Hospital Choice: Survey Evidence from Istanbul[§]

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Abstract

This paper analyzes the patient characteristics that affect the choice between public and private health care providers in Istanbul, Turkey. In addition to socioeconomic variables, such as insurance status or income, which have often been considered in the previous literature, we also focus on another factor, the availability of social networks, which might determine ease of access to hospital services in developing countries. The analysis is based on data from a household survey conducted in Istanbul. The econometric results indicate that potential social ties play an important role in choosing public health care centers over private ones for minor health problems. As public facilities have long been characterized by long waiting lines even for appointments for medical exams, this finding indicates that households who possess higher levels of social networks might be using those in easing access to public facilities.

Keywords: Public vs. Private Health Care Providers; Hospital Choice; Social Networks; Household Survey; Turkey.

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1 Introduction

During the last two decades the share of private hospitals in healthcare delivery has expanded rapidly in Turkey, as can be observed by the facts that the number of private hospitals doubled during the period 2000-2005 and that as of 2006 the percentage of patients treated in private facilities has reached a sizeable amount of 11. It is a truism that private hospitals are more expensive than public hospitals and that healthcare services are freely provided to some types of patients in public hospitals. On the other hand, public hospitals carry considerably higher non-monetary costs, such as long waiting times, and the quality of care is often lower due to the heavy workload and budgetary constraints faced by these hospitals.

This paper aims to analyze the patient characteristics that affect the choice between public and private providers in Istanbul, Turkey. In addition to socioeconomic variables, such as insurance status or income, which have often been considered in the previous literature, we focus on another factor: availability of social networks, which might determine the ease of access to hospital services in the context of developing countries.

It is hypothesized that by using their social networks, individuals can unfairly gain advantage over the others by shortening the waiting time for a surgery, or an appointment, by reducing the costs, by getting special care, etc. Expressing in economic terms, the monetary and non-monetary costs of access to either type of hospitals may be considerably lower when the patient has connections in a given hospital, to the extent that the system is open to manipulation via patronage networks. Therefore, under the assumption that clientelism is systemic factor, it is expected that availability of networks would affect a patient's choice between hospitals. Although from a theoretical perspective favoritism is a manifestation of the principle-agent problem and thus independently exists from the ownership status (viz. private versus public), empirical studies by and large conclude that it is rather associated with organizations that are under public ownership.

The analysis is based on a face-to-face survey of 600 people (of which 370 are reported to have health problems in the past two years) conducted in Istanbul in May 2006. The survey provides information about various household characteristics including employment, health insurance status, education, a proxy for income, and a proxy for material security. Furthermore, the survey provides us with a variety of measures on ethnicity, religion, immigration status, and social awareness. These measures are used to construct variables that proxy for the potentiality for social networks. The survey does not indicate the specific hospital chosen by the patient but only whether the hospital was public or private.

In the analysis we run standard binary logit models where the dependent variable is a dummy which shows whether the hospital chosen by the patient is public or private. Considering the possibility that individual behavior regarding the choice between public and private health care facilities may depend on the type of visit, the econometric analysis is first done for all hospital visits, and then repeated for visits relating to relatively minor health problems, such as medical exams, diagnostics, and outpatient treatment.

The econometric analysis provides some evidence for the hypothesis that the existence of social ties plays an important role in choosing public health care centers over private ones for the cases where minor health problems are experienced. As public facilities have long been characterized by long waiting lines even for appointments for medical exams, this finding indicates that households who possess higher levels of social networks might be using those in easing access to public facilities. Furthermore, the results are found to be in parallel with the literature in suggesting that the socioeconomic status (or material well-being) as well as social security

characteristics do play a role in the choice of patients. The inclusion of serious treatments, on the other hand, makes us loose the statistical significance of social ties in the choice of the type of health care centers.

This investigation is of importance to the extent that, if the existence of particularistic networks does play a role in the healthcare system in Turkey, it will bring about inefficiencies (the associated opportunity cost of time allocated to networking by both patients and members of health cares) as well as unfairness (given that networks are not evenly distributed in a given society). As Turkey is in the process of reforming its healthcare system, the picture that the analysis will provide will be of help in diagnosing the problematic areas.

Section 2 provides an overview of the health system in Turkey. Sections 3 and 4 summarize the literature on patient's hospital choice and social networks, respectively. The data set and the results of the econometric analysis are presented in Section 5, while a conclusion is given in Section 6.

