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Health Insurance in Saudi Arabia:
Funding Options to Manage the Risk of Government Healthcare Spending

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Report on research completed and submitted for the degree of Doctor of Philosophy in Finance,
March 2019

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ABBREVIATIONS

Average annual increase or decrease (Av)
Basic Health Insurance (BHI)
Capexs (CAPEX, or CEX)
Central Eastern Europe (CEE)
Citizen's Account Fund (CAF)
Community Based Health Insurance (CBHI)
Contingent Valuation Method (CVM)
Federal Soviet Union (FSU)
General Authority for Statistics (GAFS)
General Organisation of Social Insurance (GOSI)
Gulf Cooperation Council (GCC)
Hospital (HOS)
Human Resources Development Fund (HRDF)
Increase or decrease as percentage (I or D%)
Increase or decrease in Millions of US dollars (I or D $M)
Inverse Mills Ratio (IMR)
Mandatory Health Insurance (MHI)
Marginal Effects at the Mean (MEM)
Medical Centers (MC)
Medical savings accounts (MSA)
Ministry of Defence (MOD)
Ministry of Education (MOE)
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Saudi Riyal (SR)
Saudi Social Welfare (SW)
Saudi total budget (Total B, or S B).
Security, Defence, and University (SDU)
Social Health Insurance (SHI)
Social Research Ethics Committee (SREC)
The increase in total number of healthcare facilities as units (I U)
The World Bank (WB)
Total number of healthcare facilities (Total H F)
United Arab Emirates (UAE)
Value added tax (VAT)
Variance Inflation Factor (VIF)
Voluntary Health Insurance (VHI)
Western Europe (WE)
Willingness to accept (WTA)
Willingness to pay (WTP)
With Income (WI)
Without Income (WOI)
World Health Organisation (WHO)
Year (Y)

DECLARATION

This is to certify that this work is my own, and has not been submitted for any another degree, either at University College Cork, or elsewhere. All external references and sources are clearly acknowledged and identified within the contents. Also, I have read and understood the regulations of University Collage Cork concerning plagiarism.

Signed: _____ Date: _____

SALEM AL MUSTANYIR

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ABSTRACT

The Saudi Ministry of Health's budgets demonstrated a sharp continuous increase in the period from 2006 to 2015, putting high burdens on the government at a time when the economy suffered slow growth as a result of the plummet in oil prices. This research was conducted to provide a solution for the Saudi government to ensure the sustainability of the Saudi public healthcare sector.

This research started by investigating the major causes of the sharp increases in the Ministry of Health budgets, then explored the possible funding options existing in other economies to find the most suitable options that meet the Saudi context. Afterwards, this research investigated the attitudes of Saudi residents towards paying for their healthcare services, and the most preferred method to pay through. Finally, this research estimated the maximum value that people in Saudi Arabia are willing to pay for their healthcare services.

This research collected data from the Saudi Ministry of Health books, the Saudi Central Bank, the Saudi General Authority for Statistics, and reports from the Saudi Ministry of Finance. Also this research collected survey data from a subset of the population of Saudi Arabia from different areas, and at different times.

This research found that the weak strategy used by the Saudi Ministry of Health for estimating the necessary budgets was the main reason for the continuous increase in the Ministry of Health budgets. Moreover, it was found that Taxation, Medical Savings Accounts, and Private Health Insurance are the most suitable funding options according to the Saudi setting and needs. When people's decision to participate was investigated, the majority were willing to take part, and it was found that nationality, the possession of Private Health Insurance and the eligibility to healthcare influenced people's decisions. Moreover, it was found that the majority prefer to pay via Private Health Insurance or

Medical Savings Accounts, and it was found that gender, health status, education, and the available access to healthcare affected people's preferences. Finally, when people's maximum willingness to pay was examined, it was found that the majority are willing to pay 2.7% on average from their total income, and it was found that gender, nationality, employment, education, chronic diseases, age, marital status, having Private Health Insurance, and the access to healthcare services influenced people's willingness to pay.

This research suggests that the population of Saudi Arabia participate in funding their own healthcare services through either Private Health Insurance or Medical Savings Accounts at percentages which meet their willingness to pay.

To my parents, and the whole family for their love and support and putting me through the best possible education. I appreciate their sacrifices and I would not have been able to get through this without them.

To my brother Hamad who passed away, you are always in my heart, and a part of every day I live.

Chapter 1: Introduction

The Kingdom of Saudi Arabia (SA) is the largest country in the Middle East, occupying approximately four fifths of the Arab peninsula, with a land area in excess of two million square kilometres. It lies at the furthermost part of southwestern Asia, bordered by Kuwait, Iraq and Jordan to the north; Bahrain, Qatar, the Arabian Gulf, and United Arab Emirates to the east; Oman and Yemen to the south; and the Red Sea to the west. The population of SA was estimated at about 31 million in 2015, of whom 67% are Saudis (51% male and 49% female); of the non-Saudis 69% male and 31% female (GAFS, 2015). The crude birth rate in SA is 21 per 1,000 population, and the annual population growth rate is 1.9% (2.0% for Saudis and 1.6% for non-Saudis). Nearly 29% of the total population are younger than 15, 68% are between 15 and 64, and 3% are aged older than 65. Moreover, the crude death rate is 3.9 per 1,000 population (GAFS, 2015), and the life expectancy is 74.34 years (Du and Wu, 2016).

This Chapter gives an overview of the Saudi Economy and the major changes that are taking place there. It also presents a profile of the Saudi healthcare system and the fiscal situation of the public healthcare system so as to outline the thesis questions and objectives of this study.

1.1 Saudi Economy

1.1.1 Overview of the Saudi Economy

The Saudi economy is one of the richest economies in the world with a GDP in 2015 of 646 billion US dollars[1], making SA the top economy in the Middle East, and the twentieth globally (SAMA, 2015). The Saudi economy is largely driven by a revenue from exporting oil and natural gas, which accounts for 73% of 2015 actual revenues, and 18% of GDP (MOF, 2015). This wealth from natural resources makes the Saudi economy

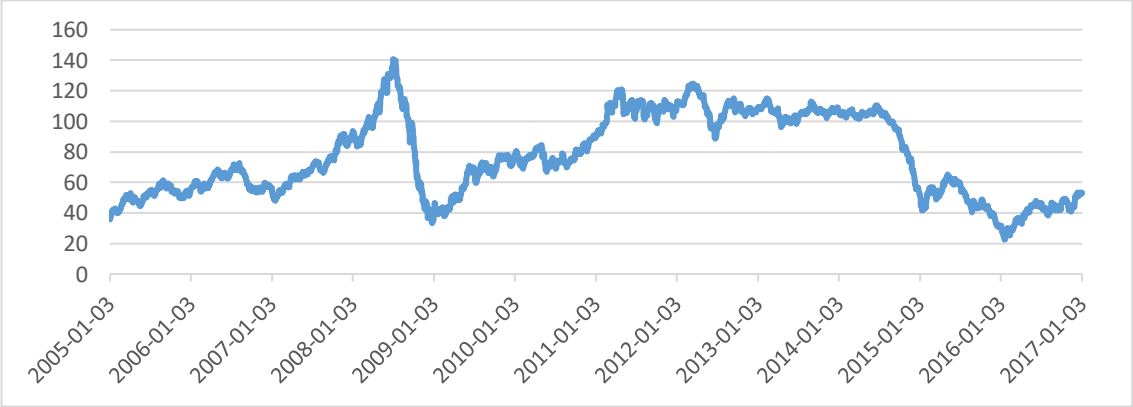
[1] All the figures in this study in US dollars.

significantly less reliant on debt that other economies — indeed SA ranked 173rd globally for indebtedness in 2015 (6% of GDP) (Economics, 2017).

1.1.2 Saudi Economy Challenges and Trend

The Saudi economy has recorded slow growth in the last two years, down from 3.59% in 2014 to 3.35% in 2015 then to 1.46% in 2016 (MOF, 2016, MOF, 2017). This was a result of the sharp and sustained decrease in oil prices, which plummeted from $110 in 2014 to a low of $22 per barrel at the beginning of 2016 (see Figure 1) (OPEC, 2017). At the same time SA has become embroiled in a significant and costly military intervention in Yemen, a conflict which was estimated to be costing the equivalent of $175 million a month when only its air forces were involved (Alsaad, 2015); since that time the intervention has expanded to include ground and naval forces as well. These two factors have had a significant negative impact on the Saudi economy (causing a deficit of $26.8 billion in the country's budget in 2014, $103.6 billion in 2015, $83 in 2016, and $61.4 in 2017) resulting in a stay on governmental project payments to the private sector (MOF, 2015). Expecting oil prices will remain low for the foreseeable future and with no end in sight to the war in Yemen, the Saudi government has launched "Saudi Vision 2030" which contains ambitious plans to steer the Saudi system away from its primary dependence on oil.

Figure 1 Oil Prices



Source: The Organisation of the Petroleum Exporting Countries (OPEC, 2017)

1.1.3 Saudi Vision 2030

In April 2016, under the chairmanship of the custodian of the two holy mosques King Salman bin Abdul-Aziz, the council of ministers endorsed Saudi Vision 2030 which was drafted by the Saudi Council of Economic and Development Affairs based on instructions from the deputy crown prince Mohammad bin Salman.

The vision was set to meet the era after oil, where the main objective is to reform the entire Saudi system in order to make oil a secondary source for the Saudi economy. The vision also aims to minimise the country's spending by prioritising important governmental projects.

For instance, starting from the fourth quarter of 2016, the government immediately cut subsidies on fuel, electricity, water and sanitation, taxed idle lands, increased the Ministry of Interior (MOI) service fees, and also stopped automatic promotions to government employees and froze their allowances for seven months. The vision also plans to privatise proportions of the governmental assets, starting with selling 5% of Saudi Aramco (the leading company in the oil industry) in 2019, and to restructure the public investment fund to turn it into the largest sovereign wealth fund in the world (projected to reach $1.8 trillion by 2030).

The ultimate aim of the vision is to increase non-oil exports from 27% to 50% of total exports by 2030. Moreover, the vision also outlined a plan to increase the government debt by selling government bonds and *Sukuk (Islamic compliant bonds)* in the international market. It also plans to start applying a value added tax (VAT) at a percentage of 5% on many products, and an excise tax of 50% to 100% on specific products (MOE&P, 2016).

1.2 Saudi Healthcare System

1.2.1 Overview of the Saudi Healthcare System

Article 31 of the Saudi constitution requires the government to provide free healthcare services at the point of use to all Saudi citizens (SCM, 2005). The result is that Saudi citizens can avail of healthcare services in the Ministry of Health (MOH) facilities at no charge and, if access to these facilities is unavailable, can access private sector facilities for which the MOH will pay.

In addition, Article 12 of the Saudi Council of Cooperative Health Insurance (CCHI), allows free access to MOH healthcare facilities to any non-Saudis (and their dependents) who work for the government and do not have access to their own agency healthcare facilities (CCHI, 1999). The only exception is non-Saudi Ministry of Defense (MOD) employees and their dependents who, despite having access to their own facilities, are also allowed to access MOH facilities. This free access to MOH healthcare facilities is also extended to some other limited categories by supreme[2] and special[3] orders, including Gulf Cooperation Council (GCC) citizens, non-Saudis with single sponsorship (private housekeepers, personal drivers, nursemaids, and farmers in Saudi households), the disabled, orphans, those with specific illnesses (AIDS, Hepatitis, Leprosy, and Tuberculosis), minorities of displaced tribes, prisoners, pilgrims, students with sponsorship, Saudi wives, sons and daughters of a Saudi mother, and mothers to a Saudi.

These limited categories represent a minor percentage of the total population of SA. For example, the number of non-Saudi MOD employees is small (and restricted to healthcare and IT positions) because almost all of the other jobs in the MOD are restricted to Saudi citizens. Similarly, the total number of publicly employed GCC citizens in SA in 2015

[2] Order given by the King, crown prince, or the deputy crown prince of Saudi Arabia.
[3] Order given by people from the royal family or government official in a high position.

was only 16, 1,887 are employed privately, and there are 10,100 students in different public educational facilities (GCC, 2015).

Separately, Article 2 (Sections 1,2,3,4, and 5) of the second Chapter of the Saudi executive regulations of the cooperative health insurance system, requires private employers, regardless of the size and nature of the company, to provide all employees — Saudis and non-Saudis and their dependents — with Private Health Insurance (PHI) (CCHI, 2014). Usually the company provides health policies related to the income of the employee ranging from VIP policies, which cover all healthcare services at any private healthcare facility, to policy C, which covers basic illnesses in specific private healthcare facilities and for which the holder must share some of the cost.

All those who work in public security and defense sectors are fully covered by healthcare facilities dedicated to those sectors. For example, those who work in the MOI and their dependents get free access to all MOI healthcare facilities in SA and those who work in the Ministry of National Guard (MONG) are fully covered by the MONG facilities. Due to lack of access, some of these sectors have also introduced PHI to cover the healthcare expenses of their employees in private facilities (limited to few employees). The academic and administrative staff (and their dependents) receive free access to the healthcare facilities within the university; students of the university also have this access. Except in cases of emergency, employees who work for one sector are not eligible to obtain healthcare services from those dedicated to another sector.

The rest of the population are obliged to obtain PHI before travelling to SA. In 2015, PHI was provided by 27 companies, led by BUPA, TAWUNIYA, and MEDGULF who occupy 80% of the Saudi healthcare insurance market (39%, 26% and 15%, respectively) (CCHI, 2015).

Article 13 of the CCHI exempts non-Saudis who work in private healthcare facilities from obtaining PHI as long as the healthcare facility where they work is qualified to cover their healthcare needs, with prior approval from the CCHI (CCHI, 1999).

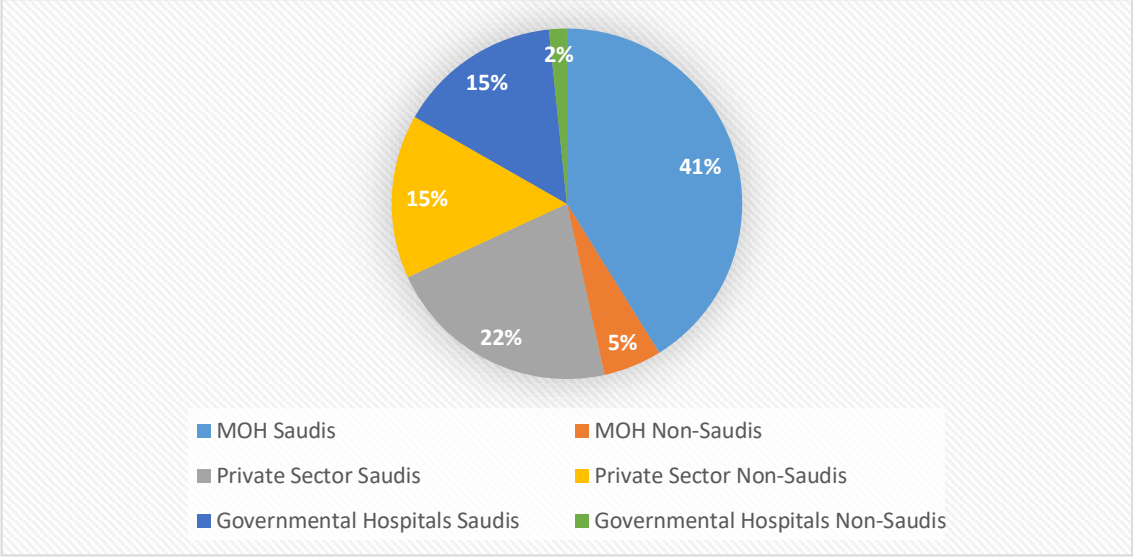
The Saudi General Organisation of Social Insurance (GOSI) obliges private sector employers to contribute 2% of each Saudi and non-Saudi's basic salary to an occupational hazards fund, which is collected, pooled, and operated by GOSI, to cover specific work related injuries (GOSI, 2017).

1.2.2 Healthcare Levels of Coverage

The majority of the healthcare services in SA are provided by MOH healthcare facilities. According to 2016 data, MOH healthcare facilities accounted for 47% of patient visits, of which 41% were by Saudi citizens (see Figure 2) (MOH, 2016). Private sector facilities account for 37% of patient visits (the vast majority made by Saudis), and other governmental healthcare facilities (operated by Security, Defense, University, Specialist, or ARAMCO i.e. all non-MOH operated governmental healthcare facilities) accounted for 17% (the majority made by Saudis) (see Figure 3).

Figure 2 shows that 78% of the healthcare services that were provided by the Saudi healthcare system were accessed by Saudis. The majority of the Saudi citizens' healthcare visits were in the MOH healthcare facilities (41%), followed by private sector facilities (22%), and governmental healthcare facilities (15%). Patient visits by other nationalities represents 22% of the total, the majority of which were in the private sector facilities (15%), followed by MOH healthcare facilities (5%), and small fraction in the other governmental healthcare facilities (2%) (see Figure 2).

Figure 2 Patient Visits to all Healthcare Provisions in Saudi Arabia in 2016[4]



Source: Saudi Ministry of Health (MOH, 2016).

1.2.3 The Eligibility to the Healthcare Services in Saudi Arabia

Healthcare in SA is delivered by the MOH, other governmental healthcare facilities (SDU), and the private sector. Eligibility of access to these facilities can be represented by a Venn diagram with six slices summarised in Figure 3. Each slice from 2 to 6 consists of two cohorts (A and B). Cohort A represents the main group (i.e. those employed in the public or private sector and entitled to free access to healthcare in their own right) and cohort B contains their dependents. Slice 1 is slightly different to the other slices. That is, all Saudis in slice 1 are in cohort A regardless of whether or not they are employed. Non-Saudis in slice 1 consist of cohorts A and B, as before.

[4] Data for 2016 was used because there was missing data regarding the Saudis and non-Saudis in the section of the patient visits to most of the other Governmental Healthcare facilities in the MOH statistical books from 2006 to 2015. The MOH 2016 statistical book reported patient visits by Saudis and non-Saudis in most of the other governmental healthcare facilities except in the MONG and the MOI healthcare facilities. Therefore, 2016 statistical book is the best option to provide data in this regard. For the missing patient visit data in the MONG and the MOI healthcare facilities, it was found that the MOH 2006 statistical book provided data for these two types of healthcare facilities, where non-Saudi patient visits to each of these two hospitals represent less than 3% of the total. Therefore, in Figure 2, it was assumed that all the patient visits to the MONG and the MOI healthcare facilities were from Saudis, as less than 3% of non-Saudis patient visits is a minor percentage.

Figure 3 The Eligibilities to the Three Provisions of Healthcare in Saudi Arabia[5]

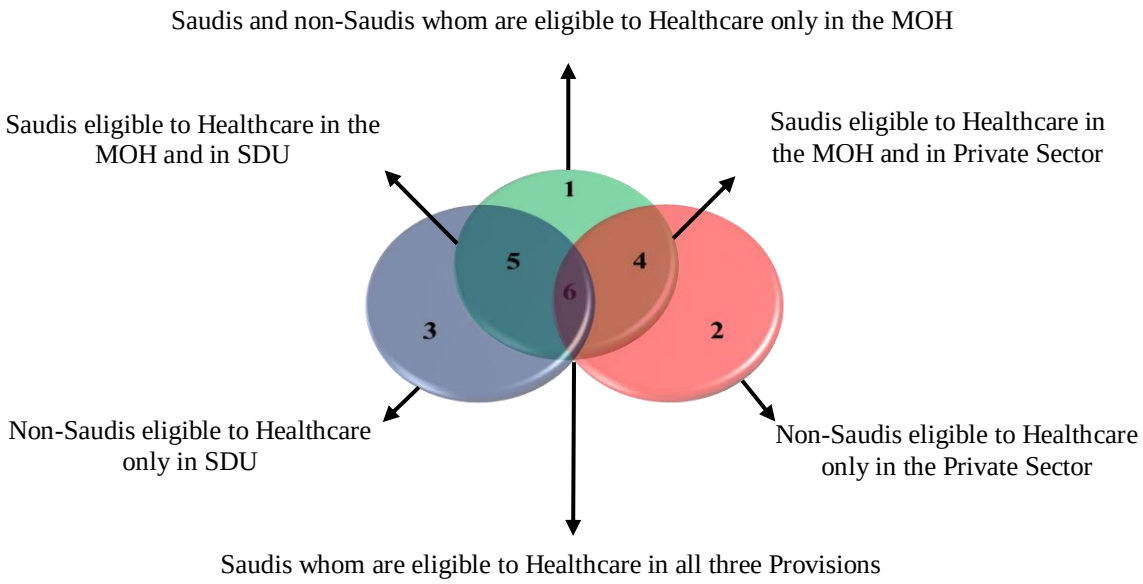


Figure 3 shows that slice 1 represents all the Saudis and non-Saudis who are not eligible to receive any healthcare services outside of MOH healthcare facilities. Slice 2 represents non-Saudi employees and their dependents who can only access private sector healthcare services based on the level of healthcare coverage that is provided to them by their private employer. Slice 3 represents the non-Saudi employees and their dependents who can only access healthcare services that are provided by their employer in other governmental healthcare facilities.

Slice 4 contains Saudi employees and their dependents who, through their private employer, have guaranteed healthcare access to private sector healthcare facilities and also have access to MOH healthcare facilities because they are Saudi citizens (double access). Slice 5 represents Saudi employees and their dependents who have guaranteed access to healthcare in other governmental healthcare facilities, and who also have access to MOH healthcare facilities because they are Saudi citizens (double access).

[5] This is just a conceptual chart to explain the six slices, and does not reflect the reality 100%. For example, slices 2 and 3 look the largest in the figure, but this does not mean that the non-Saudis who are privately or SDU employed are the largest groups.

Slice 6 represents Saudis and their dependents who, through their employer, have guaranteed access to private sector healthcare facilities as well as other governmental healthcare facilities. This happens for example if a female in slice 4, cohort A is married to a person in slice 5, cohort A. In such a case, this female and her family are guaranteed access to private sector, MOH, and other governmental healthcare facilities (triple access). The first access is guaranteed in the private sector healthcare facilities because she is privately employed, the second access is though her husband's eligibility in the other governmental healthcare facilities, and the third access is in the MOH healthcare facilities as she and her family are Saudi citizens.

If a person in any of the six slices wants to access healthcare services outside of their eligibility, a full charge is applied.

1.3 Saudi Public Healthcare Sector Fiscal Situation (MOH)

1.3.1 Saudi Public Healthcare Sector Economic Challenges (MOH)

In the last ten years the MOH budget has trebled from $5.0 billion in 2006 to $16.5 billion in 2015, and has, on average, increased by more than the country's total expenditure (13.6% vs 11%). In 2015, with the country significantly impacted by falling oil prices, the MOH budget increased by a further 4% even though the entire budget grew by just 0.58% that year (see Table 1). Indeed, in 2015 the MOH budget had increased to 7.25% of total government spending, the largest percentage allocation the MOH had received in the preceding ten-year period.

The Saudi MOH is usually the third largest ministry in SA in terms of budget allocation (after the MOD and Ministry of Education (MOE)) receiving 6.48% of the total budget, on average, versus 32.77% and 15% for the MOD and MOE, respectively. However, growth in the MOH budget has been much higher than that of the MOD and the MOE in almost all of the previous ten years, and also higher than growth in both Saudi GDP and

the total Saudi budget (see Table 1). Moreover, in spite of the continuous increases in healthcare spending, the efficiency of the Saudi healthcare system has been decreasing, dropping from 17th in the world in 2009 to 38th in 2016 with a 42.7% efficiency score (Du and Wu, 2016).

Table 1 Saudi GDP, Total Budgets, and the Changes in the Three Highest Ministries' Budgets in Billions of US Dollars.

	Saudi GDP		Government		MOD			MOE			MOH			
Y[1]	**Saudi GDP** SAMA	**I or D%[2]**	**Total B[3]** MOF	**I or D%**	**MD B[4]** SAMA	**I or D%**	**MD T B[5]**	**ME B[6]** GAFS	**I or D%**	**ME T B**	**MH B[7]** MOH	**I or D%**	**MH GDP[8]**	**MH T B[9]**
06	356.1		89.3		29.5		33.0	16.5		18.5	5.2		1.4	5.9
07	384.6	8.0	101.3	13.4	35.4	20.0	34.9	16.9	2.0	16.7	6.0	15.8	1.6	6.0
08	476.2	24	120.0	18.4	38.2	7.8	31.8	17.7	4.9	14.8	6.7	10.5	1.4	5.6
09	429.0	-9.9	126.6	5.5	41.2	7.9	32.5	20.2	13.8	15.9	7.8	17.0	1.8	6.2
10	526.8	22.7	144.0	13.6	45.2	9.6	31.4	22.1	9.4	15.3	9.3	18.8	1.7	6.5
11	669.5	27.0	154.6	7.4	48.5	7.2	31.3	22.8	3.1	14.7	10.6	13.6	1.6	6.8
12	733.9	9.6	184.0	18.9	56.4	16.4	30.7	24.6	8.0	13.4	12.5	18.1	1.7	6.8
13	744.3	1.4	218.6	18.8	67.0	18.6	30.6	29.4	19.2	13.4	14.4	15.4	1.9	6.6
14	753.8	1.3	228.0	4.2	80.7	20.5	35.4	30.1	2.6	13.2	15.9	10.3	2.1	7.0
15	646.0	-14.3	229.3	0.5	81.8	1.3	35.7	31.3	3.9	13.6	16.6	3.9	2.5	7.2
	Av[10]	6.84	**Av**	11.0	**Av**	12.0	32.7	**Av**	7.3	15.0	**Av**	13.6	1.8	6.5

Source: (Saudi Arabian Monetary Authority SAMA 2006-2016; Ministry of Finance MOF 2006-2015; General Authority for Statistics GAFS 2006-2015; Ministry of Health MOH 2006-2015)

Abbreviations: [1]Year. [2]Increase or decrease as percentage. [3]Saudi total budget. [4]Saudi Ministry of Defense budget. [5]Saudi Ministry of Defense budget as a percentage of the Saudi total budget. [6]Saudi Ministry of Education budget. [7]Saudi Ministry of Health budget. [8]Saudi Ministry of Health budget as a percentage of Saudi GDP. [9]Saudi Ministry of Health budget as a percentage of Saudi total budget. [10]Average annual increase or decrease.

1.3.2 Saudi Public Spending on Healthcare among other Countries

Compared to other countries to which comparisons might be useful based on economic, political, geographical, and commercial similarities (62 countries represented by the GCC, Middle East, Arab, Asia, and OPEC), the Saudi total[6] government spending on healthcare services for the period from 2005 to 2014 ranks 7th per capita on average ($1,170). As a percentage of total government expenditure, SA ranks 18th (7.6%), and as

[6] The WHO data that was used in this part, is not the same as what Table 1 showed, as the WHO might take into account all the public spending on health. That is, the WHO data might include the public financing to agencies within the MOH, such as the other governmental healthcare facilities. This was the only source of data to unify the comparison between countries.

a percentage of GDP, the Saudi spending on healthcare ranks 31st (2.64%) (see Figure 1 in the Appendix).

Specifically, versus other GCC countries, which are tied by political and economic agreements for sharing commercial, military, scientific, and social benefits, the Saudi government spent the most on healthcare as a percentage of GDP on average. As a percentage of total government expenditure, SA ranked 3rd, and ranked 4th in terms of government spending on health per capita (WHO, 2017).

Versus the sixteen countries in the Middle East, the Saudi government spending on health per capita ranked 5th. As a percentage of GDP, SA is ranked 7th, and ranked 8th as percentage of total government expenditure.

Among twenty Arabic countries, Saudi government spending on health per capita ranks 4th, and 6th in terms of spending as percentage of GDP. As a percentage of total government expenditure, SA came in the middle of the Arabic countries.

In comparison to the entire Asian continent (45 countries), Saudi ranked 7th by public spending on healthcare per capita. As a percentage of GDP and as percentage of government spending, SA ranked 15th and 26th respectively.

Among oil based economies, Saudi government spending on health ranked 3rd as a percentage of GDP, 4th as a percentage of total government expenditure, and also 4th by spending per capita.

1.3.2.1 2008 Crisis and the Plummet in Oil Prices

Healthcare spending in SA was adversely affected by the 2008 financial crisis and the sharp decline in oil prices in 2008–2009. All those GCC and OPEC countries that had higher spending on health than the Saudi government in the three comparative measures in the period under investigation, were similarly adversely impacted as were Lebanon, Turkey, Comoros, Maldives and Bhutan. Of all of these countries, based on the sharp

declines in their spending on health per capita in 2010, the figures indicate that Qatar, UAE and SA were the worst affected. Since 2011, Saudi government spending on health per capita has been increasing faster than both UAE and Qatar (87% versus 8% and 31.6%, respectively). Similarly, unlike both Qatar and UAE, spending as a percentage of general government expenditure and as percentage of GDP has also been increased every year in SA since 2011 in line with rebounding oil prices (see Figure 2 in the Appendix).

1.4 Research Objectives, Questions, Rationale and Contribution

1.4.1 Research Objectives

Given the backdrop of the Saudi parlous fiscal situation following the financial crisis and exacerbated by declining oil prices since then and the ambitious Saudi 2030 plans to reform the Saudi system, this thesis will investigate the Saudi healthcare system in order to identify the most appropriate funding mechanism for the Saudi MOH with a view to controlling government spending on health.

Specifically, this research aims to explore what might be a suitable healthcare financing system for the Saudi MOH as the country moves away from a fully governmental funded model. To better understand the current fiscal situation, this research will start by exploring the reasons for the rampant inflation in the healthcare budget since 2006. It will then consider the various funding mechanisms in place in other economies, as well as any implications that Islam might have on how these could be implemented in a Saudi setting. The research will then investigate the willingness of the Saudi population to co-fund their healthcare costs under such funding mechanisms.

1.4.2 Research Questions

This thesis will answer four research questions:

1: What is the reason for the sharp increase in the MOH budget over the past 10 years?

Chapter 2 of this thesis will explore the drivers of the increases in healthcare spending globally and whether the same drivers apply to SA. This Chapter will also analyse the supply and demand side reasons for the rampant increases in healthcare spending in SA in order to investigate if these increases can be attributed to the demand for specific types of health service, or to the implementation of costly prevention programmes for specific infectious or chronic diseases. Relevant supply side factors could be whether the MOH recruited more healthcare providers every year, especially consultants (who per head are more expensive than other healthcare practitioners), whether the MOH has invested heavily in modern medical technology, and/or increased the number of healthcare facilities during the period in question.

2: What are the most appropriate funding mechanisms to use to charge Saudi citizens for using healthcare services?

In many countries around the world patient contribution strategies are used to meet shortages where an economy cannot fully fund the healthcare system from central government coffers. Chapter 3 of this study will reference the experience of other countries which use patient contribution strategies and, in light of Saudi Vision 2030, will discuss the suitability of each contribution mechanism for the Saudi setting based on the proviso that these contribution mechanisms must be in line with principles of Islamic finance.

3: What is the willingness to pay for healthcare services, and which healthcare funding option is the most preferred by people in Saudi Arabia?

Once this thesis identifies the factors that contribute to the MOH budget from question one and based on the identified options from question two, Chapter 4 will then undertake a survey to investigate the willingness of the population of SA to contribute to their own healthcare needs, and then to rank the identified healthcare funding mechanisms.

4: How much are people in Saudi Arabia willing to pay for healthcare services?

Chapter 5 builds directly on the results in Chapter 4. That is, after understanding the willingness to pay (WTP) of people in SA, this study will investigate the maximum willingness of people in SA to pay for their healthcare services.

By the end of this thesis, the study will have some recommendations about what the Saudi healthcare financing system might look like as the economy undergoes significant change, with the potential to influence policy in line with Saudi Vision 2030.

1.4.3 Research Rationale

The importance of investigating the aforementioned topics is due to the critical state of the financial situation in SA. The country derives the majority of its budget from oil, and low oil prices and oil price volatility (even with OPEC efforts to control the supply to ensure stable and better prices (Alarabiya, 2019d, News, 2019)) have created an unsustainable budgeting situation for the Saudi government. This, in addition to the costly military intervention in Yemen, has caused the Saudi economy to slow in the past few years, such that the Saudi government has incurred significant budgets deficits. Moreover, investigating these topics in the context of health is important because of the sharp and unsustainable increase in the Saudi MOH budgets, which notwithstanding the parlous fiscal situation outlined above, more than trebled between 2006 and 2015 at an average

rate faster than that of the total government budget. Specifically, even though the government budget was severely impacted by falling oil prices in 2015, the MOH budget increased significantly that year to represent the largest percentage allocation of total government budget that the MOH had received in the preceding ten years period, notwithstanding the entire government budget grew at a very low percentage that year. The MOH budget even grew much faster than the budgets of other ministries with higher budgets than the MOH. This sustained level of public spending on healthcare means that SA is ranked one of the highest among GCC, OPEC, Middle East, Arab, and Asian countries.

Oil prices have also been volatile in the recent past (see for instance the 2008 financial crisis and the sharp decline in oil prices that adversely affected the Saudi public spending on healthcare in 2008–2009). But the impact of that shock was not sustained insofar as when oil prices rebounded two years later, the Saudi government spending on healthcare per capita and as a percentage of the total government budget surged in the following years. However, this time is different. Oil prices have traded at relative lows since 2014 influenced by high supply from non-OEC producers and the general global shift away from fossil fuels (Alarabiya, 2016). In addition, as part of OPEC, the Saudi government is constraining its own oil supply and so further exacerbating the impact of the sustained oil price shock on total government revenue (Alarabiya, 2018b). There is also no end in sight to the war in Yemen. This is the first time that SA has faced such sustained negative shocks that have significantly increased the risks to government finances and could even threaten the sustainability of the healthcare services in SA.

Expecting oil prices will remain low for the foreseeable future, and the fact that such a source is constrained by the extent of its reserves (Alarabiya, 2018g), the Saudi government has recognized that oil is an unsustainable source of funding. In order to diversify its economy to be less dependent on oil, the government introduced Saudi

Vision 2030 which aims to develop alternative sources of sustainable funds, to prioritise certain projects, and to generally eliminate the country's unnecessary spending. Since the introduction of this ambitious Vision, the government has implemented several initiatives to rationalise spending. Examples include the stopping for revaluation of government employees' promotions and allowances and governmental project payments to the private sector. Subsidies on fuel, electricity, water and sanitation were also cut and fees for Ministry of Interior services were increased. VAT at 5% was introduced for the first time, excise tax was levied at 50% to 100% on specific products, and idle lands have been taxed. In addition, the government is planning to sell 5% of Saudi Aramco, and to increase its debt percentage. In short, nothing is off the table, the entire Saudi economic system is under review in order to implement reforms to cut unnecessary spending and to raise different and sustainable sources of funding.

This thesis seeks to apply the ethos of Saudi Vision 2030 to the healthcare sector. Specifically, by investigating, inter alia, the supply and demand side reasons for the sharp increases in the MOH budget and whether these budgets need to be maintained at these higher levels, this study also seeks to influence policy designed in order to implement reforms to cut unnecessary spending in the Saudi healthcare system. For instance, when the eligibilities to healthcare services were investigated, it was found that the Saudi government has invested significantly in healthcare infrastructure of the other governmental healthcare facilities and supported the private healthcare sector though directing the law to oblige private employers to provide PHI to their employees and their dependents. However, Saudi citizens who consume the majority of healthcare at these two provisions also consume healthcare in the MOH. Such multi-eligibilities reduce the access of those who are eligible to healthcare only in the MOH and may create overuse of the public healthcare resources which are not in line with the Saudi Vision 2030 which calls for the elimination of unnecessary and excess use of resources and to find other

sources of funding. Therefore, investigating these topics will enable this research to influence a healthcare policy that could mitigate the strain of these multi-eligibilities on MOH resources, and indeed to also suggest possible ways of raising sustainable funds for healthcare from these eligibilities.

1.4.4 Research Contribution

On the policy side, this thesis will give the decision makers a broad vision of how the healthcare system in SA should change, starting with modifying the government free funded model to a one that is based on ensuring that the Saudi population pay a proportion of their healthcare costs. Because nothing like this has been tried in SA before, this research will give decision makers and researchers inside and outside SA an insight into how a population with a very limited experience with sharing public costs would respond to such a reform. Building further, because this research is conducted against a backdrop of change in SA, it also provides decision makers and researchers insights into how people react to being asked to share public costs in specific contexts, i.e. relative hardship and relative prosperity. Moreover, this thesis designs and recommends a policy that would reduce the multi-eligibilities of Saudi citizens and mitigate the burden on MOH resources. This will enable the ministry to better invest its resources to target a smaller proportion of the population. It will also bring additional non-governmental investment into the private sector and the other governmental healthcare facilities to meet the extra demand from Saudis who, being entitled to free healthcare in these two provisions, will no longer be able to access the MOH for free. Furthermore, shifting a part of the public healthcare cost to the Saudi population will ensure a sustainable source of funding for the MOH, and this will start changing the Saudi population perspective about the public services, which they currently expect will be provided for free to them. Moreover, investigating the supply and demand for MOH services will show the decision makers if there are specific activities where reforms to needed and to identify system weaknesses that need to be

strengthened. Finally, this study will also give decision makers in Islamic countries an insight into how an Islamic population would respond to different funding mechanisms that are compliant with Islamic rules.

On the theory side, investigating the four topics in this thesis will provide future researchers with a thorough investigation of the strategy that has been used to date to finance the Saudi MOH, and what is the cause of the rampant inflation in its budgets. This will encourage studies in the future that specifically investigate one or more of the factors that might be found to be driving the increases in the MOH budget. In addition, this study will be a cornerstone for future researchers to engage in further studies to build on the unique and unresearched financial policy that will be designed in this thesis. This might include the investigation of the willingness to pay and/or the preferences of people within a specific provision (MOH, Private Sector or SDU) or within a specific slice (the slices from 1-6, see Figure 3). Moreover, this study will inspire the health economics field in SA, which is at an early stage of development, and, specifically the willingness to pay for healthcare in SA which has thus far not been studied in great detail. This thesis will also make a significant contribution to the research about preferences for different mechanisms used to fund healthcare services, which is under researched inside and outside SA.

On the methodological side, this research will be undertaken in an Islamic country ruled by Islamic principles. This will impose additional constraints to the research methodology, most obviously the difficulty in reaching females participants. I addition, due to the significant role of these Islamic principles in managing people's life in SA, designing the research methodology (i.e. the healthcare funding options that people will be asked to consider, the need for clear explanation of these options, and the need for sampling times to avoid the five prayers times during the day) must be in line with these principles, otherwise people (participants) will not respond and if they do then

policymakers may not take heed of the results of research conducted contrary to Sharia law and future researchers may not build on it. In addition, because SA is a developing county, this research will also face additional methodological and sampling challenges such as sampling in tribal areas, interacting with people with low levels of education, and also the prevalence of military employees in certain locations. How this research deals with these constraints imposed by religion, culture and tradition will be useful for future researchers exposed to similar complications. Moreover, the timeframe during which this study is conducted is a difficult one financially for the Saudi population such that the nature of the questions asked could induce negative reactions, and in certain hostile tribal locations, even potential harm to the researcher. Nonetheless, in order to ensure the randomisation and a good representation of the study sample no locations will be avoided. The experiences of the researcher and the methods used to overcome barriers and to ensure the appropriateness of the sample might be useful for future researchers conducting studies in SA (or an area/country with similar complicating factors).

