



REGIONAL INEQUALITIES AND PUBLIC-PRIVATE DYNAMICS IN SAUDI HEALTHCARE PROVISION

A. K. Alhawaish¹, F. S. Alshhiri², A.Y. Shinwai³

¹Professor in urban and regional planning department, college of architecture and planning, Imam Abdulrahman University, P.O. Box 2397, Dammam 31451, Saudi Arabia, ahawaish@iau.edu.sa

²Professor in urban and regional planning department, college of architecture and planning, Imam Abdulrahman University, P.O. Box 2397, Dammam 31451, Saudi Arabia, fshihri@iau.edu.sa

³Teaching assistance, urban and regional planning department, college of architecture and planning, Imam Abdulrahman University, P.O. Box 2397, Dammam 31451, Saudi Arabia, malik.y.s@hotmail.com

KeyWords

Regional inequalities, healthcare, public, private, Saudi Arabia

ABSTRACT

This study investigates spatial pattern of healthcare provision across public and private sectors, and the extent to which expanded public and/or private sector participation in healthcare provision has translated into a more equitable distribution of healthcare services in Saudi Arabia. The Gini coefficient technique and associated Lorenz curve were adopted as the main index for assessing the nature and extent of health inequality between public and private healthcare provision in Saudi Arabia. Pearson product moment correlation coefficient was also used to determine whether the private sector responds more strongly to the level of need for healthcare services than the public healthcare sector. The results show that overall, private healthcare tends to be distributed more equitably than public healthcare. Primary healthcare centers in the public sector and polyclinics in the private sector by large have the most spatially inequitable distributions in the country compared with other healthcare facilities. The study also revealed that the need for healthcare services is the most important factor to the public and private healthcare providers compared to all other factors such as location, market, profits, etc. The ongoing privatization process of the Saudi healthcare system is a successful strategy and needs to be encouraged and maintained in the long run. Saudi healthcare-policymakers, however, need to focus more on the privatization of primary healthcare than of general hospitals. Policymakers in the Saudi healthcare system need to focus more on the private healthcare sector and simultaneously create a broader perspective on how the public and private healthcare sectors can work together to address the long-term challenges of affordability, quality, and availability of healthcare for Saudi citizens.

Introduction

According to numerous articles courtesy of the Saudi constitution [1-3], the government is required to provide free health care to all its Saudis. These free healthcare services are provided for by the development of health policy, which is committed to a "health for all" goal. In the kingdom of Saudi Arabia healthcare is responsible by both the public and private sectors; however, the public sector is presiding of the other [4]. The ministry of health is in charge of managing the nation's health system. Its job is to strategically form specific health policies, oversee all health delivery services, and monitor all other health doings. The ministry of health is also the sole government agency that is charged with the providing healthcare services for its citizens. Bloomberg [5] recently (2015) placed Saudi Arabia 12th in a ranking of the efficiency of healthcare systems around the world, while during the same year, the United Kingdom, France, Canada, and the United States were ranked 17th, 18th, 24th, and 50th respectively. The ranking was based on life expectancy, healthcare expenditure as a proportion of GDP, and healthcare costs per capita. Despite Saudi Arabia's healthcare achievements, the healthcare system is currently under pressure that is set to intensify in the near future [6]. One reason is the demographic shift underway in Saudi Arabia. The country's population is currently about 31.5 million; it is expected to reach 39.1 million in 2030, and to exceed 46.0 million in 2050 [7]. The proportion of people in Saudi Arabia aged 60 or more is predicted to be almost 21 percent of the total population by the end of 2050 compared with 5 percent in 2015. Additionally, the number of people aged 80 or more is expected to be 2.7 percent in 2050 compared with only 0.5 percent in 2015. These aging populations will eventually create increased demand for healthcare services in the country. Furthermore, young people below the age of 34 years account for about 60 percent of the total Saudi population [8]. This rapidly growing young population is also a key factor driving demand for healthcare services in the country in the near future. The ongoing shift of disease patterns from communicable to non-communicable diseases is another factor that will put more pressure on the Saudi healthcare system. Incidence of chronic non-communicable diseases (such as diabetes, cardiovascular disease, and cancer) is on the rise and is now the major cause of death among the elderly in Saudi Arabia [9-10]. Overweight and obesity are highly prevalent in the country relative to the rest of the world: 69 percent of the population are overweight, and 33 percent are obese [11-12].