2   The health system in Turkey

In Turkey health care is financed by government budget, various social security mechanisms, and private payments (directly or through private voluntary health insurance schemes). The total health expenditure currently fluctuates at around 7-8 % of the GDP, and public expenditures make about 70% of the total health expenditures.[1] There exist three social security institutions. Retired civil servants are covered by Government Employees Retirement Fund (GERF). Health care services for active civil servants are paid by their organizations through the government budget but they are subject to similar rules as GERF members. Private sector employees and blue collar public employees are covered by Social Insurance Organisation (SIO), and self employed are covered by Bağ-Kur (BK). There also exists a plan for those who are poor and are unable to pay for health care (Green Card). Additionally, there are less than one million (over seventy plus million) people with a private health insurance.[2]

Most of the hospitals in Turkey are operated by the Ministry of Health (about two thirds of the total bed capacity). Private hospitals constitute only about 7% of the total hospital beds as of 2006, but, as mentioned above, they have been growing rapidly in the last two decades. Private hospitals are concentrated in big cities and especially in Istanbul where they make about 20% of total hospital bed capacity with 6217 beds in 124 hospitals as of 2006. There also are hospitals operated by the Ministry of Defense (8% of total bed capacity), universities (15% of total bed capacity) and other institutions such as municipalities and foundations (2% of total bed capacity). Ministry of Defense hospitals are primarily serving military personnel and there were restrictions on access to university hospitals by SIO members at the time of the survey (*Yataklı Tedavi Kurumları İstatistik Yıllığı 2006*).

Until recent years, SIO operated its own hospitals and SIO coverage was restricted to those hospitals. Similarly, GERF and BK coverage was restricted to those hospitals operated by the Ministry of Health. While private hospitals existed, patients covered under social security had to pay full charge of health care services out of their pocket. In recent years, efforts to collect the

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[1] http://www.tuik.gov.tr
[2] The number of people covered by these institutions is not very clear. According to SIO statistics active and retired civil servants make about 15% of population, while SIO and BK cover 50% and 23% of the population respectively. Those with a Green Card are reported to be about 11 million (17% of the population). The inconsistency in the numbers can be explained by the large number of BK members who do not pay their premium (Savas *et al.* 2002).

three social security institutions under one roof have intensified. In 2003 SIO patients were allowed to make use of hospitals other than those operated by SIO. GERF and BK patients were also allowed to use SIO hospitals. In 2005 SIO stopped operating its own hospitals and transferred ownership of those to the Ministry of Health.

Starting in 2004 social security organizations made contracts with private hospitals and allowed their members to use services of those private hospitals. In May 2006, when the survey was conducted, patients had access to a wide collection of private hospitals. As the payment by the social security organizations to private hospitals covered only part of the expenses of private hospitals for most medical procedures, private hospitals generally charged extra fees.

Public hospitals are free of charge under all three types of social security, but the quality of the care at public hospitals is often criticized as being low. As primary care services are not satisfactory and the referral system is not functioning well, patients often go directly to outpatient clinics of the hospitals. This leads to long waiting hours to see a doctor in public hospitals (see, e.g., World Bank, 2001). High demand from patients also means that doctors may have a tendency to spend little time with patients. Anecdotal observations and the results of diagnostic surveys indicate that it is common to make out-of-pocket payments or to give presents to the doctors and/or hospital personnel or use connections for better care and service in public hospitals in order to get a favourable treatment (Adaman, 2003).

3 Patients' hospital choice

Patients' hospital choice can be modeled as a utility maximization problem where utility is a function of health status and consumption. Hospital characteristics, such as the quality of care, could have a direct impact on health status. Monetary and non-monetary costs of access could have an indirect impact on consumption through the budget constraint.

Empirical literature has found that various hospital characteristics are significant determinants of hospital choice. Distance to the facility (e.g. Tai *et al.*, 2004, for rural patients), various proxies for quality of service (Luft *et al.*, 1990, for various surgical procedures), and costs of treatment have been among those. The impact of the hospital characteristics were found to depend on patient characteristics such as the severity of illness or income level. Phibs *et al.* (1993), more specifically, compared deliveries by high risk and low risk women and the quality of hospitals (as proxied being a university one or not) was found to be more important for high risk patients compared to low risk ones.

In this study we focus on one particular hospital characteristic, the ownership type of the hospital. Whether the hospital is private or public could have important implications for the costs and quality of the hospitals and hence on the utility of the patient. As already mentioned, private hospitals do generally carry higher monetary costs but lower non-monetary costs such as shorter waiting times.

As to the quality, public and private hospitals face differential incentives and accordingly are expected to behave differentially. Because private hospitals are generally not subsidized by government, they rely on payments by patients. Hence they are expected to take measures that satisfy customers. They would provide better service whenever this is observable by patient and increase the profits of the hospital. Andaleeb (2000) offers evidence from patient surveys that private hospitals are considered to provide better quality, based on perceptions of the patients in Bangladesh. On the other hand, considering information asymmetries, private hospitals would be

expected to provide inferior service compared to public hospitals when (1) the quality of service is not observable by patients and (2) inferior quality cuts costs of the hospital or increases its revenues. Ordering unnecessary care could be an example for this. Angelopoulou (1998) found for Greece that public hospital patients are more interested in medical resources and technology than contextual and environmental features of a hospital compared to the patients of private hospitals.