1.5 Conclusion

The level and growth of public spending on healthcare in SA is high relative to other economies. In light of the country's parlous financial situation, brought on and exacerbated by the financial crisis and subsequent decline in the price of oil, respectively, continued increases in healthcare spending from central government are no longer feasible. The Saudi government is aware of this and, as part of Saudi Vision 2030 which aims to make oil a secondary source for the Saudi economy, has identified the need to transform the funding mechanism of the public healthcare system, in order to shift part of the costs to the population and the private sector. This thesis will assist in this mission by using scientific methods to help to find the best solution in order to mitigate the fiscal burdens incurred by the government, and to enhance the sustainability of the MOH healthcare services.

This thesis begins by exploring the reasons behind the public healthcare expenditure growth globally, and identifies which of these are relevant for SA. Specifically, it investigates the demand for MOH healthcare facilities by investigating population and other demand side trends and supply side drivers of MOH healthcare services including the capital, operational, and other frequent expenditures budgets. It then explores the experiences of other countries in requiring their populations to co-fund their healthcare costs, and investigates to what extent are the Saudi population open to the implementation of such strategies, as well as determining the highest level they would be willing to pay to participate. This systematic process will help to identify the best solutions to alleviate the public financial load into the future.

Chapter 2: Drivers of the MOH Expenditure Increases

Based on the difficult Saudi financial situation as outlined previously, the significant increases in the MOH budgets, and the Saudi mission to transform the Saudi system, this Chapter will investigate the Saudi MOH healthcare system in order to identify the reasons for the increases in its budgets with a view to controlling costs. This Chapter will outline the study objectives and questions, study methodology, the drivers of the healthcare expenditure increases at macro level, then at micro level, and by the end of this Chapter, the findings will be summarised in a conclusion.

2.1 Study objective and Methodology

2.1.1 Study Objective

This study aims to investigate the MOH healthcare system in order to identify the drivers of its budgets increases in the past 10 years. This is to develop a financial strategy by which the Saudi MOH can reduce the dependence on the country's general revenue, and ensure the sustainability of the Saudi citizens' healthcare system.

To serve the purpose of this study, two questions must be answered namely:

1. *What are the main drivers for the increases in public spending on healthcare globally, and are they the case in Saudi Arabia?*

2. *What are the drivers of the MOH budgets increases over the past 10 years?*

By answering the first question, this study will give a view at macro level to understand the major reasons that contributed to the inflation of healthcare spending globally, and whether any of these reasons are the case in SA. By answering the second question, a broad vision at micro level will be achieved as to how the demand and supply of the MOH healthcare services were administrated, and which significantly impacted at the MOH budgets.

2.1.2 Study Methodology

To answer the first question, this study will refer back to relevant literature reviews existing in other economies, and find out what researchers considered to be the primary reasons for the inflation of spending on healthcare services. Afterwards, the study will relate each reason to the situation in SA going back ten years. For instance, if the researchers attribute the increases to population growth as a main reason, then, the Saudi population growth trends will be investigated in line with the changes in the MOH budgets.

In the second question, this study will scrutinise each healthcare service and activity that the MOH delivered in the past ten years in detail, and analyse the trend of each to find out whether it is interpreted by the changes in the relevant budget. For example, the changes in the number of Primary Healthcare Centres (PHC) will be compared to the movement of the MOH capital expenditure (CAPEX) in the past ten years.

To achieve the stated objectives, this study will analyse the Saudi MOH budgets and activities in the last ten years, relying on ten statistical books from the MOH. The length of these books ranges from 248 to 356 pages, and they contain more than 500 tables, which will be analysed in this study (see Table 1 in the Appendix). These books explain in detail five dimensions, which are: the MOH healthcare facilities, manpower, healthcare activities, spread of communicable diseases, and Al Hajj season[7]. Each dimension will be fully analysed and discussed in depth, going through the types, quantities, capacities, specialities, and classifications, also analysing the relationship between the changes of each item with other items within these books.

[7] Al Hajj season is a period of about two weeks, when Muslims go to Makkah and Madinah cities to carry out Islamic rites, which every Muslim must do at least once in his/her life.

Moreover, this study will also rely on ten statistical books from the Saudi General Authority for Statistics (GAFS), covering the same period. These books discuss the budgets and the activities of a number of ministries in SA. Reference will also be made to ten statistical books from the Saudi Arabian Monetary Agency (SAMA), discussing the progress of the Saudi and the global economy. This study also relies on ten annual reports from the Saudi Ministry of Finance (MOF), which show the total estimated revenues, the estimated expenditure, debt, and the total spending on each governmental sector, as well as the actual data for some items for the year prior. They also contain some comparative analyses between the expected and actual figures.

In line with Saudi governmental rules, all the ministries in SA use the Hijri calendar, which is based on the moon movements, where the beginning of each month is marked by the observation of the crescent moon, and the month is either 29 or 30 days long. On the other hand, SA announces the country and the ministries' budgets at the beginning of the Gregorian calendar, and the difference between the two calendars is about 8 days. Therefore, there will be minor timing differences between MOH and MOF statistical data, but these will not have any effect on the study.

2.2 Drivers of the MOH Expenditure Increases (Macro Level Investigation)

The public spending on healthcare services showed increases in many countries in the last ten years, especially the countries with an old healthcare system like Japan (see Figure 1 in the Appendix). In SA, the public spending on health accounts for one of the highest spending among 62 countries distributed over four contents; given the fact that the Saudi healthcare system is emerging (SA has only been founded 86 years). Moreover, for the reason that the Saudi public spending on healthcare peaked in the last ten years, in a time of economic turmoil; this part of the study aims to find for the reasons behind the increases of healthcare expenditure in different countries, and investigates whether they are the main drivers for the increases in Saudi public spending on healthcare services.

This will be conducted through searching for the drivers in the previous studies, and examining them in the Saudi healthcare system for the period from 2006 to 2015. Moreover, further comparative analyses will be conducted if necessary. This will give a broad overview to understand which reason affected the Saudi MOH budgets the most.

2.2.1 Literature Review

The drivers of increasing public spending on healthcare depend on the general policy of the healthcare system used in the country. In other words, the reasons for the increases of healthcare expenditure in one country would not be applicable in others. Therefore, this issue remains somewhat unclear and a subject for debate.

In general, changing medical technology potentially explains the persistent growth in healthcare expenditure in many countries, as is the case with pharmaceutical spending (Braendle and Colombier, 2016, Łuczak and García-Gómez, 2012). In Canada, they attributed public healthcare expenditure increase in the period from 1998 to 2008 to many reasons; like the increase of general inflation, the number of physicians, population growth, the methods of diagnosis, and the demand, as well as technology and pharmaceuticals (Di Matteo, 2014).

Some studies mentioned that chronic diseases account largely for the increases in spending on healthcare, and are considered as a great challenge for the global economies. Specifically in Europe, spending on chronic diseases takes up an increasingly greater proportion of private and public budgets (Busse, 2010, Tsiachristas et al., 2016).

Some attributed the reason to an increasing number of healthcare facilities with a higher degree of specialisation like university hospitals and research centres (Vatter and Rüefli, 2003). Others stated that political issues were the cause, this happens because presidential candidates or ministers tend to improve health services to secure their positions (Potrafke, 2010). Some studies implied that smoking was a critical factor, due to the fact that

smokers consume more healthcare services than non-smokers, and their treatment period is longer (Bearman and Neckerman, 2011). Other studies cited immigrants as a potential reason, as a result of their having been more likely to work in physically demanding and risky jobs (Braendle and Colombier, 2016).

Indeed, most of the previous studies believe that ageing is one of the main reasons for increasing healthcare expenditure (Lopreite and Mauro, 2017, Tabata, 2005, Di Matteo and Di Matteo, 1998). Since old people need much more healthcare services, including nursing and other social services, as well as expensive technology and longer length of stay in hospitals including follow up, ageing increases the healthcare expenditure of the economy exponentially (Di Matteo, 2005, Braendle and Colombier, 2016, Vatter and Rüefli, 2003, Piacenza et al., 2010).

Moreover, some studies implied that the healthcare cost of a person in his/her last years is seven times greater than other periods in his/her life (Felder et al., 2000, Blanco-Moreno et al., 2013). Another study added that the prevalence of both morbidity and disability generally increases with age, which in turn increases healthcare expenditure. However, it soars in the last year of a person's life (van Baal and Wong, 2012). In addition, studies expected that there would be major economic consequences as a result of the rapid increase in the percentage of the ageing population worldwide (de Bruin et al., 2011).

2.2.2 Saudi MOH Situation from 2006 to 2015

The previous studies suggest that the healthcare expenditure growth was due to thirteen reasons, which are; inflation, population growth, ageing, demand for healthcare services, foreign patient visits, chronic diseases, specialised healthcare facilities, general number of physicians, designating new ministers, changing medical technology, drugs, diagnosis method, and number of smokers.

Due to how the data of the medical technology and drugs are classified, there was a lack of access to their costs and quantities; also missing was the number of smokers' visits to healthcare facilities, and no data on the misuse of healthcare resources. It was noted as well that there was a lack of access to the number of patient visits to primary healthcare centres chronic diseases clinics in 2006 and 2007.

This part will discuss the major reasons, which significantly influenced healthcare spending based on available data.

2.2.2.1 Inflation

Table 2 in the Appendix indicates that the sharp increases in the MOH budgets did not occur mainly because of inflation, which increased cumulatively by 44.3% between 2005 and 2014. The data shows that the MOH budget had increased 2.2 times by 2015 in comparison to 2006 in real terms, this represents 9.2% average growth, which accounts for a higher level of increase than the Saudi total budget and the Saudi GDP (9.2% vs 6.7%, 3%) (see Table 1 in the Text and Table 2 in Appendix). Such increases in real terms are extremely high, and suggest that inflation is not the reason for the continuous increase in the MOH budgets.

2.2.2.2 Population Growth

Annual population growth in SA ranged between 2.28% minimum (2009), and 6.95% maximum (2010), with no significant changes except in 2010, and this was due to the sharp increase (23.4%) in the number of non-Saudis. However, the increase in the number of Saudi citizens in this year was just 0.89%. Moreover, the number of Saudi citizens who received most of the healthcare services in the period from 2006 to 2015 (91.04% on average) did not change in line with the changes in the MOH budgets (see Table 1 in the Text and Table 3 in Appendix). This makes the population growth another doubtful reason for the continuous increases in the MOH budgets.

2.2.2.3 Elderly People

Most of the previous studies that searched for the causes of the growth in healthcare expenditure agreed globally that ageing is a major reason. This study data shows that the increase in percentages of people aged 65 and above in SA was negligible in the period from 2006 to 2015 (0.00% on average). In addition, the data did not show any significant increases during the ten years to explain the continuous and sharp increase in Saudi MOH budgets. Moreover, the percentage of elderly people in SA represent just 2.8% on average of the total population, and this is still a very low figure to create such high increases, where most of the Saudi population lie in the group aged 15-64 years (66.8% on average), then those aged 0-14 (30.3% on average) (see Table 2).

Therefore, this part of the study will investigate whether these percentages are high or not by comparing them to the five groups of countries, which were discussed in the previous Chapter. The lack of access to data on Taiwan and Palestine is noted.

Table 2 Saudi Population Ages as Percentage of Total Population

Y	0-14 %[1]	Change %	15-64 %	Change %	65 & above %	Change %
06	32.63		64.54		2.83	
07	31.93	-0.71	65.25	0.71	2.82	-0.01
08	31.35	-0.58	65.84	0.59	2.81	-0.01
09	30.86	-0.49	66.35	0.51	2.79	-0.02
10	30.42	-0.44	66.81	0.46	2.77	-0.02
11	29.95	-0.47	67.29	0.47	2.76	-0.01
12	29.51	-0.44	67.73	0.45	2.76	-0.01
13	29.13	-0.38	68.11	0.38	2.76	0.01
14	28.82	-0.30	68.38	0.27	2.79	0.03
15	28.58	-0.24	68.56	0.18	2.86	0.07
Av	30.29	-0.45	66.87	0.45	2.8	0.00

Sources: The World Bank (WB, 2016)

Appreciations: [1]As a percentage of the total population in the same year.

In the period from 2006 to 2015, the Saudi elderly group ranks 55th on average among the GCC, Middle East, Arab, Asia, and OPEC countries. In the group aged 0-14, SA ranks 27th and in the group aged 15-64 is 25th.

The group of elderly people in SA ranks the highest among the GCC counties on average, as a percentage of total population in the period from 2006 to 2015 (2.79%) (see Figure 4 in the Appendix). Also, the same is true for the group of people aged 0-14 (30.29% on average). However, for the group aged 15-64, SA is considered the lowest (66.87% on average), where the highest is UAE (84.85%).

In the Middle East, the Saudi elderly group was just ahead of the GCC countries and Yemen, where the highest is Cyprus (11.72% on average). In the group aged 0-14, Saudi is the 6th, and appears in the middle of the group aged 15-64.

In comparison to Arabic countries, the Saudi elderly group ranks just before Yemen and GCC countries, where the highest is Lebanon (8.11% on average). In the group aged 0-14, SA came in the middle of the ranking, and in the group aged 15-64, came after the GCC countries, Tunisia, and Lebanon.

Among Asian countries, elderly Saudi group ranks very low, ahead only of the GCC countries, Yemen, and Afghanistan, where Japan is the highest (23.22% on average). In the group aged 0-14, SA came after 15th countries, and in the group of people aged 15-64, SA appeared in the middle, where the highest is UAE (84.85% on average), and the lowest is Afghanistan (51% on average).

Among OPEC member countries, the elderly Saudi group is the 9th, and 7th in the group aged 0 to 14. In the group aged 15-64, SA ranked 5th, behind UAE, Qatar, Kuwait, and Iran (see Figure 4 in the Appendix).

2.2.2.4 Demand for Healthcare Services

The study figures show that the total patient visits to the MOH healthcare facilities have increased 6.8% by 2015 in comparison to 2006 (4.2 Million visits), with 471 thousand more visits every year on average (see Table 1 in the Text and Table 4 in Appendix). This does not come in line with the sharp increases in the MOH budgets, which increased 220% by 2015 in comparison to 2006 ($11.4 Billion). Moreover, the highest increases in the MOH budgets in 2010 and 2012 were corresponding to very low increase in 2010 (410 thousand visits), and decrease in 2012 (-728 thousand visits). In addition, the second highest increase in total patient visits occurred in 2015 (2.7 Million visits); however, it was matched by the lowest increase in the MOH budget ($0.7 Billion). These indicators suggest that the demand for healthcare services was not a major reason for the increases in the Saudi MOH budgets.

2.2.2.5 Foreign Patient Visits

The average increases in the number of foreign patient visits is relatively low in comparison to the increases in the MOH budgets (2.9% vs 13.6% on average). Also, the increase in the number of foreign patient visits was just 27.9% by 2015 in comparison to 2006, which seems very low in comparison to the growth of the MOH budgets (220%). The data shows that the highest increases in the MOH budgets during the ten years were met by relatively high increases in the number of foreign patient visits (2010 and 2012); however, the highest increases in the foreign patient's visits (2008, 2015) were met by very low increases in the MOH budget (8.9% vs 10.5% and 7.9% vs 3.9% respectively). Also, the third and fourth highest increases in the MOH budgets (2007 and 2009) were met by decreases in foreign patient visits (-7.3% and -3.9% respectively) (see Table 1 in the Text and Table 4 in Appendix). Therefore, foreign patient visits cannot justify such a high increase in the MOH budgets.

2.2.2.6 Chronic Diseases

The patient visits to chronic diseases clinics in PHCs decreased 2% on average (-99 thousand visits). Also, the patient visits to these clinics decrease year on year except in 2012. This makes the patient visits to PHCs chronic clinics an unlikely reason for the increases in the MOH budgets.

In the patient visits to chronic diseases clinics in hospitals (Diabetes mellitus, Blood diseases, Nervous system diseases, Hypertension diseases, Coronary heart diseases, Rheum & other heart diseases), the data shows that the highest increases in patient visits to these clinics were in 2015 for all the six types (38.3%, 30.7%, 33.2%, 35%, 19.1%, and 38.2% respectively); however, these accounted for the lowest increase in the MOH budgets (3.9%).

For the blood diseases, nervous system diseases, and hypertension diseases clinics, the second highest number of patient visits was in 2012 (21%, 13.3%, and 10% respectively), which saw the second highest increase in the MOH budget (18.1%); however, the third highest number of visits to these clinics was in 2014 (17.5%, 11.4%, and 7.8 respectively), these accounted for the second lowest increase in the MOH patient visits (10.3%).

The coronary heart diseases and the rheum and other heart diseases clinics reported 8% increases in 2007, which were matched by high increase in the MOH budget (15.8%). However, all of the other years changed in percentages to lower than 5% as in the case of the number of visits to diabetes mellitus' clinics (see Table 1 in the Text and Table 4 in Appendix). These data indicate that all these six types of visits are considered dubious reasons for the increases in MOH budgets.

2.2.2.7 Specialised Healthcare Facilities

In the period from 2006 to 2015, there were five medical cities with high specialty in different fields, only one of which was inaugurated during the investigated period (11/2009), namely King Abdulla Medical City in Makkah. However, its budget cannot be accounted for just by the 2009 budget, as the cost of the construction occurred over several years. Therefore, the 17% increase in the MOH budget in this year cannot be explained by the inauguration of this Medical City, as is the case with the oncology centre that was opened in the same year. Also, for the same reason, the six cardiology centres that were opened in 2007 (one unit), 2009 (two units), and 2011 (three units) cannot explain the entire increase in 2007 (16%), 2009 (17%), and 2011 (13.6%) budget (see Table 1 in the Text and Table 5 in Appendix). Therefore, these quantities are unlikely to explain the sharp increases in the MOH budgets.

2.2.2.8 Number of Physicians

The study data shows that the total number of physicians has grown at a lower rate in comparison to the MOH budgets, and the only increases that came in line with the increase in the MOH budgets were in 2008 (11% vs 10.5%) and 2010 (24% vs 18.8%). However, the rest of the increases changed at a lower rate than 10.2%. Moreover, the other highest increases in the number of physicians were in 2007 (10.2%) and 2009 (9.1%). However, these years were met by significant growth rates in the MOH budgets (15.8%, 17%, respectively). On the other hand, the other high increases in the MOH budgets were in 2012 (18.1%) and 2013 (15.4%); however, these saw very low increasing rates in the number of physicians (6.2%, 6.5%, respectively) (see Table 1 in the Text and Table 5 in Appendix). These big variations between the increases in the number of physicians and the MOH budgets make physicians an unlikely reason for this issue.

2.2.2.9 New Ministers

In the period from 2006 to 2015 seven ministers were designated to lead the MOH, four of them in the period of King Abdulla (until 2014), one of whom was temporary, and three in the period of King Salman, one of whom was temporary as well (see Table 6 in the Appendix). The data shows that the designation of Doctor Abdulla Al Rabeaa was followed by the highest increase in the MOH budgets in 2010 (18.8%). However, the budget already increased sharply by about 16% in 2007 and 17% in 2009, and these were in the period of Doctor Hamad Al Mana. In 2014, there were three ministers, of whom Adel Fakeh occupied the position for most of that year (8 months); however, this period was followed by the lowest increase during the ten years (3.9% in 2015).

2.2.2.10 Drivers of the Saudi Public Healthcare Expenditure Growth

All the nine reasons discussed in this chapter, have had an insignificant effect on the Saudi MOH budget in the last ten years, and there was not a consistent reason for the increase in the MOH budgets. It is noted that the highest increase in the number of physicians in 2010 was met by the highest increase in the MOH budget (24% and 18.6%, respectively). This occurred the year after the appointment of the new minister (Dr. Al Rabeaa) and shows that his appointment had a significant impact on operating costs. However, because the impact of his appointment on the increases in the MOH budget was not consistent across his tenure, the effective impact of his appointment was limited. Moreover, the proportion of the elderly in SA is very low in comparison to the five groups except with GCC countries. This suggests that the elderly treatment cost in the period from 2006 to 2015 accounted for a low proportion of the MOH budgets. Therefore, the findings of this part suggest further investigations to include all the items that the MOH budgets were spent on in the period from 2006 to 2015 to find out the actual reasons for increasing the Saudi MOH budgets.

2.3 Drivers of the MOH Expenditure Increases (Micro Level Investigation)

The macro level investigation conducted in the previous section found that none of the drivers of healthcare spending identified by the international literature were found to be causing the significant and continuous increases in the Saudi MOH budgets in the period from 2006 to 2015. Therefore, in this part, further detailed analyses will be carried out, to investigate all of the items funded by the Saudi MOH budgets to determine the actual reasons for the increase in these.

Specifically, this investigation will examine in detail all four of the Saudi MOH budgets (i.e. the projects budget, the manpower budget, the operational & maintenance budget, and the frequent expenditures budget) using the ten statistical books detailed in Section 2.1.2. As an additional analysis, this study will also investigate Al Hajj season activities across all four of these budgets.

2.3.1 Projects Budget

The projects budget includes all spending on the construction of healthcare facilities. The MOH provides healthcare services through three types of facilities: PHCs, Hospitals, and Medical Centres (MC). There was significant activity in the construction of medical facilities during the period under investigation which is reflected in the sharp increase in the projects budget. Specifically, the projects budget almost trebled from $493 million to $1,347 million, representing 11.8% average annual increase. The highest increase through these years was in 2012, where the spending increased $213.3, representing 22.6% increase in the construction budget. Although these average increases are meaningful, it is important to note that these account for only 9.2% of the increase in the MOH budget during the period under investigation (0.6% of the increase in the Saudi total budget, and 0.16% of Saudi GDP) (see Table 3). Such that it is already obvious that it must be the other budgets — manpower, operational & maintenance, and frequent expenditures — that account for the majority of the growth in healthcare spending in SA. That said, it is

important to note that the spending of these other budgets are dependent on the a priori construction of the medical facilities funded by the projects budget such that an investigation of the projects budget is necessary in the first instance.

This section will investigate the continuous and significant increases in the MOH projects budget in the period from 2006 to 2015, to determine which types of healthcare facilities are driving these increases. This will be carried out by analysing the MOH CAPEX and the trends in the numbers of MOH new healthcare facilities in the same period. Although the data about facilities in the statistical books is reported net, the analyses in this study will focus specifically on the number of new facilities (i.e. gross). This is because, in the projects budget, CAPEX is spent only on the construction of new units[8]. When examining the relationship between CAPEX and the various types of facilities, this study is careful to exclude the impact of the closure or merger of facilities which might cause the net facilities number reported in the statistical books to be different from the actual number of (i.e. gross) facilities in any year. This is done by calculating the number of healthcare facilities added in in each year, by comparing the number of facilities in each specialty in each city in a year with the same figure from the prior year.

When examining the additions to healthcare facilities, hospitals, hospital beds, and MCs will be analysed at the micro level (i.e. by speciality and city) whereas, because there is no speciality classification for PHCs, PHCs will be analysed based on city classification. It is also noted that the statistical books did not include information about the number of diabetes centres from 2006 to 2011.

[8] Ongoing maintenance after construction is covered under the operation & maintenance budget.

Table 3 MOH CAPEX as Percentages of MOH Budgets, Saudi Total Budgets, and Saudi GDP in Millions of US Dollars.

Y	CEX $M[1] GAFS	I or D %[2]	I or D $M[3]	CEX % of MH B[4] MOH	CEX % of S B[5] MOF	CEX % of S GDP[6] SAMA
06	493			9.4	0.55	0.14
07	613	24.2	119.4	10.0	0.61	0.16
08	693	13.0	80.0	10.3	0.58	0.15
09	757	9.2	64.0	9.6	0.60	0.18
10	837	10.5	80.0	8.9	0.58	0.16
11	944	12.7	106.6	8.8	0.61	0.14
12	1,157	22.6	213.3	9.2	0.63	0.16
13	1,333	15.2	176.0	9.2	0.61	0.18
14	1,333	0.0	0.27	8.3	0.58	0.18
15	1,347	1.0	13.6	8.1	0.59	0.21
	Av	11.8	94.8	9.2	0.59	0.16

Sources: (General Authority for Statistics GAFS 2006-2015; Ministry of Health MOH 2006-2015; Ministry of Finance MOF 2006-2015; Saudi Arabian Monetary Authority SAMA 2006-2016)

Abbreviations: [1]Capex in millions of US dollars. [2]Increases or decreases in the CAPEX. [3]Increase or decrease in Millions of US dollars. [4]Capex as a percentage of the Ministry of Health's budget. [5]Capex as a percentage of Saudi total budget. [6]Capex as a percentage of Saudi GDP.

2.3.1.1 Data Analysis of the Projects Budget

In the period from 2006 to 2015 the total number of healthcare facilities increased 3.16% per annum on average (82.5 units) (see Table 4). The highest increase was in 2012, where the total number of healthcare facilities surged by 188 units (by 7.10%) — the increases in all the other years ranged from 20 to 119 units. Most of the increases came from PHCs, which represent 67% of the average annual increase of the total number of healthcare facilities. Once again the highest increase was in 2012, where the number of PHCs increased 150 units (by 7.11%). Hospitals increased by an average of 8.1 units per annum (by 3.34%), which represents about 10% of the total average annual increase in healthcare facilities. The highest increases in hospitals were in 2009, 2012, 2013 (19, 9, and 12 units, respectively). The number of MCs increased 18.8 units per annum on average (by 6.67%), representing about 23% of the total average annual increase in healthcare facilities, where highest increase was in 2013 (32 units).What is noticeable is that the high level of increases in total healthcare facilities did not result in an immediate increase in the MOH projects budget. That is, although CAPEX rose considerably in 2007, 2011 and 2012 ($119.4, $106.6, and $213.3 million, respectively), with the exception of 2012, these

years had only a small increase in the number of units. Conversely, 2014 had a by a very low level of spending ($0.27 million) but a significant increase in the number of units (102 units).

Table 4 Increases and Decreases in Number of Healthcare Facilities[9].

Y	Total HF[1]	I %[2]	I U[3]	PHC[4]	I %	I U	MC[5]	I %	I U	HOS[6]	I %	I U	Total Beds	I %	I U
06	2,387			1,925			242			220			31,877		
07	2,396	0.84	20	1,925	0.47	9	246	2.07	5	225	2.73	6	31,420	2.21	706
08	2,460	3.38	81	1,986	3.17	61	243	5.69	14	231	2.67	6	31,720	0.95	300
09	2,535	4.84	119	2,037	4.18	83	254	7.0	17	244	8.23	19	33,277	22.61	7,172
10	2,610	3.83	97	2,094	3.58	73	267	7.09	18	249	2.46	6	34,370	10.91	3,632
11	2,648	1.88	49	2,109	0.72	15	288	10.49	28	251	2.41	6	34,450	8.29	2,850
12	2,846	7.10	188	2,259	7.11	150	328	10.07	29	259	3.59	9	35,828	4.17	1,438
13	2,870	1.55	44	2,259	0.00	0	343	9.76	32	268	4.63	12	38,970	14.20	5,087
14	2,892	3.55	102	2,281	3.19	72	341	7.58	26	270	1.49	4	40,300	6.42	2,501
15	2,892	1.49	43	2,282	1.62	37	336	0.29	1	274	1.85	5	41,297	7.21	2,905
	Av	3.16	82.5	**Av**	2.67	55.6	**Av**	6.67	18.8	**Av**	3.34	8.1	**Av**	8.55	2,954

Sources: (MOH 2006-2015)

Abbreviation: [1]Total number of healthcare facilities. [2]The increase in total number of healthcare facilities as percentages. [3]The increase in total number of healthcare facilities as units. [4]Total number of Primary Healthcare Centers [5]Total number of medical centers. [5]Total number of hospitals.

It can be argued that an increase in CAPEX is a leading indicator such that there would not necessarily be a same year relationship between CAPEX and new facilities. In that regard, it is noteworthy that there also was no correlation between high CAPEX in any year and the increase in the number of new facilities in the following year. This is, because the construction of healthcare facilities is funded by allocations from the projects budget over many years, the total CAPEX figure in the projects budget in any year is dependent on the stages of completion in construction of all projects in that year.

This being the case, the one type of facility where a same or lagged year relationship might be expected with the MOH projects budget is PHCs (because construction time relative to that for other facilities is shorter, i.e. one to two years). This expectation notwithstanding, this study does not find any significant relationship between the two.

[9] The figures in this table show the actual increases, taking into consideration the offsetting, and the same for all the other tables in this study.

There are two reasons why this might be the case; i) the approximate percentage of PHCs that are owned by MOH up to 2012 was 20% — the remainder were rented and funded from the MOH frequent expenditures budget (MBC, 2012), ii) although not insignificant, the cost of building the PHCs is significantly lower than the construction of other types of healthcare facilities.

In terms of capacity, the number of hospital beds increased by an average of 2,954 units per annum (by 8.55%). The highest increase was in 2009 when 7,172 beds were added (see Table 4), but again this study finds no relationship with CAPEX, i.e. CAPEX did not show a significant increase in 2009 or in the prior year. A similar absence of any relationship between the number of beds added and CAPEX is evident in 2012 when although CAPEX increased significantly, the number of beds added (1,438) was relatively low. This shows that the size of hospitals (as reflected by the number of beds) does not drive increases in CAPEX.

Delving deeper in order to investigate if the speciality of the healthcare facility matters, Table 7 in the Appendix shows that number of general hospitals increased by 66 units through the period under investigation, representing the majority of the increase in the number of hospitals (by 90.41%). Moreover, it is evident from the data that the focus of investment by the MOH in the period under investigation was on the expansion of eight specialities (general, internal medicine, intensive care, paediatric, surgery, isolation, OB & Gyn, and psychiatry & neurology). These eight specialities have shown significant average increases in the number of beds through the ten years (1,128, 343, 333, 296, 223, 134, 112, 104 beds for each speciality, respectively) (see Table 8 in the Appendix). Similarly, investment in MCs was focused on dialysis and anti-smoking centres (an increase of 4.3 and 7.5 units on average respectively) however the investment in both was not equivalent — dialysis centres require a large allocation from the budget, anti-smoking centres do not (see Table 9 in the Appendix).

Furthermore, the data shows a slowdown in growth in the total number of healthcare facilities from 2012 to 2015 (7.10% and 1.5%, respectively). Specifically, the increase in the number of PHCs declined from 7.1% to 1.6%, hospitals from 3.6% to 1.8%, and MCs from 10% to 0.3%. These declines were a result of the slowing growth in the Saudi economy, and hence the Saudi total budget (where increases declined from 18.9% in 2012 to 0.5% in 2015), which directly impacted the MOH budget (where increases declined from 18.1% in 2012 to about 4% in 2015) (see Table 1).

It is obvious from the data that while the increases in the number, type, and size of healthcare facilities were generally accompanied by increases in the projects budget, a direct link in the changes between them is not apparent. This is because the funding process is based on the stage of completion in construction of the facilities for a variety of reasons, i.e. the construction period differs between types of facility and also between the same types of facility. For instance, PHCs involve a short construction period and are likely to have had a limited impact on the projects budget because of the low percentage of these units owned by MOH as well as their low cost of construction relative to other facilities. In that regard, general hospitals, which are totally owned by the MOH, accounted for the majority of the projects budget throughout the ten year period and eight specialities accounted for the majority of this. In MCs, dialysis centres were significant.

2.3.2 Manpower, and Operation & Maintenance Budgets

Healthcare services in SA are delivered by 384,636 healthcare practitioners, of whom 51% are employed by the Saudi MOH (the remainder are employed by the private sector or SDU), of whom 64.27% are Saudis (MOH, 2015). The manpower employed by the MOH are either employed through the Saudi Ministry of Civil Services (MOCS) and are paid from the MOH manpower salaries budget, or are employed via private companies which operate and maintain some of the MOH healthcare facilities and are paid from the MOH operation and maintenance budget.

In 2015 the total number of MOH employees reached 248,310, 88.4% of whom are employed by MOCS, and the remainder by operation and maintenance companies. In the period from 2006 to 2015, the Saudi MOH spending on MOCS employee salaries almost tripled from $2.7 billion to $7.1 billion representing an average annualised increase of 11.1%. On average, these figures represent almost half of the increase in the MOH budget during the period under investigation, 3.1% of the increase in the Saudi total budget, and 0.85% of the increase in Saudi GDP (see Table 5). The most significant single year percentage increase in the budget (17.6%) occurred in 2012, an increase that represented about half of the MOH budget that year, 3.2% of the Saudi total budget, and 0.82% of the Saudi GDP in the same year (see Table 5).

Similar to the manpower budget, the operations & maintenance budget increased fivefold by 2015 in comparison to 2006 ($5.8 vs $1.1 billion). On average, spending on operation and maintenance represents a quarter of the MOH total budget across the period, 1.6% of the Saudi total budget, and 0.47% of the Saudi GDP.

Collectively the manpower and operations & maintenance budgets account for approximately 75% of the increase in the MOH budget during the period under investigation. It is obvious then that, as was flagged in Section 2.3.1, it is these budgets which account for the majority of the growth in healthcare spending in SA such that a thorough investigation of these budgets is warranted.

This section will investigate the number of physicians, nurses, pharmacists, allied health personnel, as well as the administrators, technicians, and workers employed directly by MOCS and indirectly by the operative companies. Unlike the projects budget analysis this section discuss both the increases and decreases in the numbers in each category in detail because while increases create an absolute and obvious need for more spending in the form of salaries, decreases (if triggered by the termination of service, or by the end of

service or resignation) also trigger significant final pay related compensation in SA[10]. Because the data about employees in the statistical books is reported net, this investigation will analyse the numbers employed in each category by city, by nationality, and finally by gender in order to establish the actual increases and decreases, i.e. to avoid for offsetting. Due to the unavailability of information, this study is unable to account for offsetting that might occur if employees are transferred from one city to another. That said, however it is estimated by Yami (2017) that such intercity transfers are rare (i.e. less than 1 in 5,000 employees employed by the MOH) such that it is unlikely to adversely impact the results of the analysis in this study.

Due to changes in the way that the number of physicians by speciality who worked in hospitals in 2006, 2007, and 2008 were presented in the statistical books, this cohort was excluded. Also, it was evident that for the classification of physicians by speciality and level there was no data available by city, nationality and gender in the statistical books from 2012 to 2015. For these reasons, the calculation of the number of physicians who work in hospitals will be from 2009 to 2015 and based on the total figures. Moreover, data on the numbers of administrators, technicians, and workers was also unavailable for the period 2013 to 2015.

[10] According to the Saudi Ministry of Labour law (Chapter five, Section four), employer pays employee a compensation by the end of services or resignation, to be calculated based on the number of years of services MOL, M. O. L. 2015. *Saudi Ministy of Labour Law* [Online]. Saudi Arabia, Riyadh: Saudi Ministry of Labour Available: https://hrdf.org.sa/Content/files/labor_system.pdf [Accessed 04/02/2019 2015].

Table 5 MOH Manpower's Salaries and Operation and Maintenance Budgets as Percentages of MOH Budgets, Saudi Total Budgets, and Saudi GDP in Millions.

Y	S $M[1] GAFS	I or D %	I or D $M	S%M[2] MOH	S% S[3] MOF	S% G[4] SAMA	T M[5] MOH	I or D %	I or D Per Head	OM[6] $M GAFS	I or D %	I or D $M	OM%M MOH	OM % S MOF	OM % G SAMA
06	2,751			52.4	3.0	0.77	142,282			1,144			21.8	1.3	0.32
07	3,073	11.7	322.6	50.5	3.0	0.80	153,214	7.7	10,932	1,386	21.1	241.8	22.8	1.3	0.36
08	3,304	7.5	230.6	49.1	2.7	0.70	165,798	8.2	12,584	1,600	15.4	213.3	23.8	1.3	0.34
09	3,837	16.1	533	48.7	3.0	0.90	176,018	6.1	10,220	2,069	29.3	469.3	26.3	1.6	0.50
10	4,573	19.1	735.7	48.9	3.2	0.87	186,069	5.7	10,051	2,549	23.2	480	27.2	1.7	0.50
11	5,121	12.0	548.5	48.2	3.3	0.77	197,672	6.2	11,603	298	-88.2	-2250.4	2.8	0.2	0.04
12	6,025	17.6	903.2	48.0	3.2	0.82	208,438	5.4	10,766	3,544	1085.6	3245.3	28.2	1.9	0.50
13	6,720	11.5	694.9	46.3	3.0	0.90	216,122	3.7	7,684	4,370	23.3	826.6	30.1	2.0	0.60
14	6,956	3.5	236.5	43.5	3.0	0.90	219,548	1.6	3,426	5,441	24.5	1070.1	34.0	2.4	0.72
15	7,110	2.2	154.4	42.7	3.1	1.1	219,505	-.02	-43	5,839	7.3	398.4	35.1	2.5	0.90
	Av	11.1	484.4	47.8	3.1	0.85	**Av**	4.93	8,580	**Av**	19.8	521.6	25.2	1.6	0.47

Sources: (General Authority for Statistics GAFS 2006-2015; Ministry of Health MOH 2006-2015; Ministry of Finance MOF 2006-2015; Saudi Arabian Monetary Authority SAMA 2006-2016)

Abbreviations: [1]Total salaries of MOH employees employed through MOCS in millions of US dollars. [2]Total salaries of MOH employees employed through MOCS as percentage of the MOH budget. [3]Total salaries of MOH employees employed through MOCS as percentage of Saudi total budget. [4]Total salaries of MOH employees employed through MOCS as percentage of Saudi GDP. [5]Total manpower employed through MOCS, and get salary from Salaries' budget. [6]MOH operations and maintenance program's budgets.

2.3.2.1 Data Analysis of the Manpower and Operations & Maintenance Budgets

The total number of healthcare practitioners in SA has more than doubled in the last ten years, increasing by an average of 11.6% per annum (15,027 practitioners), with the most significant increases occurring in 2010 (an increase of 22.7% or 27,973 practitioners). The data shows that all four of the medical specialities (Physicians, Nurses, Pharmacists, and Allied Health Personnel) increased significantly, where the highest average percentage annual increase was the pharmacists (about 20%). However, the increase in total number of pharmacists across the period under investigation was not particularly high (1,023 in 2006 versus 3,184 in 2015). The majority of increases, in terms of figures, were in the number of nurses, which increased by 7,410 nurses on average (11.6%), representing about half of the average annual increase in the total number of healthcare practitioners. The second highest increase was in the number of allied health personnel, which increased by 4,523 practitioners on average (12.7%), representing 30% of the average annual increase in the number of healthcare practitioners. The third highest increase was the physician cohort, which increased 9.7% on average (2,753 physicians), representing 18.3% of the average annual increase in healthcare practitioners (see Table 6). The number of technicians, administrators, and workers also showed a continuous upward trend, with the highest increase in 2010 and 2012 (25,370 and 21,969, respectively) (see Table 10 in the Appendix).