The third and probably the most important reason is the financial aspect of the Saudi healthcare system. The government is the major financier and provider of healthcare in the country, contributing approximately 75% of total healthcare spending [13]. During the last ten years, for example, the government increased its healthcare budget allocation from SAR14.7 billion in 2004 to more than SAR59.9 billion in 2014 [14]. On average, healthcare spending was estimated to have been 4 percent of GDP during the last ten years [15]. This growing burden of healthcare spending has forced the government to introduce initiatives to encourage private-sector participation in the provision of healthcare services, either through direct investment or through public-private partnership (PPP). In fact, several healthcare privatization programs were introduced by MOH in early 2007 with the aim of reducing government healthcare expenditure, improving healthcare system management, and generating world-class healthcare standards for its citizens [16-18]. Saudi healthcare-policymakers argue that privatization would reduce government expenditure rather than the complexities of decision-making at the governmental hospitals and the quality of service would improve in response to market demand. Thus, based on such ideas, a number of government hospitals have already been sold to the private sector and the others rented to private operators [19].

The crown prince Mohammed bin Salman, during an interview regarding Vision 2030 and other schemes to privatize a few sectors of the economy which includes health, said that it would secure a greater productivity and transparency, as well as remove wastage of medicine [20]. The ministry of health plans to privatize around 295 hospitals and 2,259 health centers by 2030 [21]. In theory it proclaims that privatizing these medical facilities will accelerate medical services by giving rise to competition. The government would benefit in two aspects. Firstly by reducing public health expenses, and secondly by increasing income for the ministry of health by a new source. On the other hand, it has also been argued that privatization tends to be market-oriented where profit can be maximized, rather than place-oriented where welfare services to distressed people can be achieved.

In Saudi Arabia however, before the government can privatize more healthcare facilities, it needs to introduce certain legislation and regulations that would ensure more equitable healthcare distribution and improved accessibility of health services all over the country, including small and rural communities. A more in depth investigation in terms of public and private healthcare provisions between and among the thirteen Saudi regions needs to be conducted. Hence, the present study aims to (i) investigate the spatial patterns of healthcare provision across public and private sectors in Saudi Arabia in terms of both physical and human resources, and (ii) ascertaining the extent to which expanded public and/or private sector participation in the provision of healthcare services has translated to a more equitable distribution of health facilities in the country. The remainder of the paper is organized as follows: Section two describes the methodology, data sources, and the study area; Section three presents the empirical results; and Section four provides a summary, a brief conclusion, and some policy recommendations.

Materials and methods

Data on physical and human healthcare resources for each of the thirteen Saudi regions were obtained directly from Saudi health statistical reports for the year 2014 [22]. The number of hospitals and number of primary healthcare centers (polyclinics) is used as a

proxy of healthcare physical resources in both public and private sectors, while the number of physicians and number of nurses is used as a proxy of healthcare human resources in both sectors. The 2014 Population Census data for each of the thirteen Saudi regions were obtained directly from the general authority for statistics database [23].