The advantages and disadvantages of private versus public facilities may differ across countries as well. In developed countries non-monetary costs of access to public facilities are generally lower compared to those of developing countries. The quality of service at public facilities is also generally higher than those in developing countries. Empirical evidence shows that in such countries insurance availability determines the choice of hospital. Rodriguez and Stoyanova (2004), for example, showed that in Spain private hospital choice could be explained by insurance status. In developing countries, conversely, service quality is generally lower and waiting times are long in public facilities. Accordingly, it is sometimes observed that patients bypass free public facilities to get care from private facilities that may be further away and/or more expensive (Akin and Hutchinson, 1999).

The literature on hospital choice in Turkey is scarce. The only comprehensive one, that by Akıncı *et al.* (2004), analyzes patients from three public and one private hospitals. Patients are asked questions to determine the importance of various factors in the hospital choice. Based on the answers, descriptive statistical analysis reveals that accessibility of the hospital plays the most important role followed by the availability of modern equipment and facilities. The study also indicates that, though not statistically significant, there exist differences in the influence of factors for public versus private hospitals. Therefore, this motivates the need for a formal econometric analysis of public versus private hospital choice. Our study uses discrete choice framework and also stresses the importance of social networks as an additional factor influencing this choice.

4 Social networks

An element which may affect hospital choice is social capital and, in particular, social networks available to the patient. Although being a vaguely defined concept, social capital can be described as relations among people that facilitate certain outcomes such that, in the absence of social capital, these outcomes would be unlikely.[3] Hence, social capital is productive and closely linked with personal interactions in society. Social networks, in this setting, are webs of informal ties among individuals that characterize an individual's social capital. To broadly categorize, it is possible to state that the use of social networks can be grouped in four: information exchange, social learning, cooperation and trust, and risk sharing.[4]

As social capital—and social networks—are closely linked to relationships among individuals in a social environment, their ties to individual decision-making, and in turn, social outcomes and economic development, have been investigated by a vast literature. Economic growth, adoption of new technologies, educational attainment, health outcomes, and risk sharing are only a few examples of areas in which the effects of social networks have been studied.

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[3] See Arrow (2000), Dasgupta (2000), and Durlauf and Fafchamps (2005) for the definition of social capital being incoherent and unclear. See the seminal work of Coleman (1988) for an introduction of social capital.

[4] The examples include Calvo-Armengol and Jackson (2006) for information exchange; Bandeira and Rasul (2006), and Conley and Udry (2001) for social learning; Fafchamps and Minten (2002) for cooperation and trust; Fafchamps and Kurosaki (2002), and Fafchamps and Lund (2003) for risk sharing.

In the context of health outcomes, the literature on social networks generally concentrates on the relationship between the quantity of social ties and being healthy. For example, Pearce and Smith (2003) state that because of the inherent inequalities among individuals in terms of income and socioeconomic status, the concept of social capital is becoming increasingly important for health outcomes. Specifically, increased income inequality in a society reduces the available social capital, thereby causing poorer health outcomes. The mechanism through which this idea works is as follows. As inequality rises, individuals' perception of their place in the social hierarchy gets affected in an undesirable way. As a result, people start to participate in community organizations at a lower rate and alienate themselves, leading to poorer health. In the same vein, House (2002) argues that policy should aim at enhancing the socioeconomic status of the disadvantaged groups in society so that the health status of these groups as well as of the overall society will improve. Cattell (2001) analyzes the effect of social networks on the health outcomes of poor people and suggests that different neighborhoods lead to different social ties, and social ties have implications on health outcomes.

Andersen (1995) stresses the importance of access to health care and the role of what he calls "enabling resources" in accessing health care. In this context, social networks, obviously, act as enabling resources to facilitate access to health care through information dissemination. For example, some individuals who are not aware of the existence of a certain treatment or a certain health care center may acquire knowledge in this regard via their social contacts. Hendryx *et al.* (2002), using household data from the U.S., test whether higher levels of social capital lead to a better access to health care. Their findings indicate that individuals living in metropolitan areas with high levels of social capital do not have significant problems in health care access.

Taking into account the fact that the most rapidly urbanizing cities are in the developing world, Vlahov and Galea (2002) suggest that the most important factors that influence health outcomes of urban populations in developing countries are social and physical environment as well as access to health care. Therefore, social networks, in defining the socioeconomic status of an individual as well as in facilitating access to health care, are significant determinants of health outcomes in this respect.