The data shows that, unsurprisingly, the highest increases in all types of manpower occurred concurrently with the increases in the number of healthcare facilities. That is, the 19 hospitals and 83 PHCs which were completed in 2009 resulted in a significant increase in the demand for staff in 2009 and 2010 (a 50% increase in the total number of health practitioners, and a 70% increase in the number of technicians & administrators, and workers) (see Tables 4, 6, and Table 10 in the Appendix). A similar situation is evident in 2012 and 2013, when the number of PHCs increased by 150 units in both years,

Table 6 Number of Healthcare Providers in Thousands

Y	T HCP[1]	I %	I F[2]	D F[3]	PHY[4]	I %	I F	D F	NUR[5]	I %	I F	D F	PHR[6]	I %	I F	D F	ALH[7]	I %	I F	D F	New[8]
06	91.7				21.2				44.3				1				25				1
07	101.7	15.8	14.5	-4.4	22.6	10.2	2.1	-.79	51.1	19.5	8.6	-1.8	1.3	38.3	.39	-.11	26.6	13.1	3.2	-1.6	1.2
08	110.5	11.6	11.7	-2.3	24.8	11.0	2.4	-.34	55.4	11.5	5.8	-.95	1.5	23.5	.30	-.07	28.7	11.6	3	-1	1.3
09	123.1	16.2	17.9	-5.3	25.8	9.1	2.2	-1.2	63.2	17.6	9.7	-1.9	1.6	20.4	.31	-.18	32.3	19.4	5.5	-1.9	.60
10	149.3	22.7	27.9	-1.7	31.5	23.8	6.1	-.47	75.9	20.9	13.2	-.57	1.7	14.2	.23	-.09	40.1	25.7	8.3	-.57	.41
11	157.2	7.60	11.4	-3.5	33.9	8.5	2.7	-.22	77.9	6.1	4.6	-2.6	1.8	11.9	.21	-.10	43.4	9.6	3.8	-.53	.48
12	166.6	7.70	12.1	-2.6	35.8	6.2	2.1	-.26	82.9	7.8	6.1	-1	2.1	16.8	.31	-.06	45.6	8.2	3.5	-1.2	.62
13	174.8	7.40	12.3	-4.1	37.8	6.5	2.3	-.28	83.8	5.1	4.2	-3.3	2.3	16.4	.35	-.12	50.7	11.8	5.4	-.37	.59
14	186.3	8.80	15.3	-3.9	38.4	3.7	1.4	-.84	91.8	10.4	8.7	-.73	2.9	25.3	.60	-.07	53	9.2	4.6	-2.3	.79
15	194.8	6.30	11.7	-3.1	41.2	8.1	3.1	-.34	95.3	5.8	5.3	-1.8	3.1	11.0	.32	-.05	55	5.5	2.9	-.91	.83
	Av	11.6	15	-3.4	**Av**	9.7	2.7	(.53)	**Av**	11.6	7.4	-1.6	**Av**	19.8	.33	-.09	**Av**	12.7	4.5	-1.17	.86

Sources: (MOH 2006-2015)

Abbreviations: [1]Total number of healthcare providers employed through MOCS and the operative companies. [2]Increases as figures. [3]Decreases as figures [4]Total number of physicians. [5]Total number of nurses. [6]Total number of pharmacists. [7]Total number of allied health personnel. [8]The new manpower enrolled in fellowship and higher studies programmes[11]

[11] There was a lack of access to the total number of manpower enrolled in the fellowship and higher studies programmes.

MCs by 29 and 32 units and hospitals by 9 and 12 units, respectively. As in 2009, these increases resulted in additional hiring of staff, so much so that the number of all healthcare practitioners totalled 186,303 by 2014. However, the total increase in numbers from 2012–2014 (39,897 practitioners) is lower than the increase that occurred in 2009–2010 (45,938 practitioners), due to the larger size of the 25 hospitals opened in 2009–2010 (10,804 beds) in comparison to the size of the same number opened in 2012–2014 (9,026 beds).

The data also shows that it is the growth in specific specialities (i.e. psychiatric, OB & GYN, isolation, surgery, paediatric, intensive care, internal medicine, and general), which had the highest expansion within healthcare facilities (as discussed in Section 2.3.1.1), and for the purposes of the analysis in this section, also led to a significant increase in the number of physicians employed in these specialties (see Tables 8 and 11 in the Appendix). Separately, new employees enrolled in fellowship and higher studies programmes had little effect on the manpower and operation & maintenance budgets because the numbers on these programmes increased insignificantly at a time when both budgets increased sharply (see Table 6).

These data show that each US dollar the MOH spends on CAPEX creates a need to spend $5.10 on salaries of MOCS staff and $5.50 on operative and maintenance programmes (including salaries of their employees). Also, every new healthcare facility opened by the MOH cause manpower employed by MOCS to increase by 103 persons on average, and healthcare practitioners employed by both MOCS and operative companies to increase by 181 on average.

Moreover, the data shows that the increases in manpower corresponded with increases in both the manpower and the operation & maintenance budgets. This indicates that it was the actual increases in manpower were the main driver of the increases in both budgets, i.e. any decreases in manpower had minimal impact. This is highlighted when in 2009

and 2010 although both the manpower and the operation & maintenance budgets increased significantly, the number of physicians, pharmacists, and allied health personnel only reported a high level of actual decreases in 2009. The only category to show any noticeable decrease in numbers in 2010 was workers (which decreased 12,466) but, because workers are low paid, this had no significant impact on the two budgets.

The 5% cumulative increase in salaries that was granted to publicly employed Saudis and pensioners by King Abdulla bin Abdul-Aziz in each year from 2009 to 2011 to meet the high living costs, might be considered as a driver of healthcare costs (Alriyadh, 2008). However, while sizeable for individual Saudis in receipt of these increases, this study estimates that the overall impact on the manpower and operation & maintenance budgets was likely to be limited for several reasons, i) only 56% of healthcare practitioners in 2011 were Saudis, ii) only 23% of physicians (who are the highest paid cohort) in 2011 were Saudis, iii) only 60% of administrators, technicians, and workers were Saudis (MOH, 2011). It is also noteworthy that the impact of the salary increases on the operations & maintenance budget is likely further reduced because, in addition to salaries, this budget funds many programmes unaffected by these increases.

What is evident from the data is that the continuous increases in the manpower and operation & maintenance budgets during the period under investigation was driven by the increases in the number of healthcare facilities in the same period. Specifically, the analyses show that the MOH invested on average five times more in staff employed directly through MOCS, or the operative and maintenance programmes including salaries of their employees, than they spent on CAPEX. In addition, on average, the MOH employed 103 employees though MOCS, and 181 healthcare practitioners for each unit of healthcare facility opened. Moreover, the increases in the manpower and operation & maintenance budgets were mainly caused by increases in the amount of manpower (i.e. decreases in manpower caused by termination of service, end of service, or resignation

had no effect). Also it was, the expansion of the eight specialities referred to previously that had the most significant impact on the number of physicians who work in these specialties, which in turn contributed significantly to the increase in the manpower and the operation & maintenance budgets during the period under investigation.

2.3.3 Frequent Expenditures Budget

The frequent expenditures budget is the final budget that funds healthcare service activities in SA. This budget includes payments for drugs, equipment, preventive programmes, treatments abroad, educational and supervision activities, and other expenses (MOH, 2015). In the period from 2006 to 2015, this budget experienced large increases (almost trebling from $850 million in 2006 to $2.3 billion in 2015). This sharp increase means that those activities covered by the frequent expenditures budget represent 15% of the total MOH budget on average, 1% of the Saudi total budget, and 0.27% of the Saudi GDP (see Table 7).

This section will analyse changes in six major activities which are covered by this budget;

1. Patient visits, including an analysis of patient visits to PHCs, hospitals, and chronic diseases clinics.
2. Communicable diseases, covering 38 types of infectious disease.
3. Medical activities, including the number of inpatient cases, surgeries, deliveries, laboratory investigated cases, radiology, physiotherapy, number of served meals, and the cases sent abroad for treatments.
4. Supervision activities, including MOH visits to water supplies and public places, and the sampling of water and food.
5. Educational activities, including the number of lectures and meetings held every year.
6. Awareness activities, including the number of printed booklets, newsletters, posters and leaflets.

Table 7 MOH Frequent Expenditures Budget as Percentage of the MOH and Saudi Total Budgets, and Saudi GDP.

Y	FE $M[1] GAFS	I or D %	I or D $M	FE % M MOH	FE % S MOF	FE % G SAMA	T PL[2] MOH	I or D %	I or D P[3]	T S[4] MOH	I or D %	I or D P
06	858.6			16.3	0.96	0.24	23.6			17.2		
07	1,008.2	17.4	149.6	16.6	1.00	0.26	24.2	2.4	0.56	17.6	2.5	0.43
08	1,127.4	11.8	119.2	16.7	0.94	0.24	24.8	2.3	0.56	18.1	2.4	0.42
09	1,207.2	7.0	79.7	15.3	0.95	0.30	25.3	2.3	0.56	18.5	2.3	0.42
10	1,390.1	15.1	182.9	14.8	0.97	0.26	27.1	6.9	1.70	18.7	0.9	0.16
11	1,574.1	13.2	184	14.8	1.00	0.24	28.3	4.5	1.20	19.4	3.7	0.69
12	1,826.6	16.0	252.5	14.5	1.00	0.25	29.1	2.9	0.81	19.8	2.2	0.43
13	2,068.8	13.2	242.1	14.2	0.95	0.30	29.9	2.7	0.79	20.2	2.1	0.42
14	2,264.5	9.4	195.7	14.1	1.00	0.30	30.7	2.6	0.77	20.7	2.1	0.43
15	2,326.6	2.7	62.1	14.0	1.00	0.36	31.5	2.4	0.75	21.1	2.0	0.42
	Av	11.7	163.1	15.1	1.00	0.27	**Av**	3.2	0.87	**Av**	2.2	0.43

Sources: (General Authority for Statistics GAFS 2006-2015; Ministry of Health MOH 2006-2015; Ministry of Finance MOF 2006-2015; Saudi Arabian Monetary Authority SAMA 2006-2016)

Abbreviations: [1]Frequent expenditures in millions of US dollars. [2]Saudi total population in million (Saudis and non-Saudis). [3]Increases or decreases per head. [4]Total Saudis in million.

2.3.3.1 Data Analysis of the Frequent Expenditures Budgets

Patient visits grew from 61.8 million to 66.0 million during the period under investigation, however, growth was not smooth throughout the period. Specifically, while the number of visits increased by 1.5 million in the period from 2006 to 2014 (61.8 million versus 63.3 million visits, respectively), 2015 saw a large single year increase of 2.7 million visits (i.e. an increase from 63.3 million in 2014 to 66.0 million in 2015) (see Table 8). Also of interest is that not every year experienced an increase in visits (i.e. there were some years when patient visits declined in absolute terms), and also there were many years when patient visits per capita declined. Indeed, the average patient visits per capita decreased by 2.08% from 2006 to 2015.

Visits to PHCs, which represent the majority of total visits (75% on average), reported an average decrease (by 630,872 visits) across the period under investigation with no significant increases in any year except in 2009 (the increase in PHC visits in 2009 pertained to general clinics). Visits to well-baby clinics were the only clinics to experience an average increases across the period (by 53,295 on average) (see Table 12

in the Appendix). Visits to general, dental, antenatal, and other clinics reported average decreases in the number of visits across the period under investigation by 285 thousand, 80 thousand, 35 thousand, and 282 thousand visits, respectively.

Visits to chronic disease clinics, which represent about 6% of total visits on average, did not report any increases except in 2012 (it is noted that there was a lack of information about the number of patient visits to chronic diseases clinics in 2006 and 2007). Hospital visits, which represent about 19% of total visits on average, showed high growth by 48% in 2015 in comparison to 2006 (an increase of 593,398 visits on average). The highest increases in hospital visits were to musculoskeletal diseases, OBS & GYN, Eye, and general diseases (58 thousand, 72 thousand, 107 thousand, 161 thousand visits on average, respectively). Visits caused by other diseases fluctuated between -12 and 30 thousand visits on average (see Table 13 in the Appendix).

Medical activities show that the number of both inpatients and surgery cases increased significantly in 2007 (207 and 33 thousand cases, respectively), representing 30 and 14 thousand on average. The number of deliveries (births) remained almost the same between 2006 and 2015 (248 vs 247 thousand cases, respectively), with a notable increase in both 2007 and 2012 (7.8 and 10 thousand cases, respectively). The highest increase in laboratory cases occurred in 2008 (19 million cases), x-ray in 2011 (483 thousand cases), and in physiotherapy in 2010 (38 thousand cases). The number of meals served increased three times in 2015 in comparison to 2014 (68 vs 21 million meals), and more than quadrupled in comparison to 2006 (68 vs 15 million meals). The number of cases sent abroad for treatment showed a negligible increase in the period from 2006 to 2013. However, in 2014 this number increased almost four times (3.4 vs 0.89 thousand cases) (see Table 15 in the Appendix). In communicable diseases, malaria and dengue fever are the only two diseases which increased significantly among the 38 types of infectious disease (by 149 and 307 cases on average, respectively) (see Table 14 in the Appendix).

Table 8 Patient Visits to PHC, Hospitals, and Chronic Clinics in Millions.

Y	Total [1]	I D %	I D V[2]	CA [3]	I D %	PHC [4]	I D %	I D V	HOS [5]	I D %	I D V	CHR [6]	I D %	I D V
06	61.8			2.6		50.7			11.1					
07	58.8	-4.8	-2.9	2.4	-7.02	47.4	-6.3	-3.2	11.3	2.3	.25			
08	65.3	10.9	6.4	2.6	8.40	48.3	1.8	.89	11.6	2.3	.26	5.2		
09	65.9	1.0	.65	2.6	-1.25	49.5	2.5	1.2	11.3	-2.2	-.26	4.9	-5.4	-.28
10	66.3	0.62	.41	2.4	-5.92	50.1	1.0	.51	11.4	0.3	.03	4.8	-2.8	-.14
11	65.9	-0.61	-.40	2.3	-4.95	49.7	-0.67	-.33	11.4	0.3	.03	4.7	-2.1	-.10
12	65.2	-1.1	-.72	2.2	-3.88	48.6	-2.2	-1.1	11.6	1.8	.21	4.9	3.7	.17
13	64.6	-0.95	-.62	2.1	-3.59	48.5	-0.23	-.11	11.4	-2.0	-.23	4.6	-5.5	-.27
14	63.3	-2.0	-1.2	2	-4.47	46.6	-3.9	-1.9	12	5.6	.63	4.6	-0.2	-.009
15	66	4.3	2.7	2.1	1.86	45	-3.4	-1.5	16.4	36.4	4.3	4.5	-1.3	-.06
	Av	0.83	.47	**Av**	-2.08	**Av**	-1.2	-.63	**Av**	4.9	.59	**Av**	-1.9	-.09

Sources: (MOH 2006-2015)

Abbreviations: [1]Patient visits. [2]Increases or decreases as visits. [3]Visits per Capita (not in millions). [4]Visits to PHCs[12]. [5] Visits to hospitals. [6]Visits to chronic clinics.

In supervision activities, the number of visits to water supply decreased by 2,565 visits on average, and visits to public places decreased by 856 visits on average, where the former had a high increase in 2010, and the latter in 2015 (14.6 and 26.2 thousand visits, respectively). The investigated samples of water decreased by 1,222 samples on average, showing no noticeable increases, whereas investigated samples of food increased by 613 samples on average, with a high increase in 2011 (14.3 thousand samples). Destroyed food increased 1,886 kilograms on average, with no significant increases, and decreased by -1,095 litre on average, where 2007 increased by 73,943 litres (see Table 16 in the Appendix).

In educational activities, the number of lectures held inside healthcare facilities increased in 2014 almost fivefold in comparison to 2006 (249.3 vs 52.4 thousand lectures), where the lectures which were held outside healthcare facilities increased by 409 on average, with a significant increase in 2012 (41.9 thousand lectures). There was no significant change in the number of meetings held every year. In awareness activities, the data shows

[12] The patient visits to PHCs do not include patient visits to chronic diseases clinics.

that all the significant increases came in 2009, and were followed by decreases in the following years. The constant level of educational and awareness activities provided in 2007-2008 and from 2012-2015 could be due to the fact that the reporting occurs every two years rather than every year (see Table 17 in the Appendix). The analyses found that, except for the number of laboratory investigations and treatments abroad, none of the trends in MOH activities in the period from 2006 to 2015 were in line with the changes in the frequent expenditure budget. Of these two activities, the cases sent abroad represented 13% of the frequent expenditure budget in 2013 ($266 million), and it is noted that the number of such cases quadrupled by 2014 (Alhider, 2013). Similarly, laboratory investigations significantly affected the frequent expenditure budget due to the large number of cases in every year.

Because the MOH budget is funded by the MOF at the beginning of each year, each of the projects, manpower, and operation & maintenance budgets are based on existing contracts. Conversely, the frequent expenditures budget is allocated based on estimated demand, such that actual MOH healthcare services activities in any year will only explain any increases in the frequent expenditures budget in that year to a certain extent.

Indeed, a lagged relationship between the frequent expenditures budget and certain key items might be anticipated. This predictable relationship is evident from analyses that showed a correlation between the numbers of healthcare facilities opened in any year with the frequent expenditures budget in the prior year. This was especially the case for newly opened MCs and hospitals, where the preparation and furnishing of these facilities was from the prior year's frequent expenditure budget. For instance, the frequent expenditures budget increased noticeably in the years before the opening of 83 and 150 PHCs in 2009 and 2012, respectively. This lagged relationship is also evident prior to the opening of the 19, 9, and 12 hospitals in 2009, 2012, and 2013, respectively, as well as the opening of the 28, 29, 32, 26 MCs in 2011, 2012, 2013, and 2014, respectively.

There was no correlation in the data between the frequent expenditure budget and the total number of healthcare practitioners, nor was there correlation with the total manpower who are employed directly by MOCS. Similarly, no correlation was evident with total population, or with the Saudi population in the same year or one year later, or with patient visits per capita. It is also evident that there was neither a relationship between the number of patient visits and the increases in the number of healthcare facilities (0.83% vs 3.16%), nor healthcare practitioners (0.83% vs 11.6%), nor with the manpower who are employed directly by MOCS (0.83% vs 4.93%). On the other hand, there is a clear link between changes in the frequent expenditure budget and changes in the MOH total budget, where both increased significantly in 2010 and 2012, then increases declined year on year; both budgets also followed the same trend as the Saudi total budget.

It is evident from the analyses that laboratory investigations and treatment abroad are the two main factors explaining increases in frequent expenditure budget. In addition, it is evident that the increases in the number of healthcare facilities affected the frequent expenditure budget by increasing the preparation and furnishing costs that were required to equip the new facilities. That said, however, there was no relation between increases in the frequent expenditure budget and increases in healthcare practitioners, or with total manpower employed directly by MOCS. Interestingly, no relation was found between increases in the frequent expenditure budget and increases in total population, or with the Saudi population, or patient's visits per capita. In addition, no relation exists between the increases in patient visits and increases in healthcare facilities, or with healthcare practitioners, or with the increases in manpower employed by MOCS. However, a relationship does exist between the increases in frequent expenditure budget and the increases in the MOH total budget, as well as with the Saudi total budget.

2.3.4 AL Hajj Season

Of specific interest in the SA context is the possible relationship between healthcare costs (and so budgets) and the number of pilgrims visiting the Holy Cities each year. Specifically, SA receives an average of 2.5 million pilgrims to Makkah and Madinah during Al Hajj season every year, and the MOH takes the full responsibility for providing all the necessary preventive and curative services for visitors to these cities (MOH, 2015). The costs of healthcare services provided to pilgrims during Al Hajj season are incurred across all of the four budgets previously discussed[13]. For this reason and for the purpose of analysing the drivers of healthcare costs in SA, an analysis of the Al Hajj is required.

The data analyses here will focus on the increases in the number of Al Hajj related PHCs and hospitals (some of which are permanent and are embedded in the number of healthcare facilities that were discussed previously, and others are seasonal i.e. mobile and not embedded). Both healthcare facilities (whether permanent or mobile) are only open during the Al Hajj season. The analyses will also include the total number of beds, and the number of physicians, nurses, administrators, allied health personnel, technicians, and others who participate in health services delivery during the season. The number of patient visits, inpatients, and vaccinations given to pilgrims will be also discussed. It was noted that there was a lack of access to the data of poliomyelitis vaccinations in 2006.

2.3.4.1 Data Analysis of Al Hajj Season

The data shows that the number of hospitals increased by 7 permanent units, and one seasonal unit throughout the ten years. The number of PHCs increased by 21 permanent units, and 41 seasonal units, and the number of beds increased by 2,243 beds during the investigation period. The data shows that there were increases in all types of manpower, i.e. physicians increased by 150%, nurses by 117%, administrators by 246%, and allied health personnel, technicians and others by 213%. Total patient visits to PHCs and

[13] Projects, manpower, operational & maintenance, and the frequent expenditures budgets

hospitals decreased since 2011, and inpatients decreased by 441 cases on average. The total pilgrims who had prophylactic vaccination increased by 1,092 on average, and those who had poliomyelitis vaccination decreased by 14,500 on average.

Two thirds of the increase in PHC units came from the seasonal PHCs, which consist of caravans or tents, such that the cost is very low. The increases in permanent PHCs account for just 4.2% of the MOH total increase in PHCs during the study period. On the other hand, the majority of the increases in the number of hospitals were permanent units which increased by 7 units, representing approximately 10% of the increases in total MOH hospitals during the period under investigation. Three of these hospitals opened in 2009, one in both 2011 and 2012, and two in 2014 accounting for 15.8%, 16.6%, 11.1%, and 50% of total increases in each year, respectively (see Table 18 in the Appendix).

The Al Hajj-related number of beds increased by 2,243, representing 8.4% of the total increase in the last ten years. It is also noted that these increases are not related to MOH increases in the number of hospitals, but rather to expansions in the existing hospitals, because no new hospitals were opened at the time when the number of beds increased.

The majority of the manpower who participate in Al Hajj season work for 15 days, i.e. the period of the season. Those who work for more than 15 days are the technicians, workers, and heads of departments who arrive early to check the readiness of the facilities, as well as the vaccination staff. Everyone who works the season gets their usual salary, as well as an extra day's salary for each day spent in the two Holy Cities. Notwithstanding the increases in the size of manpower in Al Hajj season, the total number of participants is still very low in comparison to total manpower, and represents an insignificant percentage of increase in the manpower and operative & maintenance budgets.

The same is true for the total patient visits and the inpatient cases, which account for just 1.2% and 0.4% on average of the total patient visits and inpatient cases, respectively. As

such, these represent an insignificant percentage of the frequent expenditures budget. The total vaccinations given to pilgrims does not correlate with the increase in the frequent expenditures budget in any year, which suggests that the vaccinations did not affect the increases in this budget. The investigations found that the seasonal PHCs and hospitals, showed an insignificant correlation with the historical changes in the number of pilgrims or with the number of patient visits in the same year or the year prior. The same is true with changes in the number of manpower in all specialities, except for the sum of the allied health personnel, technical personnel, and others which partially matched changes in the number of pilgrims in the prior year. Also no correlation was found between the changes in the seasonal healthcare facilities with the projects budget, nor with the frequent expenditures budget. However, there is a correlation between the changes in the manpower and operation & maintenance budgets with manpower in all specialities.

It is obvious that the increases in the number of permanent hospitals in the two Holy Cities were the only major factor during Al Hajj season that had an impact on the MOH total budget via an increasing in the projects budget, i.e. it is noted that other factors (changes in PHCs in both types, number of beds, manpower, patient visits, inpatients, and vaccinations) had no impact. Also, the changes in the number of seasonal healthcare facilities and manpower in all specialities were insignificantly correlated with the changes in the number of pilgrims and the number of patient visits in the same year or the prior year, except for the sum of the allied health personnel, technical personnel, and others, who showed some correlation partially with the changes in the number of pilgrims in the year prior. Also, no significant correlation was found between changes in the frequent expenditures budget or projects budget and the changes in seasonal healthcare facilities; however, there is some correlation between manpower and operation & maintenance budgets with manpower in all specialities.

2.4 Budgeting Process in Saudi Arabia

This study has looked at the demand side which was not driving the increases in the Saudi MOH budget. Therefore, this section will go through the supply side and discuss how the Saudi government allocates its resources and highlight different budgeting approaches, also this part will look at the history of Saudi Arabia's expenditure patterns.

2.4.1 Resources Allocation and Budgeting in SA

The Saudi government follows the administrative classification of public expenditure, which breaks down its expenditure by ministries and governmental organisations, which are then divided according to subdivisions called branches and departments. Public expenditure for each branch or department is then divided into four chapters called the economic classification which are: i) manpower salaries, ii) frequent expenditure, iii) operation & maintenance programmes, iv) public projects (Eid, 2015, Joharji et al., 2014).

The process of preparing and approving the Saudi budget starts in January every year. Within six to seven months, each ministry and governmental organisation prepares the required budget. In June or July, a budget proposal has to be sent to the General Budget Department of the Saudi MOF. This department reviews and assesses each item of the proposed budget before the MOF starts the first negotiation with representatives of each ministry and governmental organisation, which takes place in August and September. The MOF negotiates the requested appropriations for next year based on last year's actual spending and the planned spending and actual spending for the first half of the current year. In September, the Deputy Minister of Finance reviews the first draft of the budget, and in October, the MOF starts the second negotiation of the budget. In November, the Minister of Finance[14] reviews the second draft of the budget, and in December, the MOF

[14] Ministers in SA are assigned by a royal order from the King and this is based on a revision to the Basic Law of Governance and recommendations from the King's consultants ALARABIYA. 2019c. *Royal Orders* [Online]. United Arab Emirates: Alarabiya. Available: http://ara.tv/2qrrb [Accessed 01/08/2019 2019], EID, A. G. Budgetary institutions, fiscal policy, and economic growth: the case of Saudi Arabia. Economic Research Forum Working Paper, 2015.

issues the final draft of the budget and sends it to the Council of Ministers[15] for approval. By the end of December, a Royal approval of the budget is issued, and the budget is then announced by the MOF, which issues a report discussing the economic developments and highlights revenue and expenditure. This report also shows some data on government expenditure of major civilian sectors, such as education, healthcare, infrastructure and transportation, and municipalities' services. When the ministries and governmental organisations receive their approved budget documents, they start spending according to each department budgetary appropriations (Eid, 2015, Joharji et al., 2014).

One of the issues with the preparation and approval procedures of the Saudi budget is that the Consultative Assembly (Majlis Al-Shura), which is considered as the Saudi parliament, does not take a significant role in these procedures. This is different to the majority of countries with a monarchy government, where usually the parliament has the authority to review, negotiate and approve the budget proposals. The reality is that Article 76 of Chapter 7 of the Saudi Basic Law of Governance, which discusses financial affairs, does not specify any role for the Consultative Assembly regarding the budget process. Therefore, the duty of the Consultative Assembly in processing the budget is limited to reviewing the government general budget report by the end of the fiscal year, and to ask for questioning any civilian minister about items of expenditure that lie under his authority. Afterwards, the Consultative Assembly prepares a report summarising the results of the questioning and provides recommendations to be sent to the King. According to Eid (2015), the Saudi MOF has great power over the budget preparation process and allocating expenditure before handling the final draft to the Council of Ministries for final approval (Eid, 2015).

[15] The Council of Ministers consists of the King, the Crown Prince, and all the Ministers of the various departments.

By the middle of each year, the General Accounting Department in the MOF completes the final account of the previous year and makes a report which the MOF uses to negotiate the proposed budgets by ministries and governmental organisations (Eid, 2015). Joharji et al (2014) argued that the use of such a report to negotiate means that the past spending patterns significantly determine future expenditure, so this incrementalistic logic makes it difficult for the MOF to evaluate the programmes in the proposed budgets. In light of this, researchers have observed that a significant proportion of the expenditure is driven primarily by requests from ministries and governmental organisations just to increase spending instead of being based on an early determination of the macroeconomic constraints (Joharji et al., 2014). Wildavsky and Caiden (2004) and Folscher and Saha (2007) argued that such a system leads to programmes included in the past year's budgets continuing in future budgets until they are challenged, because the decision taken regarding the bulk of the budget is reduced to concentrate on the differences between this year's budget and last year's budget rather than evaluating the whole programmes instead (Wildavsky and Caiden, 2004, Folscher and Shah, 2007). In addition, the reliance on the final account report could make the MOF reduce the budget of the ministry that reports a surplus in its account. That would therefore encourage some ministries to spend the remaining fund in their accounts before the end of the year without actual need, but just to guarantee a higher budget next year. This is more likely to occur in the second chapter of the budget which concerns the frequent expenditure, as the spending of this chapter is not based on fixed contracts to be submitted to the MOF, but rather on estimates for the following year[16]. This is unlike other chapters of the budget (such as manpower salaries and projects) where spending is based on fixed contracts.

[16] The MOF do not consider many years (historically) when negotiating any ministry budget.

As stated earlier, by the end of December of every year, the MOF issues a statement involving the estimated revenue and expenditure for the coming year. However, because of the continuous volatility of oil prices and the inability to accurately forecast their trend for the following year, the Saudi government uses a conservative oil price to measure its revenue (France24, 2012, Jadwa, 2014). What happens is that the Saudi government approves the proposed budgets for the following year based on these conservative oil price estimates which drives up to 90% of the government budget (Jadwa, 2014). Moreover, according to the MOF reports from 2004 to 2019, the data shows that if the actual revenue that is received during the year is exceeding the estimated revenue (which is most likely the case), then usually the government shift out of the approved expenditure and increase spending on capital projects and human development programmes during the year (MOF, 2004-2019). If actual oil prices brought in revenue less than what was estimated, then the government evaluate the size of surplus received in the previous years (which is kept in the Central Bank) and if there is a necessity to increase spending over the approved expenditure, and then decide. For example, in 2015, when actual revenue was less than the estimated due to plummeting oil prices, the government shifted out the approved budget and increased spending due to the unexpected war in Yemen. In light of increasing the government spending due to a high unexpected revenue, Mohamed Ramady (2010) criticised this strategy in dealing with revenues arguing that there is a fundamental issue facing the Saudi fiscal authorities concerning budgeting, which is the inability to have a significant control over a large proportion of revenue (Ramady, 2010). Eid (2015) also criticised this strategy and added that the poor planning and estimation of government expenditure is considered to be responsible for the significant and prolonged gap between budgeted and actual expenditure (Eid, 2015).

At the beginning of each year, when the ministries and governmental organisations receive their approved budget documents, they start managing their financial transactions with the MOF. However, due to poor estimation by each ministry and governmental organisation of their actual financial needs (Eid, 2015, Albassam, 2011), they start asking the MOF for what is called budget correction. This happens for example when a ministry realises that it has a deficit in one item and a surplus in another and asks the MOF to transfer funds between the two (Eid, 2015, Joharji et al., 2014). The MOF regulates these transfers and has the authority to approve transfers that are less than $37.7 million. If the requested budget correction exceeds this amount or if the correction involves transferring funds from one chapter to another, then an approval from the Council of Ministers is required. However, due to the prevalence of this issue, the MOF facilitate the transfer of funds even for amounts exceeding $37.7 million. Albassam (2011) and Eid (2015) have criticised this process arguing that it could lead to a misuse of the budget correction tool (Albassam, 2011, Eid, 2015).

In section 2.3 of this chapter, it was found that there is a continuous focus from the Saudi MOH to keep increasing the number of healthcare facilities, which resulted in increasing the number of employees. This was only one case out of 23 ministries, 27 universities, and 20 public organisations (Eid, 2015, MOE, 2015). According to data on the economic classification of the Saudi government budget covering the period from 1994 to 2010, budgets allocated to chapter one and four (manpower salaries and public projects) accounted for around 80% of total government spending (Eid, 2015). Moreover, Menzies (2013) and Al-Hamidy (2012) confirmed that Saudi Arabia focuses on investments that expand infrastructure and increase employment (Fenton-Menzies, 2013, Al-Hamidy, 2012). This might be sustainable if oil prices are able to provide the funds to do so; if not an adverse outcome is likely because although the government might be able to stop

infrastructure projects, they would struggle to cut employees and/or decrease Saudi employees' salaries.

There are therefore eight potential weaknesses in the Saudi budgetary system. The first is that the ministers who usually have the top authority and responsibility in deciding their ministry's budget proposals are also involved in the final approval decision of the final budget draft that is sent in December to the Council of Ministers, because they are the members of this council[17]. The absence of an independent authority to separate ministers from any involvement in the final decision is likely to exacerbate the problem of unnecessary budgets. The second weakness of the budgeting process is the absence of the Saudi parliament from the process or even from the final approval decision that could change many budgetary proposals. The reality is that the authority of the Saudi parliament is limited to a review of the final draft of the budget at the end of the year in order to provide recommendations to the King. The third weakness of the budgetary system in SA is the reliance on the previous budget to decide the coming one. This means that the structure of the following year's budget is influenced by the appropriations of the previous budgets. Researchers have criticised using the MOF final account report as a base to start negotiations, as it may result in a focus on items changes in programmes rather than on the necessity of the whole programmes and may even make many programmes continue to the future without actual need. The reliance on this report could also cause some ministries to misuse the allocated resources through spending the remaining funds in their accounts before the end of each year in order to guarantee a higher budget next year. The fourth weakness of the system is that a significant proportion of the proposed budgets are driven mainly by requests from ministries and governmental organisations just to increase spending instead of being based on an early determination based on macroeconomic

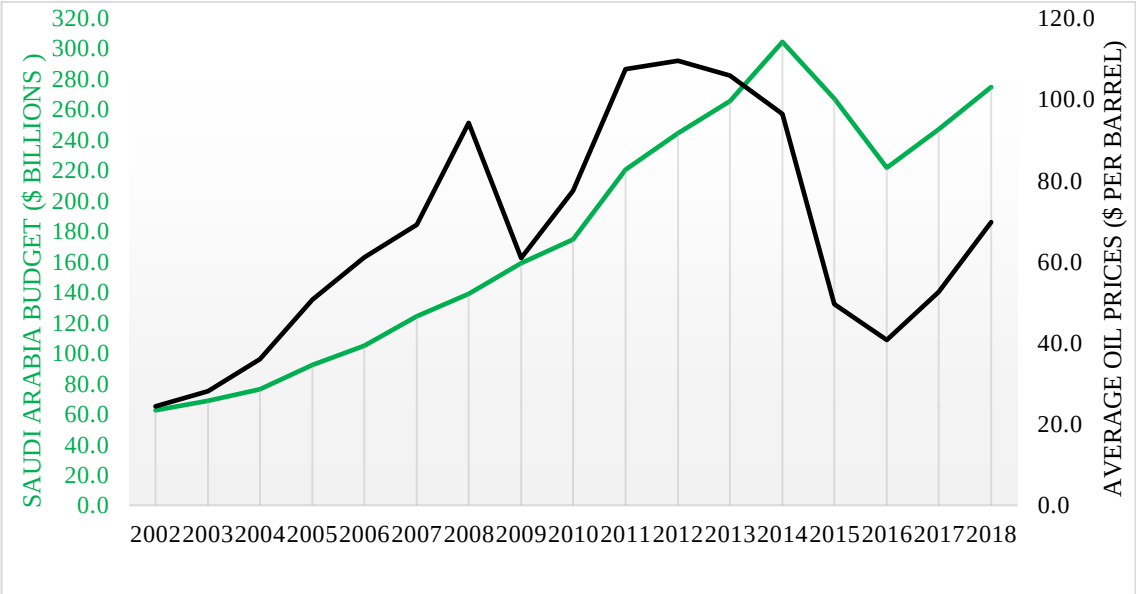
[17] All members of the Council of Ministers decide together, but the King still has the highest power to give all the requested budget or less.

constraints (Joharji et al, 2014). The fifth weakness in the budgeting system concerns facilitating the use of the correction tool. This happens when a ministry exaggerates the financial needs for specific items in the proposed budget, not because they actually need them, but to take advantage of the guaranteed budget correction tool to cover any deficits that may occur in other items. The sixth weakness is the inability to stay within approved expenditure limits if a high unexpected revenue was received. This could have a significant consequence in terms of the government's ability to cover any future deficits if they occur and also to keep enough reserves available. The seventh weakness in the system is the focus on capital project and human development programmes that could cause the system to struggle to cover higher operational costs if fiscal pressures occurred in the future. The eighth weakness is that the MOF gives the top priority in negotiating and investigating the proposed budgets to next year expected oil prices, which usually are set based on conservative prices (Jadwa, 2014, Eid, 2015, France24, 2012). Insofar as oil subsequently trades above expectations, the MOF could relax budgetary constraints and so increase the likelihood of unnecessary expenditure.

2.4.2 Saudi Arabia's Expenditure Patterns History

When the Saudi budgets were investigated along with the average oil prices over the past 17 years, it is obvious that these budgets follow oil price trends. The data in Figure 4 shows that the Saudi budgets and the average oil prices increased and decreased at the same time in the majority of the years under investigation, with only three years showing contrary trends. The data analyses indicate a 0.58 correlation between the Saudi government budgets and the average oil prices in the period from 2002 to 2018, which implies a positive relationship. The reality is that SA is an oil producing country where oil derives from 60% to 90% of total government revenues; therefore, such a correlation with oil prices was expected (MOF, 2009, MOF, 2019).

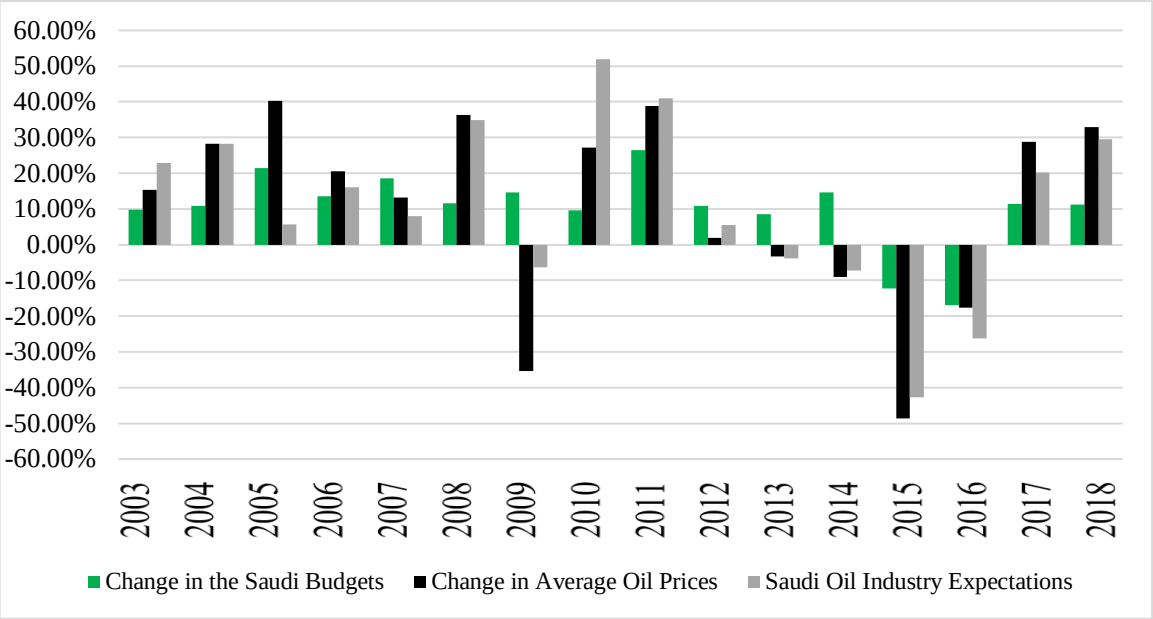
Figure 4 The Saudi Total Budget and the Average Oil prices in the Past 17 Years



Source: (Saudi Ministry of Finance MOF, 2004-2019; Statista, 2019).

This relationship between the Saudi budgets and oil prices can also be interpreted from the correlation between the percentage change in the Saudi government budgets and the change in the average oil prices in the period from 2003 to 2018 (r=0.62), which is also indicating a positive association between the two (see Figure 5). Moreover, because the Saudi government sets its budgets based on the expected oil prices for the following year, an investigation with the expected oil prices is also important. However, due to the lack of data concerning the expected oil prices and the expected level of oil production that the Saudi government uses to set the following year budget (Jadwa, 2014), the expected growth in the Saudi oil industry was used instead. The data analysis implies a 0.63 correlation between the change in the Saudi budgets and the expected growth of the Saudi oil industry. Once again, such a correlation indicates the significant role of oil prices in estimating the Saudi government budgets. A positive correlation was also found between the percentage change in the average oil prices and the expected growth of the oil industry in SA (r=0.85). This also indicates the high attention that the Saudi government pays to oil prices and its involvement in setting the Saudi budgets.