The paper adopts the Gini coefficient technique and associated Lorenz Curve as the main index for assessing the nature and extent of health inequality among and between Saudi regions. The Pearson Product Moment Correlation technique was used to test the association between public/private healthcare provision and level of need. The total population of each of the thirteen Saudi regions is used as an index of need. The Gini coefficient compares the percentage frequency of some attribute with a distributional criterion. The distributional criterion in the context of this study is the population, which is the index of need for healthcare services. The Gini coefficient ranges from 0 to 100. A coefficient of zero indicates perfect equality of healthcare distribution while a coefficient of 100 indicates perfect inequality. The Gini coefficient is expressed as:

$$G = 1 - \sum_{i=0}^n (X_i - X_{i-1})(Y_i + Y_{i-1})$$

Where X_i is the cumulated proportion of the population variable, for $i = 0, \dots, n$, with $X_0 = 0$, $X_n = 1$, and Y_i is the cumulated proportion of the health variable, for $i = 0, \dots, n$, with $Y_0 = 0$, $Y_n = 1$ [24].

The Lorenz curve is a plotted graph used to depict inequality based on the cumulative percentages of the distributed phenomenon (i.e., healthcare services) against the cumulative percentages of the distributional criterion (i.e., population size). As is well documented [24-26], a 45-degree diagonal line is the line of perfect equality and if the Lorenz curve coincides with the diagonal, then there is perfect equality in the distribution of health services in the study area. The greater the departures of the Lorenz curve from the diagonal the greater the inequalities [25]. A Lorenz curve can also be used to determine the proportion of the population that controls a given proportion of health services in the study area. Finally, the Pearson product-moment correlation coefficient (sometimes referred to as the PPMC or Pearson's r) is a measure used to test the linearity or degree of relationship between two variables under investigation. The values range between +1 and -1 inclusive, where 1 is a total positive correlation, 0 is no correlation, and -1 is a total negative correlation [26]. In this study, the PCC is used to determine the degree of relationship between the level of need and the provision of healthcare services in both public and private sectors. In other words, the PCC technique was used to determine whether the private sector responds more strongly to the level of need for healthcare services than the public healthcare sector in Saudi Arabia.

Study Area. The Kingdom of Saudi Arabia lies in the southwest part of Asia with an approximate area of 2,149,690 sq km. The kingdom takes 80% of the Arabian Peninsula and is bordered by the Red Sea to the west and the Arabian Gulf to the east. Kuwait, Bahrain, Qatar and the UAE border Saudi Arabia to the east and Oman and Yemen to the south [27]. Today, there are 21.13 million Saudis and 10.39 non-Saudis, which totals to 31.52 million people populating the kingdom and most importantly is that the majority of the population is between the ages of 15 and 64 [23]. The country is rich in natural resources and its economy is fueled by oil meaning that its oil based. The oil sector counts for 92% of the total government revenues. It is the world's leading exporter of petroleum and is recognized as the fastest growing economy [28].

The administrative classification of Saudi Arabia divides the Kingdom into five large regions, namely, Western, Eastern, Northern, Southern, and Central regions. During the fifth development plan [29], however, these five former planning regions were replaced as spatial references for planning by thirteen regions, namely, Riyadh, Makkah, Madinah, Qassim, Eastern Province, Jizan, Najran, Aseer, Baha, Hail, Tabouk, Northern Border, and Jouf (Figure 1). These thirteen regions differ in economic, demographic, and geographic factors such as socio-economic development, population size, and land area [30]. Additionally, these thirteen regions were classified into three development levels based on different socio-economic indicators [31-32]. Out of thirteen regions, three regions (Riyadh, Makkah, and Eastern Province) were classified as developed regions, four regions (Qassim, Madinah, Aseer, and Jizan) classified as developing or emerging regions, while the remaining six regions (Hail, Tabouk, Baha, Najran, Jouf, and Northern Border) were classified as underdeveloped regions. Today, the three developed regions account for 65.9 percent of the total Saudi population, while the four emerging regions account for 23.0 percent, and the underdeveloped regions account for 11.1 percent of the total population. These thirteen regions with their classification categories are used as the spatial units of analysis in this study.