As social networks are considered as a tool of risk sharing, they equally play an important role in financing health expenditures in communities where formal insurance markets are not well-developed. Community financing schemes, which are more formal than risk sharing through informal family/friend ties, have become increasingly important in the developing world. These are, in fact, closely linked with social networks in a sense that the establishment of such community financing schemes is based on the formal and informal ties within a society. Preker *et al.* (2002) provide evidence from the developing world and suggest that such schemes may even be inclusive of the poor who are in general socially excluded. Habtom and Ruys (2007), using data from Eritrea, report evidence for the importance informal insurance schemes in providing modern health services where free public health services and private insurance are unavailable. Thus, there is room for policy in terms of enhancing the sustainability of these financing arrangements in the context of health expenditures.

The aforementioned studies all have a common theme: social capital and social networks are good for health outcomes and for health financing. Rose (2000) takes on a different aspect of this issue, one that is common to what he calls "antimodern" societies. Specifically, in antimodern societies, characterized by organizational failure, social networks can invade the malfunctioning of formal organizations to correct for the deficiencies in an undesirable way. In essence, this correction is done through instigating mechanisms to commence the allocation of goods and services again, albeit through bribery and favoritism. Although this is a means of making sure the

formal organizations start functioning again, it is certainly not an equitable mechanism. The same line of argumentation surfaces in different studies, when, for example, Warren (2006) refers to the "dark side" of social capital, or when Foley *et al.* (2001) proposes a distinction between "social" versus "unsocial" capital. In this context, Adaman and Çarkoğlu (2003) argue for the presence of the dark side of social capital and corruption in Turkey, specifically during the 2001 economic crisis.

In terms of access to health care, this might imply, for example, that through favoritism and/or bribery, individuals can unfairly gain advantage over others by shortening the waiting time for surgery or an appointment, reducing the costs, etc. The monetary and non-monetary costs of access to either type of hospital might be considerably lower when the patient has connections in a given hospital. More specifically, connections might decrease the price paid for care in private facilities, or they could cut down the waiting costs and increase the quality of care in public facilities. Depending on the magnitude of these, one's choice of hospital could be different compared to the case without network connections. In the context of Turkey, it is reported that social networks could provide easier access to, and more efficient care from, public health care services (Adaman and Yoltar, 2005).

The impact of networks on hospital choice could have further consequences for the efficiency and equity in access to healthcare services. Networking carries its costs. One has to spend time to get into networks and arrange better access to the facilities. If networking is done through care providers such as physicians or nurses, they would have less time available to perform their healthcare related duties. The network-related access to healthcare services would also create inequity in access to healthcare services since those with no such connection would have to wait even longer hours than they would if nobody used networks.

5   Data set and results of econometric analysis

5.1 Data set

The data used in this paper is from a face-to-face survey conducted in May 2006 in Istanbul—a city of 12 million and the cultural, intellectual and financial center of Turkey. Because of this, the city attracts a huge amount of migration from rural as well as other urban areas in Turkey. This, no doubt, creates a highly heterogeneous population in terms of economic, educational, and cultural aspects. It is therefore possible to argue that this heterogeneity is one of the reasons for the presence and continuation of tightly connected social networks in addition to other cultural, sociological, and political motives in Turkey in general. The most common ties are claimed to be family and friends networks. Other important ones are of a colocality nature (for those relatively recently migrated) as well as of a religious and political kind; to these one should add NGOs and professional societies which provide a facilitating environment for people to form their own networks. These facts about Istanbul make the city a natural candidate to study social networks and their effects on a variety of decision-making problems.

The sampling procedure used is the random stratified one; the target survey size was 600, which represents the city at household level within a 95% confidence band with a margin of ±0.04. Of the 600 households interviewed, 370 reported that they had faced a health problem that required

them to visit a health care center in the past two years.[5] These households were then asked whether they preferred public facilities or private facilities, as well as the reasons of their visits.

Table 1 displays information on the distribution of visits to health care centers by the type of visits. While some households had only one type of visit to the health care center during the past two years, others had more than one type of visit. The bulk of visits seem to be of the type "medical exam, diagnostic, outpatient", indicating that these are, in general, low-cost items. In addition, regular drug treatments are also largely observed. These indicate that the majority of the households in the sample visited health care centers for mostly low-cost items. In making their choices between public and private health care centers, whether for low-cost or high-cost items, patients are assumed to have considered the trade off between wait times and price, given the existence or non-existence of social networks.

Table 1 – Distribution of health center visits by type of visits

	Visit only once	Multiple visits
Birth, surgery	30	62
Regular drug treatment	45	110
Inpatient	8	17
Rehab, chemotherapy, physiotherapy, dialysis and other continuous treatments	17	22
Medical exam, diagnostic, outpatient	133	126

Note: The first column shows the number of visits for each type for the households who had only one type of visit in the past two years. The second column shows, in addition to the first column, the number of visits for the households who had multiple visits during the period of analysis.