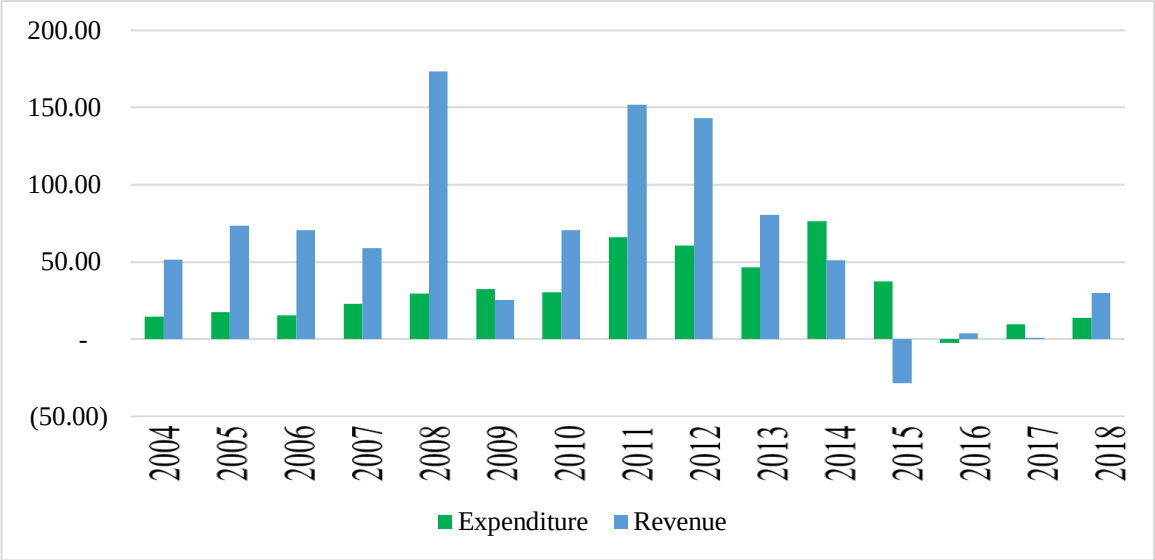
Figure 5 The Change in the Saudi Budgets, Average Oil Prices and Saudi Oil Industry in the Past 16 Years



Source: (Saudi Ministry of Finance MOF, 2004-2019; Statista, 2019).

In addition, the data in Figure 6 shows another positive relationship between the difference between the actual and expected revenue and the difference between the actual and expected spending (r=0.46). The figures indicate fourteen periods when actual expenditures were higher than expected, and the same is true for revenue. However, in eleven periods, actual revenue exceeded actual expenditure, and in a very high absolute terms that accounts for more than double and in some periods treble the increases in the expenditure over what was expected. Indeed in 2008 the difference between the actual and expected revenue was six times more than the difference between the actual and expected spending.

Figure 6 The Difference between the Actual and Expected Revenue and Expenditure in the Past 15 Years



Source: Saudi Ministry of Finance (MOF, 2004-2019).

Note: The revenue and expenditure are in billions of US dollars.

In fact, the correlation between the Saudi government budgets and the average oil prices influenced by the contrary trends in 2009, 2013 and 2014, which were significant following the financial crisis (2009), but at lower levels in 2013 and 2014 (see Figure 5). At the beginning of July 2008, oil prices decreased from $138 down to $35 per barrel by the end of December that year (see Figure 1). This lowered the Saudi government expectation for the growth of the oil industry in 2009, where they estimated a contraction around 7%. However, notwithstanding this expected contraction, the Saudi government announced that it would continue supporting the country's development and increasing the attractiveness and trust in the Saudi economy (MOF, 2009). On these bases, the Saudi government increased spending that year and at even faster rate than in 2008 (see Figure 4 and 5). The reality is that oil prices started rebounding from $35 per barrel at the end of December 2008 to exceed $80 per barrel by the end of December 2009, these upward trends brought in actual revenue exceeding what was expected. This, in addition to the high surplus accumulated from prior year's revenues (the surplus in 2008 was more than

double what was spent that year) (MOF, 2009), also encouraged the Saudi government to increase spending as shown in Figures 5. In 2013, the Saudi government also increased spending even though average oil price decreased compared to 2012. The reasons for this were; i) the decrease in the average oil price was at very low percentage (3.3%), ii) the average oil price was still very high that year ($106 per barrel), iii) the government achieved actual revenue that exceeded expectations, and this was 72.5% higher than what was actually spent, iv) the government reported high surpluses in the previous years (the surplus in 2012 accounted for 45.3% of what was spent that year) (MOF, 2013). In 2014, given the steep fall in oil prices that started in July and continued to the next year, the average oil price was high that year ($96 per barrel). This along with the high surplus in 2013 (surplus accounted for 22.2% of what was spent in 2013), encouraged the Saudi government to increase spending (MOF, 2014).

This previous analysis shows that oil prices play a significant role in deciding how much the Saudi government will spend every year. The high reliance on such a source of funding could be sustainable when prices are high. Otherwise (i.e. in 2009 and since 2012), the government spending could experience contractions as was the situation in 2015 and 2016. Therefore, the Saudi government should look for different funding methods and budgeting approaches to ensure sustainable funding for the country.

2.4.3 Budgeting Approaches

In light of the Saudi budgetary process that was discussed earlier, it seems that the Saudi government uses the bottom up and incremental approaches to allocate its budgets. Bottom up (micro-budgeting) includes lower and sometimes middle level choices on budgets, and this is when departments make financial requests to the ministry which in turn compile requests and send them to the MOF (Guess and LeLoup, 2010). The use of this approach appears in the Saudi budgetary system when the departments and branches within each ministry and governmental organisation determine their fiscal needs and

submit them to the top authority within the ministry or governmental organisation which in turn send them to the Saudi Ministry of Finance for negotiation (Eid, 2015). The incremental approach as was defined by Guragain et al (2019) and Birkland (2015) is when the structure of the country's budget is primarily determined based on previous spending instead of being based on a comprehensive analyses (Guragain et al., 2019, Birkland, 2015). This appears in the Saudi budgetary system when the Saudi MOF negotiates the proposed budgets by ministries and governmental organisations based on last year's final account report. Such approaches are not unique to SA. Therefore, in line with these approaches and in order to attain better budgetary system for SA, researchers suggest two reforms; i) replacing the bottom up approach by a top down approach, and ii) replacing the incremental approach by a value for money approach. In addition, both of these reforms must be on a basis of a macroeconomic framework (Ljungman, 2009, Joharji et al., 2014). In regard to the first reform, the top down approach (macro-budgeting) includes choices on broad bases, and that is when the high authority (MOF) outlines a macroeconomic framework that includes economic growth, unemployment, fiscal balance, balance of payment, inflation, exchange rate and other economic variables, upon which ministries build their budget proposals (Guess and LeLoup, 2010). On these bases, the MOF should prepare projections and guidelines for ministries and governmental organisations in order to instruct them on how to prepare their budget proposals in a way that will be consistent with macro objectives. Joharji et al (2014) denounced the absence of cooperation between the Saudi MOF and the Ministry of Economy and Planning. The latter prepares the country's five-year development plans that include forecasts and targets for certain macroeconomic aspects, sectoral developments and expenditure. Therefore, researchers have emphasised the need to involve these medium-term development plans in the MOF's budgetary process and to increase cooperation between the MOF and the Ministry of Economy and Planning.

Researchers have also suggested that the MOF should establish a macroeconomic unit in the general budgeting department whose main duty should be to conduct forecasts of relevant macroeconomic variables (Joharji et al., 2014). In terms of the value for money approach, this concerns maximising the impact of the outlined programmes in the proposed budget through increasing the understanding of what is driving costs to ensure optimal resource allocation and to achieve the intended outcomes. The current budgetary system in SA focuses on inputs and dismisses outputs (Joharji et al., 2014). The reality is that the ministries and governmental organisations do not identify their programmes' targets and outputs in their budgetary proposals. For instance, Joharji et al (2014) argued that the MOF negotiates capital expenditure on a project basis without any details on the economic classification for capital expenditure. In addition, researchers have emphasised the need for a value for money approach for the Saudi budgetary system, that shifts the focus from an approach that pays attention only to inputs, to a one that focuses on output. They have also emphasised the importance of identifying the targets of each programme along with the funds requested by each ministry and governmental organisation, such as reducing unemployment, creating better health or better education. They also have to develop measures of the effectiveness of their programmes to decide whether or not the development results justify the costs (Joharji et al., 2014).

Budgetary reforms are easier to be adopted when fiscal pressures are small. The reality is that the current financial situation in SA is better than the previous four years (since 2015) insofar as the level of deficit has decreased significantly. Therefore, now would be a good time for the Saudi authorities to implement the aforementioned budgetary reforms.

2.5 Response to the Financial Crisis

The financial crisis, which started in 2007, caused many economies to slow and to report contractions, including European countries where a severe fiscal pressure was experienced (Loughnane et al., 2019). For example, the GDP of the European Union in 2009 reported the sharpest decrease in its history (-4.3%) (Thomas et al., 2013). Therefore, many countries required to obtain bailouts from international financial authorities to manage their spending and debt (Thomas et al., 2013). In addition, countries in Europe either by order from the international financial authorities (i.e. International Monetary Fund (IMF), European Commission, and European Central Bank - known as the Troika) or their own volition adopted austerity policies in response to the financial crisis (Loughnane et al., 2019).

This section investigates the impact of the global financial crisis on different countries and their responses. The experiences were brought from countries that obtained bailouts (including developed and developing countries according to the IMF) and those which did not (including developed and developing countries) to better understand the response of economies with different characteristics. Evidence was also obtained from countries that received the highest bailout, countries that had the deepest decrease in the GDP and those which reported the sharpest decline in government spending on healthcare. Moreover, this section will discuss the shocks that happened for each country, how each country responded to these shocks including the reforms and austerity measures intended to be applied, what measures each country implemented, how such implementation affected the government level of spending (particularly in the healthcare field) and how the government responded to compensate for these decreases. It should be noted that some of the responses to austerity have been unwound in some countries, but the purpose of this section is to examine the immediate responses to austerity situations.

Among 53 WHO Europe countries, Ireland had the greatest decrease in healthcare spending in the years after the crisis (Burke et al., 2014a). Due to the overreliance on the construction sector in Ireland which caused a bubble in the market, the construction sector collapsed, which then led to an increase in credit defaults in the banks' loans and difficulties in funding (O'Sullivan et al., 2010). This beside the effect of other countries' economic downturns caused the Irish economy to contract by more than 10% between 2008 and 2010, and the public debt to increase from 25% of GDP in 2005 to more than 100% in 2010 (Thomas et al., 2012). Also the unemployment rate more than trebled between 2008 and 2014 (from 4% to 12.3%) (Burke et al., 2014a). Therefore, Ireland entered into an international bailout worth €85 billion from the Troika in the period from 2010 until the beginning of 2014 (Burke et al., 2014a, Loughnane et al., 2019).

Public spending on healthcare in Ireland increased from €3.6 billion in 1998 to more than €16 billion in 2008. In 2005, more than three quarters of the overall healthcare financing came from general taxation. However, as a result of the financial crisis, tax revenues decreased significantly in 2008 and 2009. As part of the response, austerity measures were adopted in the healthcare sector targeting cost containment and better allocation of resources (Thomas and Burke, 2012), also increasing taxation and user charges and reduction in employment, operational costs and capital investment. Therefore, the public healthcare budget was cut by 17% between 2010 and 2012 (Thomas et al., 2012). Loughnane et al (2019) compared the mean expenditure changes of healthcare pre (2004-2009) to post (2010-2015) the financial crises among seven EU countries which received bailouts from international financial authorities. The study indicated that the mean of Irish government spending on healthcare as a percentage of the total government expenditure decreased 22.57% after the financial crisis relative to pre the financial crisis (2010-2015 compared with 2005-2009 respectively) and the mean of government spending on healthcare as a percentage of total expenditure on healthcare decreased 9.76% . The

investigation also found that these reductions in public healthcare spending were the highest among bailout countries. Moreover, it was found that the private healthcare spending as a percentage of total spending on healthcare increased to almost a third (31%). Consequently, the distribution of the burden of paying for healthcare shifted from the government onto individuals and this was also the highest among the bailout countries (Loughnane et al., 2019). The same findings was also highlighted by Burke et al (2014) who stated that the system transformed healthcare costs from the government onto people (Burke et al., 2014a). Such a decline in government healthcare spending caused a reduction in the breadth and depth of healthcare provided in the public system (Burke et al., 2014a, Burke et al., 2016), and unmet healthcare needs due to people having more limited access (Connolly and Wren, 2017).

In terms of employment and operational costs, after the financial crisis, there was a policy trend targeting the recruitment and salaries of healthcare employees, and administrative, management and advertising costs (Thomas and Burke, 2012). Recruitment and promotions were suspended in 2009 and staff on leave and those with expiring temporary contracts were not replaced (Thomas and Burke, 2012). There was also significant budget reductions attained through reducing the number of employees and cutting public sector wages; for example, in the period from December 2008 to December 2010, the number of general and support staff was reduced 9.6%, nurses 4.2% and management and admin staff were reduced 3.7% (Thomas et al., 2013). Moreover, in 2010, the healthcare budget introduced lower fees for GPs and other healthcare professionals to make an estimated saving of €659 million, and in 2011, voluntary redundancies and early retirement were proposed (Thomas and Burke, 2012). Moreover, in 2013, the number of Health Service Executive employees was reduced by more than 12,000 compared to 2007 (Burke et al., 2014a, Thomas et al., 2014), also a new (lower) salary scale for new entrants was introduced across the public service (not just in health, but this sector was affected).

In relation to taxation and user charges, in May 2009, the health levy in Ireland was doubled to 4% on all earnings up to €75,036 and to 5% for those receiving higher than this amount (Callan et al., 2010, Thomas and Burke, 2012). Moreover, in the same year, tax relief on hospitals and nursing homes ended (Thomas et al., 2013). The entitlement to Medical Cards[18] was also reduced in 2009, where more than 12,000 from those who are wealthy and aged over 70 years lost their entitlements, and automatic free healthcare for people older than 70 years was stopped. In addition, people experienced delays in obtaining and renewing their medical cards in 2011 and this was attributed to cost saving tactics (Thomas and Burke, 2012, Thomas et al., 2014). In addition, in 2010, a 50 cent charge per prescription (up to a maximum of €10 a month per family) was introduced for all medical card holders (Thomas and Burke, 2012), this was increased to €1.50 in 2013 (capped at €19.50 a month per family), and then to €2.50 in 2014 (capped at €25 a month per family) (Maresso et al., 2015, MGI, 2013). In 2009, co-payments for public beds increased from €66 to €75 for two thirds of the population who do not have medical cards (Maresso et al., 2015). The charges of emergency departments in hospitals increased from €66 to €100 in 2009 and it has stayed at this level ever since, and the deductibles for the Drugs Payment Scheme which reimburses those without medical cards for drugs' costs over a certain amount also increased (Maresso et al., 2015). In 2010, the drugs reimbursement threshold increased to €120 a month comparing to €100 in 2009, and increased to €132 in 2012 (Thomas and Burke, 2012, Thomas et al., 2013), and then to €144 in 2013 (Maresso et al., 2015). According to Burke (2015), Irish people paid nearly €600 million more for drugs and hospitals charges in 2014 than they paid in 2007, and the majority of these costs increases were introduced pre 2011 (Burke, 2015). Thomas et

[18] A Medical Card enables those receiving incomes under certain thresholds and most people over 70 years to access General Practitioners and hospitals (It's actually a wider set of services than just these.) without charge and medicines at a low cost BURKE, S. A., NORMAND, C., BARRY, S. & THOMAS, S. J. H. P. 2016. From universal health insurance to universal healthcare? The shifting health policy landscape in Ireland since the economic crisis. 120**,** 235-240.

al (2014) stated that through the austerity period, user charges increased at various levels of healthcare in Ireland even for those holding medical cards, and eligibility for subsidies has been decreasing[19] (Thomas et al., 2014).

As a result of the continuous austerity measures in the Irish public healthcare system, evident in the reduction of employees, closed wards, fewer public hospital beds (which decreased by 941 in 2012 compared to 2008 (Burke et al., 2014a)), and the reduction in capital spending, which decreased 26% in 2009 (Thomas et al., 2013), the treatment waiting period increased and the provided home care services decreased (Burke et al., 2014b). According to Burke et al (2014 a), the treatment waiting period from 0-3 months, 3-6 months and from 6-12 months increased in 2013 comparing to 2012 and trebled for those waiting over 12 months (Burke et al., 2014a). The researchers added that the government targeted eight months as a maximum waiting period for treatment to begin by the end of 2013; however, the waiting period for 4,350 patients exceeded eight months in March 2014. For home care, the number of hours provided increased between 2006 and 2008 and then decreased steadily, where the number of hours provided in 2013 declined to less than nine million compared to eleven million hours in 2006 (Burke et al., 2014a).

The Irish public healthcare system has endured radical resource cuts as a response to the financial crisis. While the system has reduced the breadth and depth of coverage, this may preserve the functioning of the healthcare system in the short term. However, it does not consider the economic impact of employment reduction, which in turn may influence the proportion of collected tax in the future and the ability to fund the healthcare system (Thomas et al., 2013). Burke et al (2014) argued that such a cut in home care budgets and

[19] The Sláintecare report, which sets out a 10-year plan for the Irish health system, envisages reductions and removal of some of these charges BURKE, S., BARRY, S., SIERSBAEK, R., JOHNSTON, B., FHALLÚIN, M. N. & THOMAS, S. J. H. P. 2018. Sláintecare–A ten-year plan to achieve universal healthcare in Ireland. 122**,** 1278-1282.

increasing user charges are short term measures, but it may end up putting more pressure on the healthcare system in the long term when people turn up in hospitals due to the absence of support and not receiving the healthcare they need (Burke et al., 2014b).

Greece is one of the European countries that was severely affected by the global financial crisis (Fragkoulis, 2012). The country's GDP declined 22.1% in the period from 2009 to 2012 (Maresso et al., 2015), and the government deficits remained at percentages over 9% of the GDP since 2008. In addition, the government debt rose to more than 170% in 2011 as a share of GDP compared to 113% in 2008, and the unemployment rate jumped to 24.3% in 2012 from 7.7% in 2008 (Economou et al., 2015). As a result, the credit rating agencies repeatedly downgraded the country's economy, which increased the cost of borrowing, where the interest on the government 10 years bonds increased from 5.8% in 2009 to 12.1% in 2010 (Economou et al., 2015). These continued shocks required the country to obtain financial assistance from the international authorities.

In May 2010, the Troika agreed to secure a rescue package of loans to Greece worth €110 billion and a further package worth €109 billion was approved in July that year in return for adapting harsh austerity measures (Houston et al., 2011). The country received in total three bailouts amounting to €336 billion (Syrrakos, 2018), and these were received in the period between 2010 and 2016 (Loughnane et al., 2019). Within the bailout period, Greece was set under the supervision of Troika as part of the deal (the signed memorandum of understanding). This deal included a series of measures focusing on the reduction of public expenditure and also included measures targeted at reducing public healthcare expenditure (Kaitelidou and Kouli, 2012, Kentikelenis and Papanicolas, 2011).

As a response to the austerity measures, within 12 months starting in May 2010, public sector wages were reduced 15% and the public and private pensions by 10%. There was also a 10% reduction in public sector employees with a total of 80,000 made redundant (Houston et al., 2011). Specifically in the healthcare sector, responding to the bailout

conditions which emphasised a reduction in public spending on healthcare to 6% of GDP (Kentikelenis and Papanicolas, 2011, Karidis et al., 2011), the Ministry of Health performed a series of hospital closures and mergers since 2011 (10 hospitals out of 133 were merged) (Kaitelidou et al., 2012, Houston et al., 2011), and employed a centralised purchaser to enhance the purchasing negotiation power on medical procurements in order to reduce the cost of supply (Fragkoulis, 2012, Kentikelenis and Papanicolas, 2011). There was also an orientation to eliminate unnecessary treatments through enhancing the use of computerised systems, such as e-prescription, which became compulsory from the beginning of 2012, to comprise at least 90% of the medical activities including drugs, diagnostics, surgeries and referrals, so as to increase control over expenditure and to monitor physicians' behaviour (Kaitelidou and Kouli, 2012, Fragkoulis, 2012). The memorandum of understanding also aimed to make more cuts on pharmaceutical products and set a target to reduce spending on these to 1% of GDP in 2014 from 2.2% in 2009 (Kaitelidou and Kouli, 2012, Maresso et al., 2015). In 2011 and 2012, there was a high focus on generic drugs being provided in public facilities at prices not exceeding 40% of the equivalent branded drugs (Kaitelidou and Kouli, 2012). In terms of salaries and related benefits, they were reduced by €568 million in 2011 and hospitals' operating costs by €840 million (Kaitelidou and Kouli, 2012). There was also a reduction in public pharmaceutical expenditure from €5.2 billion in 2009 to €2.9 billion in 2012 (Kaitelidou and Kouli, 2012, Economou et al., 2015), and spending on mental health was reduced 45% in 2011 (Kentikelenis and Papanicolas, 2011). According to Loughnane et al (2019) the mean of government healthcare expenditure as a percentage of total government expenditure was 7% lower for the period 2010-2015 than for 2005-2009 (Loughnane et al., 2019).

In terms of the contribution to SHI, in 2011, the state (employer) contribution rate to the civil servants' SHI fund was set at 5.1% of civil servants' salaries while the fund's retired

pensioners contribution rate was increased gradually from 2.55% to 4% in 2013 (Economou et al., 2015). Moreover, to increase revenues, user charges were introduced and increased in different healthcare services and products. In 2011, there was an increase to outpatient department charges in public hospitals and health centres from €3 to €5 (Thomson et al., 2015). There was also an increase up to 10% of user charge for drugs in 2011 on different types of diseases (i.e. Alzheimers, dementia, epilepsy, angiopathy, diabetes type 2 and Charcot's disease), up to 25% on pulmonary hypertension, and an increase from 10% to 25% on 14 types of diseases (coronary heart disease, hyperlipidemia, rheumatoid arthritis, psoriatic arthritis, lupus, vasculitis, spondylarthritis, scleroderma, chronic obstructive pulmonary disease, pituitary adenomas, osteoporosis, paget's disease, Crohn's disease and cirrhosis) (Economou et al., 2015). In 2014, the government imposed a €25 co-payment on admission to public hospitals and an extra €1 for each prescription issued under the national health services. However, the €25 co-payment on hospital admission was then revoked later in 2014 (Economou et al., 2015, Maresso et al., 2015)

The increase in the unemployment rate in Greece decreased households' incomes which in turn led more patients to seek healthcare in public facilities instead of paying privately. According to the WHO, the the private spending on healthcare in Greece was 42% as a percentage of total spending on healthcare in 2008, and in the period from 2009 to 2012 kept at percentages between 31% to 34% (WHO, 2019). This, alongside the reduced employers and employees' contributions to SHI (because of higher unemployment) put more pressure on the public healthcare system, which was already overloaded (Kaitelidou and Kouli, 2012). Moreover, the radical cuts in public healthcare budgets has reduced people's access to healthcare, increased their waiting periods for treatment and negatively affected the quality of healthcare services provided (Kaitelidou and Kouli, 2012). According to Karidis et al (2011), the continous reduction in public healthcare spending

has led to a significant shortage in surgical supply all over the country and exsasberated suppliers' refusal to supply to public hospitals due to their defaults in paying their accumulated debt (Karidis et al., 2011).

In the Netherlands, due to the global economic slowdown and the banks' tightened lending criteria as a result of the housing market collapse, Dutch exports decreased from 76% of GDP in 2008 to 69% in 2009 leading employers to reduce the working hours of their employees and to focus on the part-time recruitments with the idea to employ them full-time again when the economic situation improved. Subsequently, the unemployment rate doubled in 2012 compared to 2008 (6.4% in 2012 versus 3.1% in 2008) (Priemus and Environment, 2013, Linssen et al., 2018, Maresso et al., 2015). This decreased people's disposal income and weakened their level of consumption, which in turn decreased the country's imports from 68% of GDP in 2008 to 62% in 2009 (Maresso et al., 2015). Consequently, the country's GDP contracted in the fourth quarter of 2008 and this trend continued until the end of 2009 to report 3.9% contraction that year (Priemus and Environment, 2013, Maresso et al., 2015). In addition, the government plans to support businesses and the financial sector by capital injections led to a rapid increase in public spending and a substantial increase in the public deficit, which increased more than eleven-fold in 2010 compared to 2008 as a share of the GDP (5.6% of GDP in 2010 compared to 0.5% in 2008) (Maresso et al., 2015, Linssen et al., 2018). Moreover, the government debt increased from 54.5% of the GDP in 2006 to 82.7% in 2012. These negative economic trends encouraged the Dutch government to introduce more austerity measures to lessen the effect of the financial crisis and to stimulate the economy (Priemus and Environment, 2013).

These measures included cuts to government spending and stabilisation of salaries in the public sector with a main aim to reduce the public deficit and debt by 2015. In 2012, the government increased VAT by 2 percentage points (from 19% in 2011 to 21% in 2012)

and introduced a tax called the crisis levy at 16% on incomes over €150,000 per year (Economics, 2019d, KPMG, 2017). These measures also targeted the healthcare sector at different levels; for example, there were some plans to reduce spending on acute care in 2008 and long-term care in 2010 (Maresso et al., 2015). In addition, the government introduced a deductible of €150 per year in 2008 on different healthcare services and pharmaceuticals, which then increased gradually year on year to reach €350 in 2013. In 2009, more measures were applied to reduce the government healthcare coverage and to eliminate improper healthcare consumption. In 2010, the Ministry of Health implemented an agreement with the Association of Medical Specialists and the National Hospital Association to introduce a budget cap for medical specialists so as not to increase by more than 2.5% per year in the period between 2012 and 2015. In 2011, the government implemented a plan to decrease healthcare allowances gradually in the period between 2011 and 2040, and implemented further measures to contain costs in the areas of acute care and long-term care (Janssen et al., 2016). In the period from 2009 to 2012, there were continuous measures to reduce pharmaceutical expenditure. In 2012, additional measures to shift more healthcare costs from public to private sources were introduced with the patient bearing more costs, and to reduce overspending on primary and specialized care through making healthcare providers more responsible for overspending (Maresso et al., 2015). In that year also, there was an introduction of a co-payment between €100 and €200 per treatment for the secondary mental healthcare, an increase in primary mental healthcare co-payment from €10 to €20 per session and an increase of the co-payment for the stay in mental healthcare hospitals of €145 per month. In 2013, the government started taking into account the assets above €100,000 when considering eligibility for healthcare allowance, and in the same year, 8% of taxable assets was included in the calculation of cost sharing for the long-term care (Maresso et al., 2015).

As a result of these radical measures, the reduction in medical specialists' tariff (compensation and support for medical specialists) reduced the medical specialists' care budget by 10% in 2008 (€175 million), 24% in 2009 (€375 million), and 28% in 2010 (€479 million) (Maresso et al., 2015). In addition, hospitals' budgets decreased by €160 million in 2008, and the GPs were encouraged to prescribe generic drugs, which reduced the pharmaceutical budget by 6% in 2010 (€130 million), also in that year, there was 3% reduction in the mental healthcare budget (€119 million). In 2011, the reduction in pharmacists' tariff measure reduced the pharmaceutical budget by 1% (€74 million), reducing tariff measure for hospitals reduced the hospitals' budget by 2% (€316 million) and reducing the tariff measure for medical specialists reduced medical specialists' budget by 33% (€606 million). In 2012, reducing the tariff measure for GPs reduced their budget by 5% (€98 million) and there was 6% reduction in the mental healthcare budget (€222 million) (Maresso et al., 2015). According to the WHO data, the Dutch government spending on healthcare as a percentage of the total government spending in the period from 2008 to 2011 was less than the spending in 2007 or 2011 (18.1% in 2007 vs 17.8% in 2008, 17.5% in 2009, 17.8% in 2010 and 18.4% in 2011) (WHO, 2019).

The Portuguese economy experienced low economic growth and imbalances prior to 2008 and the situation was exacerbated since the onset of the global financial crisis. The continuous public deficit and high level of debt beside the low government credit caused instability in the economy and put the government under pressure (Sakellarides et al., 2014a). The country's GDP decreased by about 3% in 2009 and the government deficit increased from 3.7% in 2008 to 10.2% in 2009 as a percentage of GDP. Moreover, the public debt increased from 75.5% of GDP in 2007 to 127.9% in 2012, and the unemployment rate more than doubled in 2012 compared to 2008 (15.9% vs 7.7%). These indicators led to a downgrading of the Portuguese economy credit rating, where the government 10-year bonds interest rate reached 10.5% in 2012 compared to 4.4% in 2007.

Such continuous negative trends and the high borrowing costs required the Portuguese government to obtain a bailout from international authorities.

In May 2011, the Portuguese government signed a memorandum of understanding with the Troika to receive a loan worth €78 billion in the period from 2012 to 2014, with a condition of adopting austerity measures covering this period (Sakellarides et al., 2014a, Loughnane et al., 2019). These measures included a reduction in government expenditure and increases in taxation in order to reduce the government deficit and stabilise the economy. In addition, the deal included requirements to control spending on healthcare, and specifically the pharmaceutical sector with a target to decrease spending on drugs from 1.34% of GDP in 2011 to 1.25% in 2012 and to 1% in 2013. Further reductions were also required in hospitals' operational costs and primary and ambulatory care (Pita Barros, 2012). The memorandum emphasised the use of generic drugs, the implementation of an international reference pricing system to define the maximum market price, and the establishment of a mandatory e-prescription system to control spending on healthcare and to monitor physicians' prescribing patterns (Pita Barros, 2012).

According to Loughnane et al (2019), the mean of government spending on healthcare as a percentage of total government expenditure in the period 2010-2015 compared to the period 2005-2009 decreased 12.1% and the government spending on healthcare as a percentage of total spending on healthcare decreased by 4% over the same period. The researchers added that the mean changes of the private spending on healthcare as a percentage of the total spending on healthcare for the same two periods (pre and post the crises) increased nearly 9%. Therefore, the researchers suggested that the burden distribution of healthcare costs shifted from the Portuguese government to individuals (Loughnane et al., 2019). Particularly in pharmaceuticals, the spending on drugs

decreased 11.4% in the ambulatory sector and 1.1% in hospitals in 2012 compared to 2011 (Sakellarides et al., 2014a).

Between 2011 and 2013, the government increased user charges on many healthcare services; for example, user charges on visits to specialists in primary and ambulatory care increased 68.5% (from €4.60 in 2011 to €7.75 in 2013), the charges for primary healthcare consultations increased 122.2% (from €2.25 to €5.00), and for urgent attendances in health centres they increased 171% (from €3.8 to €10.30). In hospitals, the charges for type 1 emergency visit increased 114.6% (€9.60 to €20.60), type 2 by 74.4% (from €8.60 to €15.00), type 3 by 103.5% (from €8.60 to €17.50), and since January 2013, all hospitals user charges increased 2.8% (Sakellarides et al., 2014a). In addition to these, the government reviewed the exemptions from user charges of many groups of people (based on the economic status, i.e. household income and number of dependents), the maximum price of generic drugs was set at 60% of the branded products, and a centralised procurement system for medical supply was implemented to decrease costs and fight waste. Moreover, the spending on private providers who provide diagnostic and therapeutic services to the national health services was reduced 10% by the end of 2011 and another 10% by the end of 2012 through centralising the procurement of medical goods in the national health services, and hospitals' operational costs were reduced, including a reduction in the management staff in 2012 and spending on overtime was reduced 10% that year and by another 10% in 2013 (Sakellarides et al., 2014a).

The wide increase in user charges caused decreases in the number of people accessing healthcare, and the trend has continued specifically for vulnerable groups. (Legido-Quigley et al., 2016). According to a Portuguese study investigating the changes in health seeking behaviours, it was found that 15% of those surveyed did not take drugs and 9% did not seek a necessary medical consultation due to a lack of financial resources (Sakellarides et al., 2014a).

The Latvian economy was also one of the economies that were severely hit by the global financial crisis where the economy began to contract from the third quarter of 2008 to report a 26.5% contraction in 2009 and a further 9.2% in 2010 (WB, 2019c, Klyvienė and Rasmussen, 2010, Kentikelenis and Papanicolas, 2011). Moreover, the government deficit increased from 0.4% of GDP in 2007 to 10% in 2009 and the public debt quadrupled in 2009 relative to 2007 as a share of GDP (9% in 2007 vs 37% in 2009) then increased to higher percentages in the period from 2010 to 2012 (more than 42% in these three years). Consequently, the interest rate of the government 10 years bond increased to 18% in 2009 compared to 5.6% in 2007 (Mitenbergs et al., 2012a). These factors participated significantly in increasing the unemployment rate, which quadrupled in 2010 compared to 2007 (22% vs 5%) (Economics, 2019e, Mitenbergs et al., 2012b). In 2008, the Latvian government sought financial assistance from international authorities to reduce the effect of these shocks and to retrieve economy stability (Maresso et al., 2015).

In 2008, the EU, Scandinavian countries and the World Bank agreed to provide an assistance financial programme to the Latvian government amounting to €7.5 billion to be received from the end of 2008 until the beginning of 2013 (Maresso et al., 2015). This financial assistance was conditional on implementing austerity measures in the period from 2008 to 2013. The key feature of these measures included reducing the government expenditure with a view to keeping the budget deficit at levels below 5.0% of GDP in 2009, 4.8% in 2010 and 2.8% in 2011 (which was not achieved in any of these years (Maresso et al., 2015)). The assistance programme also required increases in different types of taxation (i.e. personal income, VAT and social insurance).A reduction in the salaries and related benefits of the public sector employees was also required, and specifically to reduce the number of public administration employees at least 15% during 2009 and 2010. The healthcare sector was also mentioned explicitly in the assistance programme, which required cuts in public healthcare budgets, fewer administrative

agencies, reductions in staff numbers and rationalisation of publicly financed pharmaceuticals (Mitenbergs et al., 2012a, Maresso et al., 2015).

As a response to these measures, the government increased the value added tax to 18% in 2008 and to 21% in 2011, increased the personal income tax rate from 23% in 2009 to 26% in 2010 and then reduced it to 25% in 2011, and the social insurance tax increased from 33.09% to 35.09% in 2011. Moreover, there was a trend to shift from hospital care to ambulatory care in 2009; so as to accelerate this transfer, the government reduced the number of hospitals that provide statutory impatient services from 72 to 43 in 2009 and then to 39 in 2012. Moreover, many healthcare agencies were closed in 2009 including the State Centre of Medical Professional Education, the State Agency of Health Statistics and Medical Technologies and the Public Health Agency, and in 2011, the government merged the Health Payment Centre with the Centre of Health Economics in one agency named the National Health Services. In addition, the number of healthcare employees was reduced 55% before the end of 2009 (from 1,319 in January to 593 in October) (Mitenbergs et al., 2012a, Maresso et al., 2015). In that year also, the percentage of reimbursement for pharmaceuticals was reduced from 75% to 50% and from 90% to 75% for other diagnoses (Behmane and Innus, 2011). Previously, the National Health Services paid the same reference price for all drugs with similar chemical and therapeutic characteristics, where patients could choose any one and pay the difference between the reference price and the actual price of the chosen drug (if the drug was more expensive than the reference price) in addition to the regular drug co-payment. In 2012, the National Health Services introduced one drug (among the previous group of drugs with similar chemical and therapeutic characteristic) which is the cheapest one, and pharmacists have to prescribe this drug, where if a patient chose a different product, then he/she has to pay the full price (Mitenbergs et al., 2012a, Maresso et al., 2015).

As a result of these reforms, public healthcare expenditure decreased almost 10% in 2009 compared to 2008 (Mitenbergs et al., 2012a). In addition, the budget for public health (i.e. environmental health, health promotion and health statistics) was reduced nearly 25% in 2009 relative to 2008. Moreover, the treatment of communicable diseases and infectious disease control budget was cut by 17% in 2009, and in the same year, the salaries of all healthcare employees was cut 20% (Maresso et al., 2015). Furthermore, the reimbursement budget for pharmaceuticals decreased by 7.1% in 2009 compared to 2008, where the average number of reimbursed prescriptions was 4.82 million in 2009 compared to 4.89 million prescriptions in 2008 (Behmane and Innus, 2011). In addition, while inpatient services accounted for almost 50% of the Ministry of Health spending in 2008, this percentage was reduced to 35% in 2011. According to Loughnane at al (2019), the mean of government healthcare expenditure as a percentage of the total government expenditure for the period 2010-2015 was 8.1% lower than in the period 2005-2009 (Loughnane et al., 2019).

In addition to the planned cuts in healthcare spending, the government increased VAT percentage in 2009 from 5% to 10% on products with a reduced tax rate such as pharmaceuticals and medical devices, and in 2011 VAT was increased to 12%. In 2009, the government also increased excise tax on tobacco and alcohol. Moreover, user charges increased between 2008 and 2009 on outpatient visits to GPs (from LVL0.5 to LVL1), outpatient visits to specialists (from LVL2 to LVL5), outpatient visits to hospitals (from LVL2 to LVL5), outpatient surgery (from LVL0.5 to LVL5), the daily inpatient charge in hospitals (from LVL5 to LVL12), and a co-payment of up to LVL30 was introduced in 2009 for inpatient surgical interventions. In addition, the cap for co-payments for one hospital episode increased from LVL80 in 2008 to LVL250 in 2009 and the maximum patient contribution for one year increased from LVL150 in 2008 to LVL400 in 2009 (Maresso et al., 2015, Mladovsky et al., 2012).

The global financial crisis also affected the Italian economy, which had already deteriorated due to political and economic instability (Di Quirico, 2010). In 2009, the economy had a severe contraction in excess of 8.5% and continued to contract by a further 2.7% in 2010, then increased 7.1% in 2011 and decreased again by nearly 9% in 2012 (WB, 2019b, Pompili et al., 2014). In addition, the government debt increased more than 20 percentage points in the period from 2008 to 2012 as a share of the GDP (102.4% in 2008 compared to 123.3% in 2012) (Economics, 2019c), and the government deficits continued at levels higher than 3% of the GDP in the period from 2008 to 2012 where the highest was in 2009 (-5.2% of the GDP) (Maresso et al., 2015). Moreover, the interest rate on government 10-year bonds increased from 4.2% at the beginning of 2008 to nearly 7% by the end of 2011 (Economics, 2019b). Furthermore, the unemployment rate increased from 6.2% in 2007 to 11% in 2012, and the number of working hours decreased, and made the private sector focus on the part-time recruitment. Such shocks reduced people's disposable income and increased the proportion of poor families, which in turn led to lower purchasing power and a reduction in personal consumption (Pompili et al., 2014).

As a response to these continuous shocks, a range of austerity measures were introduced by the government to alleviate the effect of the financial crisis, to support the economy and to manage the widening public debt. These measures targeted cuts to public expenditure with more concentration on public sector manpower, such as reducing employees' salaries and related benefits and limiting recruitment (Di Quirico, 2010, Turone, 2015, Ferré et al., 2014). These measures also targeted the healthcare sector; for example, the government undertook an urgent decrease in the 2009 healthcare budget as a response to the crisis and introduced policies to improve the regions' accountability in containing healthcare costs. Moreover, the measures included spending reductions on healthcare personnel and recruitment (there were incentives in some regions for early

retirement in 2008), also spending containment on medical supply purchases including pharmaceuticals (Ferré et al., 2014). In 2010, there was a focus from the government on the regions with the highest debt to implement the spending containment plans earlier than the other regions (De Belvis et al., 2012). In addition, the spending review of the government budget in 2012 included cuts to hospitals' budgets and the government mandated public hospitals to order their purchases through the National Purchasing Agency for Medical Goods and Services (Ferré et al., 2014, Maresso et al., 2015). In 2012, there was also a trend to reduce the hospitalisation rate from 180 per 1000 inhabitants to 160 and to reduce hospitals' admissions and the average length of stay (Maresso et al., 2015). In 2013, the budget of medical devices was capped at 4.8% of the national health services spending, and then was lowered to 4.4% in 2014. (Ferré et al., 2014).