Results and discussion

Table 1 presents the spatial pattern of provision of healthcare resources by public and private providers. The analysis clearly shows that Riyadh, Makkah, Eastern Province, and Aseer regions account for a substantial proportion of public hospitals in the Kingdom. Each accounts for 17 percent, 14 percent, 13 percent, and 10 percent respectively. With the exception of Jizan (8 percent), Qassim (7 percent), and Madinah (7 percent), the other six Saudi regions each account for less than 4 percent of public hospitals. A similar pattern emerges when the primary healthcare centers are considered. As with public hospitals, Riyadh, Makkah, Eastern Province, and Aseer regions account for 18 percent, 14 percent, 11 percent and 15 percent respectively, while Jizan, Qassim, and Madinah regions

each account for 7 percent. The remaining six regions each account for less than 5 percent of primary healthcare centers. The three developed regions account for 45 percent and 44 percent of public hospitals and primary healthcare centers respectively. The four developing regions account for 32 percent and 37 percent, while the six underdeveloped regions account for 23 percent and 20 percent of public hospitals and primary healthcare centers respectively.

For the private healthcare sector, however, a different pattern emerges when private hospitals are considered. Makkah, Riyadh, and Eastern Province regions account for a substantial proportion of private hospitals in the country. Each accounts for 31 percent, 24 percent, and 18 percent respectively. According to the Saudi regional classifications, these three regions are classified as developed regions, which together account for more than 74 percent of private hospitals. However, Aseer and Madinah regions each account for 9 percent of private hospitals, Qassim region account for 4 percent, while the other regions each account for less than 2 percent. In fact, Northern Border and Jof regions each have no private hospitals at all. However, the private polyclinics provision shows that Aseer, Riyadh, Makkah, and Eastern Province account for 23 percent, 16 percent, 13 percent, and 10 percent respectively. These four regions together account for more than 61 percent of private polyclinics. In addition, Hail region accounts for 8 percent, Jizan and Tabouk each account for 7 percent of private polyclinics, while the remaining six regions each account for less than 4 percent. The three developed regions, however, account for 74 percent and 38 percent of private hospitals and polyclinics respectively. The developing regions account for 23 percent and 34 percent, while the underdeveloped regions account for only 4 percent and about 28 percent of private hospitals and polyclinics respectively.

Table 2 presents the distribution pattern of human resources in the study area. The analysis shows that Makkah, Riyadh, and Eastern Province regions account for a large proportion of public physicians and nurses in Saudi Arabia. Each accounts for 22 percent, 19 percent, and 15 percent in the case of public physicians and about 20 percent, 19 percent, and 15 percent in the case of public nurses respectively. With the exception of Aseer and Madinah regions, the other Saudi regions each account for less than or equal to 6 percent of both public physicians and nurses. Based on regional classifications, however, the three developed regions account for 56 percent and 55 percent of public physicians and nurses respectively, while the four developing regions account for 27 percent and 26 percent, and the six underdeveloped regions account for 17 percent and 19 percent of public physicians and nurses respectively. A similar pattern emerges when private physicians and nurses are considered. As with the public healthcare sector, Riyadh, Makkah, and Eastern Province regions account for 33 percent, 27 percent, 19 percent of private physicians and about 29 percent, 20 percent, and 22 percent of private nurses respectively. However, the other Saudi regions each account for less than 6 percent of both private physicians and nurses. In fact, the three developed regions account for almost 79 percent and 71 percent of private physicians and nurses respectively, while the four developing regions account for 15 percent and 16 percent, and the six underdeveloped regions account for only 6 percent and 13 percent of private physicians and nurses respectively.