Table 2 provides summary statistics of the data. As is shown in the table, 77% of the households that experienced health problems in the sample chose public health care centers over private health care centers. The survey also provides us with various household characteristics including employment, health insurance status, education, a proxy for income, a proxy for material security, and proxies for social networks. These characteristics are used to investigate whether or not they in fact play a role in determining the choice of health care facility by the household. We describe the calculation of these variables below.

Based on the survey results, we are able to categorize the respondents into two depending on whether they are working or not. In the analysis that follows, we use two variables, "working/household size" and "retired/household size", to proxy for the employment status of respondents. In these variable definitions, a member of the household is characterized as working if he/she is of age 18+ and has a regular full-time or part-time job. Household size used in these ratios is in fact the number of household members aged 18+. The rationale behind these calculations is that these variables show the percentage of households of working age who receive regular wage and pension payments. Based on these calculations, for an average household, the ratio of working members to total adult members is 39%, while the ratio of retired members to total adult members is 11%. Since working and retired individuals have some forms of social security that can be used at public facilities which also provide coverage to immediate family members, the *a priori* expectation is that these two variables should be positively related to the probability that public facilities are chosen.

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[5] With this reduction in the sample size, the city is represented at household level within a 95% confidence band with a margin of ±0.05.

Health insurance status is measured by five different types of insurance the household possesses, GERF, SIO, BK, Green Card, and private insurance. Note that these different schemes are described in Section 2 above. As this is a household level variable and as different members of a household may have different—and even possibly more than one type of—insurance, we allow for multiple insurance types for a household. Thus, to proxy for health insurance status, we form five dummy variables, one for each type. Our prior expectation is that households with GERF and SIO are more inclined toward public facilities as such facilities provide almost free health care for those people.

Table 2 – Summary statistics: sample means and standard deviations (in parentheses)

	All sample	Only for medical exam, diagnostic, outpatient
Public hospital	0.77	0.74
	(0.42)	(0.44)
Working/HH size	0.39	0.44
	(0.30)	(0.33)
Retired/HH size	0.11	0.09
	(0.19)	(0.17)
Socio-economic status	-0.04	0.37
	(1.35)	(1.43)
Material security	-0.04	0.32
	(1.45)	(1.53)
GERF	0.11	0.16
	(0.32)	(0.37)
SIO	0.66	0.67
	(0.47)	(0.47)
BK	0.12	0.10
	(0.32)	(0.30)
Private health insurance	0.03	0.06
	(0.16)	(0.23)
Established	0.01	-0.12
	(1.29)	(1.36)
Marginal	-0.01	0.06
	(1.09)	(1.08)

A proxy for material security using survey data on certain possessions of the household is constructed, such as cars, internet connection, etc., and receivables and payables, if any. By utilizing the data on material possessions and the net debt stock of the household, an index of material security using principal components analysis (PCA) is created. Table 3 provides information on the results of this analysis and the components of material security. The *a priori* expectation is that people with higher material security levels tend to choose private health care facilities.

In the survey, the respondents were asked how much the average monthly expenditures of a similar household would be. We use this information as a proxy for household income; however, we adjust this for those households who were not asked to pay any rent for housing (as they used their acquaintances' residence), and for those who received regular amounts of in kind and in

cash transfers. Per capita income of a household is then calculated by using the weighted household size.[6]

Table 3 – PCA results for the Material Security Index

	Material security (component 1)
Internet connection at home	0.45
Central heating	0.41
Car	0.40
Dishwasher	0.47
LCD/plasma TV	0.28
Vacation outside the country	0.29
Receivables	0.20
Payables	0.07
House/apartment	0.20
% Total variation explained	*25*

In addition, we also form a proxy for measuring the education level of a household. The number of years spent in compulsory education is subtracted from the total years of education for each household member; this gives the education score for each member. Then the average education score for the household is calculated by dividing the total score by the weighted household size. This gives us what we call "education per capita" for the household.

Table 4 – PCA results for the socioeconomic status variable

	Socioeconomic status (Component 1)
Material security	0.60
Income per capita	0.52
Education per capita	0.60
% Total variation explained	*62*

We also form a variable that we call "socioeconomic status." Socioeconomic status measures three dimensions: material security, income per capita (in natural logarithm), and education per capita.[7] Table 4 presents the results of the PCA analysis on material security, income per capita and education per capita performed to construct the socioeconomic status variable. The *a priori* expectation is that people with higher levels of socioeconomic status tend to choose private health care facilities.

The survey provides us with a variety of measures on ethnicity, religion, immigration status, and social awareness. These measures are used to construct variables that proxy for the potentiality for social networks. Specifically, it is natural to expect that people of the same ethnic origin may

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[6] Weighted household size is computed according to Eurostat methodology as follows: any household member older than 14 is counted as an adult. The first adult member gets a weight 1, the other adult members receive a weight 0.5, and each child receives a weight of 0.3. For example, a household composed of a husband and a wife with two children aged less than 14 has a weighted household size of 1+0.5+0.3+0.3=2.1.