As a result of these reductions to public healthcare expenditure, there was a cut of €1 billion from the investment in hospitals' buildings in 2010, and the number of hospital beds was reduced from 4 per 1000 inhabitants to 3.7 in 2012. In addition, the spending on healthcare salaries for 2013 and 2014 was reduced by 1.4% relative to 2004, and spending on medical devices decreased €22 million in 2013 and €30 million in 2014. The government also cut central transfers to regions for disability, childhood, migrants and other welfare policies, which then needed to be compensated primarily by increasing co-payments and through saving (Ferré et al., 2014). According to the WHO data, the Italian government spending on healthcare in 2012 was reduced to 76% of total healthcare spending compared to 78% in 2009, and as a percentage of the total government expenditure decreased from 14% in 2009 to 13% in 2012 (WHO, 2019). To compensate the aforementioned cuts in healthcare spending and to ensure the sustainability of the healthcare services, the Italian government introduced co-payments for public and private outpatient specialist visits and diagnostic services at €10 in 2011, and €25 user charge on

visits of patients aged over 14 to emergency departments that are deemed non-urgent (Maresso et al., 2015, Ferré et al., 2014, De Belvis et al., 2012, Houston et al., 2011).

Hungary was one of the EU counties that was severely hit by the global financial crisis, where the economic growth fell from 3.2% in 2005 to 0.8% in 2008 and then to -6.7% in 2009 to represent the deepest recession in Hungary since the 1980s. In 2011, government debt reached 102% of GDP compared to 72.3% in 2008, and the government deficit exceeded 4% in 2011 (Mihalyi, 2012, Gaal, 2011). In addition, the Hungarian Forint depreciated 30% against the major currencies in March 2009 and the unemployment rate increased from 7.8% in 2008 to 10% in 2009 and then to 12% in 2012 (Gaal, 2011, Uzzoli, 2011). The credit rating of the Hungarian economy was downgraded, where the interest rate on the government 10-year bonds increased from about 7% by the end of December 2008 to nearly 12% in March 2009 (Thomson et al., 2014). Such negative indicators made Hungary one of the first countries seeking for assistance from international authorities. In the second half of 2008, Hungary signed a memorandum of understanding to obtain a loan from the International Monetary Fund, the EU and the World Bank worth €20 billion, to be received in 2010 to avert economic collapse (Mihalyi, 2012, Gaal, 2011). The deal was conditional on adopting harsh austerity measures including tax increases (increasing value added tax from 20% to 25% and other tax increases), cuts to pension and welfare benefits, increasing retirement age, reducing public transport and energy subsidies, reducing the budget deficit and cuts to healthcare costs comprising reduced capital expenditure, emphasising the use of generic drugs and employing software to help select the least costly therapy by physicians (Gaal, 2011).

According to Loughnane et al (2019), the mean of government spending on healthcare as a percentage of total government expenditure was 5% lower in the period 2010-2015 compared to the period 2005-2009, and the mean of government spending on healthcare as a percentage of the total spending on healthcare decreased 4.5% over the same period.

The researchers also found that the mean changes of the private spending on healthcare as a percentage of the total spending on healthcare for the same two periods (2010-2015 compared to 2004-2009) increased nearlly 11%. The researhers added that such decreases in public spending and the increase in private spending on healthcare suggest that the burden of healthcare costs shifted from the government onto individuals (Loughnane et al., 2019).

The Hungarian public healthcare system implemented various changes in line with the austerity measures. For example, the employers' share of contribution to social health insurance was reduced from 5% in 2008 to 2% in 2011 and the employees' share was increased from 6% to 7%, also the base for the proportional healthcare tax levied on non-wage-related income was widened in 2011 (Mihalyi, 2012, Maresso et al., 2015, Szigeti et al., 2019). Moreover, a new tax for health was levied in 2011 on food products including high salt, sugar or carbohydrates, also a new tax for health was levied on statutory car insurance premiums in 2012. In the same year, there was a 20% increase in the SHI revenue from taxation on drug company turnover on covered products, and the number of short-term care beds was reduced by 5% (around 2500 beds) (Thomson et al., 2015).

Romania was also among the countries that faced serious economic downturns, where economic growth had a significant drop as a result of the global financial crises to contract by more than 6.5% in 2009 and another 1.1% in 2010 (Carausu et al., 2017, Suciu et al., 2012). The government deficit as a percentage of the GDP trebled in 2009 compared to 2005 (9% and 3%, respectively). In addition, public debt increased from 34.6% of GDP in 2010 to 41.5% in 2013, and the interest rate of government 10-year bonds increased from 7.5% in 2008 to 10% in 2010 (Vlădescu et al., 2016, Maresso et al., 2015). The fall in the real estate and the financial market in general extended the effect to contractions in several industrial sectors such as cars, steel and chemicals. This increased the

unemployment rate to 8.5% in 2010 from 7.2% in 2005 (Suciu et al., 2012, Vlădescu et al., 2016). There was an attempt from the Romanian government to implement some budgetary reforms to alleviate the effect of the financial crisis; however, they were not enough to face the economic pressure. Therefore, the government found that it was necessary to obtain financial assistance from the international authorities (Carausu et al., 2017).

In 2010, the Romanian government signed a memorandum of understanding with the IMF, the European Commission and the World Bank to attain financial assistance packages worth €20 billion in 2010, 2011 and in 2013 (Loughnane et al., 2019, Thomson et al., 2015). The deal was conditional on adopting austerity measures in order to lower the crisis effects and to stimulate the economy. The conditions included increasing taxation and lowering capital investment and operational costs. Particularly in healthcare, the measures required decreases in healthcare expenditure and eliminating unnecessary spending through adopting better procurement systems, more focus on generic drugs, and implementing an electronic monitoring system (Thomson et al., 2015).

The salary reductions in Romania were one of the highest in the EU countries (Carausu et al., 2017). In 2010, across all public sectors, recruitment was frozen including healthcare, where salaries of physicians and other hospital personnel were reduced 25%. One year later, 111 hospitals were merged, another 69 hospitals converted to nursing homes, and the hospitalisation period was decreased for some diseases (Maresso et al., 2015, Carausu et al., 2017, Chiriac, 2011). In 2012, a plan to build eight hospitals was cancelled and purchasing of equipment was reduced. In 2013, there was an order from the Ministry of Health to reduce the number of beds that are funded by the Health Insurance Fund by 2% (from 125,639 to 123,127) (Thomson et al., 2015).

In 2009, healthcare expenditure in Romania was 5.6% of GDP compared to nearly 9% for the EU average. The vast cuts to public spending on healthcare reduced the allocated

fund for medicines in 2009 by nearly 30% comparing to 2008 (RON 2.18 billion in 2009). Moreover, as a result of the continuous reduction in employees' salaries and the increases in the unemployment rate, the social health insurance which covers the majority of the healthcare in Romania was underfunded and reported continuous deficits in the period from 2008 to 2010 to represent 1% of the GDP (Carausu et al., 2017). These deficits were then covered by transfers from the government general budget which accounted for a quarter the total healthcare budget in 2010 (Vlădescu et al., 2016). Moreover, in 2009, the family medicine budget was 24% lower than 2008 and spending on hospitals decreased more than 10% in 2010 compared to 2009 which resulted from hospital mergers (Carausu et al., 2017). According to Loughnane et al (2019), the mean of government spending on healthcare as a percentage of the total spending on healthcare for the period from 2010-2015 compared to 2004-2009 was almost flat (up 0.7%) (Loughnane et al., 2019).

In line with the austerity measures and to alleviate the financial pressure on the healthcare system, the Romanian government reduced the exemptions from the social health insurance contribution in 2010. Moreover, the number of patient visits to GPs for the same reason was capped at five visits in 2010 and then was reduced to three visits in 2011, where extra visits must be paid for individually (Maresso et al., 2015). In addition, some of the branded medications that were used in the national health programmes were replaced with generic medications in 2011, and a charge of RON10 on hospitalisation in hospitals was introduced, this charge increases to RON50 per day for more than one day and capped at RON600 per year for each individual. In that year also, the SHI modified reference pricing was employed to encourage prescribing cheaper medications, and in 2012, the e-prescription system was applied. In 2013, a new co-payment from 5 to 10 RON on the discharge from hospital was introduced, and hospitals can set their rate in between these two amounts. In addition, the Ministry of Health centralised the

procurement of medical supply and drugs in hospitals, and in the same year, the excise tax on tobacco increased by 14% and by 10% on beer (Maresso et al., 2015).

According to Carausu et al (2017), the attempt of the Romanian government to reduce the impact of the financial crisis on the economy negatively influenced the healthcare system. The researchers added that the radical cuts in government spending and specifically in salaries underfunded the healthcare system, which in turn reduced the size and quality of healthcare services provided, where vulnerable groups were the most affected (Carausu et al., 2017).

The global financial crisis had a negative effect on Croatia similar to other countries in Europe. Industrial production in Croatia decreased more than 9% in 2009 and the retail trade by 16%. Croatian exports decreased 25% in 2009 and imports by 30%. These factors contributed to an increase in the unemployment rate from 8% in 2008 to 16% in 2012, and a cut in salaries, thereby reducing people's consumption. Such a scenario led Croatian GDP to decline by more than 6% in 2009 and 1.4% in 2010 (Džakula et al., 2014, Bokan et al., 2009, Maresso et al., 2015). Moreover, public debt increased by more than a third in 2012 compared to 2010 (41% of GDP in 2010 and 56% in 2012) and the government deficit doubled in 2010 relative to 2005 as share of the GDP (4.5% vs 2.4%, respectively). These negative indicators led to a downgrading in the economy's credit rating and increased the cost of borrowing, where the interest rate on the government 10-year bonds exceeded 10% in 2010 compared to 7.6% in 2005, and the Croatian Kuna decreased by more than 6% relative to the Euro in 2009 comparing to 2008 (Džakula et al., 2014, Bokan et al., 2009).

The poor economic climate and negative GDP growth prompted the Croatian government to decrease public spending including in the healthcare sector, where austerity measures were adopted to rationalise healthcare costs, implement significant savings and to address the long-standing deficits in the healthcare system with no more borrowing except for

covering previous liabilities (Maresso et al., 2015). There were also some measures to bolster public healthcare revenues through introducing and increasing user charges (Džakula et al., 2014). After the onset of the financial crisis, government spending on healthcare as a percentage of the total spending on healthcare decreased from 86.5% in 2007 to 81.3% in 2013, and between these two years decreased from 14.2% to 11.5% as a percentage of total government spending, and from 6.5% to 5.5% as a percentage of GDP (WHO, 2019).

As a response to the austerity measures, the Croatian government reduced the hospitals budget by 3.3% in 2010 and introduced a reference pricing system. In 2011, 1% tax (for health) was introduced for those receiving a pension less than the average salary paid from general taxation and at 3% for those above the average, also at 5% on unemployed paid from general taxation (Džakula et al., 2014) . In the same year, the government introduced excise tax on tobacco at 32% and 7% tax on car insurance premiums to cover costs of healthcare provided due to traffic accidents. One year later, the government reduced the number of non-medical employees on temporary contracts and introduced 5% VAT on pharmaceuticals and medical devices. In that year also, the government implemented a joint hospital procurement programme to better allocating financial resources and to make savings. This programme assigned group of hospitals with the best procurement history that achieved the best value for money to procure supply for other hospitals. Moreover, the complementary health insurance increased 60% for retirees (from HRK50 to HRK80 per month) and 62.5% for employees in receipt of high incomes (from HRK80 to HRK130 per month). There was also a HRK15 charge per visit on primary care family medicine and gynaecology and HRK15 deductible per prescription was introduced, and the government reduced the number of people who are exempted from co-payments (Džakula et al., 2014, Maresso et al., 2015, Thomson et al., 2015).

In Georgia, given the small economy, which is less exposed to the world market, the economy was not isolated from the effect of the global financial crisis, which influenced it in many different ways and this was mainly due to the trade with the neighbouring countries, which were severely hit by the crisis (Bughulashvili, 2009). In addition, the shockwaves of the global financial crisis were worsened by the armed conflict with Russia which launched in 2008 to cause a dramatic fall in almost all the economic sectors including construction, banking, retail and tourism and to deteriorate the economy in general and incur the government more burdens in particular (Kirtskhalia, 2008). The economic instability started in November 2008, when the exchange rate of the Georgian Lari against the US dollar decreased from 1.45 to 1.65 (Otarashvili, 2013). Moreover, due to the banks' stiffer lending terms and the global downturns, the country's exports dropped and subsequently people lost their jobs, where the unemployment rate increased from 13.8% in 2005 to 18.3% in 2009 (Richardson and Berdzuli, 2017, Economics, 2019a). Consequently, people became more cautious in terms of spending, where they preferred to save rather than to spend (Otarashvili, 2013). Therefore, GDP in Georgia start declining in the second half of 2008 and continued until the end of 2009 to contract by 3.6% that year (WB, 2019a). Moreover, due to the government spending increases from $3.4 billion in 2007 to $4.6 billion in 2010 as an attempt to alleviate the effect of the hard situation, the government deficits experienced rapid increases, reaching 9.2% in 2009 compared to 0.3% in 2004 (Otarashvili, 2013), and public debt doubled in 2010 compared to 2007 (42.5% of GDP in 2010 compared to 21.5% in 2007) (Economics, 2019a). As a result of all these negative indicators, the government found it necessary to obtain financial assistance from the international authorities.

The Georgian government received a programme of assistance from the IMF, the World Bank and other international donors in Brussels totalling $4.5 billion in 2008 to accelerate the country's recovery from the impact of the financial crisis, the conflict with Russia as

well as improving the country security (Otarashvili, 2013, Bughulashvili, 2009). In addition, the government introduced a reform agenda including a macroeconomic and fiscal framework with an effective fiscal stimulus to restore confidence and mitigate the impact of the downturn (Otarashvili, 2013). These reforms also targeted the healthcare system, which is mostly funded through OOP (75.6% in 2011), with a target to reduce government healthcare spending (Thomson et al., 2015, WHO, 2019). There were also policies to lower the costs of medical supply including pharmaceuticals through centralising procurement. In addition, other reforms included rationalising hospital stock through the closure of underutilized facilities. Moreover, there was a trend to reduce the quantity of hospital beds and patient length of stay, where the number of beds fell from 16,455 in 2006 to 11,348 in 2012 and the average length of stay decreased from 7.4 nights in 2006 to 6.3 in 2009 and to 5.4 in 2013. In 2012, the annual limit of the outpatient pharmaceutical benefit of the Medical Assistance for the Poor was reduced from GEL200 to GEL100, and a user charge from 10% to 20% was introduced on emergency hospital care, oncology services and elective surgery, and childbirth to be capped at GEL500 and at GEL800 for a caesarean delivery (Richardson and Berdzuli, 2017).

It can be seen from the experiences of these countries that nearly twenty types of reforms were implemented, where some of them were to raise funds (introducing different types of taxations (i.e. income tax, VAT, and excise tax) and user charges (i.e. co-payments and deductibles)) and the majority were to contain healthcare costs (reducing salaries and other related benefits, recruitment, number of employees, entitlement to healthcare and level of coverage, public hospital beds, length of stay, number of hospitals, different subsidies, closing wards, merging hospitals and other health agencies, introducing e-prescription, centralising procurements and emphasising generic drugs). What it seems from the experiences of these countries is that they responded in different ways. However, almost all of them adopted eight types of reforms which concern; user charges, taxes,

salaries and related benefits, number of employees, generic drugs, people's entitlement to healthcare and their level of coverage, procurement systems, and the number of hospital beds.

It was noticed that notwithstanding the remarkable contractions in these countries' economies and governments' need to raise funds, there were more reforms on cost containments compared to reforms on raising funds. It can be learned from this that even if the economy is experiencing harsh contractions it does not mean the government focus on raising additional funds, specifically at high percentages. But the government should know the maximum level that the population could pay to raise funds so as not to overload them and not to encounter resistance as was seen in some countries that reversed the increases in personal income taxes and user charges, due to resistance from the population for the former and healthcare professionals and stakeholders for the latter for the same reason. Moreover, if the maximum level that the population could pay was not enough to ensure the sustainability of the healthcare system, then cost containment strategies could be implemented. Furthermore, the experiences of these countries suggest various ways that governments can raise funds and reduce spending on healthcare. It can also be learned that governments should be careful of reforms that may raise funds or contain costs in the short term, but may put more pressure on the healthcare system in the long term when people become severely sick as a result of the absence of healthcare and support. Other lessons that were learned from the experiences of these countries is that reducing salaries and related benefits will reduce the level of contributions to the funding mechanisms, and that reducing the number of employees could mean that more people consume healthcare and social welfare while paying low or no contribution; therefore, caution is necessary before implementing such reforms.

Since the Saudi economy deteriorated at the end of 2014, the government has implemented different types of austerity measures similar to what some of the investigated countries implemented; such as reducing public employees' salaries through freezing their allowances for seven months and stopping automatic promotions (to be studied and only be given to those who deserve them), as well as cutting subsidies on fuel, electricity, water and sanitation, and applied VAT and excise tax (MOE&P, 2016, Alarabiya, 2018a). In addition, other reforms are still in progress, where the government set plans and is still working to achieve them, such as implementing e-prescribing software connecting all the MOH healthcare facilities (MOE&P, 2016). Moreover, some of the reforms, which many of the investigated countries implemented, were found necessary to be implemented by the Saudi MOH according to Chapter 2 results, such as; i) stopping building more healthcare facilities, ii) reducing number of healthcare facilities especially those which are rented, iii) stopping hiring more staff, and iv) limiting the renewal of contracts for people who work for the MOH for a specified duration. Furthermore, there are some reforms implemented by the investigated countries where the Saudi government should develop studies about them in the Saudi context and decide how to implement them, such as; i) finding a proper statutory funding mechanism to raise funds for the MOH, ii) understanding the level that people are willing to pay through this mechanism, and iii) reducing Saudis' free entitlement to healthcare in the MOH. These three reforms will be investigated in the coming chapters to find the appropriate way of how to implement them in the Saudi context. In relation to user charges, it was seen that there were many countries which introduced or increased different types of user charges; however, these countries already have a basic (statutory) funding mechanism to fund their healthcare systems which the Saudi MOH needs at this time. Concerning pharmaceuticals and medical supply procurement, the government could also study the possibility to emphasise the generic drugs in the MOH healthcare facilities; however, the MOH

procurement for medical supply is already centralised in the MOH. The government could also study the need and benefit of reducing patients' length of stay in hospital. However, all these reforms must be implemented in a way that will not deter people from accessing healthcare so as not to incur higher costs in the long term.

2.6 Conclusion

This chapter investigates the reasons behind the continued increase in the MOH budgets in the period from 2006 to 2015. While it would seem that these increases would be driven by demand in the form of visits by elderly people (as is the case in many countries), this study shows that people aged 65 and above are a relatively small fraction of the total SA population. This study also shows that patient visits by the total population did not play a significant role in the continuous increases in the MOH budgets. In other words, the MOH healthcare facilities and size and cost of manpower employed in those facilities increased significantly for no obvious demand side reason, in a time when the Saudi demographic factors showed negligible changes and most of the healthcare activities reported either a negative trend or negligible increases. This shows that MOH budget increases were not based on the historical demand for healthcare services, but rather driven by the Saudi economic situation during the period under investigation as evidenced by the high correlation between Saudi total budgets and the MOH four budgets.

The data shows that if the Saudi economic situation is positive, then the MOH requests and receives additional budget, which it uses to increase the number of healthcare facilities, and hire more staff to run these units. This situation is sustainable in periods of high oil prices when surpluses are large, but is not when oil prices plummet, and the Saudi economy experiences deficits (as it has since 2014), when there should be significant scope to restrict investment in new CAPEX and the hiring of more staff. However, as is evident from the continuous increase in the projects and manpower budgets, despite plummeting oil prices, neither of these areas were restricted in SA.

Therefore, this study concludes that the primary reason for the continuous increases in the MOH budget in the period from 2006 to 2015 was the budgeting strategy used to finance the public healthcare sector. In many ways what happens every year during the Al Hajj season is a small scale example of the weaknesses in the system for forecasting and budgeting demand for healthcare services at national level. It is evident that this budgeting situation could be improved by employing health economics solutions.

For this reason, this study suggests that the Saudi MOH should estimate the required budget based on the historical demand for healthcare services activities, and on the population growth rate while taking into consideration the fact that although most of the Saudi population are currently aged between 18 and 65 (67% of the population), and will need extra healthcare services in the future as the population ages. This study also suggests that the MOH stop building more healthcare facilities, and reduce the percentage of the rented PHCs based on the actual demand in each city. In addition to this, the MOH should stop hiring more staff, and stop renewing the contracts of those who work under contract with MOH, and should instead, redeploy current staff to cover the actual demand for healthcare services in each city, and/or shift new applicants and those with un-renewed contracts to the other two healthcare providers (the private sector and SDU).

In hospitals, the expansion in healthcare services that are provided in psychiatry, intensive care, and surgery departments have been followed by significant increases in the number of neurosurgeons and physicians who work in psychiatry, neurology, ICU, and surgery. Therefore, the MOH should implement a strategy to reorganise this supply with the actual demand for such healthcare services. However, because demand for these healthcare services is inflexible, the MOH should undertake additional studies before implementing any strategies in this regard. The same is true for the isolation, dialysis, emergency, inpatients departments as well as treatment abroad.

Conversely, because the parlous fiscal situation requires immediate action, the MOH must prioritise decisions taken in healthcare services with greater flexibility, such as those which are provided in the primary care clinics in hospitals. These clinics are mostly covered by family medicine and general practitioners, whose numbers proliferated in the period under investigation, as well as the healthcare services provided in the internal medicine, paediatric, and OB & GYN, where their departments, physicians, and number of patient visits expanded significantly. The eye and musculoskeletal departments/specialities must also be prioritised due to the high average annual increases in patient visits in these areas. With regards to laboratories and x-rays, the MOH has already worked to minimise the number of investigations by enacting the sharing of medical files, which is one target of the Saudi Vision 2030 (MOE&P, 2016).

Finally, given that the Saudi budget has been suffering from deficits since 2014 and, depending on oil prices, may continue to do so for the foreseeable future, the Saudi MOH should strive to find an appropriate funding mechanism to minimise the financial burden on the government into the future rather than waiting for oil prices to rebound and repeating the same way of budgeting and spending.

Chapter 3: Healthcare Funding Options for Saudi Arabia

The Saudi economy has shown slow growth in the last few years as a result of volatile and downward trending oil prices (which is considered as the major source of funding of the public budget in SA). This unexpected level of low prices prompted the Saudi government to implement cost-containment strategies to ensure the sustainability of the public financing by prioritising spending, minimising unnecessary expenditures, and exploring other sources of funds.

Despite SA's parlous economic situation across the period under investigation, the Saudi MOH budgets have increased sharply, such that they have experienced a higher annual increase than the Saudi total budget on average, and a faster level of growth than Saudi GDP total budget, and other ministries with higher budgets than the MOH (i.e. defence and education).

Chapter 2 investigated the reasons behind these sharp increases at a macro level. The a priori expectation of these analyses was that these increases would be justified by one or more of the common reasons for the increases of the public spending on healthcare globally. However, none was found to have had a significant effect on the increases in the Saudi MOH budget, such that a micro level study was carried out to determine the Saudi-specific reasons for the increases. The conclusion from these analyses is that the MOH budgets were set based almost entirely on the presumption of a continuing and positive economic performance. However, when this presumption proved to not be the case, this budgeting methodology became problematic because multi-year projects still needed to be funded and staffed, i.e. significant budget increases were still necessary even though the economy was not performing as strongly. It is for this reason that, in this chapter, this study investigates possible methods to fund the MOH budgets to ensure the sustainability of the public healthcare system into the future.

3.1 Study Objective and Methodology

Given that SA is transforming its economy from a fully governmental funded model, this part of the study explores all the possible health funding mechanisms in place in other economies in order to investigate which mechanism might be appropriate in the Saudi context to ensure that the MOH can sustain the healthcare services that are provided by its facilities into the future.

To serve this purpose, a question must be answered:

> *What are the most appropriate and acceptable funding mechanisms to raise funds for the MOH in the Saudi context?*

To attain the desired objective, this part of the study will firstly search for all the possible healthcare financing mechanisms in place in other economies, to provide a good understanding of what the available options are. Secondly, given the backdrop of the fiscal constraints, constitutional constraints (in terms of the eligibilities to healthcare) discussed in Chapter one, and the reasons behind the increases in the MOH budgets that were discussed in Chapter two, this study will investigate each of these healthcare funding options to see whether they are appropriate in the Saudi context. It will also examine whether the financing option are in line with Islamic principles.

To do so, this study will investigate more than thirty healthcare systems throughout the world and will discuss the experience of different healthcare financing mechanisms in those economies. The evidence will be brought from countries that have long-established, stable, and successful healthcare systems, or from countries whose implemented approach overcame a fiscal deterioration. Particular attention is given to those economies that implemented a new financing method, and the extent of the success of the introduction of this new method will be discussed, and the advantages and disadvantages experienced by the government, people, or by the market will be highlighted. In order to explore all of

the possible funding options, evidence from the United States, Australia, Singapore, Switzerland, and Western Europe (WE) countries will be used in this study as will the experiments and the decisions of Central Eastern Europe (CEE) and Federal Soviet Union (FSU) countries in transforming their healthcare systems. The experiences of the latter countries is worth particular investigation because they have undergone economic difficulties similar to those experienced recently by SA.

3.2 Overview of the Health Funding Mechanisms

A sustainable healthcare system requires financial resources to build healthcare facilities, compensate healthcare providers, and pay for pharmaceuticals and other health consumables. Most industrialised countries have established a healthcare system that funds the burden of healthcare costs from different funding mechanisms. This section will give an overview of six healthcare funding mechanisms which are: Taxation, Social Health Insurance (SHI), Private Health Insurance (PHI), Out of Pocket (OOP), Medical Savings Accounts (MSA), Donations and Loans. This section will also discuss six criteria for health financing system design which are: revenue raising ability, protection of the poor, value systems, risk pooling, the sustainability of the mechanism, and multisectoralism. These criteria were used by the World Health Organisation and the World Bank in evaluating countries' healthcare systems, and were seen by researchers as necessary to be investigated along with funding mechanisms before deciding among alternatives, and the healthcare policy that uses these criteria would have the opportunity to implement a financing mechanism that best suits the people, the government and the healthcare providers (Green, 2007, Bennett and Gilson, 2001, McIntyre, 2007). Therefore, this section will measure each of the six funding mechanisms against these criteria.

3.2.1 Taxation

Healthcare revenues in many EU countries are raised from Taxation, which usually account for more than that raised from other mechanisms (Arsenijevic et al., 2016). Taxes can be levied in a direct way (via taxes on individuals' income, households, or firms' profits), or in an indirect way (via taxes on the value of transactions or commodities, i.e. value added tax (VAT) as percentage, or excise tax as percentage or flat fee) (Aamir et al., 2011). In general, Taxation rates are set based on the revenue required by the government, and the collected revenue is pooled to serve general public purposes. However, some systems restrict the use of Taxation only for the purpose for which it was raised (hypothecated Taxation) (Doetinchem, 2010, Evans, 2002). Regardless of how it is raised, Taxation can be used either to fund the public healthcare expenditure (when the government own all or part of the healthcare sector), or to pay the private healthcare provider (private healthcare facilities) (Evans, 2002).

3.2.1.1 Criteria for Health Financing System Design (Taxation)

In terms of the revenue raising ability, funding healthcare through taxation will enable the Saudi MOH to benefit from taxing all types of individuals, some of whom (such as unemployed people and dependents who benefit from the Saudi government through different funds, self-employed and capital investors) might not be included in other mechanisms. Moreover, applying a direct tax based on the total income that includes earning from salaries, government benefits and any income due to making other activities (such as capital investments) will give a great ability to the MOH to raise revenues. With regard to sustainability, in SA, very few Saudis receive no income and that happens in cases of owning valuable assets, refusal to take a job offered by the Human Resources Development Fund (HRDF), or if dependent on someone who receives very high salary. Therefore, applying taxation in SA will enable the MOH to levy contributions from a large proportion of the population, which will ensure a sustainable fund for the ministry.

In respect of protecting poor people, financing the Saudi MOH through direct taxation will provide all people with the same access to healthcare regardless of how much they contribute, such that will protect poor people. Moreover, the indirect way (per transactions or commodities, i.e. VAT), will be ignored as it might place higher burdens on poor people and exposes them to risk. Furthermore, levying tax from a large proportion of the population and based on the total income will ensure the MOH will have a high level of fund in order to ensure reasonable healthcare access to all people.

Concerning value systems, funding the MOH through taxation will transform the system from a free fully funded model by the Saudi government to one that is based on the population contribution. This will facilitate the subscription of those in slices 2 to 6 to the financial policy without affecting their employers or making a change to the healthcare system of the private sector or SDU. Moreover, due to the extent of the reforms envisaged in Saudi Vision 2030, people might be resistant to participate in funding their healthcare services, especially as this would be the first time since the foundation of the state that the government would levy a tax on people's incomes. Resistance could also be likely in cities and provinces with a significant nomadic population and/or include a significant proportion of people with a low level of education. Specifically, those categories might see the obligation to fund public services as the government's responsibility. However, applying taxation at a very low percentage at the beginning might encourage people to accept this transformation.

In relation to risk pooling, the funds raised through taxation are usually collected and pooled to serve general public purposes. However, if the Saudi MOH restricted the use of this fund only for spending on healthcare, more funds can be ensured for health (rather than being spent on other public programmes), which in turn reduces risk associated with the pool. One of the issues that a direct tax may cause to the pool is if the proportion of unemployed, retired and those under 18 years is high relative to the size of the pooled

fund in the country or might increase in the future (the unemployed represents 2.2% of the Saudi population, retired people 2.1% and those under 18 years 32.5%, also these categories are compensated from the Saudi government in monthly amounts from $200 to $800, unlike the employed people where the average monthly salary is $1700) (GAFS, 2017b). Therefore, the sufficiency of the pool might be at risk if these proportions were to increase significantly. In addition, because the Saudi MOH provides healthcare services through its own facilities, more funds will also be guaranteed in the pool as these facilities are not for profit. Also, this is the case when the MOH collects the fund and pools it, where less administrative fees can be incurred. All these will participate in reducing the pooling risk.

Regarding multisectoralism (which concerns the ability of the mechanism to fund other health aspects), direct taxation makes the process of multisectoralism easier, as it does not develop direct financial relationship between patients and healthcare providers, where the contribution goes to a pool that is controlled by the MOH. This will enable the MOH to use the raised funds for other health purposes, such as improving the supply of clean drinking water.

3.2.2 Social Health Insurance

Social Health Insurance is a mechanism that levies a specific percentage on employees' income and an additional percentage is incurred by their employers to cover all or part of the employees' healthcare costs (Sieverding et al., 2018). In some healthcare systems, the levy is also extended to the income of the self-employed. Other systems charge the elderly, unemployed, and disabled people through a deduction from their pension or any other benefits they receive (Normand and Weber, 1994).

The collection of these levies can be through the government, which pools the revenues and then pays the healthcare provider directly (integrated), or passes the pooled revenues to a third party (insurance company), who in turn pays the healthcare provider

(unintegrated). In some healthcare systems, one or more of the processing steps (collection, pooling, and purchasing) can be completed by the same independent body (i.e. a sickness fund) (Rechel et al., 2018). The relationship between the insurer (the fund) and the member is a contractual relationship, and the coverage is explicitly defined in the contract. Some countries use a single fund to cover the entire population; others use multiple funds, where each covers a specific category of the population (Thomson et al., 2009).

The country designs the SHI based on what is suitable for the government and the population. It can be used as a major mechanism to fund the healthcare system, or as a complementary tool to cover a specific illness, or a part of people's healthcare costs which are not covered under the statutory healthcare system (Doetinchem et al., 2010). In most countries, the fund is self-governed and the contributions are determined by the government. In others, the government, employees and employers representatives, and the social security organisations negotiate the level of contributions (Normand and Busse, 2002).

The level of contribution by employees can be the same regardless of income level (uniform) or can vary based on the level of income of the employees. The same is true for the share paid by the employee and employer, where both may pay the same or different contribution rates. In Austria, Belgium, France, and Luxemburg, SHI covers more than 99% of the total population. Also, in those European countries that do apply SHI, the system only covers a part of the person's health expenditure — the rest is covered through other mechanisms (Normand and Busse, 2002).

3.2.2.1 Criteria for Health Financing System Design (SHI)

In terms of the revenue raising ability, due to the nature of SHI, which focuses mainly on contributions from employers and employees, applying SHI as a statutory mechanism to fund the Saudi MOH will miss the chance to levy contributions from many governmental

funds (such as the SW, Citizen's Account Fund (CAF), HRDF, PPF, GOSI, disability benefit, and studying reward) that fund Saudi citizens. Moreover, implementing SHI to fund the MOH might focus more on those publicly employed people who receive healthcare only in the MOH, as it might not be feasible to raise revenue via SHI from all those who have access to the private healthcare sector and other governmental healthcare facilities (MCS, 2015), which will make this mechanism less able to raise revenues to the MOH.

In respect of protecting poor people, if SHI was employed as a statutory mechanism to fund the MOH with more focus on those publicly employed people who receive healthcare only in MOH facilities, in other words those in slice 1 (as it might not be feasible to raise funds from all those employed and eligible to healthcare in slices 2-6), the healthcare of those in slice 1 (including the poor in this slice) are likely to be affected. This is because a low number of contributors might not be sufficient to fund the healthcare of those unemployed and receiving healthcare in the MOH (i.e. 1.2 million employees in the public sector will contribute to fund more than 7 million of the population (News, 2017)). Therefore, difficulties to access the MOH facilities might be experienced due to the low funding that may not be sufficient to provide the necessary healthcare services, and would make the chance to improve them limited. Moreover, if the MOH designated a pool for each locality to be used only by those who contribute to it, poor people who live in poor regions (i.e. south and the north of SA) are more likely to experience low quality level of healthcare due to the low level of fund in their pools.

With regard to sustainability, the raised proportion of funding through SHI would be low compared to the number of people who will benefit from it, as the average family size in SA is 5.9 persons where the majority are likely to be dependents (News, 2017). This could affect the sustainability of the fund if it were not supported by other sources of funding.

Furthermore, the level of funding might be even lower if the MOH outsourced the collection and pooling which might result in extra administration costs.

Concerning the value systems, implementing SHI will transform the MOH free funded system to one that is based on employees' and employers' contributions. This would require the involvement of the public agencies to fund the MOH to cover their share. Moreover, the involvement of the privately employed people will only contain contributions from employees. This is because the Saudi government obliges private employers to provide PHI to all their employees including their dependents and it is not fair to mandate private employers to contribute to the Saudi healthcare system twice, as if such an obligation were put in place, the sustainability of many companies in SA will be affected. Also, because the PHI system is already in place to cover private sector employees, it is not an ideal option to transform this infrastructure to implement SHI. Therefore, the implementation of this method will make it difficult for those employed and receiving healthcare in slices 2, 4, and 6 to access the MOH facilities, unless i) the government covered the private employer share, or ii) applied taxation on their incomes, or iii) changed the private sector obligation from providing PHI to SHI for those employed and receiving healthcare in these three slices. However, this is not an ideal option should this threaten the insurance industry in SA, because a significant percentage of the insurance companies in SA rely primarily on providing healthcare insurance products, and by changing the private sector obligation from providing PHI to SHI, many of these insurance companies may leave the market as a result of losing a significant proportion of their customers.

In relation to the risk pooling, given the structure of the Saudi healthcare system and the demographic and socioeconomic characteristics mentioned previously, the pooling in this mechanism would be underfunded, and may even struggle to provide basic therapeutic drugs and preventive services. Such a situation may be exacerbated if the MOH

designated a pool for each locality to collect and fund only those living in this locality, should this put such a pool under risk, because some areas contain a higher concentration of people with low level of income and therefore the pools in these areas might be underfunded.

Regarding multisectoralism, if the MOH implemented an integrated system, where the collection, pooling and funding the healthcare services is carried out by the MOH, the system could benefit from allocating part of the fund to improve other health purposes. Nevertheless, if the MOH outsourced this mission through sickness funds, other health aspects would be less likely to be improved. However, either way, due to the low expected level of funding through SHI, the opportunities for improving other health aspects would be limited.

3.2.3 Private Health Insurance

Private Health Insurance is a contractual policy that covers people's healthcare costs fully or partly. Premiums are paid from the insured to a third party (Insurance Company) and these premiums are then pooled to fund the healthcare provider for services received by the insured. PHI can be complementary (i.e. covers the proportion that is not covered by statutory health insurance), supplementary (enhance a person's level of coverage), or substitutive (as an alternative to statutory health insurance) (Sagan and Thomson, 2016). The premiums in this mechanism are sometimes determined based on individual health status (risk rated). Some healthcare systems oblige insurance companies to set the premium based on the health status of the community or state (community rated) or based on the nature of work (group rated) (Thomson et al., 2009).

PHI can be provided either through for-profit organisations or non-profit organisations (i.e. mutual associations exist in Belgium, Denmark, France, Germany, Luxembourg, Netherlands, and UK). In non-profit organisations, the pooled fund is completely owned

by the contributors (Mossialos and Thomson, 2004) such that the premiums are used solely to fund the health costs of their members (i.e. no dividends are distributed).

PHI is commonly used in wealthy countries although the low and middle income population of those countries can be reluctant to use it due to difficulties in securing an insurance policy. The reason for that is, for-profit PHI companies avoid vulnerable groups (i.e. the unhealthy, poor, elderly, unemployed, and people with chronic disease) and focus on the wealthy and the young (i.e. exercise risk selection) (Ahmed et al., 2018). For the same reason, regulatory bodies find it difficult to control health insurance companies because, if these companies were forced to provide coverage to vulnerable groups, they would choose to leave the market. Therefore, some governments instead require insurers to provide minimum health insurance packages. Other public authorities incentivise PHI companies through subsidies in the form of tax credits, relief, deferral, or exemptions to ensure the sustainability of the healthcare system. Other countries pay the premiums for the vulnerable group (Mossialos and Thomson, 2004).

PHI can be provided in two different forms. The first type is conventional insurance that is provided by the majority of insurance companies and banks globally. The second type is Islamic insurance; which is an Islamic financial product provided in the Islamic countries. Recently, this type has become available in countries where a significant proportion of Muslims are concentrated. However, these Islamic products still represent less than 2.5% of the total financial transactions globally (Abdel-Maoula Chaar, 2016).

3.2.3.1 Islamic Insurance (*Takaful*)

Conventional insurance contains contracts for buying and selling indemnities and guarantees that are not permitted by Islam. For this reason most populations in Islamic countries find conventional insurance an unsuitable mechanism for their needs. Specifically, conventional insurance contains *Maysir* (spending money expecting large

outcomes which is not associated with productive skills or useful work, which leads to consuming wealth for no effort) and *Gharar* (uncertainty, deceptiveness, ignorance, and lack of transparency that lead to deceit and fraud), both of which are forbidden because they are incompatible with Islam (Abdel-Maoula Chaar, 2016). *Maysir* occurs in conventional insurance when an insurance company collects contributions from the insured in the hope that any claims made by the insured for the period covered will be less than the amount of the premiums. *Gharar* arises when the insured pays for uncertain benefits that may be zero, or may greatly exceed the amount of the contributions.

