0.315
Number of Private Healthcare Facilities	0.173	0.318	1,210	0.248
R	R-squared	Adjusted R-squared	F	p
0.318	0.101	0.032	1.465	0.248

The analysis revealed that there was no statistically significant relationship between the increase in the number of private health institutions and the real income of insurance companies ($p > 0.05$). This finding shows that the increase in private hospital supply alone does not significantly increase the premium revenues of insurance companies.

There are several main reasons underlying this supply-income disconnection. The first is that while the supply of private hospitals increases, the real income and insurance purchasing power of the people do not increase at the same rate due to high inflation. Second, the concentration of private hospitals in metropolitan cities restricts the geographical access of the insurance system. Finally, rising healthcare costs and the inclusion of high-risk individuals in the insurance pool are hindering the growth of real profitability despite the increasing number of insured.

This indicates that the integration between the private health sector and the insurance system in Turkey is weak and makes a unique contribution to the literature with the concept of "lack of institutional integration". From a policy perspective, this finding is important evidence that increasing supply only through private sector investments is not a sufficient strategy to improve the insurance system. For the financial development of the system, it is imperative to consider intermediate variables such as income level and institutional compliance.

5. Conclusion and Recommendations

The findings of the research reveal that public investments in the field of health in Turkey serve as an indirect trigger for the health insurance market. This result supports the theoretical approach that public investments will become functional as a marketing signal. Because the increase in the number of public health institutions has a statistically significant and positive effect on the demand for private health insurance and real income. This situation can be predicted that public investments work functionally as a "marketing signal". In addition, it is possible to state that public investments in the field of health increase both trust and quality perception throughout the health system. Because in the field of investment, where trust is increasing, citizens buy private insurance as a complementary measure to support the public system. Because there is a perception that the public system provides only basic protection. As a result, while the state carries out activities to improve public services, it also creates a market for the private insurance sector, thus stimulating demand.

In addition, one of the important findings of the research is that there is no statistically significant correlation between the increase in the number of private hospitals and private insurance revenues. It is seen that the increase in supply does not translate into real income. This supply-income disconnect indicates the presence of structural barriers to market growth. For example, the people have limited real income and purchasing power as a result of high inflation. Additionally, the high cost structure of private institutions and the restrictions within insurance policies should be taken into

account. This situation shows that the private health sector and the insurance system in Turkey are not sufficiently integrated ("lack of institutional integration").

As a result, the findings of the research provide findings that will provide important input for policy makers and the sector. Public investments should not be considered as a social responsibility made by the administrators only with the understanding of the social state. Public investments in the health sector should also be considered as an economic tool that has an impact on the dynamics of the private sector. In fact, it has been observed that increasing the number of private hospitals alone does not contribute to the private insurance sector. Accordingly, it is recommended that insurance companies focus on developing hybrid products and pricing policies based on the integration of public and private healthcare systems. In this way, they can use the trust created in society thanks to the public health system. It is important to implement an integrated approach to ensure the financial sustainability of the system, especially considering the expected increase in healthcare expenditures.

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