[7] In our econometric analyses, we include either the socioeconomic status variable or the three dimensions that form it separately. In fact, when we do the latter, we find that income per capita and education per capita have poor statistical performances.

help one another at different times; similar ideas can be raised about people of the same religious sect. In addition, if an individual came to Istanbul as an immigrant, he/she may still have ties with those people that used to live in his/her town of origin and had moved to Istanbul. Those relationships may also prove to be useful at times of need. The role of social participation in proxying for the potentiality of social networks is clearer. One would expect that an individual who is more active socially would possibly have a higher number of social ties.

In the survey data, it is possible to identify the sect of Islam that the household belongs to: Allevite, Sunnite or neither. It is also possible to measure the degree of religiousness. Using this information, two measures of religion are constructed via PCA that explain a total of 93% of the variation in the data. The first measure puts more weight on being Sunnite and religious, the second puts more weight on being Allevite and religious. Hence, it is possible to interpret these measures as "strongly Sunnite" and "strongly Allevite." If an individual is, say, strongly Allevite, then it is possible to expect that he/she can use his/her ties with other strongly Allevite people when necessary. Therefore, these two measures are thought of as a potential source of social networks. These two measures will then be used to construct proxies for potential social networks available for households.

The survey also allows us to differentiate people with respect to their ethnic origin. Specifically, the respondents were asked whether they can speak Kurdish. A dummy variable indicating being Kurdish is then constructed. As explained above, it is expected that people of the same ethnic origin may ask for help from one another at times of difficulty, and hence, ethnic origin indicates a potentiality of social networks.

The immigration status of households is also thought of as an important indicator of the available social networks for two reasons. First, locals may have more social ties than immigrants. Second, immigrants may have colocality ties. In some instances, being new in town may have different implications from being in town for some time. Hence, it is possible to think of grouping households into three categories: locals, old immigrants, and new immigrants. In this paper, the distinction between new immigrants and old immigrants is made as follows: households who came to town before the average time of all immigrants are counted as old immigrants and vice versa. In addition, it may prove to be important to count for internally displaced people (IDP) due to the dispute in the South Eastern Anatolia. These people are, in general, poor and socially excluded (see Adaman and Ardıç, forthcoming). Hence, it is expected that their network ties are not very strong. Therefore, immigration status is proxied with three variables: old immigrants and new immigrants (relative to locals), and IDPs.

As mentioned above, another ingredient of the potentiality of social networks is social participation and awareness. Social participation and awareness are measured in a variety of dimensions by the survey. First, the respondents were asked whether they participated in social work, whether they are a member of a social organization, and whether they helped (in kind or in cash) to those in need. Second, the respondents were asked whether they went to concerts, theatres or movies, whether they paid visits to neighbors/friends, whether they attended continuing education, religious meetings and visits. These dimensions are then reduced to an index of what we would like to call "social awareness" using PCA. This index explains 32% of the total variation in the dimensions mentioned above. Any increase in any one of these dimensions, that is, increases in social participation, cultural activities, etc., do in turn increase the index of social awareness. It is plausible to expect that individuals who have higher levels of this index are more socially aware, and they possess a higher number of potential social ties.

The four dimensions, i.e. religion (2 variables), ethnicity, immigration status (3 variables) and social awareness, are then combined together via PCA to form measures of the potentiality of social networks.[8] The results of this PCA are summarized in Table 5. The first two components extracted explain 40% of the total variation in these dimensions. We name these components as "established" and "marginal", respectively. Our interpretation of these two components is as follows. Households that have higher levels of "established" networks are those, relative to the households with "marginal" networks, who are more socially aware, seem to receive more from their religious ties, whose ethnic identities are not pronounced, and who are not new in town. Hence, they have well-established social ties. In contrast, households that have higher levels of marginal networks, relative to established networks, seem to be more on the edge of the society, being IDPs, less socially aware, and having a more pronounced ethnic identity.

Table 5 – PCA results for the potentiality of social networks

	Established (Component 1)	Marginal (Component 2)
Strongly Sunnite	-0.01	-0.68
Strongly Allevite	0.37	-0.05
Ethnicity	-0.09	0.49
Social awareness	0.30	0.10
New immigrant	-0.61	-0.01
Old immigrant	0.58	0.22
IDP	-0.23	0.48
% Total variation explained	*23*	*17*

5.2 Econometric analysis

This section presents the results of the econometric analysis where the determinants of the choice between public versus private health care facilities are analyzed. The probability of choosing a public facility (or a private facility) is assumed to depend on a number of individual characteristics such as the type of health insurance (if any), socioeconomic status, potentiality of social networks, etc. The standard binary logit estimation framework is applied. In what follows, we present the results of the marginal effects that are calculated at the sample averages of each independent variable.[9] In practice, marginal effects calculated in this manner show the effect of an infinitesimal change in each independent variable, from the initial values given by those of an average person, on the probability of each outcome. Marginal effects are tabulated in Table 6 below.