Takaful insurance (individuals guaranteeing each other) has been developed to avoid *Maysir* and *Gharar*. *Takaful* creates a pool for a specific group from contributions paid by members of the group. The contributions are intended as a donation, and benefits are paid to members from the pooled fund as needed. The pooled fund is owned by the group (policy holders) and managed by an operator (Insurance Company). If a surplus arises, some is reserved to meet future deficits (as in conventional insurance) and the remainder is redistributed to the policy holders. The reserves in the pooled fund can be invested in *Sharia* compliant products to minimise the probability of loss. If the deficit exceeds the reserve, the shortfall is funded via an interest free loan (to avoid *Riba*, which is prohibited by Islam), or from additional contributions from policyholders (Abdel-Maoula Chaar, 2016).

3.2.3.2 Criteria for Health Financing System Design (PHI)

In terms of the revenue raising ability, because of the large proportion of Saudi population receiving income, implementing PHI as a statutory mechanism would have a great ability to raise funds to cover the costs of healthcare services that are provided by the MOH.

With regard to sustainability, if those who are restricted to healthcare only in the MOH were mandated to subscribe to PHI, and those receiving low or no income were supported by the income of the person on whom they are dependent, the insurance companies will benefit from a large number of subscriptions, taking into account that the number could be higher as people in slices from 2 to 6 may prefer also to subscribe to access the MOH. In addition, because PHI will cover people's healthcare costs in the MOH healthcare facilities which are not targeting profit, there will not be a competition that could create challenges for the insurance companies as there is only one healthcare provider, such that will ensure the sustainability. Moreover, due to the Islamic principles, the only type of PHI that could be implemented to cover the MOH healthcare costs is *Takaful* where the pooling is owned by the subscribers and the premiums are used only to fund subscribers' healthcare costs, which will also contribute to the sustainability of the fund as no dividends are distributed.

Concerning value systems, implementing PHI as a statutory mechanism to fund the MOH healthcare services would be difficult because PHI is usually expensive. Therefore, people will not be able to afford the cost of the premiums due to the fact that only approximately one-third of the Saudi population are employed (MCS, 2015, GAFS, 2015), and the rest are retired or unemployed and either receive low compensation from the government or none at all. Also, even if this thesis proposes incurring part of the premiums by the person on whom they are dependent, this person (usually the father) may not be able to afford to pay part of the highly expensive premiums for all the family members, taking into account that the average family size in SA is 5.9 persons (News, 2017). Moreover, 73% of the privately employed people are from those in receipt of low income (GOSI, 2015). This may make those in slices 2, 4, and 6 decide not to subscribe to access the MOH. Therefore, the only PHI that can be implemented to cover the MOH healthcare services costs given these demographic and socioeconomic characteristics is

regulated PHI. This can be implemented through obliging insurance providers to accept everyone via an open enrolment and to charge community rated premiums (considering that those who are most likely to need health insurance aren't priced out of the market, but those on lower income have to pay the same as those on higher income), also to guarantee renewability of policies, and not to drop anyone when they become sick. Moreover, due to the Islamic principles in SA, this insurance must be compliant with Sharia rules (*Takaful*).

In respect of protecting poor people, because healthcare services are costly in general and extremely expensive for some, insurance companies are exposed to a significant risk. Therefore, they avoid poor people, unhealthy and elderly (vulnerable groups) who might incur high costs, and focus on wealthy, healthy and young people. These may mean that applying PHI as a statutory mechanism would leave a significant proportion of the Saudi population without insurance. However, if a regulated PHI was implemented then all vulnerable groups will receive the same benefits as any subscribers to the insurance.

In relation to risk pooling, by regulating the PHI market in SA, the insurance providers will receive high levels of funding due to the large number of subscribers, which will support their pools and expose them to lower levels of risk. Moreover, the reality is that 67% of the total population of SA are young, and the percentage of elderly is less than 3%, also the demand on the MOH healthcare services increased marginally on average in the period from 2006 to 2015 and specifically decreased in relation to chronic diseases. All of these indicators imply that the insurance providers' pools will be exposed to lower risk. Regarding multisectoralism, because the contributions are collected, pooled and processed by insurance companies in this mechanism, the likelihood to promote other health uses is limited.

3.2.4 Out of Pocket (User Charge)

In most healthcare systems, citizens are required to share costs, i.e. bear a part of their own healthcare costs over and above that covered by the statutory mechanism. Some governments shift a portion of healthcare expenses onto the user in order to mitigate the burden on public finances, while others do so to eliminate the effect of the moral hazard (Prinja et al., 2012).

Out of Pocket expenses can be charged directly (via a formal or an informal payment) or indirectly. Formal payment can take many forms: i) co-payment (a flat fee or charge per service in monetary terms), ii) linear pricing "co-insurance" (a percentage of the total charge), iii) nonlinear full marginal cost pricing "deductible" (payment covering an initial proportion of the total charge before the insurance coverage starts), iv) nonlinear partial marginal cost pricing "balance billing or reference pricing" (an amount levied by the healthcare provider on the use, which is not covered by the insurance policy), and v) two part tariffs (a flat fee then a charge per unit). Informal payment is a payment for services that are covered under a specific package plan, but still require the individual to make an additional payment (i.e. cash payments to physicians, nurses, or other healthcare personnel outside the official channel, "under the table") (Atanasova et al., 2013). Indirect payment results when the health insurance policy specifies some healthcare services that are not reimbursed. Robinson in 2002 comments that it can be difficult somtimes to distinguish between the direct and indirect charges (Robinson, 2002).

3.2.4.1 Criteria for Health Financing System Design (OOP)

In terms of revenue raising ability, this mechanism's ability to raise fund for the Saudi MOH would be limited. This is because this method is usually used to part-fund healthcare over and above that provided by a functioning statutory system, and less likely to be implemented as a statutory mechanism, which the Saudi MOH needs at this time. Moreover, given the MOH structure, it is true that funding through this mechanism will

go directly to the MOH as it has its own facilities. However, lower financing would be expected because healthcare services are costly in general, and for specific treatments can be extremely expensive, which will deter people from approaching healthcare services as many individuals, and especially the poor, would not be able to afford the costs. In addition, recent data showed that more than 85% of the females in SA are unemployed (GAFS, 2018a, GAFS, 2018b). This is because, due to the Islamic principles and the traditions in SA, males are required to take the full responsibility to provide life's needs for their families. Therefore, the vast majority of females are either in receipt of low compensation from the government or none at all. Consequently, implementing OOP to fund the MOH would negatively affect females in SA who represent 42% of the population as they may find their self without healthcare due to the inability to pay (GAFS, 2018b). This will also increase the burden on the males on whom they are dependent, especially if the males themselves are also unemployed.

In relation to risk pooling, the nature of OOP does not include pooling in the funding process as it creates a direct contract between individuals and healthcare providers. Therefore, the absence of the pooling in this method exposes people to significant risk. In respect of value systems, implementing OOP as a statutory mechanism to fund the MOH will change the MOH system from a free fully funded model by the government to individually based funding. This will encounter a high resistance from the Saudi population for two reasons; i) people's living conditions were negatively affected by the Saudi Vision 2030 which still has ten years to run, during which it is expected to include reforms to raise funds for the government, such as increasing energy prices (Alarabiya, 2018a), and ii) the fact that the royal grant was planned to be only for 2018 and was just renewed in 2019, so that might not be in place in the coming years (Alarabiya, 2018d). This will make implementing this method very difficult, and a recent example that shows the negative effect of such an individually based funding method is that people's general

spending in SA has been decreasing due to applying a small percentage of VAT at the beginning of 2018 (Alarabiya, 2019a).

With regard to sustainability, given people's unstable financial conditions in SA that is likely to incur more burdens in the coming years, and the socioeconomic characteristics that are affected by Islamic principles and traditions such as the low percentage of employed females and the fact that males will incur the burdens of funding their healthcare costs, fitting OOP as a statutory mechanism into the MOH system is unlikely to provide sustainable funding.

Regarding multisectoralism, because the Saudi MOH provides healthcare services through its facilities, the payments through this method will go directly to the MOH, which will enable the MOH to benefit from the raised funds to improve other health aspects. However, the reality is that implementing this method as a statutory mechanism will underfund the MOH. Therefore, the possibility of even funding the major and necessary supply cannot be guaranteed.

3.2.5 Medical Savings Accounts

MSA requires each individual to contribute a proportion of his/her income into a saving account solely to cover his/her healthcare costs. In this method, there is no pooling, but instead the fund is kept in each person's account. When the account holder dies, the fund is passed to the person's relatives (this is common in Singapore and to limited extent in the US, and more recently in China) (Wouters et al., 2016). This mechanism usually also requires another type of health insurance because, in the absence of pooling, the MSA on its own will not be able to protect the individual from costs arising from serious health situations (Thomson et al., 2009).

3.2.5.1 Criteria for Health Financing System Design (MSA)

In terms of revenue raising ability, this mechanism will require each person to contribute a proportion of his/her total income into a savings account solely to cover his/her healthcare costs in the MOH. However, since most of the population of SA are in receipt of low or no income, MSA would have less ability to raise revenue on its own because a significant proportion of the population would have low levels of funds in their accounts, which might not be able to cover the cost of the basic healthcare services given the fact that they are expensive. However, if MSA were supported by the government or by creating additional accounts or both together (as is the case in the Singaporean healthcare system), then this mechanism would have the ability to raise funds. The same is true regarding sustainability, where if MSA was supported by funding from the Saudi government or by creating additional accounts, this mechanism will ensure a sustainable funding stream.

Concerning value systems, implementing MSA to fund the MOH will transform the system from a free fully funded model dependent on the government budget to an individually based funding method. This is very hard to be implemented in SA because more than two thirds of the Saudi total population are in receipt of low or no income. Therefore, the balance in each individual account may fail to provide basic healthcare to its owner because healthcare services are costly. Therefore, this mechanism must be supported by an additional account which has a pool that is funded through deductions from the first account of each individual to cover the healthcare costs of those who have used up all their balance in the first account, or the Saudi government could fund the additional healthcare costs of those people.

In respect of protecting poor people, implementing MSA as a statutory mechanism will not provide protection for poor people unless the government intervened to fund those people by creating an account solely to cover their healthcare costs. For example, in 1993,

the Singaporean government created an account which is funded by the government to pay for the healthcare costs of the poor people and those who had used up all of their balances in the first account and their eligibility in the second one (Mossialos et al., 2016).

In relation to risk pooling, there is no pooling in the first account of this mechanism, where every person's healthcare costs are paid from his/her own account. It depends on how the government would design this mechanism and the number of pools needs to be created. For example, if another account was created (as in the Singaporean healthcare system), then it would have a pool that is funded from each person's first account. Usually there is no risk associated with this pool, because every person can use up to a specific percentage of this pool. If further costs arose, then they are usually funded through a third account which has its own pool and is funded by the government.

Regarding multisectoralism, because the funding of this mechanism goes directly to each person's account, which is then used mainly to cover his/her healthcare costs, the ability of this method to improve other health purposes will be limited. This is also the case even if a second account with a pool were created, because usually this pool is designated to cover specific healthcare services and up to specific percentage for each person.

3.2.6 Donation and Loans

Some low income countries rely on donation or loans from non-governmental organisations (NGOs), charities, foreign governments, and multilateral agencies such as the World Bank to fund healthcare. For instance, in Africa the average proportion of healthcare expenditure funded by donations from external sources is 20%; in some countries this proportion is as high as 50%. Because the sustainability of the external donor cannot be guaranteed, this mechanism has the potential to put the healthcare system in these low income countries under significant pressure should the donations not continue. The same is true for loans, which must be repaid, thereby placing a significant burden on future generations of these countries (Mossialos and Dixon, 2002).

3.2.6.1 Criteria for Health Financing System Design (Donation and Loans)

In terms of revenue raising ability, donations are less likely to raise revenues for the Saudi MOH because the Saudi economy is one of the richest economies in the world. Therefore, it is unlikely to receive donations from charity organisations, and even if ensured for one year, the continuity cannot be guaranteed. The same is true for funding through loans, where it is very hard for the MOH to borrow every year to cover all or the majority of the MOH supply. Therefore, the ability of donations and loans to raise revenues to the MOH is limited. Furthermore, because the continuity of donors and lenders cannot be guaranteed every year, this mechanism cannot provide sustainable funding for the MOH.

In respect of protecting poor people, due to the low level of funding that donations could raise and the fact that the continuity of donors cannot be guaranteed, this mechanism is highly likely to put the healthcare of those who only have access to healthcare in the MOH facilities under significant pressure and specifically poor people. The same is true for loans, where the MOH cannot guarantee a continued lender every year, and the fact that these loans must be repaid.

In relation to risk pooling, the pooling in this mechanism is expected to be at significant risk due to the low level of funding that the Saudi MOH could attain through this mechanism. As stated earlier, this is because SA is a rich country and is less likely to be funded by charity organisations, and if the MOH was funded by these organisations, their continuity cannot be guaranteed. Also, it is difficult for the MOH to borrow every year, and the reality is that lenders cannot be ensured every year. According to the WHO, the majority of the EU countries do not fund their healthcare systems through this mechanism, and if so, then only through marginal percentages (WHO, 2018).

Concerning value systems, donations cannot be implemented as a statutory mechanism to fund the MOH because it is more likely to fund poor countries. Moreover, introducing this mechanism would weaken the trust in the Saudi economy, and could be a sign to internal and external investors that the government has become unable to fund one of the most important services in the economy. This is contrary to Saudi Vision 2030, which tries to increase the involvement of external investors in the Saudi economy and increasing the country's financial rating (Alarabiya, 2019b). Moreover, the loans can be obtained at rates which the government can pay them back, but not at a rate that makes borrowing as a predominant method which the MOH needs at this time. Therefore, loans also cannot be implemented as a statutory mechanism to fund the MOH.

Regarding multisectoralism, it is true that the raised fund by this mechanism goes to the MOH. However, due to the low expected fund through this mechanism and the unguaranteed sustainability of donors and lenders, this method is unlikely to encourage the improvement of other health aspects.

3.2.7 The Suitability of the Funding Options for the MOH According to the Criteria for Health Financing System Design

Funding healthcare services through direct taxation will give the MOH a great revenue raising ability and fund sustainability as it will enable taxing all types of individuals, some of whom might not be included in other mechanisms. The same is true with regulated *Takaful* PHI, due to the large proportion of people receiving income in SA who will benefit the insurance companies with many subscriptions. MSA will also give the same to the MOH if they were supported by the government and/or by additional accounts. In contrast, implementing SHI might not be able to raise sufficient funds for the MOH because it would miss the chance to levy contributions from many governmental funds that fund Saudi citizens, as well as many of those who are employed and have access to healthcare in slices from 2 to 6 as they might see their non-MOH access as sufficient,

should this also affect the sustainability of the funding. The same holds true for donations and loans, and this is attributed to the high wealth of SA, which would lower the chance to receive donations, and also it is hard for the MOH to borrow every year to cover all or the majority of its financial needs. OOP is also the same, where the high costs of healthcare services is expected to deter people from accessing healthcare; therefore, this would provide low and unsustainable funds to the MOH.

Financing the MOH through direct taxation will provide all people with the same access to healthcare regardless of how much they contribute, which will protect poor people. The regulated *Takaful* PHI is similar, where poor people and those on lower and higher incomes would pay the same premiums, the same as MSA if it contains a designated account funded by the government to cover poor people healthcare costs. However, due to the low funding that SHI would raise for the MOH, the healthcare of those in slice 1 (including poor people) is likely to be affected. The same is true if the system was funded through donations and loans due to the low level of funding that could be attained through this mechanism beside the unguaranteed continuity of donors and lenders. In addition, poor people would not be able to afford paying for their healthcare costs out of their pockets because they are expensive in general, which means that this method may fail to protect poor people.

If the direct taxation were hypothecated, the pool then would be exposed to low risk as more funds can be ensured. Implementing regulated *Takaful* PHI would also expose the pool to low risk, as such a method will mean the insurance companies would benefit from a large number of subscriptions. In contrast, the small proportion of funds that SHI could raise would expose the pool to a significant risk. The same is true in the case of donations and loans due to the lower funding that could be attained though this method and the fact that the continuity of donors and lenders cannot be guaranteed. However, there is no pooling in OOP and the first account of MSA, but usually the second account has a pool,

which is exposed to a low level of risk because every person can use up to a specific percentage of this pool.

Financing the MOH through direct taxation, regulated *Takaful* PHI or MSA supported by funds from the government will facilitate the subscription of all the population categories, including those employed and receiving healthcare in slices from 2 to 6 without affecting their employers or making a change to the healthcare system of the private sector or SDU. However, the implementation of SHI would make it difficult for private employers to pay their share because they are already mandated to provide PHI to all their employees (including their dependents), and it is not fair to fund the Saudi healthcare system from employers twice, neither it is ideal to transform this infrastructure to implement SHI. Moreover, the MOH cannot rely heavily on donations because the reliance on this mechanism may weaken trust in the Saudi economy, and the MOH cannot also rely on loans because they must be paid back. In addition, implementing OOP as a statutory mechanism may encounter significant resistance from the Saudi population due to the continuous reforms of the Saudi Vision 2030 that reduces their disposal income.

Since the raised funds through direct taxation, SHI with an integrated system, OOP, donations and loans go directly to the MOH, this would enable the MOH to use the funds to improve other health purposes. However, with the exception of direct taxation, all these methods would be less likely to improve other health purposes due to the low level of funds that they could raise for the MOH. In addition, other health purposes cannot be improved via SHI if collection, pooling and funding are outsourced, as is the case with the PHI. The same is true if MSA were employed, because contributions in this method go directly to each person's account, even if a second account with pooling were in place, because usually this pool is assigned to cover specific healthcare services and used up to specific percentage for each person.

Finally, it can be seen that the direct taxation, MSA supported by funds from the Saudi government, and regulated *Takaful* PHI are more suitable to fund the Saudi MOH according to the criteria for health financing system design. However, these criteria showed that implementing SHI, OOP, donation and loans would be difficult in the Saudi context.

3.3 Literature Review

3.3.1 Healthcare Funding in CEE and FSU in the Period of Transformation

In the period from 1990 to 1997, half of the CEE and FSU countries experienced severe economic disruptions from civil war. The real GDP of these countries showed a sharp decrease of up to 68%, which caused a decline in wages and tax collection (see Table 9) (Preker et al., 2002, McKee et al., 2011).

The healthcare systems of these countries were funded through state budgets and provided free access (at the point of use) to their citizens (Alexa et al., 2015, Katsaga et al., 2012). However, due to the deteriorating economic conditions, and in order to guarantee constant access to healthcare services for their citizens, most of these countries introduced a new transitional plan to ensure the sustainability of public spending on healthcare. For instance, Croatia, the Czech Republic, Estonia, Hungary and Slovakia (hereafter referred to as Group A) introduced SHI as the predominant mechanism (Habicht et al., 2018, Smatana et al., 2016). Albania, Kazakhstan, Latvia, Romania, and Russia (hereafter referred to as Group B) continued to finance the majority of the system through Taxation, supplemented by a new payroll tax introduced to meet the shortage in public spending (Mitenbergs et al., 2012a). Due to the severity of the decrease in public financing in Azerbaijan, Georgia, Kyrgyzstan, and Moldova (hereafter referred to as Group C) individuals in these countries were forced to pay for their healthcare needs via Out of Pocket payment (see Table 9) (Turcanu et al., 2012, Richardson and Berdzuli, 2017).

Table 9 shows that the countries that applied SHI as the predominant mechanism broadly succeeded in improving their public spending on healthcare despite the deteriorating economic conditions. That is, the average level of spending of Group A by 1997 was 16% higher than in 1990. Specifically, the data shows that three countries reported increases in public healthcare resources between 1990 and 1997 (Czech Republic 15.8%, Estonia 86.8%, and Slovakia 13.3%); Hungary reported a slight decline (by 4.3%), and Croatia decreased by 31.5%.

Table 9 CEE and FSU Countries' Real GDPs, Private Spending on Health, and 1997 Real Public Spending on Health as a Percentage of 1990

Country	Change in Real GDP % 1990-97	Private Spending 1997 %	1997 Real Public Spending on Health as % of 1990
Group A	**Social Health Insurance**		
Croatia	-18	16.4	-31.5
Czech R	-9	8.3	15.8
Estonia	-21	13.3	86.8
Hungary	-6	18.3	-4.3
Slovakia	-2	19.3	13.3
Average	-11.2	15.1	16
Group B	**Taxation**		
Albania	-11	23.3	-53.5
Kazakhstan	-40	32.5	-42.1
Latvia	-45	22.6	-22.2
Romania	-13	30.0	-6.5
Russia	-40	2.3	21.9
Average	-29.8	22.1	-20.5
Group C	**Out of Pocket**		
Azerbaijan	-57	81.5	-78.2
Georgia	-68	87.5	-71.1
Kyrgyzstan	-43	60.3	-60.3
Moldova	-63	45.8	-6.5
Average	-57.7	68.7	-40.5

Source: (Preker et al., 2002)

In Group B, Table 9 shows that by 1997 public healthcare expenditure decreased by an average of 20.5%; Albania and Kyrgyzstan had sharp declines of 53.5% and 42.1%, respectively. Private spending in Kazakhstan and Romania as a share of total spending on healthcare reached 32.5% and 30%, respectively. That said, however, public spending as a percentage of the total spending on healthcare for the countries in this Group remained high. Moreover, the introduction of the payroll tax (from 2% to 4% of employees' income) helped to support public spending in the majority of the countries in

Group B. For example, in Russia, the payroll tax accounted for 28% of the total spending on health in 1997 (Preker et al., 2002).

The countries in Group C experienced sharp contractions, as evidenced by the significant reductions in public healthcare spending by 1997 in comparison to 1990 (an average decrease of 40.5%). Private spending in this group surged to an average of 68.7% of total healthcare spending during this time and peaked at 81.5%, 87.5% and 60% in Azerbaijan, Georgia, and Kyrgyzstan, respectively (Preker et al., 2002). The World Bank available national household surveys in 1998 shows that 50% of the investigated sample in Georgia and Azerbaijan did not access healthcare, because of the lack of financial resources; this figure was 30% in Moldova. In Georgia, people paid 70% of their monthly household earnings to pay for healthcare, and 40% of the households borrowed funds or sold property to cover healthcare expenses. In Moldova 30% of the investigated sample borrowed to cover their health costs (Preker et al., 2002, McKee et al., 2011).

3.3.2 Healthcare Funding in CEE and FSU after the Transformation

Subsequent to the transformation period, the majority of the investigated CEE and FSU healthcare systems kept using the same mechanisms (with a few changes to the level of contribution) introduced during the transformation period. The data in Table 10 shows that Group A countries continued to fund the majority (i.e. more than 65%) of their healthcare systems through SHI — Hungary, at 55.6%, was the lowest. In general, public spending as a percentage of the total spending on healthcare has been stable between 70% and 80% in the majority of Group A countries since 2000 (see Table 10). The data also shows that since 2000, the share of public spending on healthcare in Slovakia increased, and decreased by a small percentage in Estonia, and decreased at higher percentages in Croatia, Czech Republic, and Hungary — this was due to a larger increase in VHI and OOP than in public spending (WHO, 2018).

Table 10 CEE and FSU Countries' Spending on Healthcare[20]

Country	Public Spending on Health as % of Total Government spending 2015 vs 2000	2015 Public Spending on Health as % of 2000 Public Spending on Health	Public Spending as % of Total Health Spending 2015	SHI [4]	OOP [5]	VHI [6]
Group A	**Social Health Insurance**					
Croatia	-3.11	-10.9	76.8	74.4	15.2	8.0
Czech R	2.19	-7.8	82.4	70.4	14.8	0.1
Estonia	1.53	-1.6	75.4	64.9	22.8	0.2
Hungary	-2.04	-5.4	66.7	55.6	29	2.3
Slovakia	-0.44	5.9	79.7	75.4	18.4	0.0
Group B	**Taxation**					
Albania	2.44	19.6	42.3	34	56.9	0.0
Kazakhstan	1.67	18.1	60.2	0.0	38.8	0.2
Latvia	1.52	13.3	57.5	0.0	41.6	0.8
Romania	1.96	-3.5	77.8	64.5	21.3	0.3
Russia	-0.15	2.9	61.1	33.8	36.4	2.2
Group C	**Out of Pocket**					
Azerbaijan	-1.23	-10.5	20.2	0.0	78.6	0.6
Georgia	4.1	158.8	38.8	0.0	57.3	1.3
Kyrgyzstan	2.81	-7.2	44.9	6.1	48.2	0.0
Moldova	3.69	-10.6	45.5	40	46.2	0.2

Source: WHO (WHO, 2018)

Abbreviation: [4,5,6]As a percentage of total spending on healthcare.

Note: Czech Republic, Estonia, Hungary's data are from 2003, Slovakia from 2005 instead of 2000.

In Hungary, no remarkable changes were made to the system except for an adjustment to the SHI contribution which was reduced because it was seen to be causing tax evasion. The reduced revenue caused by the reduction in SHI contributions was then offset by a general tax (Gaal, 2011). In Croatia, the flat declines in public spending on healthcare as a percentage of the government budget since 2011 (13% in 2011 to 12% in 2015), was due to the increase in the government budget (Džakula et al., 2014). In Slovakia, driven by higher revenues from economic growth, public spending on health increased between 2004 and 2010. It is noted that since then the increase in the percentage of public spending on healthcare in Slovakia was caused predominantly by a change in the private spending reporting system (Smatana et al., 2016). Similarly, the reason for the decrease in the percentage of public spending on healthcare in Estonia since 2009 was mainly due to a change in health expenditure calculation (i.e. now excludes capital investment), and by a

[20] Funding healthcare systems through other sources represent the reaming percentage of the sum of the mentioned sources.

change the method of reporting OOP (Habicht et al., 2018). Private spending on healthcare in Group A countries has increased since 1997, except in Slovakia. However, the reliance on VHI remained marginal, except in Croatia (WHO, 2018).

Public spending on healthcare in all Group B countries has increased significantly since the transformation with the exception of Romania, where the worsening economic situation and the unstable political landscape since 2010 has caused a reduction in public spending in order to meet fiscal deficit targets (Vlădescu et al., 2016) — that said, however, the proportion of health spending accounted for by public spending in Romania is still one of the highest in the Group.

Three countries in Group B (Romania, Russia and Albania) have increased the reliance on SHI (instead of general Taxation) to fund their healthcare system. For example, Romania implemented SHI in 1999, and since then, the majority of the system is funded through this mechanism (Vlădescu et al., 2016). Russia introduced SHI in 1993, and funding via this method has grown from 24% to 34% in 2000 and 2015, respectively (Popovich et al., 2011, WHO, 2018). The same is true in Albania, which introduced SHI in 1995 to cover a basic list of reimbursable drugs and the payment of family doctors (Rudina, 2017). Since that time, the spending on healthcare via this mechanism has increased significantly from 7% to 34% in 2000 and 2015, respectively. Due to the large informal economy, and problems with tax collection, the sustainability of public spending on healthcare in Albania remains uncertain (Kutzin et al., 2010). Many reforms were introduced prior to 2010 to improve the funding system. These include the development of a more centralised system with state functions consolidated in fewer institutions (on the administrative and financial levels), the establishment of one central institution for purchasing healthcare, and a healthcare delivery system with a strong focus on primary care. However, the majority of the system is still funded through private sources (Mitenbergs et al., 2012a).

In Kazakhstan, public spending on healthcare has improved significantly since 2000. This was mainly due to the comprehensive programme of healthcare reforms that was adopted in 2004. These reforms included pooling the fund and improving health purchasing methods through a new provider payment system (Katsaga et al., 2012). The same is true for the increase in 2010, which was mainly due to the state healthcare development programme (Salamatty Kazakhstan).

With the exceptions of Romania and Kazakhstan, the data shows that the private spending on healthcare of Group B countries has increased significantly since the 1990s, which was mainly driven from OOP. However, the data shows that the VHI still has a relatively minor role in funding healthcare (see Table 9 and Table 10) (WHO, 2018).

In Group C, the data shows that Georgia is the only country that succeeded in improving its healthcare system funding since the sharp decreases in public spending in the 1990s. The data shows that public funding increased by 159% from 2000 to 2015, in comparison to decreases of 71.1% in the 1990s. Prior to 2004, the majority of public healthcare spending in Georgia was funded via SHI, which, because it was underfunded, was unsuccessful in delivering a basic package, such that between 2004 and 2012, marketisation was undertaken. From 2008 to 2012, most government spending on healthcare was directed through PHI companies, which were paid to provide a standard package of benefits for children, pensioners, teachers, students, the disabled, and those living in poverty (Richardson and Berdzuli, 2017). There was a change in government in December 2012, and reforms since February 2013 have sought to bring universal health coverage to Georgia. Government health spending has increased significantly under this Universal Health Care Programme, and by 2015, private spending has decreased to 58% of the total healthcare spending compared to 87% in 1997. However, OOP payments still dominate total health expenditure in Georgia (WHO, 2018).

Spending on healthcare by the rest countries in Group C (Azerbaijan, Kyrgyzstan and Moldova) has not increased since the severe decreases in public spending in the 1990s. The exact structure of healthcare spending in Azerbaijan is difficult to define because the data was difficult to track and what information is available is based on WHO estimates (Ibrahimov et al., 2010). That notwithstanding, it is evident that private spending, which peaked in 2005 at 88% (WHO, 2018), still accounts for the majority of the spending in Azerbaijan. In Kyrgyzstan, although public spending in the past two decades has been highly unstable. The increase in public spending in Kyrgyzstan since 2005 is explained by the increase in funding from external agencies (Ibraimova et al., 2011). In Moldova, private spending on healthcare as a percentage of total health spending increased from 46% to 55% in 1997 and 2015, respectively. In 2004, the country introduced Mandatory Health Insurance, which helped to increase the public spending on healthcare in 2004 (Turcanu et al., 2012). However, since then, public spending on healthcare has decreased to a percentage lower than the percentage in 2000 (WHO, 2018).

3.3.3 Healthcare Funding in CEE and FSU through Other Sources

Many of the FSU and CEE countries also fund their healthcare systems via other sources (i.e. Donations and Loans). Based on 2015 data (see Table 10), it was found that Group A countries fund between 1% and 3% of the total spending on their healthcare systems from other sources; Croatia is an exception. The percentage for Group B countries is 1%. Unsurprisingly, Group C has a significantly higher percentage funded from external sources — in Kyrgyzstan and Moldova the figure is in excess of 7% (WHO, 2018).

In some of the CEE and FSU, informal payments are seen as an important source of healthcare financing. In some countries these are clearly illegal, whereas in others, their legality is and has remained ambiguous. The prevalence of informal payments emerged from the decline in the CEE and FSU economies in the 1990s. During this time, healthcare staff were underpaid, and sometimes unpaid, and informal payments were a supply side

driven tool to maximise income and evade taxes. Informal payments are also a demand side tool for consumers to attempt to improve the level of healthcare services provided (such as getting easy access to healthcare services, jumping the queue, or ensuring better level of quality) (Chereches et al., 2013).

In Moldova, a survey studying hospital care in 2011 showed that 37.9% of all hospitalised patients made informal payments (about $100 on average). Moreover, it was found that the highest percentage of informal payments goes to maternity (71%) and surgery departments (50.9%) (Turcanu et al., 2012). In a study conducted on 5,337 patients in 2006 by the Health Policy Analysis Centre in Kyrgyzstan, it was found that 76% paid informal payment for medical personnel and 44% for drugs (Ibraimova et al., 2011). A survey conducted by the Russian Longitudinal Monitoring Survey in 2009, found that 38.5% of respondents applying for inpatient care, and 28.6% applying for outpatient care made informal payments (Popovich et al., 2011). In Azerbaijan, informal payments accounted for 22.4% of total healthcare expenditure in 2002 (Ibrahimov et al., 2010).

In a survey conducted by the European Bank for Reconstruction and Development in 2011, it was found that 15% of respondents in Croatia made informal payments, where 56% went to doctors, and 36% to nurses (Džakula et al., 2014). Muzik et al (2013) conducted a survey in Slovakia, and found that 71.4% of 1,181 respondents reported making an informal payment in the form of cash or presents (Smatana et al., 2016). The Transparency International Global Corruption Barometer data showed that 15% of the Czech Republic population made informal payments in 2013 (Alexa et al., 2015). In Estonia, the University of Tartu developed a survey in 2011, which concluded that 2% of patients acknowledged having made informal payments to obtain faster access to care and about 3% paid after getting the treatment (Habicht et al., 2018). In Latvia, the Global Corruption Barometer report (2010-2011) showed that 15% of respondents indicated that they have paid bribes in health institutions (Mitenbergs et al., 2012a).

The high reliance to fund healthcare on such a method in CEE and FSU countries means that healthcare providers focus on those who are willing to pay, and ignores patients from vulnerable groups. Since the fund goes to individuals instead of the overall healthcare system, the grey economy prospers and the opportunity to upgrade medical equipment, improve nursing standards, increase level of efficiency, or improve quality is limited.

3.3.4 WE Countries

Data for public spending on healthcare (i.e. Taxation and SHI) covering a period of sixteen years, shows that most WE countries rely on Taxation as a predominant mechanism for funding their healthcare systems, i.e. fund > 50% of the system via tax (see Table 11). Denmark, Sweden, and UK fund their healthcare systems most via Taxation (by over 80%), with marginal changes since 2000. The other countries who rely mostly on Taxation to fund their healthcare systems do so in the range of 60–80% though Taxation, with a maximum change of approximately ± 7%.

Table 11 Taxation and SHI as a Percentage of Total Health Expenditure among WE Countries[21]

Country	Taxation			Social Health Insurance		
	2000	2015	Change %	2000	2015	Change %
Austria	28.7	30.8	2.1	45.9	44.8	-1.1
Belgium	15.9	23.2	7.3	63.4	59.2	-4.2
Denmark	83.0	84.1	1.1	0.0	0.0	0.0
Finland	60.0	64.1	4.1	14.0	13.3	-0.7
France	3.5	4.0	0.5	75.3	75.0	-0.3
Germany	7.5	6.6	-0.9	71.8	77.9	6.1
Greece	26.1	30.3	4.2	32.3	28.8	-3.5
Ireland	77.5	71.2	-6.3	0.0	0.0	0.0
Italy	72.6	74.6	2.0	0.0	0.3	0.3
Luxembourg	9.2	9.8	0.6	73.0	72.9	-0.1
Portugal	69.6	65.0	-4.6	0.8	1.2	0.4
Spain	66.0	66.3	0.3	5.3	4.7	-0.6
Sweden	81.8	83.7	1.9	0.0	0.0	0.0
UK	81.8	80.4	-1.4	0.0	0.0	0.0
Average	48.8	49.6	0.78	27.3	27.0	-0.3

Source: (OECD, 2018a, WHO, 2018)

Note: Belgium, France, Netherlands, Spain's data are reported from 2003, Austria from 2004, and Greece from 2008 instead of 2000.

[21] There was a lack of access to the Taxation data. Therefore, it was calculated by deducting the SHI spending on healthcare from the total government percentage. Also, there was a reporting issue for Taxation and SHI in Netherlands. Therefore, it was excluded.

SHI is the next most prevalent method and this is used predominantly in France, Germany, and Luxemburg who consistently funded their healthcare systems in the range of 70–80% via SHI during the period under investigation. In Belgium and Austria, the healthcare system was funded by 60% and 45% through SHI in 2015, respectively; the SHI percentage in both countries has decreased by less than 5% since 2000 (see Table 11).

The figures in Table 12 show that eleven of the WE countries finance their healthcare system through OOP in a percentage lower than 20%; France and Luxembourg finance less than 10% of their healthcare systems via this mechanism. OOP as a percentage of total spending in 2015 was most prevalent in Greece, Portugal, Spain, and Italy (35.5%, 27.7%, 24.2%, and 22.8%, respectively) (WHO, 2018). Moreover, the data shows that since 2000, the percentage of OOP among the fifteen countries in Table 12 did not show any remarkable changes, with half of the countries reporting small decreases and the other half small increases.

Table 12 OOP and VHI as a Percentage of Total Expenditure on Health in WE Countries

Country	OOP			VHI		
	2000	2015	Change %	2000	2015	Change %
Austria	17.8	17.9	0.1	5.3	4.9	-0.4
Belgium	20.7	17.6	-3.1	5.1	4.8	-0.3
Denmark	15.4	13.7	-1.7	1.5	2.1	0.6
Finland	23.2	19.9	-3.3	2.8	2.6	-0.2
France	7.3	6.8	-0.5	13.1	13.6	0.5
Germany	12.0	12.5	0.5	7.4	1.5	-5.9
Greece	39.4	35.5	-3.9	2.3	3.7	1.4
Ireland	12.1	15.2	3.1	10.4	12.3	-1.9
Italy	26.5	22.8	-3.7	0.9	1.5	0.6
Luxembourg	14.3	10.6	-3.7	2.4	6.0	3.6
Netherlands	9.4	12.3	2.9	18.1	5.9	-12
Portugal	25.0	27.7	2.7	3.6	5.2	1.6
Spain	24.3	24.2	-0.1	5.4	4.4	-1.0
Sweden	14.5	15.2	0.7	0.0	0.6	0.6
UK	11.5	14.8	3.3	3.4	3.4	0.0
Average	18.23	17.78	-0.45	5.45	4.83	-0.85

Source: (WHO, 2018, OECD, 2018a)

Note: Belgium, France, Netherlands, and Spain's data are reported from 2003, and Greece from 2008.

The data in Table 12 shows that VHI accounted for a small proportion of the total spending on healthcare in the past sixteen years of all the investigated countries, with only marginal increases or decreases, except in Netherlands and Germany, where the funding via this mechanism decreased significantly in the period under investigation (by 12% and 6%, respectively).

In the Netherlands, VHI had increased to 20.1% as a percentage of the total spending on healthcare in 2005, before the government applied a change to the system that required every person (excepting those under 18 years) to obtain a basic health insurance policy (compulsory) to cover their healthcare costs. The Dutch government also required insurers to provide community rated policies and to accept all applicants, in return for providing subsides for the exposure to risk (Kroneman et al., 2016). These amendments to the system reduced the proportion funded via VHI to 6.4% in 2006, a proportion which since then has remained relatively low (WHO, 2018).

Similarly in Germany, VHI increased to 8.6% as a percentage of total spending on healthcare in 2008, before the government obligated insurers to offer a new basic tariff that provided similar benefits to those provided by SHI, at premium that did not exceed the highest contribution in the SHI system (about €630 per month in 2014) (Busse and Blümel, 2014). Thereafter, funding via VHI in Germany decreased to 1.4% in 2009, and has remained constant at this level.

3.3.5 United States

In the mid-1980s, PHI became the dominant funding mechanism in the US and remained the major funding method for funding US healthcare system (Rice et al., 2013). During the 1980s, rampant inflation in the cost of insurance and health services in the US lead to the introduction of managed care, where an insurer makes a deal with healthcare providers and healthcare facilities to provide members with healthcare services at a reduced cost.

Subsequent to the introduction of managed care, prices decreased, before increasing again after 1997 (Rice et al., 2013). These price increases were caused by insurance companies segmenting the healthcare services within insurance packages in order to maximise revenues.

A group of academics, insurers, and providers met in Jackson Hole to analyse the complexity of the PHI market and the problems caused by policy segmentation and adverse selection. The Jackson Hole Group suggested obliging private insurance companies to i) provide minimum healthcare coverage to everyone, and ii) broadly define the healthcare services that are covered by the offered packages (Ellwood et al., 1992). They also suggested the creation of purchasing agencies (at least one in each state) to act as broker who is fully aware of the market, the health insurance companies, the packages, and the health services that will be covered by each package. These agencies work by collecting money from employers and guiding them to the best packages, especially for the companies with a small number of employees.