The above analysis indicates that private healthcare provision tends to be more oriented to place-based concentration than public healthcare provision. It is clear that more than 70 percent of private hospitals, physicians, and nurses are concentrated in three developed regions. However, to get a clearer picture of the pattern of provision/distribution of healthcare, the Gini coefficient technique and associated Lorenz Curve were used to assess the nature and extent of healthcare inequality in Saudi Arabia. Table 3 gives the results of Gini coefficient for both public and private healthcare provision. The G values for the public healthcare sector in terms of hospitals, primary healthcare centers, physicians, and nurses are 26, 25, 18, and 19 respectively. The G values for the private healthcare sector in terms of hospitals, polyclinics, physicians, and nurses are 1, 30, 9, and 11 respectively. The G values clearly indicate that public healthcare provisions tend to be (to some degree) more oriented toward inequitable distribution among Saudi regions than private healthcare provisions. With the exception of private polyclinics, the G value indicated enormous spatial inequality in the provision of polyclinics by private providers. The associated Lorenz curves in Figures 2 and 3 equally confirm that there is generally an unequal distribution of public healthcare provision compared to the private healthcare sector. It is interesting to note that both the public and private healthcare sectors share a similar pattern of spatial inequality in the provision of primary healthcare centers and polyclinics.

The Pearson correlation coefficient was calculated for the relationship between level of need and provision of public and private healthcare facilities. Strong and significant positive correlations were found between need and public ($r = 0.984$, $p < .001$) and private ($r = 0.966$, $p < .001$) healthcare provision respectively. However, the coefficient of determination (i.e., the square of the correlation coefficient) indicates that need accounts for 97 percent and 93 percent of the variation in the provision of healthcare services by public and private providers respectively. These suggest that the need for healthcare services is the most important factor to the public and private healthcare providers compared to all other factors. Thus, it can be confirmed that both public and private sectors respond equally to the level of need for healthcare services in Saudi Arabia.

Conclusion

The present study aimed to investigate the spatial pattern of healthcare provision between public and private sectors, and to ascertain the extent to which expanded public and/or private sector participation in the provision of healthcare services has translated

into a more equitable distribution of health facilities in Saudi Arabia. The Gini coefficient technique and associated Lorenz curve were adopted as the main index for assessing the nature and extent of health inequality between public and private healthcare provision in Saudi Arabia. The results from the above analysis revealed that overall, private healthcare provision tends to be more oriented towards equitable distribution than public healthcare provision. The study also revealed that primary healthcare centers in the public sector and polyclinics in the private sector have, by a large degree, the most spatially inequitable distributions in the country compared with other healthcare variables. The study confirmed that the need for healthcare services is the most important factor to the public and private healthcare providers compared to all other factors such as location, market, and profits.

Based on the above analysis, however, one could conclude that the ongoing privatization process of the Saudi healthcare system is a successful strategy and needs to be encouraged and maintained in the long-run. Saudi healthcare policymakers need to focus more on the privatization of primary healthcare than of general hospitals. Finally, given that the Saudi Arabian economy is based on oil resources and is vulnerable to oil price changes, any oil revenue shock would result in a dramatic decrease in public healthcare spending. Thus, Saudi healthcare policymakers need to focus more on the private healthcare sector and create a broader perspective on how the public and private healthcare sectors can work together to address the long-term challenges of affordability, quality, and availability of healthcare for Saudi citizens.

Finally, it should be acknowledged that this paper and the methods used to investigate the inequalities in Saudi healthcare provisions have some limitations. Firstly, the G values present the magnitudes of inequalities but not the direction of it. Other techniques such as the generalized entropy (GE) and herfindahl index (HI) indices might be used along with the G value index to present both the magnitudes and the direction of inequalities among and between places. A second limitation lies in the fact that resources were not available to include other types of health professionals in the study such as small size private clinics and specialized units. Finally, the spatial patterns of physical and human resources were investigated in a separate model; however, it would be stronger to bring the two together in the analysis.