Considering the possibility that individual behavior regarding the choice between public and private health care facilities may depend on the type of visit, the econometric analysis is first done for all hospital visits, and then repeated for visits due to relatively minor health problems defined as medical exams, diagnostics, and outpatient treatment. This is mainly due to the issue that for many people cost considerations might become a big issue once there is a major health problem,

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[8] Note that it is possible to use all these measures separately as identifiers of potential social networks. However, in our econometric analyses, we uncovered that, those measures, when used one-by-one, do not have a significant impact on the outcome while, when combined, they play a significant role. This might indicate that although some of the variation in these variables is not relevant for our purposes, once the appropriate portion is extracted, it becomes possible to observe the effects of the potentiality of networks. See more on the results of the econometric analysis in Section 5.2.

[9] Estimated logit coefficients are in the Appendix, Table A-1.

and therefore, they might choose to go wherever is cheaper. Since we do not have data on either the costs of the services used or their alternatives, by using the data for minor health problems only, we hope to isolate the effects of prices. Hence, Table 6 presents two sets of regressions.

For the larger sample, i.e. for all hospital visits, the first regression includes nine independent variables: established networks, marginal networks, the ratio of working adults to total adults, the ratio of retired adults to total adults, socioeconomic status, and four dummy variables for types of insurance held by the household. Socioeconomic status is statistically significant and negative, indicating that those individuals whose socioeconomic status level is one unit above that of the average person in the sample will have the probability of choosing public facilities over private facilities reduced by 0.08. In addition, the dummy variables representing the different types of insurance are also statistically significant. Relative to individuals with Green Cards, those individuals with GERF and SIO prefer public facilities with a higher probability, and others with BK and private health insurance schemes prefer private facilities with a higher probability.

The second regression takes out socioeconomic status and inserts material security. It is found that material security is statistically significant, and a one unit increase in material security relative to the average person in the sample reduces the likelihood of choosing public facilities by 0.05. Moreover, those households who have GERF and SIO relative to those with Green Cards still prefer public facilities over private, and those who have private health insurance relative to those with Green Cards still prefer private facilities over public ones. However, we are no longer able to differentiate between the behavior of households with BK and households with Green Cards. Therefore, it is possible to speculate that only after controlling for items besides material security that are included in socioeconomic status, i.e. income and education, it is possible to differentiate between the behavior of these types of households.

These two regressions are repeated for a smaller sample that includes those households who visited health care centers only for minor health problems. As mentioned above, this could isolate any potential effect due to differences in prices.

In the first regression, involvement in established networks matters for the choice between public and private facilities. Those people who have a level of established networks that is one unit higher than the average person in the sample have a rise in their probability of choosing public over private facilities by 0.07. It is possible to interpret this finding as showing that those people with higher than average potentiality of social networks tend to go to public health care centers for minor health problems, most likely due to the benefits of these networks in easing the access to such facilities. The effects of socioeconomic status and the dummies for types of health insurance schemes in this smaller sample are the same as those found in the first regression for the whole sample, except for the BK dummy, which becomes insignificant for the smaller sample. Hence, it is possible to deduce that, once minor health problems are considered, the behavior of households with BK and the behavior of households with Green Cards cannot be differentiated. The regression results when material security is inserted in the place of socioeconomic status are similar.

Table 6 – Logit results-marginal effects

	All hospital visits			Only for medical exam, diagnostic, outpatient			
	[1]		[2]		[1]		[2]	
Established	0.03		0.03		0.07	**	0.07	**
	(0.02)		(0.02)		(0.03)		(0.03)	
Marginal	0.03		0.03		0.01		0.01	
	(0.02)		(0.02)		(0.04)		(0.04)	
Working/HH size	0.04		-0.05		-0.17		-0.23	
	(0.09)		(0.09)		(0.18)		(0.15)	
Retired/HH size	0.02		0.01		-0.27		-0.23	
	(0.14)		(0.14)		(0.31)		(0.31)	
Socio-economic status	-0.07	***			-0.06			
	(0.02)				(0.04)			
Material security			-0.05	***			-0.07	**
			(0.02)				(0.03)	
GERF	0.14	***	0.12	**	0.22	***	0.22	***
	(0.05)		(0.05)		(0.06)		(0.06)	
SIO	0.15	**	0.15	**	0.34	***	0.40	***
	(0.06)		(0.06)		(0.13)		(0.13)	
BK	-0.13		-0.12		-0.19		-0.12	
	(0.08)		(0.08)		(0.18)		(0.17)	
Private health insurance	-0.49	**	-0.48	**	-0.58	***	-0.49	*
	(0.20)		(0.19)		(0.22)		(0.27)	
N	343		343		121		121	
LR	41		35		35		37	
Pseudo R_square	0.11		0.10		0.25		0.26	

Dependent variable: probability of choosing public facilities. Two sets of regressions:
One for all hospital visits, another for medical exam, diagnostic and outpatient. For both, two models are estimated as in this table.
*, **, and *** indicate statistical significance at 10%, 5% and 1%, respectively.