The Jackson Hole Group's proposals formed the basis of the (ultimately unsuccessful) attempts by the Clinton administration to reform the US healthcare system in the 1990s. The proposal required insurers to issue insurance to all applicants and had to charge the same premiums to everyone. It also determined minimum coverage requirements, that included many free preventive services (Rice et al., 2013). The core concepts and objectives of the Clinton reforms was to mandate insurance to achieve universal coverage and to control prices and premiums to restrain health costs.

This proposal resurfaced recently as part of Obamacare. Obamacare's goal was to lower the nation's healthcare costs and ensure that every citizen had healthcare coverage. It initially did this by mandating everyone to buy insurance. To enforce the mandate, a tax penalty was levied on those without insurance. Insurers were required not to take health status or pre-existing conditions into account when setting premiums (the elderly can be

charged no more than three times the premium of younger applicants; also smokers can be only be charged 1.5 times more than non-smokers), with guaranteed renewability of policies. Moreover, insurers were required to not exclude people with pre-existing conditions, and to not drop anyone when they become sick. In addition, insurers were required to present information about their plans in a standard format. Obamacare also subsidised middle-income families, to allow more people to afford better insurance. To pay for these subsidies, Obamacare increased taxes on healthcare providers and those with high-incomes (Rice et al., 2013). Since the introduction of Obamacare (2010), the percentage of US population without health insurance has decreased from 16% to 9.1% by 2017 (Statista, 2018).

3.3.6 Switzerland

In Switzerland, PHI was voluntary up to 1996 and premiums were individually rated. This was because most of the population is wealthy, and the premiums are supported by general tax subsidies, making the premiums low and affordable (98% of the population are insured). However, subsidies started decreasing in the mid-1970s and healthcare costs in Switzerland have been increasing since 1980. To combat rising costs, insurers exerted pressure on their members, making the PHI unaffordable for some (i.e. old people, and those with chronic diseases found it very difficult to obtain a PHI policy). In 1996, the Swiss government introduced a compulsory PHI, covered by health insurance companies, with community rated premiums. The government obliged companies to accept everyone with no discrimination, and supported them with subsides. Specific categories of people pay reduced premiums or no premiums at all (29% of the population in 2012) (Pietro et al., 2015). It was found that the transition from the uncontrolled market to the regulated and controlled market succeeded in ensuring health coverage for the entire population.

3.3.7 Australia

In Australia, the healthcare system has been mixed between public and private insurance since 1953. In 1975, a universal public health insurance programme was introduced (Medibank). This programme is funded via contributions from peoples' income, which then covers up to 85% of their healthcare costs in public and private healthcare facilities. Subsequently, the government established Medicare in 1984 to take the role of Medibank (which, in 1997, became a private health insurer owned by the government), and the percentage of contribution required increased from 1% to 1.5% (Dixit and Sambasivan, 2018, Willis et al., 2016)

After the introduction of the Medicare, the proportion of the Australian population with PHI decreased so as the high percentage of their healthcare cost is covered, and the PHI premiums increased. By the late 1990s, the government introduced a new subsidy programme for those purchasing PHI and on low incomes (less than AU$ 35,000), and an additional levy of 1% to Medicare was charged to individuals who did not buy PHI but had taxable income over AU$50,000[22]. This was subsequently replaced by non-means-tested tax rebate. In 2000, lifetime community rating was introduced in Australia to encourage people to purchase PHI while young. Basically, this programme incurs a 2% premium to the base PHI rate for every year a person did not subscribed to PHI since he/she turned thirty years old (Willis et al., 2016). For example, if a person turned 35 years old and had not purchased PHI, then a 10% premium will be added to the cost of their policy. The premium is capped by 70%, and can be removed if a person maintained their PHI for a period of 10 years. This legislation substantially increased the percentage of people with PHI from 30% in 2000 to 47.2% in 2014.

[22] The individual taxable income was changed to AU$90,000 (AIHW 2016). AIHW, A. I. O. H. W. 2016. Australia's health 2016. *Australia's Health Series No.: 15*.

In 2012, the government re-examined the previously discussed non-means-tested PHI tax rebate, and decided to reintroduce means testing. Specifically, those with income less than $84,000 now receive a 30% rebate, a percentage which decreases gradually to zero for those with incomes greater than $124,000; those who do not purchase PHI until they are older than 30 years are no longer entitled to the rebate (Willis et al., 2016). Such control on the healthcare system ensures the sustainability of the health insurance system.

3.3.8 Singapore

MSA was first introduced in Singapore in 1984. MSA requires individuals to save from 6–8% of their income every month in an earmarked account (Medisave), to be used solely to fund their healthcare expenses. This account is used under strict guidelines to pay for hospitalisation, surgery, and outpatient expenses. Since 2015, coverage was extended to some chronic diseases and vaccinations. In 1990, the Singapore government introduced a catastrophic health insurance programme (MediShield), which is funded by premiums from individual Medisave accounts. This programme was established to address the need to fund major or long-term illnesses. Recent changes to this programme removed the benefit cap and the age restriction (coverage previously ended at age 90). In 1993, the government introduced Medifund, an endowment funded by the government to pay for the health expenses of the poor and for those who had used up all of their Medisave balance and their eligibility from the MediShield account (Mossialos et al., 2016).

Because there is no risk pooling, the aim of MSA is to overcome adverse selection. The result is equity among the population — every Singaporean has reasonable access to healthcare, and the quality of healthcare services has increased. MSA has also been very effective at controlling healthcare costs (Mossialos et al., 2016).

3.3.9 Conclusion

The serious economic downturns that took place in the CEE and FSU countries in 1990, forced many countries to make decisions about how to fund their healthcare system. It is

clear from the stable level of funding up to the past few years that the majority of CEE and FSU countries that implemented SHI have succeeded in securing a sustainable source of funding for their healthcare systems. Public spending on healthcare decreased in some of the countries that continued to fund the majority of their system via general taxation supported by payroll taxes. Indeed, some of them have shifted to be more SHI based. That said, however, this cannot be used as evidence for the fragility of taxation based systems. This is because the majority of WE countries use taxation based systems and these have largely succeeded in keeping funding stable for the past two decades.

The healthcare systems of the countries that did not implement any mechanism experienced significant declines in public spending, such that many people were left without health coverage and OOP became more prevalent to fill the funding shortage. The literature review showed that OOP accounts for less than 20% of healthcare funding in many WE countries but more than 35% in many of the FSU and CEE countries, where the use of voluntary PHI was low. In addition, regulated PHI succeeded in increasing the number of insured people in USA, Switzerland, and Australia. In Singapore, MSA had great success in ensuring the stability of healthcare funding. Surprisingly, MSA is still not widely used outside of Singapore.

3.4 Discussion

Figure 7 summarises the healthcare financing mechanisms that are used globally. The figure is designed based on the real experience of USA, Switzerland, Australia, Singapore, WE, CEE, and FSU countries. The donation and loan mechanism will not be discussed at length as it is not considered as a major source of funding in any country in this study. In this part, the study will discuss each mechanism provided in Figure 7 separately to outline the possible mechanisms and determine the best for raising a fund for the Saudi public healthcare system.

3.4.1 Public Mechanisms

3.4.1.1 Taxation

The experience of the majority of CEE and FSU countries in Group B who predominantly funded their healthcare systems via Taxation, was not positive. This may be due to two factors, i) the way the tax system is designed (i.e. the collection, pooling and operation of the fund), and ii) the variables that shape the system (i.e. the economy, demographic classifications, people's financial conditions, as well as the government's needs). If the interoperability of all of these factors and variables are not considered before designing the system, then the desired goal is less likely to be achieved. For instance, the evidence from eight WE countries, all of which rely on Taxation as a predominant mechanism for funding their healthcare systems, shows this method to be a reliable mechanism for funding the healthcare system. Similarly, and notwithstanding it being an FSU country, the Kazakhstan experience (where the public healthcare spending increased by 18% in 2015 in comparison to 2000) (see Table 10) shows that Taxation can be a reliable method to fund the healthcare system even in developing countries.

The blue line in Figure 7, suggests that Taxation can be used solely to fund the healthcare system (hypothecated), or also used to fund other public services (un-hypothecated). Within the Taxation system, indirect Taxation can be used as a compulsory method to fund the healthcare system, but is unlikely to be used as a predominant mechanism. The figure indicates that if direct tax was used, then it can be compulsorily collected from individuals, households, and/or firms. This gives the government choices on how to use the revenue raised to finance the healthcare services that are provided by the public healthcare facilities (hierarchy organisations), or to pay private healthcare providers (see Figure 7).

If direct taxes from individuals is the mechanism selected to fund the healthcare system, then there are three groups from which the tax can be levied, i) the employed, ii) the self-employed, and iii) the unemployed. Governments can levy the tax based on the person's salary or total income. If the person's income is below a minimum level (as determined by the government), then free coverage is usually provided from the health insurance pooled fund; if there is not enough in the pooled fund, then other public funds fill the gap (i.e. the general government budget).

One of the issues of employing direct tax is the percentage of the retired and unemployed people in the country. That is, if this percentage is high (as is the case in many European countries) this could put the pooled fund under a significant pressure of collapse. This issue will be further exacerbated if the number of those under 18 and/or dependent is also high. In such cases, direct Taxation must be supplemented by indirect methods or by another healthcare financing mechanism.

In general, the direct tax financing system provides all citizens with the same access to healthcare regardless of how much they contribute (generalisation). If those with high incomes contribute a higher percentage of their incomes, then the system is progressive; if those with lower incomes contribute a higher percentage, then the system is regressive and can significantly impact those on low incomes, because they already spend a larger portion of their income (than those on higher incomes) on the cost of living and basic needs. Any attempt to make the system more proportionate by replacing a purely percentage tax method with one that combines an absolute contribution with an albeit reduced percentage tax is only likely to reduce the progressivity of the system. Therefore, countries should take population income strength into consideration when designing the healthcare financial system, or when considering shifting funding from direct to indirect Taxation. Moreover, every healthcare financing system has an ongoing conflict between the healthy wealthy and the unhealthy poor, such that a more proportionate system is

likely when a combination of direct and indirect methods is used. That said, however, it is possible to raise the funds required and achieve a relatively proportionate system even in a predominantly directly funded system. For instance, the experience of Denmark and Sweden, where both rely heavily on direct Taxation, proves that such a mechanism can make the system relatively less progressive (Evans, 2002). The most important element in creating a successful system is to be aware of the demographic characteristics and the economic situation in the country, as well as the targeted population's financial conditions before designing the system. However, all of these variables are constantly changing across time, such that adjustments often have to be made to reorganise the system's needs. The most common method used to rebalance the healthcare funding system is via adjustments to the tax system (i.e. via tax concessions, exemptions, reductions, credits, reliefs, and/or deferrals). These tax adjustment tools are widely used to mitigate the burden on those on higher incomes who might otherwise try and evade tax to avoid paying more (and so reduce the level of the pooled fund). If the regressive nature of the system is the issue, then these tax adjustment tools can be used also to support the vulnerable group.

3.4.1.2 Social Health Insurance

The experience of CEE and FSU countries in Group A with SHI in the 1990s was successful with a particularly high degree of success in three countries — Czech Republic, Estonia, and Slovakia. Since 2000, public spending on healthcare in some of the countries in Group A has decreased. This cannot be seen as a weakness of SHI, because public spending via this method still represents in excess of 65% of the total spending on healthcare in the majority of these countries.

Figure 7 Healthcare System Funding Options

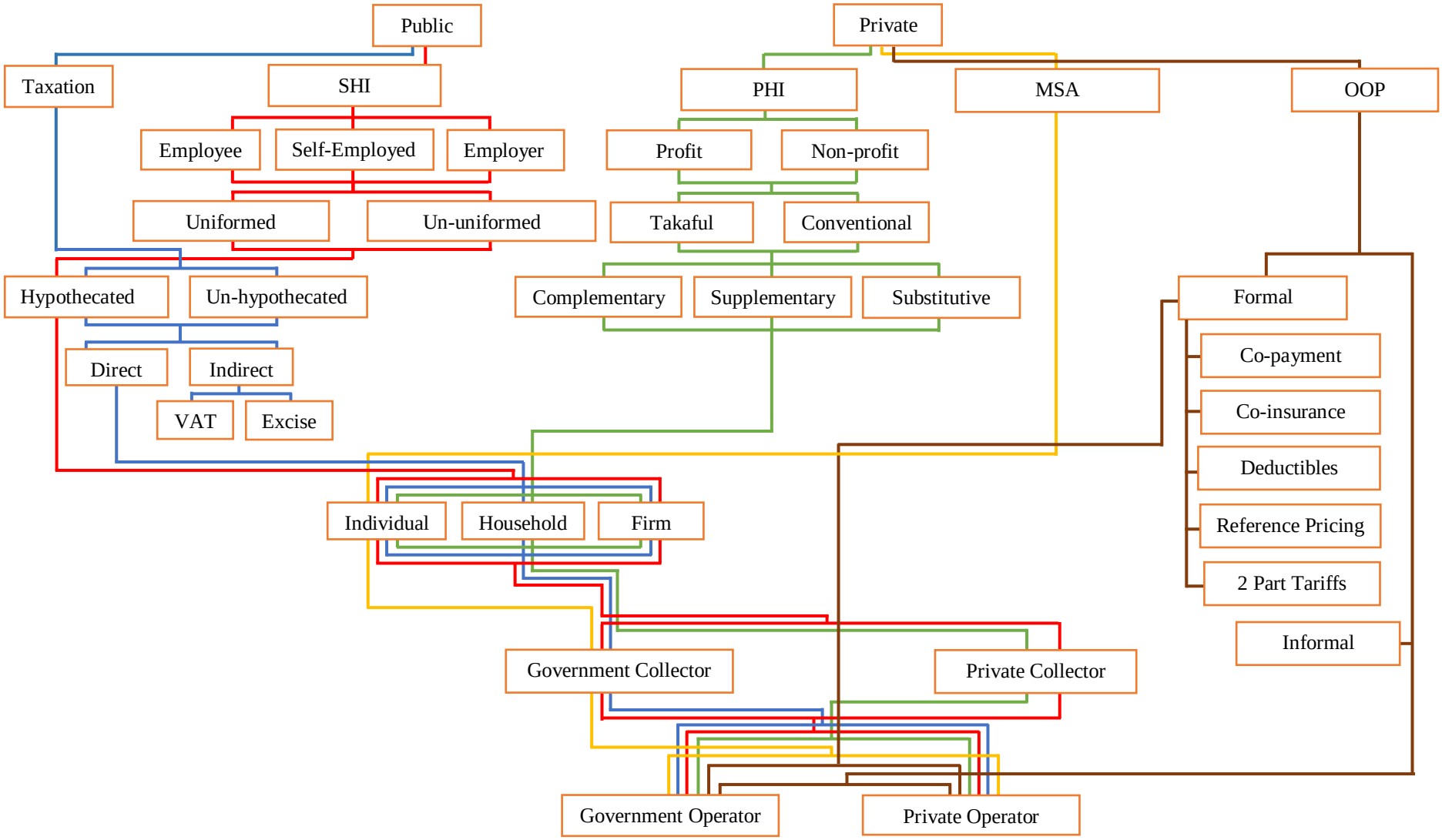


Figure 7 shows that this mechanism can be used to levy uniform percentages among employees with high, middle, and low income, and can also levy the same or different percentages between the employee and the employer. Another feature of SHI is that the pooled fund is kept for the reason for which it was raised. Unlike Taxation, SHI mainly targets the employee and employer; some countries target the self-employed. Moreover, if SHI is used as the only insurance method to fund the system, then the unemployed, children, and family dependents will be covered from the pooled fund. In the countries where Taxation is used to supplement SHI, the healthcare costs of these groups are covered by Taxation. Similar to Taxation, the government has the option to collect the fund and then to either operate it or pass it to private insurance companies. However, in most countries, the government usually outsources the collection and operation of the fund to a private body.

Most CEE countries that use SHI predominantly outsource the collection and operation of the fund. This ensures the independence of the SHI from the government, and results in better services, because the contributions cannot be diverted to other government programmes. For example, in Estonia and Poland, the system is totally independent and this is to ensure that the collected fund will be used solely for healthcare purposes (Jesse et al., 2004, Kuszewski et al., 2005). However, because this method incurs additional private agency administrative costs, the net fund available for healthcare services is necessarily lower.

One issue with the SHI system in some countries is that it misses the chance to collect money from the self-employed and capital investors causing a shortfall in the pooled fund — both of these groups are taken into account via the Taxation method. If the country increases the SHI percentage to cover the shortfall, the employer may shift the burden onto the employee by reducing salaries in future contracts. It may also encourage the employer to avoid tax by compensating employees through allowances that are exempted

from the SHI contribution, i.e. food and clothing allowances. This has the potential to reduce the level of liquidity and, taken to conclusion, to cause the healthcare fund to collapse.

3.4.1.3 Fund Collection and Number of Funds

The government can create as many public and/or private pools as the system needs. Indeed, many believe that healthcare systems that have multiple funds split between the government and healthcare providers increases the efficiency, productivity, and quality of healthcare services because of the competition between the providers. However, the use of multiple funds has the potential to cause inequality in the system. This is because each fund can only be used by those who contribute to the fund. For example, if a local tax is used to fund healthcare in each locality, those who live in rich regions where the cost of living is higher (and which also tend to have a higher proportion of people on higher incomes) are more likely to experience better healthcare. The opposite is true for those living in poorer regions, such that the system would be unequal. Moreover, healthcare systems with a high number of funds will also experience higher aggregate administration costs such that, some countries have deliberately reduced the number of funds. For example, in Lithuania, the number of regional funds were lowered from 10 to 5, and from 27 to 7 in the Czech Republic (Murauskiene et al., 2013, Alexa et al., 2015, Thomson et al., 2009).

3.4.2 Private Mechanisms

3.4.2.1 Private Health Insurance

PHI can be provided via for-profit or non-profit insurance companies. While the former is the most widely used internationally, some countries offer the latter to facilitate access to healthcare services (i.e. Belgium, Denmark, France, Germany, Netherlands, Spain, Switzerland, and UK). Moreover, both types of companies can provide conventional or *Takaful* insurance (or both); *Takaful* is mostly provided in Islamic countries.

People, as individuals and groups, can obtain PHI directly from the insurance company, or via an independent broker, who, in turn, passes the fund to the insurance company to operate (see Figure 7). The government has the option to mandate the purchase of PHI, and if so mandated, then the regulated choice is best. This is because if everyone is included without exception for health or wealth, healthcare insurance providers will benefit from the high level of contributions. In addition, if all insurers are obliged to accept everyone via open enrolment and community rating, then everyone can secure access to the needed healthcare services, and the government might pay for or subsidise the premiums for those on lower incomes. If the government fails to obtain both of open enrolment and community rating, then coverage might become unaffordable for those who are at high risk (the elderly or sick). For example, despite the fact that most of the population are wealthy, Switzerland's experience with an unregulated system left some (especially those with health issues) without coverage. Also, the experience of the United States with PHI suggests that the reliance on such a mechanism may exacerbate healthcare costs, and leave many people without coverage (Rice et al., 2013, Thomson et al., 2009).

The government also has the option to allow people to decide if they want to purchase PHI. Depending on the country, people may decide to purchase PHI in order to i) fund that proportion of healthcare costs that are not covered by the statutory method (complementary), ii) fund the incremental cost of better quality healthcare over and above that covered by the statutory method (supplementary), or iii) fully fund healthcare costs (substitutive). Based on the experience of EU countries, the least common of the above options is allowing PHI to be fully substitutive to a compulsory mechanism, such as Taxation or SHI. The reason for this is that, if the population are given the choice between the two, the rich will be more likely to opt out of the statutory scheme in favour of VHI (due to suitability of available packages and/or their wealth) thereby placing a significant fiscal burden on the remaining (more vulnerable) group. The result is that, in order to

avoid underfunding the vulnerable group, the government may be required to support the healthcare fund with public funds because the vulnerable group will be unwilling/unable to make higher payments to cover the shortfall if it arises.

The reality is that it is very difficult to control PHI because of the high level of risk to which the insurance companies are exposed. This risk causes the insurance companies to focus on healthy individuals and try to avoid the elderly and people with health issues (risk selection). In the case of individual rating, many will be left without health coverage, either because no company will accept them (due to age or health status matters), or because they cannot afford the insurance premiums and conditions. In such cases, the government must intervene by obliging insurance companies to provide open enrolment and community rating packages.

One of the other issues with the PHI is market segmentation, where the companies deliberately provide too many package choices mainly to confuse the insurance seeker. For instance, the UK government asked the PHI market to provide more explanations and to be clearer to customers, but the initiative failed due to the large number of insurance providers in the market, and also to the competition. Subsequently, it was observed that anyone who wanted to buy a PHI package in UK had 90 different premiums from which to choose, ranging from £28.67 to £363.8 per month (Mossialos and Thomson, 2004). In Ireland, the number of insurance products has increased from 18 in 2003 to 328 in 2017 (Mikkers and Ryan, 2014, IHIA, 2017).

Governments can apply changes to the PHI system until they achieve what is best to serves their purposes, to be affordable by population, and to be suitable for the market (insurer and healthcare provider). Australia has introduced many changes to improve the private healthcare system. However, it is important to note that such changes could complicate the system such that individuals may find it more difficult to obtain health coverage, also insurers and healthcare providers may find themselves under fiscal

pressure. For this reason, when public spending on healthcare decreased in EU countries in the 1980s, most countries avoided transforming their healthcare systems to PHI (even in part). The data showed that the majority of the WE countries maintained the percentage of the reliance on the PHI below 5% between 1985 and 2015 (WHO, 2018, Mossialos and Thomson, 2004).

Achieving a good private healthcare system needs government regulations to control the market, to make obligations, to provide subsidies and incentives, and to transfer from public pools in order to help vulnerable groups. Therefore, before exploring or making changes to any of the options available under PHI, an intensive investigation of the way the targeted mechanism is designed that takes into consideration the characteristics of the system is absolutely vital in order to ensure the sustainability of the system.

3.4.2.2 Medical Savings Accounts

MSA is a relatively recent phenomenon and is still not widely used. If MSA was to be used as the predominant mechanism to fund the healthcare system, it would start with a compulsory savings account to cover basic health needs. Another account would be created to meet the additional cost of healthcare received if the balance of the main savings account runs out. The premiums of the second account are funded through the first account and sometimes by the government. An additional supplementary account is also created to cover the healthcare cost of vulnerable groups and those who have used up all of their credits and eligibility from the first and the second accounts. This supplementary account is usually publicly funded. The government can design the system as it would be most suitable for the population, and can add as many savings accounts as they see fit to achieve the desired objectives (see Figure 7).

Because there is no pooling or redistribution between the healthy wealthy and the unhealthy poor, MSA make the healthcare system more individually based. A benefit of this mechanism is that it reduces overall expenditure on healthcare services by

minimising moral hazard from both sides, i.e. health seekers will be vigilant to ensure that the funds is spent wisely in order to meet after death needs. It also has the benefit of reducing third party issues (such as risk selection and market segmentation) and the associated administrative costs. If MSA is used to fund healthcare services delivered through publicly owned healthcare facilities (such as is the case in SA), introducing this mechanism in SA might work to reduce the extra cost of healthcare services arising from future unnecessary demand, and to provide Saudi citizens with a source of healthcare funding. One of the issues with the MSA is that it needs another mechanism to support it (such as Taxation or SHI). This is especially true if the second and the third accounts are publicly funded. Direct Taxation might be a suitable choice if this were the case.

3.4.2.3 OOP

OOP is prevalent in those countries where there is no functioning universal healthcare system or in failing economies. It is also commonly used when people are not prepared to fund the general healthcare system through additional tax increases or via contributions to social insurance plans. Some countries have introduced OOP specifically to fund new technology or new way of treatment that is required and ready but needs extra funding. OOP is also used to rationalise the use of healthcare resources by increasing user awareness of the cost of healthcare services.

The use of OOP as the predominant mechanism to fund the healthcare system in failing economies is likely to mean that those who need healthcare are unable to receive it. This is because healthcare services are costly in general, and for specific treatments can be extremely expensive, such that they are unaffordable for many individuals. In these situations, the use of informal payments is likely to increase and make the system even more unequal as healthcare providers target the wealthy and avoid those on low incomes, or provide them with a lower quality of service. The experience of Group C countries in the 1990s provides evidence of this being the case. Specifically, Georgia and Moldova

showed high percentages of the population with no access to healthcare and others using significant portions of their incomes (or even borrowing) to fund healthcare.

Sometimes OOP is introduced to part-fund healthcare over and above that provided by a functioning statutory system, and also to control healthcare costs via increasing user awareness. OOP can be charged as a percentage or flat fee in the form of a co-payment, co-insurance, deductible, reference pricing, or two part tariffs. In many cases, PHI may reimburse all or part of the OOP. However, if this is the case, then it is likely to neutralise one of the main reasons OOP was introduced in the first instance, i.e. increasing user awareness. If the major reason for the use of OOP was to reduce moral hazard then, as an alternative, the government could put controls on the healthcare systems in place. For instance, the moral hazard from healthcare seekers could be minimised by regulating their access to healthcare services. One way of doing this would be to request authorisation for treatment (evidence based healthcare), as well as obliging them to use the gatekeeper window in the first instance in order to limit access to expensive and potentially unnecessary services.

Most of WE, CEE, and FSU countries set the OOP percentages based on the necessity of the service. Usually, therapeutic drugs and preventive services are free or are subjected to a lower charge than services used to improve quality of life (such as cosmetic and dental services), where both are charged at a high rate in most of the European countries (Robinson, 2002). This shows how important it is to establish in advance what the system's priorities are, because otherwise unnecessary services may crowd out treatments of primary concern from the public fund.

The fact that the fifteen WE countries only financed a small percentage of their healthcare systems with OOP indicates that they were fully aware of the down side of such a mechanism — as the experiences of Azerbaijan, Georgia, Kyrgyzstan, and Moldova have

demonstrated, overreliance on OOP leads to limited and unaffordable access to healthcare services.

3.4.3 Suitable Options to Fund the Saudi Public Healthcare System

The main priority for SA in designing a new healthcare funding mechanism is a fund that is sustainable and sufficient for the public healthcare system, with moral hazard being of less concern. This is because as demonstrated by the data in Chapter 2, despite healthcare being free to the Saudi populations, total demand for healthcare services that are provided by the Saudi MOH in the period from 2006 to 2015 showed slow growth (MOH, 2015, MOH, 2006). For this reason, OOP is not required to fix a problem that does not exist in the system. In addition, even in those WE, FSU, and CEE countries where it is used, none used OOP as a statutory mechanism, and the experience of some was significantly negative.

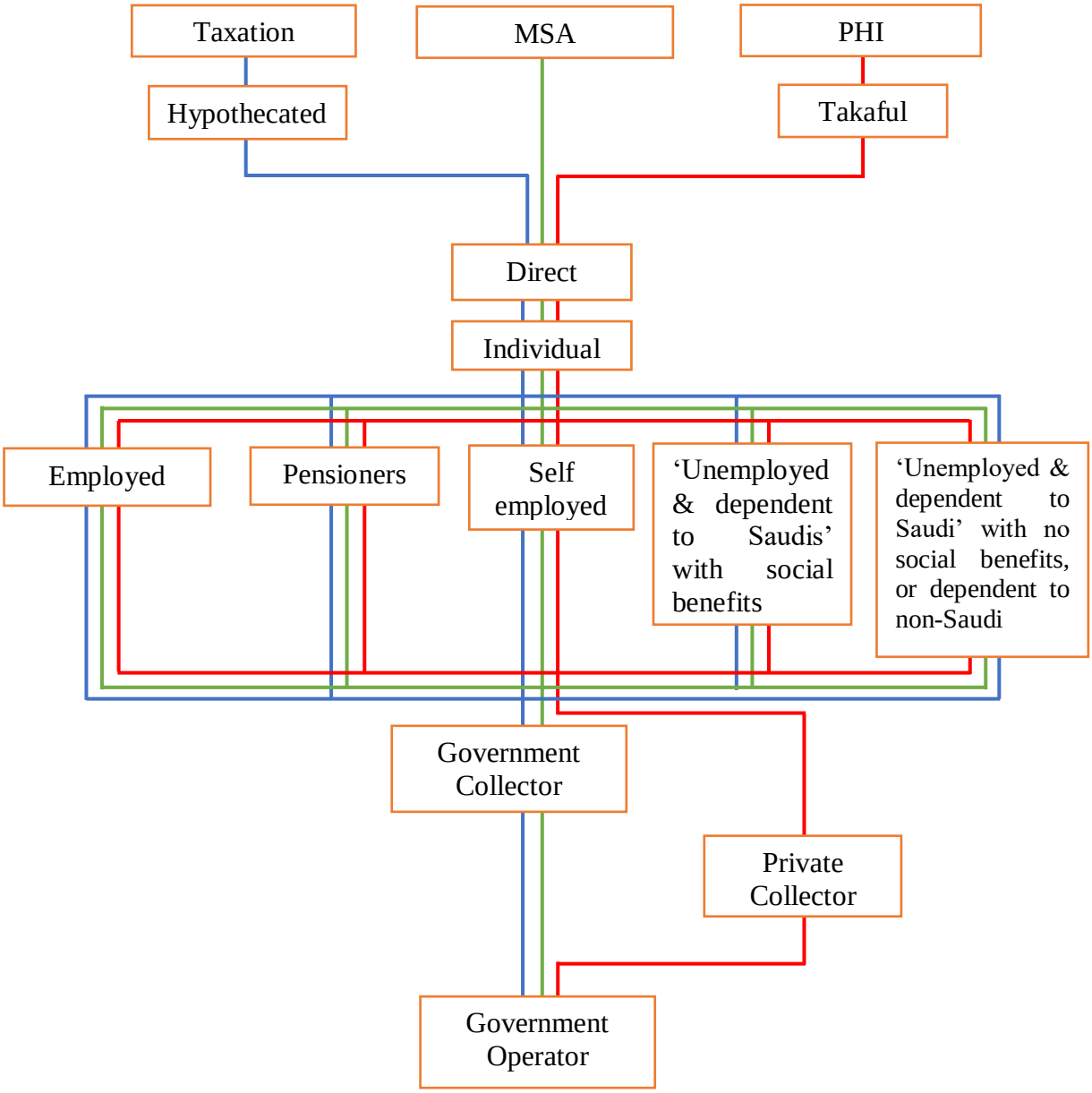
This study also excludes SHI as a viable option to fund the Saudi public healthcare sector because it mainly targets employers and employees, such that it misses the chance to levy contributions from a significant percentage of the population, such as retirees and those receiving benefits from different sources from the government (Social Welfare Fund, Citizen Account Fund – estimated to reach $16 billion by 2020 – Human Resources Development Fund, disability benefit, and studying reward) (Almowaten, 2017). Moreover, the introduction of SHI as the statutory mechanism would require significant changes to both the healthcare system and the insurance industry in SA. This is because a PHI system is already in place to cover private sector employees, such that it would not be ideal to transform this infrastructure to implement SHI. Moreover, because the proposed mechanism in this study will be voluntary to those who are already entitled to health in the private sector, SHI will not be either feasible when there is only one employer involved (public sector) (Chapter 4 will discuss the funding plan, where the contribution to some categories will be voluntary).

Funding the public healthcare system via Donations and Loans is similarly excluded because the reliance of the healthcare system in SA on these mechanisms is negligible (less than 0.23% of total healthcare expenditure) (WHO, 2017). Also, these mechanisms are not used as a basic (predominant) option elsewhere, where their prevalent is viewed as unreliable, because the sustainability of the donor cannot be guaranteed, and in the case of loans, they must be repaid.

The reality is that there are only three suitable mechanisms to fund the Saudi public healthcare system — Taxation, MSA, and PHI. This is because the primary objective of this study is, from a situation where no statutory financing mechanism currently exists, to implement a basic predominant mechanism that raises a sufficient fund to finance the public system, these methods are viable.

Taxation has been very successful in funding public healthcare in many of the EU countries, and the proposed Taxation option for SA in this study is direct Taxation (see the blue line in Figure 8). In addition, this study proposes that payment of these direct taxes is compulsory to receive the MOH healthcare services and that these direct taxes will be hypothecated. It is also proposed that these direct taxes would be levied solely from individuals (i.e. households and firms would be excluded), because, i) household levies can miss the opportunity to collect additional funds from different individuals within each family, and ii) firms in SA are already obliged to provide PHI to cover the healthcare costs of both their employees and their dependents, such that collecting additional taxes from firms to fund the public healthcare system would be unfair. It is also proposed that, as is the case with all of the healthcare systems investigated in this study, these direct taxes will be levied as a percentage of an individual's income. All of the contributions will be levied by the government and will be used to cover the costs of the healthcare services that are provided in the MOH healthcare facilities (see the blue line in Figure 8).

Figure 8 Options for Funding the Saudi Public Healthcare System



MSA has been very successful in funding healthcare services in Singapore, and the proposed number of accounts in SA in this study is one. If an individual's MSA runs out, then it is proposed that the MOH intervene to ensure the coverage of any further costs (rather than additional MSA, as is the case in Singapore). In this mechanism, the contribution will be collected by the MOH from every individual, and will be deposited in an account belonging to that individual in the MOH. Each individual's balance will be used to cover his/her healthcare costs in the MOH healthcare facilities (see the green line in Figure 8).

PHI has been implemented predominantly in US and Switzerland. Based on the experience in these countries, a community rated PHI system is proposed. In SA, the government will oblige private insurance companies to offer the Saudi population community rated packages, with no exclusion (i.e. not group or individual based). The healthcare insurance packages offered will be *Takaful* health insurance, which is compliant with Sharia rules. This is because article one in the Law on Supervision of Cooperative Insurance Companies that is managed by the Saudi Arabian Monetary Authority (SAMA), states that all of the insurance companies in SA must provide insurance policies compliant with Sharia (SAMA, 2004). In addition, no attention will be given to whether the company that provides the insurance is for profit or not-for-profit company, as long as the healthcare insurance packages offered are *Takaful*. The fund contributions will be collected by the private insurance companies, who in turn will pay the subscribers' healthcare costs in the MOH healthcare facilities (see the red line in Figure 8).

3.5 Conclusion

This study explores the available healthcare funding mechanisms in place in other economies in order to find the most suitable mechanisms that are best aligned with Saudi principles. To carry out this task, the healthcare systems of more than thirty countries were investigated. After a successful review for these healthcare systems, it was found that the majority of the CEE and FSU countries who implemented new funding mechanisms to meet the shortage in the public spending on healthcare succeeded in safeguarding the sustainability of funding their healthcare systems; public spending on healthcare severely declined in those countries which did not.

In total, six healthcare funding mechanisms were found to be in operation these countries, namely: Taxation, SHI, PHI, MSA, OOP, and Donations and Loans. Moreover, it was found that Taxation, MSA, and regulated PHI are appropriate and aligned with the needs

of the Saudi system, with the last one (PHI) being *Takaful*. SHI, OOP, and donation and loans are excluded because, given the way in which the healthcare system is currently funded in SA, these are deemed unsuitable to fund the future needs of the Saudi public healthcare system.

However, because healthcare services in SA are currently provided free of charge, it is not known whether the Saudi population will be willing to pay for their healthcare services into the future. Given the backdrop of the current financial situation in SA as a result of failing oil prices, and the financial hardship experienced by the population in the past few years as a result, this question is particularly relevant. Furthermore, this study proposes three mechanisms to fund the public healthcare system based on the experiences of other countries and on what might be suitable in the Saudi context. The preference of the Saudi population for these three mechanisms is an additional interesting research question. Chapter 4 of this study investigates the willingness of the Saudi population to pay for their healthcare services, and explores which of the three proposed mechanisms are the most preferred.

Chapter 4: The Willingness to Pay for the MOH Healthcare Services and the Preference to a Set of Funding Mechanisms

The experience of many CEE and FSU countries following economic turmoil caused by civil war and the fall in public revenue from the major sources showed that those which established a proper mechanism to best match the government's fiscal needs to fund and the population's financial situation, have succeeded in implementing a sustainable healthcare system. The current economic trends and features of the public healthcare system in SA is similar to those of CEE and FSU countries before and during the 1990s. Specifically, the economic fallout from decreasing and volatile oil prices, exacerbated by the cost of SA's involvement in the war in Yemen, has slowed the economy and placed significant pressure on the public budget. For this reason, as detailed in Saudi Vision 2030 and as discussed in Chapter 1, the Saudi government is exploring options to diversify government expenditure away from a purely oil revenue based system. The focus of this thesis is how to fund the public healthcare system — this is especially pressing because most of the population are young (67% between 18 and 65 years), such that the only thing guaranteed by maintaining the status quo is that public healthcare expenditure will continue to increase as the population ages. Chapter 3 explored the healthcare funding mechanisms in more than thirty countries worldwide to find which system or combinations of systems might be most appropriate for the Saudi system, and proposed Taxation, MSA, and PHI *Takaful* as viable options. This Chapter investigates whether the Saudi population are willing to pay for their healthcare and which of these three funding options are the most preferred.

4.1 Study Objective

This part of the study aims to develop a financial strategy, which the Saudi MOH can use to minimise its reliance on the public budget in order to reduce the fiscal burden on government finances and to ensure the sustainability of the public healthcare system. The methods proposed in Chapter 3 as being most suitable (Taxation, MSA and PHI *Takaful*) all require that some of the cost of healthcare is shifted to end users, such that both a WTP and a preference investigation are required.

Specifically, two questions must be answered:

1. *Is the population of Saudi Arabia willing to pay for the healthcare services that are provided by the Saudi MOH?*

This question leads to another specific objective, which is identifying the factors that are associated with the Saudi population's WTP.

2. *What funding mechanism does the population of Saudi Arabia prefer among the suitable options identified to fund the Saudi MOH?*

This question leads to another specific objective, which is identifying the factors that are associated with the Saudi population's preferences in relation to the healthcare funding mechanisms.

4.2 Study Methodology

Before answering these questions it is necessary to, ex ante, explain some background parameters for the financial strategy developed in this study to fund the Saudi MOH. In the first part of this section, the study will discuss how the population of SA will participate in the funding mechanism. The second part will show how the most appropriate insurance option will be decided. The third part will identify individuals and how each type of individual will be part of the insurance plan. Fourth, the study dimensions will be defined. The fifth part will outline the data collection.

4.2.1 Financial Strategy (Insurance Plan)

The current healthcare system in SA provides every Saudi and short or long term non-Saudi resident with free access to healthcare services, either via the MOH, the Private Sector, or the SDU. However, because those in slice 4, 5, and 6 part A (major) and B (dependent) are entitled to double, and in some cases to triple access to healthcare services, the MOH incurs extra costs by providing healthcare services to people who are already guaranteed free access in the private sector or SDU facilities (see Figure 3). In addition, such multi eligibilities may overload and create overuse in MOH facilities and cause a shortage of medical personnel leading to MOH services being criticised for the lack of available beds, long waiting times, lack of drugs, and the poor attitude of staff (Al-Hanawi et al., 2018a, Al-Hanawi et al., 2018b). The result is that the access of those who are only eligible to receive healthcare services in MOH facilities (slice 1) is reduced.