References

- [1] Albugami, F. Healthcare in the Kingdom of Saudi Arabia, Ministry of Health Publication, Riyadh, Saudi Arabia, 2013.
- [2] Albejaidi, F.M. Healthcare System in Saudi Arabia: An Analysis of Structure, Total Quality Management and Future Challenges, *Journal of Alternative Perspectives in the Social Sciences*, 2010, 2(2): 794-818.
- [3] Al-Yousuf, M., Akerele, T.M., and Al-Mazrou, Y.Y. Organization of the Saudi Health System, *Eastern Mediterranean Health Journal*, 2002, 8 (4&5): 233-241
- [4] Alhowaish, A.K. Economic Costs of Diabetes in Saudi Arabia, *Journal of Family and Community Medicine*, 2013, 20 (1): 1-7
- [5] Bloomberg's, Most Efficient Health Care Ranking, 2015. Available online: <http://belsat.eu/en/news/bloomberg-s-2015-most-efficient-health-care-ranking-belarus-47th-of-55/>.
- [6] The Intelligence Unit. Healthcare in Saudi Arabia: Increasing capacity, Improving Quality? The Economist Publication, Dubai, 2015: 1-13.
- [7] United Nations. World Population Prospects. New York: UN Population Division, 2015.
- [8] Al-Hazzaa HM. Obesity and physical inactivity among Saudi children and youth: Challenges to future public health. *J Family Community Med*, 2006;13: 53-4.
- [9] Karim A, Ogbeide DO, Siddiqui S, Al-Khalifa IM. Prevalence of diabetes mellitus in a Saudi community. *Saudi Med J*, 2000;21:438-42
- [10] Al-Nuaim AR, Al-Rubeaan K, Al-Mazrou Y, Al-Attas O, Al-Daghari N, and Khoja T. High prevalence of overweight and obesity in Saudi Arabia. *Int J Obes Relat Metab Disord*, 1996;20: 547-52.
- [11] Saudi Kuwaiti Finance House. Saudi Arabia Healthcare "Healthy Living", KFH research ltd, 2014.
- [12] Al-Baghli NA, Al-Ghamdi AJ, Al-Turki KA, El-Zubaier AG, Al-Ameer MM, Al-Baghli FA. Overweight and obesity in the Eastern Province of Saudi Arabia. *Saudi Med J*, 2008;29: 1319-25.
- [13] Alhowaish, A.K. (Healthcare Spending and Economic Growth in Saudi Arabia: A Granger Causality Approach, *International Journal of Scientific and Engineering Research*, 2014; 5(1): 1471-1474.
- [14] Saudi Arabian Ministry of Health. Statistical Year Report, Chapter II: Health Resources, MOH publication, Riyadh, Saudi Arabia, 2014.
- [15] World Bank World Development Indicators (WDI) database. Available online: <http://data.worldbank.org/data-catalog/world-development-indicators>
- [16] Saudi Arabian Ministry of Health. Health Strategic Plan, 2016. Available online: <http://www.moh.gov.sa/Portal/WhatsNew/Documents/OKIstragi260p.pdf>
- [17] Hassan, J. "Privatization of health sector needed," Arab News, January 13, 2016.
- [18] Bouyamoun, A. "Saudi health privatization plans left in doubt" The National, December 23, 2014.
- [19] Walston S, Al-Harbi, Y., Al-Omar, B. The changing face of healthcare in Saudi Arabia. *Ann Saudi Med*, 2008; 28(4): 243-250.
- [20] The Economist. Transcript: Interview with Muhammad bin Salman, 2016. Available online: http://www.economist.com/saudi_interview
- [21] Hail Sunday. "Saudi Arabia to privatize 295 hospitals" Saudi Gazette, May 15, 2016.
- [22] Saudi Arabian Ministry of Health. Health Statistic Book for the year of 2015. Available online: <http://www.moh.gov.sa/statistics/1435/index.html>
- [23] Saudi Arabian General Authority for Statistics. 2016. Statistical Yearbook of 2015, Chapter 2: Population Statistics, 2015. Available online: <http://www.cdsi.gov.sa/en/411>
- [24] Abiodun, O. F. Spatial Inequalities in the Provision of Private Health Facilities in OYO State, *Indonesian Journal of Geography (IJG)*, 2013; 45(1): 15-23.
- [25] Arcaya M.C., Arcaya A.L. and Subramanian, S.V. Inequalities in health: definitions, concepts, and theories. *Glob Health Action*, 2015; 8: 27106 - <http://dx.doi.org/10.3402/gha.v8.27106>