It is possible to interpret the findings of the econometric analysis as follows. When all types of visits are considered, households in the sample tend to choose private facilities if they have a higher socioeconomic status or material security and if they have private health insurance. They tend to choose public facilities if they have GERF or SIO insurance schemes. However, as we lack price data, it is possible that when major health problems are involved, regardless of the long wait lines in public facilities, individuals may still prefer public health care centers over private ones as public facilities have lower prices. Hence, using a smaller sample of households who only went to health care centers due to minor problems, the analysis is repeated. The findings in terms of socioeconomic status or material security, GERF, SIO, and private health insurance schemes do not change when major health problems are left out. However, the presence of a higher level of established networks gain importance in choosing public over private facilities. This finding can be interpreted as social networks playing a role in easing access to public health care centers.

6 Conclusion and discussion

The aim of this paper is to study the importance of social networks for the choice of public versus private health care centers. For this purpose, the paper utilizes survey data from Istanbul, and constructs measures of the potentiality of social networks. Based on econometric analysis, it is possible to conclude that potential social ties play an important role in choosing public health care centers over private ones in the case of minor health problems. As public facilities have long been characterized by long waiting lines even for appointments for medical exams, this finding indicates that households who possess higher levels of social networks might be availing themselves of those to ease access to public facilities.

Helpful as they are, social networks used in this manner, in general, create unequal treatment among the members of the society, as has been argued by Rose (2000). Hence, there is room for policy in terms of correcting for the organizational failures in public facilities so that a more equitable as well as more efficient public health provision can be achieved.

For more important health problems, the findings indicate that social networks are not influential in hospital choice. A potential reason for this could be that obtaining favors related to the care of major health problems require a large networking cost, and therefore people refrain from using their connections. But it could also be due to the likelihood that such health treatments are better organized so that networks are not operational. It is not possible to distinguish between these two without a full understanding of the workings of networks.

Hence, it is important to note that this paper is only a first attempt toward characterizing the effects of social networks on household behavior in terms of hospital choice in Istanbul. Since the findings of the analysis indicate the presence of network effects, this calls for a more thorough examination of the issue using large-scale survey data and a variety of other potential measures of social networks. As there is room for policy to correct for the inefficiencies in the Turkish health system, we feel that this line of research is extremely important to provide a general understanding of some of the problems in this respect.

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Appendix:

	All hospital visits		Only for medical exam, diagnostic, outpatient	
	[1]	[2]	[1]	[2]
Established	0.16	0.16	0.44 **	0.52 **
	(0.11)	(0.11)	(0.21)	(0.22)
Marginal	0.20	0.20	0.07	0.07
	(0.15)	(0.15)	(0.24)	(0.24)
Working	0.08	0.31	-2.10 *	-2.45 *
	(0.43)	(0.44)	(1.26)	(1.25)
Retired	0.04	0.08	-1.87	-2.18
	(0.58)	(0.58)	(1.53)	(1.57)
Socio-economic status	-0.29 ***		-0.35	
	(0.10)		(0.22)	
Material security		-0.44 ***		-0.44 **
		(0.12)		(0.21)
GERF	0.91 *	1.17 **	2.16 **	2.36 **
	(0.51)	(0.53)	(0.95)	(0.98)
SIO	0.82 **	0.84 **	2.02 ***	2.47 ***
	(0.33)	(0.34)	(0.68)	(0.76)
BK	-0.67 *	-0.73 *	-0.65	(0.25)
	(0.40)	(0.40)	(0.84)	(0.88)
Private health insurance	-2.15 **	-2.19 **	-2.83 **	-2.33 *
	(0.88)	(0.92)	(1.29)	(1.28)
Constant	0.75 **	0.57	1.94 *	1.92 *
	(0.37)	(0.39)	(1.12)	(1.12)
N	343	343	121	121
LR	35	41	38	40
Pseudo R_square	0.09	0.11	0.27	0.29

Table A-1 – Logit Results. Dependent variable: probability of choosing public facilities. Two sets of regressions:
One for all hospital visits, another for medical exam, diagnostic and outpatient.
*, **, and *** indicate statistical significance at 10%, 5% and 1%, respectively.