- [26] Cowell F.A. Measuring Inequality, Philip Allan, Oxford, UK, 1977.
- [27] Almasabi, M.H. An Overview of Health System in Saudi Arabia. *Research of Medical Sciences*, 2013; 7(3): 70-74.
- [28] Saudi Arabian Monetary Agency. The 50th Annual Report: The Latest Economic Development, Research and Statistics Department, SAMA, Saudi Arabia, 2014. Available online: <http://www.sama.gov.sa/>
- [29] Saudi Arabian Ministry of Planning. Regional and Urban Development: Key Issues in Regional Development. Ministry of Planning (MOP) Press, Riyadh, Saudi Arabia, Chapter 15: 370, 1995.
- [30] Saudi Arabian Ministry of Municipal and Rural Affairs, National Spatial Strategy for Saudi Arabia: An Overview. MOMRA Press, Riyadh, Saudi Arabia, 2000.
- [31] Alhwaish, A.K., Alshihri F.S. Towards Balanced Regional Economic Development: The Case of Saudi Arabia, *Journal of King Abdulaziz University, Faculty of Environmental Design*, 2012; 23(2): 33-45.
- [32] Alhwaish, A.K. Al-shihri, F.S. and Ahmed, S.M. Inter-Sectoral Linkages and Economic Growth in Saudi Arabia: Toward a Successful Long-term Development Strategy, *International journal of Science and Research (IJSR)*, 2014; 3(8): 1654-59.



Table 1: Healthcare Physical Resources (% Share)

Region	Public Sector		Private Sector	
	Hospitals	PHC	Hospitals	Polyclinics
Riyadh	17	18	24	16
Makkah	14	14	31	13
Jizan	8	7	2	7
Eastern Province	13	11	18	10
Aseer	10	15	9	23
Qassim	7	7	4	2
Hail	4	5	1	8
Madinah	7	7	9	2
Baha	4	4	1	3
Northern Region	3	2	0	2
Tabouk	4	3	1	7
Najran	4	3	1	4
Jouf	4	2	0	3
Total (Saudi Arabia)	100	100	100	100
Developed Regions	45	44	74	38
Developing Regions	32	37	23	34
Least Developed Regions	23	20	4	28

Note: PHC stand for Primary Healthcare Center.

Source: Ministry of Health, 2015.

Table 2: Healthcare Human Resources (% Share)

Region	Public Sector		Private Sector	
	Physicians	Nurses	Physicians	Nurses
Riyadh	19	19	33	29
Makkah	22	20	27	20
Jizan	5	5	1	4
Eastern Province	15	15	19	22
Aseer	7	7	6	6
Qassim	6	6	3	3
Hail	3	3	2	2
Madinah	8	8	5	4
Baha	3	2	1	2
Northern Region	2	3	0	2
Tabouk	3	4	2	2
Najran	3	3	1	2
Jouf	3	4	1	2
Total (Saudi Arabia)	100	100	100	100
Developed Regions	56	55	79	71
Developing Regions	27	26	15	16
Least Developed Regions	17	19	6	13

Source: Ministry of Health, 2015.

Table 3: Gini Coefficient for Public and Private Healthcare Services

Variables “Health Facilities”	Gini Coefficient	
	Public	Private
Hospitals	26	1
PHC	25	-
Polyclinics	-	30
Physicians	18	9
Nurses	19	11

Note: PHC stand for Primary Healthcare Center.



Figure 1: Map of Saudi Arabian Regions

Source: Ministry of Planning, 1995

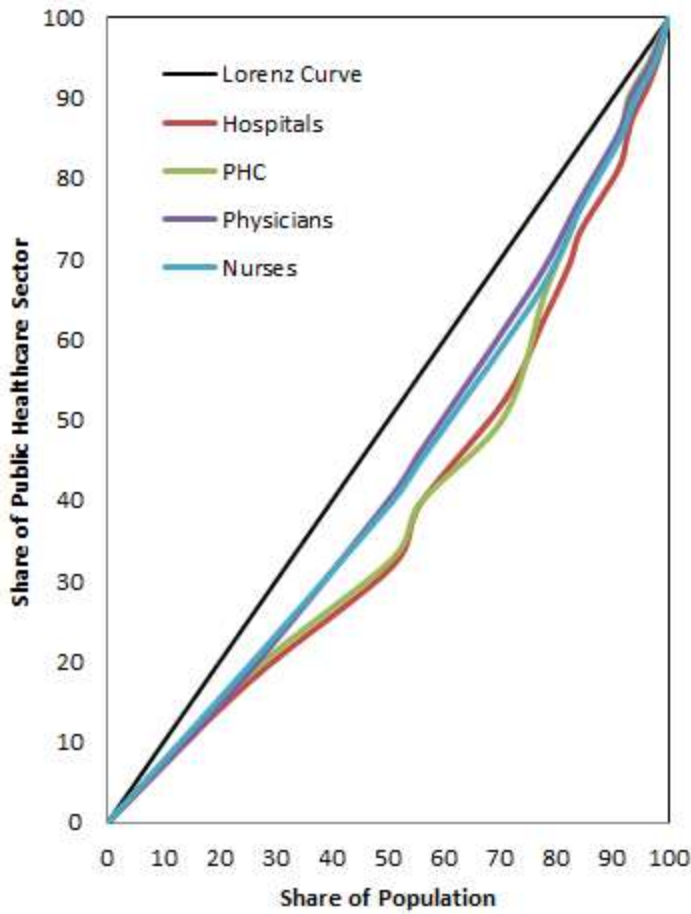


Figure 2: Lorenz Curve for Public Healthcare Sector

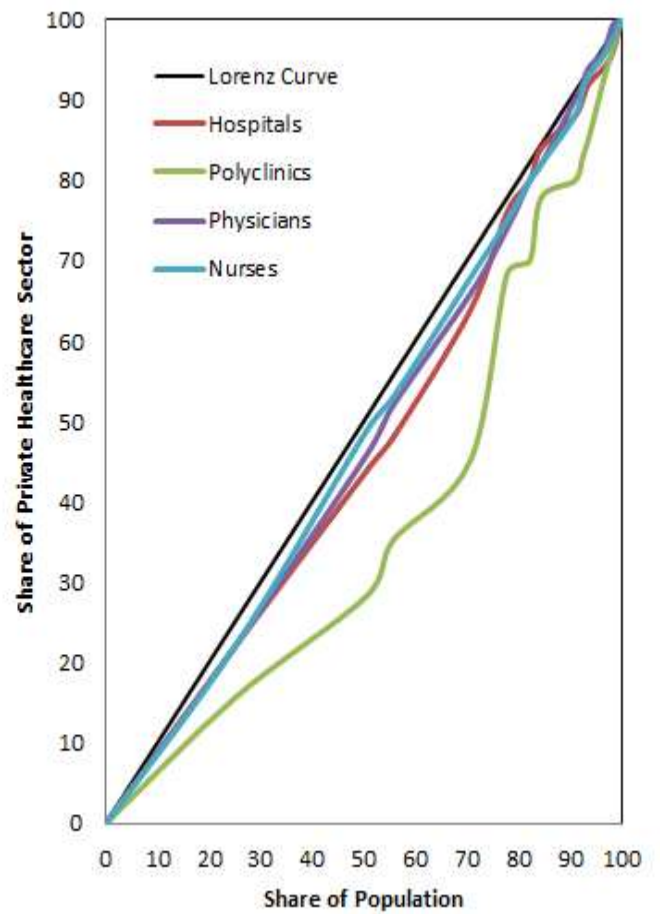


Figure 3: Lorenz Curve for Private Healthcare Sector