For this reason, the financial strategy that is developed in this study to fund the Saudi MOH proposes that:

1. anyone with mutli eligibility is required to utilise non MOH healthcare facilities. For example, MONG soldiers and their dependents who currently have access to MOH and MONG healthcare facilities will be restricted to MONG facilities only. In other words, everyone in slice 4, 5, and 6 part A or B can access healthcare services only in their domain.
2. if those in slice 4, 5, and 6 part A or B want to maintain their access to healthcare services in MOH healthcare facilities, they must subscribe to the healthcare insurance mechanism.
3. if those in slice 2 and 3 part A or B want to obtain access to MOH healthcare facilities, then they too must subscribe to the healthcare insurance mechanism.

The first point will decrease the MOH healthcare costs because those in slices 4, 5, and 6 part A and B will no longer have access to the MOH healthcare facilities. In so doing it will increase the access to MOH healthcare facilities of those in slice 1 such that this cohort will be more willing to participate in the insurance mechanism. Points two and three will provide the MOH with extra funds.

The beneficiaries of the scheme proposed in this study are any Saudi or non-Saudi residents who (depending on their eligibility to healthcare) have a desire either to increase, maintain, or obtain access to MOH healthcare services. They should, however, be willing to contribute a proportion of their total income to the insurance mechanism.

4.2.2 The Participation Method

Contingent Valuation Method (CVM) is widely used to understand the perception of a population about participating in funding public healthcare services (Venkatachalam, 2004). CVM is a survey based hypothetical approach for eliciting people's value for healthcare services (Diener et al., 1998). In general, this technique asks people to reveal the value that they are willing to place on healthcare services (Bayoumi, 2004). There are two techniques involved in this method, willingness to accept (WTA) and WTP. The decision about which method to choose depends on the initial assumption about property rights at the point of survey. If rights pre-exist, then WTA is the appropriate method, where if there is no right, then WTP is used (Atkinson and Mourato, 2006). WTA asks people about the minimum amount that they are willing to accept to forego the benefit that they have a right to, or to bear a cost, such as adopting safe disposal, or accepting something negative, such as noise or air pollution (Huang et al., 2017, He et al., 2016, Lindhjem and Mitani, 2012, da Motta and Ortiz, 2018). WTP asks people about the maximum amount that they are willing to pay to gain a new right. This method is extensively used in the healthcare, education, transportation, and environmental economics areas (Jones-Lee et al., 1985, Nick et al., 1998, Brouwer et al., 2009, Al-

Hanawi et al., 2018b, Carson, 2012). In healthcare studies, it is not required that the person being asked is at risk or in need of the service in question (Olsen and Donaldson, 1998, Bayoumi, 2004). WTP can be used for different purposes such as financing healthcare systems, budget allocation decisions, and measuring the value of certain aspects of (or attitudes to) healthcare services. Also it can be used to inform policymakers of the ways that could be implemented to provide sources of funding to finance healthcare systems or healthcare programmes (Bateman et al., 2002, Diener et al., 1998).

Because group *obtain* in this study does not have the right to access MOH facilities, it is obvious that the WTP is the appropriate method for this cohort. Similarly, because the financial strategy developed in this study to fund the Saudi MOH presupposes that the rights of group *maintain* to access MOH healthcare facilities no longer exist, then the WTP is also the appropriate method for this cohort. Group *increase* in this study is being asked how much they are willing to pay to improve their access to MOH healthcare facilities that would not exist without the implementation of the financial strategy proposed in this study, such that WTP is also the appropriate method for this cohort.

There are many elicitation formats that can be used to conduct a WTP study including closed ended, open-ended method, bidding game, payment scale, discrete choice, and discrete choice with follow up. Prior literature shows that when researchers try to estimate the maximum value that people could place on a given service, some ask respondents in two separate stages. The first stage determines whether or not the respondent is willing to pay for the proposed idea, and the second asks questions to find out the maximum amount that the respondent would be willing to pay (i.e. *Yes, No with follow up question*). For instance, Osiolo (2017) conducted a study to estimate the maximum WTP to improve energy in Kenya. The study employed CVM and used a closed ended question (i.e. Yes or No) to identify whether or not people would be willing to pay to improve the current quality and services of energy products. He then backed up this question with an open

ended question to identify the maximum amount that the people would be willing to pay (Osiolo, 2017). Similarly, Canavari et al (2005) carried out a study to evaluate people's WTP for a regulation that bans pesticides and chemicals from fruit. The respondents were first asked if they were willing to pay any amount of money for such a regulation, and this was followed by an open ended question regarding the maximum amount that they were willing to pay (Canavari et al., 2005).

Other researchers ask only one question and focus only on whether or not the respondent is willing to pay (*i.e. a Yes,No answer with no mention of monetary amounts*). Oriakhi and Onemolease (2012) examined Nigerian rural households' willingness to participate in Community Based Health Insurance (CBHI) scheme. The study used the participation stage without proceeding to ask about any monetary values (Oriakhi and Onemolease, 2012).

Other researchers proceed directly to questions to determine the amount that the respondent would be willing to pay (Halstead et al., 1992). This method benefits from what is called the double hurdle approach that can be used to deal with the zero responses econometrically at two stages. The first stage is called the *Participation Equation*, where the approach deals with the protest zero. This stage assumes that placing zero is a decision of unwillingness to pay (*NO*), otherwise it is taken as a WTP (*YES*). The second stage is called the *Consumption Equation*, where the approach deals with the genuine zero (Halstead et al., 1992).

Several researchers have used this method to conduct environmental and healthcare WTP studies. Bernath and Roschewitz (2008) conducted the bidding game format to examine the potential of the theory of planned behavior to explain WTP for the recreational benefits of city forests in Zurich. The study used a two part model to identify the participation decision initially (Bernath and Roschewitz, 2008). Wang and Mullahy (2006) developed open-ended questions backed up by a bidding game format to estimate

willingness to reduce air pollution. In the data analyses, this study used the two part model to identify if a person had any positive WTP (Wang and Mullahy, 2006). Moreover, Carlsson and Johansson-Stenman (2000) investigated people's WTP to improve air quality using the open ended format. This study also used the two part model (Carlsson and Johansson-Stenman, 2000). Focusing on healthcare studies, Frew et al (2001) conducted a study to investigate the WTP for the supply of two types of screening for colorectal cancer in the UK. The study used the payment scale and open ended formats and employed a two part model to identify the consumption equation (Frew et al., 2001). Donaldson et al (1998) used open ended data questions on WTP study for maternity care, which contained a large zero response. This study was specifically interested in finding out if the two part model would perform better than OLS or a standard Tobit model (Donaldson et al., 1998). Ryan et al. (2004) developed a study on how people value three healthcare interventions, to compare the WTP results that are generated from the payment scale and the dichotomous choice formats; this study also controlled the protest and true zeros (Ryan et al., 2004).

The broad literature shows that, depending on the context and the nature of the questions being asked, all of the CVM options (the binary question (*Yes, No*) with and without a follow up question, as well as the two-part model) are widely used by researchers to identify whether or not respondents are willing to pay. In the healthcare literature, because each format has its own strengths and weakness, there is an open debate about the most suitable format to measure people's true WTP (Smith, 2000, Onwujekwe, 2001) such that this study must be careful to ensure that the most appropriate method is used to investigate the research questions in the Saudi context.

4.2.2.1 What Elicitation Method is Suitable in the Saudi Context?

The initial fast reforms introduced to achieve Saudi Vision 2030 (and as discussed in Section 1.1.3) have been contentious for the Saudi population. They have no prior experience of sharing the cost of the public services which have heretofore been entirely covered by the government. In essence, the previous system (where everything was free) has been fractured and replaced with one that initially involved "*cutting subsidies on fuel, electricity, water and sanitation; taxing idle lands, increasing the Ministry of Interior services fees, stopping automatic promotions to government employees, and freezing their allowances for seven months"* (Saudi Vision 2030). In the context of these radical reforms and swingeing cuts, it is likely that the Saudi population (who now value their disposable wealth more highly than before) might not be receptive to a study proposing a payment for MOH healthcare services such that it is necessary that this fundamental question must be investigated in the first instance. That is, this study must focus first on investigating whether or not the Saudi population are willing to pay for MOH healthcare services (*Participation)*, before (if necessary) proceeding to ask about the maximum value that they would pay for those services (*Consumption)*. The appropriate method to perform this analysis is the closed ended format (*Yes, No*) without a follow up question.

4.2.3 The Contribution Method

There are many different techniques used to measure consumer preferences when faced with a set of choices. What these preferences are can be elicited via the contingent valuation or the multi-attribute valuation method. The former concentrates more on the economic value (estimating the maximum and the minimum) and analyses one attribute at a time, whereas the latter pays more attention to consumer preference for goods and services, and explores more than one attribute simultaneously (Merino-Castello, 2003). The multi-attribute valuation technique is a survey-based method for modelling preferences for goods, where goods are described in terms of their attributes. Respondents

are presented with various alternative descriptions of goods, differentiated by their attributes and levels, and are asked to rank, rate, or to choose from various alternatives. There are two different types of the multi-attribute valuation; the choice based approach, and the preference based approach. The former asks the consumers to choose one from several alternatives, while the latter requires individuals to rate (contingent rating) or rank (contingent ranking) the alternatives (Merino-Castello, 2003).

The contingent ranking method is widely used in research studies in the healthcare field (Beynon, 2008, Slothuus et al., 2002). For instance, in a 2008 survey, the Health Insurance Authority (HIA) in Ireland asked respondents with PHI to rank elements of their cover (such as the hospital treatment as a private patient under a consultant, receiving out-patient treatment as a private patient, and the quality of hospital accommodation) in order of importance (HIA, 2008). Foster and Mourato (2000) used contingent ranking to study the value of human health and the biodiversity impact associated with the application of pesticides. The study asked consumers to rank a conventional loaf of bread against a number of alternative loaves, differentiated in terms of price and ecolabels, which identified the environmental impacts generated by the underlying production process (Foster and Mourato, 2000). In a study to investigate consumer preference for eco-labelled seafood, Johnston and Roheim (2006) used an experimental design that allowed for four different fresh seafood products to be ranked in order of preference. The products varied according to three attributes: species, presence or absence of an eco-label, and price (Johnston and Roheim, 2006). Avery et al (2004) asked 3,240 highly meritorious students to rank a hundred undergraduate programmes in an effort to improve the quality of collage applications and to increase the number of admissions (Avery et al., 2004). Kim et al (2005) carried out a study to investigate the possible direction of device convergence based on consumer preferences for the main attributes of the mobile terminal of the future. The survey used in this study asked individuals to rank a set of alternatives

based on some attributes such as type of input equipment, quality of internet, diversity compatibility of application programmes, price, and display size (Kim et al., 2005).

4.2.3.1 What Ranking Method is Suitable in the Saudi Context?

Chapter 3 of this study concluded that three financing mechanisms were suitable for SA (i.e. Taxation, MSA, and PHI), each of which has its own attributes and specifications. The second objective of this part of the study is to understand population preference for these funding mechanisms. Given that the SA population has limited experience of these funding mechanisms, a survey that uses a ranking format will be easy to understand and complete, and will likely lead to more reliable results. Therefore, the contingent ranking method is selected as the most suitable method for this part of the study to quickly elucidate individual preferences.

4.2.4 Explanation of Groups, Eligibilities, and Income

This part of the study will explain each relevant group of individuals, will define the eligibility of these groups to healthcare services in each of the three provisions (MOH, SDU and the private sector), and explain how each group will contribute to the financing mechanism. In so doing, this part of the study will rely on the classifications detailed in Figure 3 in Chapter 1, and on the funding options that were outlined in Figure 8 in Chapter 3.

The individuals in this study are defined under five types: i) all employed people from public and private sectors, ii) the self-employed people, defined as Saudi citizens who work for themselves[23], either under contract (such as Uber taxi drivers), or without contract (such as farmers and capital investors), iii) all Saudi pensioners from both the public and private sectors[24], iv) the unemployed and dependent Saudis[25] who receive

[23] Under current legislation non-Saudis cannot be self-employed in SA.
[24] Non-Saudis leave the country at the end of the employment contract.
[25] Here meaning the unemployed with social benefits, and the dependent Saudis with social benefits.

social benefits (where benefit is defined as any income received from the government from any agency, i.e. social welfare, citizen account, disability benefit, studying reward, and human resources development fund benefits), and v) the unemployed and dependent Saudis and non-Saudis[26] who do not receive social benefits (no income).

The financial strategy proposed in this thesis mandates payment from total income (which also includes any benefits received from the government). For example, Saudi pensioners from the public and private sectors with pension income below a threshold defined by the Saudi Social Welfare (SW), receive an additional monthly income from SW. Similarly, Saudi public and private employees who receive an income lower than a threshold defined by the Citizen's Account Fund (CAF), also receive an additional monthly income from CAF. Another example is employed people who also receive disability benefits. It is noted that non-Saudis are ineligible to receive payments from the government such that all of their total income is necessarily from employment.

4.2.4.1 Public and Private Employees

These types of individuals are defined as all publicly employed people who receive healthcare services in slice 1, and all the major eligible people (parts A) from the slices 2 to 6 who are guaranteed free access to healthcare by their employer (see Figure 3). In this section the study will discuss how each publicly and privately employed individual will contribute to the funding mechanism.

1. **Slice 1**; in Taxation and MSA, all of the Saudis and non-Saudis who are publicly employed and entitled to healthcare services only inside the MOH healthcare facilities will be mandated to contribute a proportion of their total income to the MOH to increase their access to the healthcare services that are provided in MOH healthcare facilities.

[26] Here meaning the unemployed with no social benefits, and the dependent Saudis with no social benefits either. Also, the dependents on non-Saudis because this category do not receive social benefits from the Saudi government.

Their access will increase because the eligibilities of those with double or triple access will be removed (unless they pay to maintain access)[27]. In the case of PHI, individuals in this category will be mandated to purchase health insurance directly from insurance companies, which would then cover their healthcare costs in MOH healthcare facilities and guarantee better access.

2. **Slices 2 and 3, Part A**; in Taxation and MSA, all the non-Saudis who are eligible to healthcare services only in the private sector or in the other governmental healthcare facilities will be mandated to contribute a percentage of their monthly income if they want to obtain access to healthcare services that are provided by MOH healthcare facilities. In the case of PHI, they will be mandated to buy an insurance policy from insurance companies, which will give them access to MOH facilities.

3. **Slices 4, 5, and 6 Part A**; these slices contain all Saudis who are entitled to healthcare services in the MOH because they are Saudis, and also have eligibility in one or both of the private sector or other governmental healthcare facilities (i.e. they have double or triple eligibility). These categories will not be eligible to free access to MOH healthcare facilities because they already have free access to the private sector or other governmental healthcare facilities guaranteed by their employer. If anyone in these categories wants to maintain his/her access to MOH healthcare services, then he/she must contribute a proportion of his/her total income to the MOH if either the Taxation or MSA was the funding mechanism. If PHI was the mechanism, then the individuals in these slices have to buy health insurance from the open market, which would then be used to cover their healthcare costs in MOH facilities.

[27] See Section 1.2.3 to understand how a Saudi could guarantee free access to two or three healthcare provisions.

4.2.4.2 Self-Employed People

This type is defined as self-employed Saudis; it is currently illegal for non-Saudis to be self-employed in SA. Therefore, this type of individual can belong to the self-employed Saudis of slice 1 and also to slice 4, 5, and slice 6 part B. This section explains how each self-employed person will contribute to the insurance mechanism.

1. **Slices 1**; in Taxation and MSA, all self-employed Saudis who are not entitled to any healthcare services other than those provided by the MOH will contribute a proportion of their total income to the MOH to increase their access to the healthcare services that are provided by the MOH. As previously explained, their access to MOH healthcare facilities will increase by minimising the access of slices 4, 5, and 6 to the MOH healthcare facilities. If the insurance mechanism is PHI, then every individual in this category must purchase health insurance from insurance companies.

2. **Slices 4, 5, and 6 Part B**; this slice contains all self-employed Saudis who are dependent on someone in slices 4, 5, or 6 part A. Individuals in each category can only avail of the healthcare services that are provided by either the private sector or the other governmental healthcare facilities. If any person in these slices wants to maintain his/her access to the MOH healthcare facilities, then he/she has to pay a proportion of his/her total income to the MOH; this is in the case of Taxation or MSA. However, in the case of PHI, then the individuals of these three slices must buy an insurance policy.

4.2.4.3 Public and Private Pensioners

This group contains Saudis only; all non-Saudis must leave the country at the end of their contract. Therefore, this category is limited to slice 1 (the Saudi part), and slice 4 part A; however, access to free healthcare in private healthcare facilities of the majority of this category stops at the end of the employees' service[28]. The exception, which is a small

[28] The private companies are not obliged to provide PHI to those who are not working for them anymore.

percentage, is some employees in senior positions in some companies, where their employers continue to fund just the employee and his/her spouse. Slice 5 part A contains security and defence pensioners, whose healthcare coverage is lifelong for themselves and their dependents. However, this slice excludes University staff, Specialists, and ARAMCO since their eligibility stops at the end of the employee's contract[29]. Slice 6 part A, contains the pensioners either from the private or the SDU from those who have lifelong healthcare coverage and have triple access to healthcare.

1. **Slices 1**; in Taxation and MSA, all the Saudis pensioners who are entitled to healthcare services only in MOH healthcare facilities would be mandated to contribute a proportion of their total income to the MOH to increase their access to the healthcare services that are provided in MOH healthcare facilities. As before, their access would be improved by minimising the eligibilities of all or some of the Saudi citizens who are entitled to double or triple access to the healthcare provisions. If PHI was to be implemented as the predominant mechanism, then the individuals in this group would have to subscribe to a PHI policy.

2. **Slice 4, 5, and 6 Part A**; the healthcare access of those in these three slices will be limited to their domain if they have lifelong healthcare coverage (otherwise they will be in slice 1 of this group), and will no longer have access to MOH healthcare facilities. However, if pensioners in these slices want to maintain their access to MOH healthcare facilities, then they have to pay a proportion of their income to the MOH in the case of either Taxation or MSA. If PHI was the funding option, then those in this category must buy health insurance policy.

[29] There is an exception for employees in high positions, where the employee and his/her spouse's healthcare coverage is lifelong.

4.2.4.4 Unemployed and Dependent Saudis with Social Benefits

This category contains all those unemployed and dependent Saudis who receive benefits from the government. This type of individual is a portion of slice 1 and also slices 4, 5 and 6 part B.

1. **Slice 1**; this category receives free healthcare services inside MOH healthcare facilities only. If Taxation or MSA was the predominant mechanism, this category would be mandated to pay a part of their total income to obtain better access to their current eligibility of healthcare, and this would be facilitated by minimising the eligibility of those who are entitled to double or triple access. If the PHI was the predominant mechanism, then each individual must purchase PHI. If a person's total income is low, then the MOH will pay part of the premiums. However, if their total income increases, then the individual will incur the full cost of the premiums.

2. **Slice 4, 5 and 6, Part B**; these types of individuals are guaranteed healthcare services in the private sector, the other governmental healthcare facilities, or both, but they can no longer access the healthcare services that are provided by the MOH. However, if Taxation or MSA was the funding option and the individuals in these categories want to maintain their access to MOH healthcare facilities, then they have to contribute a proportion of their total income to the MOH. If PHI was the funding option, each individual must purchase health insurance and pay the full premiums, unless the total income is low, in which case the MOH will share a part of the premium until the individual's total income increases.

4.2.4.5 Unemployed and Dependents with no Social Benefits

The last type of individuals are summarised in the unemployed and dependents with no social benefits of slice 1 and also, part B of slices 2, 3, 4, 5, and 6. Slice 1 (Saudis) and part B of slice 4, 5, and 6, contain the Saudis with no income. Saudis can have no income

if they are unemployed (because they refused to take a job that was offered by the government with no valid reason), if they are dependent on someone who receives an income above a threshold defined by the Saudi social funds, or if they own valuable assets. Slice 1 (non-Saudis), 2 and 3 part B are the non-Saudis with no income; these are the dependents of non-Saudis employed in the public or private sector. If any of these dependents are in receipt of income themselves (i.e. necessarily from employment) he/she would be included with non-Saudi employees in slice 1, or the major eligible of slice 2 and 3 (see figure 3).

1. **Slice 1**; a proportion of this slice includes those unemployed Saudis, dependent Saudis, and dependent non-Saudis who receive no social benefits and are only eligible to free access in MOH healthcare facilities. Their access to the MOH healthcare facilities will be improved by limiting the healthcare access of those who are in slices 4, 5 and 6 to their own domain. In the case of Taxation or MSA, the unemployed and dependents without income in this slice will be mandated to pay a percentage of the total income of the person on whom they are dependent or to make a contribution from any of their own future total income in order to increase their access to the healthcare services that are provided by the MOH. In the case of PHI, the MOH will pay a part of the premiums and the rest will be incurred by the person on whom they are dependent; should anyone in this slice earn any income in the future then they must pay some or all of their own premiums depending on the level of their total income.

2. **Slice 2 and 3, Part B**; each dependent in slice 2 and 3 part B is entitled to a single access inside the domain where the major eligible person works. In Taxation and MSA, the dependents in these categories will be asked if they want to obtain additional access in MOH healthcare facilities by paying a proportion of the income of the person on whom they are dependent or from their own future income if they gain employment in the future. If the funding option was PHI, the MOH would pay a part of the premiums and the

remainder would be incurred by the person on whom they are dependent. Should they gain employment in the future then those in these categories must pay some or all of their premiums depending on their level of total income.

3. **Slice 4, 5 and 6, Part B**; the dependents in this category are currently eligible to access healthcare in their own domain and, because they are Saudi citizens, additional access in MOH healthcare facilities. However, under the financial strategy proposed in this study, they will no longer be eligible for the latter. Therefore, in the case of Taxation or MSA, this category can choose to maintain their access to MOH healthcare services by paying a proportion of the total income of the person on whom they are dependent or from any income they themselves may earn in the future. If PHI is the option chosen, then the MOH will pay a part of the premiums and the remainder will be incurred by the person on whom they are dependent. Should anyone in this slice earn income in the future then they must pay some or all of their own premiums depending on the level of their total income.

4.2.4.6 Unusual Situations

In the event that a Saudi citizen in slice 4, 5 or 6 part A who is only eligible to healthcare access inside his/her domain loses his/her job, then this person and his/her dependents can retrieve their eligibility in the MOH healthcare facilities, and the contribution to the funding mechanism will begin once he/she starts earning income (from any source).

If a Saudi family was ineligible to receive monthly social welfare income because the total income received by the head of household was above a threshold defined by SW, then the contribution will be paid from the SW annual compensation if the family members and father's income is qualified to receive the annual compensation.

4.2.5 Study Dimensions

To serve the purpose of this study, a survey was conducted inviting all types of individuals who were discussed in the previous section to share their thoughts about the broad decision to pay for healthcare services provided by MOH healthcare facilities, and also to rank the three health funding options in order of preference. In this section, the study will discuss the study sample size, where the study took place, and for how long sampling was undertaken. Some demographic classifications for the population of SA will also be provided in this section.

4.2.5.1 The Sample

The WTP of 600 people from the population of SA was investigated, in addition to their ranking of the three health funding mechanisms (Taxation, MSA, and PHI). People were invited randomly to participate in this study, irrespective of what category of health cover they had. The sample included people aged over 18, of both genders. This is because children are less likely to understand the historical context and the current global and domestic economic situations.

The study survey took place in Riyadh City, the capital of SA. This city was chosen because approximately eight million people live there (a quarter of the total population of SA). This proportion is the highest after Makkah (GAFS, 2015). Such a population density provided a broad access to people with different characteristics, and diverse levels of income. Moreover, Riyadh is considered as the second biggest city in the Kingdom of SA after the eastern provinces in terms of land mass, with a total area of approximately 380 thousand square kilometres (SGS, 2012). This geographic reach encompasses twenty provinces, some of which are located close to the city centre (such as Ad Diriyah at 50 km from Riyadh City centre), and others which are far away (such as Wadi Ad-Dawasir at a distance of 500 km).

Notwithstanding the possibilities that this geographic range presented, only five provinces in addition to Riyadh City were selected as sample locations, because this mix was sufficient to give a reliable representation of all of the other cities in SA in terms of population characteristics as well as the density of public and private healthcare facilities. Riyadh was particularly important as a location for targeted sample for this study. This was due to the high proportion of adults in the city, which accounted for 5.2 million in 2015 (68% of total population in Riyadh) (see Table 13). Finally, people were randomly selected from public places such as the public squares, parks, and streets in these six provinces during the period December 2017-January 2018. This time was chosen because Saudi Arabia does not celebrate the Christmas or the New Year.

Table 13 Riyadh Residents Classifications Based on Age, Gender, and Nationality in Millions

Groups		Saudis and non-Saudis			Saudis			Non-Saudis		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
0-19	All	10.1	5.2	4.9	7.7	3.9	3.7	2.4	1.3	1.1
	Riyadh	2.5	1.3	1.2	1.8	0.93	0.87	0.69	0.37	0.32
	%	24.6	24.7	24.4	23.4	23.4	23.3	28.3	28.4	28.1
20-64	All	19.9	11.8	8.0	12.2	6.1	6.1	7.6	5.6	1.9
	Riyadh	5.0	3.1	1.9	2.7	1.4	1.3	2.2	1.6	0.57
	%	25.4	26.4	23.9	22.6	23.2	22.1	29.8	29.8	29.6
65 & <	All	0.92	0.52	0.39	0.78	0.42	0.35	0.14	0.10	0.04
	Riyadh	0.17	0.10	0.07	0.15	0.09	0.06	0.02	0.01	0.006
	%	19.3	20.7	17.6	19.8	21.2	18.0	16.7	18.2	13.5
Total	All	31.0	17.6	13.3	20.7	10.5	10.2	10.2	7.0	3.1
	Riyadh	7.7	4.5	3.1	4.7	2.4	2.2	2.9	2.0	0.91
	%	24.9	25.7	23.9	22.8	23.2	22.4	29.2	29.4	28.8

Sources: General Authority for Statistics (GAFS, 2015).

4.2.5.2 General Indicators for the Saudi population

This section provides general information about the number of employed people, pensioners, unemployed, and those holding PHI in SA in 2015.

1. **Public Employees**; there were 1.2 million people employed in the public sector in SA at the end 2015, of which 60% are male. This represents 4% of the total population of SA, and 6% of those who were aged over 18. The majority of public jobs are occupied by

Saudis — non-Saudis account for less than 6% (see Table 14). Most public employees in a specifically identified sector work in education (which accounts for 40.6% of, or 506,500, jobs), followed by healthcare (12.5% of, or 156,700, jobs) (MCS, 2015).

Table 14 Publicly Employed People in Saudi Arabia in Thousands[30]

Category	Number of Employees (in Thousands)								
	Total			Saudis			Non-Saudis		
Type of Job	Total	Male	Female	Total	Male	Female	Total	Male	Female
Diff Jobs[1]	424.1	308.6	115.4	423.3	307.9	115.3	0.79	0.7	0.08
Education	506.5	231	275.5	503.2	228.1	275.1	3.3	2.9	0.42
Healthcare	156.7	82.9	73.8	107.8	63.7	44	48.9	19.2	29.7
Academic[2]	53.2	30.5	22.6	37.3	19.3	18	15.8	11.1	4.6
Judges	1.4	1.4	0.0	1.4	1.4	0.0	0.0	0.0	0.0
Prosecution	2.1	2.1	0.0	2.1	2.1	0.0	0.0	0.0	0.0
Specific[3]	39.6	39.1	0.56	39.6	39	0.56	0.09	0.09	0.0
Diplomacy	1.0	0.96	0.08	1.0	0.96	0.08	0.0	0.0	0.0
TVTC Staff[4]	8.4	10.4	0.71	7.5	9.6	0.66	0.88	0.84	0.04
Personnel	54.5	39.5	14.9	54.4	39.5	14.9	0.08	0.08	0.0
Total	1,248	747	503.7	1,178	711.9	468.7	70	35	34.9

Source: The Saudi Ministry of Civil Services (MCS, 2015).

Abbreviations: [1]Different jobs in different ministries, for example publicly employed administrators in MOH and Universities [2]Academic universities staff. [3]Establishments with specific salaries. [4]Academic Staff of the Technical Vocational Training Corporation

2. **Public Pensioners**; by 2015, the total number of public pensioners in SA was 532,100 (PPA, 2015), 89% of whom are male (472,700). This category represents 1.7% of the total population of SA, and approximately 2.5% of those aged over 18. From this proportion, the study had access to the 136,600 public pensioners living in Riyadh City. These account for a quarter of the total public pensioners in SA, 1.7% of Riyadh's total population, and about 2.6% of whom are aged 18 years and above.

3. **Private Employees**; there were more than 10.1 million people employed in the private sector in SA in 2015. This number accounts for 32% of the total population of SA, and 48% of those aged over 18. The majority of those in private employment are non-Saudis, who represent 83% of total private sector employees (see Table 15) (GOSI, 2015).

[30] There was a lack of access to the number of employees in the security and defence sectors, where the data is highly classified.

Table 15 Private Sector Employees based on Nationality and Level of Monthly Income in Thousands[31]

Category	Total Saudis and non-Saudis			Saudis			Non-Saudis		
	Total	**> $800**	**< $800**	**Total**	**> $800**	**< $800[32]**	**Total**	**> $800**	**< $800**
Total	10,141	2,659	7,481	1,724	1,666	58	8,416	993	7,423
Riyadh	4,201	1,100	3,101	723	697	26	3,478	403	3,075
%	41.4	41.4	41.4	42.0	42.0	44.4	41.3	40.6	41.4

Source: General Organisation for Social Insurance, General Authority for Statistics (GOSI, 2015, GAFS, 2015).

4. **Private Pensioners**; there were 139,200 private sector pensioners in SA in 2015 (GOSI, 2015). Only Saudis are eligible to receive social insurance services in SA and these are paid from their financial contributions and those of their employer collected by GOSI during the employee's period of service. This number of pensioners' accounts for about 0.4% of total population of SA, and 0.7% of those aged over 18. Moreover, this category gave access to 25,800 private pensioners in Riyadh, who account for 18.5% of total private pensioners in SA, 0.3% of total population in Riyadh City, and 0.5% of adults (GOSI, 2015).

5. **People with Private Health Insurance in Saudi Arabia**; the data shows that 10.7 million people in SA had PHI in 2015 (CCHI, 2015), accounting for 34% of the total population. This figure seems low given that the average private sector employee (which as discussed previously total 10.1 million) would be expected to have dependents. The reasons for this are because i) 73% of the private sector employees are non-Saudis receiving an income less than $800 (see Table 15) such that, to avoid the additional housing, education, and other living costs this would entail, they do not bring their dependents with them to SA, and ii) as discussed in Chapter 1, some privately employed people do not need PHI because they work in the private healthcare sector, and their employer must provide cover to them and their dependents directly.

[31] $800 is the minimum monthly income for Saudis.
[32] Some Saudis are below the minimum monthly income for Saudis because their companies set the minimum monthly income in the contract and then deduct the social insurance.

6. **Unemployed Saudis**; based on the GAFS unemployment survey, there were 682,300 unemployed people in SA in 2015 (GAFS, 2015), accounting for 2.2% of the total population. The unemployed in SA benefit from the SW, CAF, and/or the human resources development fund (HRDF). If the head of household died while an employee or a pensioner, then their unemployed dependents will benefit from GOSI or the public pension agency. It is possible to benefit from more than one agency if specific criteria are met. A low proportion of unemployed people in SA do not receive any income; indeed this would only happen in cases where either the individual did not meet the criteria to receive an income from the public agencies or because, for no valid reason, they refused to take a job offered to them by the HRDF.

This study does not classify any further as doing so could lead to duplication. For example, if the study classified based on how many dependants benefit from SW and GOSI (where the head of household is dead), duplication will arise because the beneficiary from the former could also be entitled to benefit from the latter.

In the sample classification exercise conducted above there was a lack of access to several pieces of information. Specifically, there was a lack of access to how many people work in university sector from the different public jobs in Table 14. The study also found difficulties in ascertaining how many publicly employed people there were in Riyadh City. The study provided evidence that showed how many people are covered by PHI in SA, but no information was available to help determine whether this was secured from private or public employers, or paid for out pocket by individuals. The study could not also obtain any data for the security and defence sectors such that it was very hard to determine how many dependents each employee has, whether or not these dependents are over 18, and who is in Riyadh. These limitations will have no effect on the study objectives or results, as the main purpose of this section is just to provide information about the population sample that was included in this study.

4.2.6 Data Collection

The data collection was conducted in the form of written documents designed to be filled in face-to-face to ensure that every participant would understand the documents, and would be able to provide reliable answers. This method was chosen because the other available options (such as the telephone interviews) are likely to be biased should the researcher select relatives or friends from the available sample. Even though it is likely that a researcher would only be able to source a fraction of 600 participants required from relatives or friends from the different provinces in Riyadh, this could still introduce significant sample bias. Furthermore, using the phone book to source participants would be very difficult, because people (especially in the provinces, where people tend to be less educated) are reluctant to participate, release, or even to give a consent for financial matters to a person over the telephone. In addition, the randomisation is not possible using this method because a call to a female in SA from an unknown person is considered (to some extent) to be a crime. Using the online method was also excluded because the data instrument contains many technical questions, such that many would ignore it, discontinue filling it out, or (if they do fill it out) would not fully read the contents such that they would give unreliable answers or answer questions they were not required to. Although the number of questions and the data provided in the instrument in this study was kept to a minimum, the reality is that the Saudi healthcare system is a complex one such that the instrument required a lot of explanation that could not be accomplished online. For instance, even though the instrument in this study was provided in both Arabic and in English, in many cases the person had difficulty reading (due to illiteracy or failing eyesight) such that the researcher was required to read and explain the questions and take the answers; this would not have been possible to do online. In other cases where a participant spoke neither fluent Arabic nor English, the researcher obtained assistance from someone who spoke that participant's language.

4.2.6.1 Information Sheet

The information sheet contains ten sections, some to introduce the study, the objectives, the researcher, and others to explain the participant's task and their rights. The first section explains that the researcher is a PhD student and is conducting this study to examine various methods to fund healthcare services that are provided by the Saudi MOH, and also to investigate the Saudi population's WTP to improve the level of healthcare services that are provided to them. In the second section the participant is provided with information about his/her task, what questions he/she will be asked, such as background questions, the healthcare coverage that he/she has, and details about some financial methods to fund the MOH and what is his/her most and least preferred methods. The third section tells the participant that there is no specific reason for selecting him/her, because people are selected randomly. The fourth section explains that the participant does not have to take part if he/she does not want to. However, if a willingness to participate was shown, then a consent form would be given which, when signed indicated that the participant had read and understood the information sheet. This part also fully explains the participant's rights to withdraw before or during the survey, to ask for their answers to be removed up to a month from the handling and details that, if they do so, the removal and destruction of their completed instrument are guaranteed. The fifth section tells the participant that the answers will be kept confidential and that no clues to the identity will appear in the researcher's work. The sixth section provides information about how the answers will be treated, and to whom the answers will be available. This part also guarantees that any extract from the participant's answers will be entirely anonymous and that the answers will be securely stored. The seventh section explains to the participant that the overall results will be shown in the researcher's thesis, which will be available to the study supervisors, external examiners, and future students and might be published in an academic journal. The eighth section explains the downside to taking part

in the study, such as time spent and the potential stress to the participant arising from the questions asked. It also provides some guidance to participants in case of any distress. The ninth section informs the participant that the data collection is approved by the Social Research Ethics Committee of University College Cork. The tenth section provides contact details for the researcher in the form of telephone number and e-mail address in case the participant had any inquiries or wanted to withdraw his/her answers. The contact details of the research major supervisor were also provided (see Sample 1 in the Appendix). There was one copy of the information sheet given to each participant. This was to ensure that they could access any kind of assistance that might be required through the contact details provided. In order to ensure best responses that would allow the researcher to detect any issues with the pilot instrument, the information sheet did not state that it was just a test.

4.2.6.2 Consent Form

This document contains a declaration from the participant that he/she understood the purpose and nature of the study, and his/her participation in the study is voluntary. In addition, it documents that the participant has understood his/her rights, and by signing the form, the researcher has the right to quote and extract data from the participant's answers. This form has a place for the participant to write his/her name. However, because some people in SA are reluctant to identity themselves (especially females according to Saudi traditions), this might cause some people to abandon at this stage. To avoid this, three options for filling in the name space were provided; the first allows the participant to write their first name and their family name. The second allows the participant to write the first letter of each of their first name, their father's name, and their family name (i.e. SALEM HADI MUSTANYIR can be written as S-H-M). The third allows the participant to use the serial number at the top of each data collection pack instead of their name. In addition, the consent form included a box for participants to tick (✓) to record their

consent to quote and extract from their answers. There was also a space for the participant to sign the consent form. However, because many people do not feel comfortable providing their own signature as they use it for official matters such as banking services, two options were given: the participant can either provide his/her signature, or state "*I participated of my own volition*". Finally, the consent form contains a space to write the date of the participation, where the participant cannot request removal of their answers after a month from this date.

Two copies of the consent form were given to each participant to complete; one was taken by the researcher, and the other one was retained by the participant. This is so that the participant can (within a month from the date of the participation) use the information on the consent form to request to withdraw their answers and that the researcher can identify and destroy their answers. Also, this form is a document which protects the researcher's rights (see Sample 2 in the Appendix). In order to properly replicate experience of the official sample, participants in the pilot were also given two copies of the consent form to complete.

4.2.6.3 Data Instrument

A cross sectional questionnaire was used as the instrument for data collection. The structure that was used benefited from the guidelines developed by O'Brien and Gafni (1996). Their guidelines comprise of five questions, which are; what questions the study want to answer, what measurement is appropriated (WTP or WTA), who forms the study sample, what characteristics of healthcare services need to be defined, and what is the most appropriated elicitation method format to be used (O'Brien and Gafni, 1996).

This questionnaire consists of six sections[33] as follows:

[33] The questionnaire consists of six sections. However, to reduce the number of headings and to avoid any misunderstanding from the participants side, the actual questionnaire has named three Sections (A, B, and C)

1. **Introduction**; this section was included to provide economic facts and data to the participant about the current state of the SA economy. Specifically, the introduction gave a brief summary of the history of oil prices and Saudi budgets, and introduced the main objective of the survey. The primary concern of this section was brevity while at the same time providing sufficient background information to elicit genuine and informed responses (see Sample 3 in the Appendix).

2. **Participant Background**; this section contained ten questions about the demographic and socio-economic characteristics of the participants. The first two questions concerned the gender and age of the participants. Age categories started with 18 to 25 as the first category, incremented by ten years up to age 65, then followed by an open category for the elderly aged over 65. Any candidates who looked under 18 were eliminated ex ante by asking the participant if he/she is over 18 before their contribution started. The third question asked about nationality because this study required the involvement of all classifications of the population in SA such that all nationalities were invited to participate with no exceptions; the choices under nationality were Saudi and non-Saudi. The fourth question asked about marital status **(**single, married, divorced, or widowed). The fifth question was to identify the participant's level of education. There were eight levels of education provided, which fall into three categories; the first level of education (primary, secondary, and high school), the undergraduate education (diploma and bachelor degrees), and the postgraduate education (higher diploma, master's, and PhD degrees). The sixth question asked about job status and this was used to categorise participants into two groups; the first includes those in the first category detailed in paragraph two of Section 4.2.4, the second includes all those in the remaining four categories in paragraph two of Section 4.2.4. The seventh question asked about income level and participants were guided to report the total income, including all the government benefits (if any). Since this question is likely to be sensitive and people might be unwilling to report their

exact total income, the participant was provided with six ranges of incomes. The first range was from zero to 3,000 Saudi Riyal (so as to include all the students and unemployed people who receive no income) and subsequent ranges incremented by three thousand up to 15,000. The final open category includes those who receive a total income over 15,000. The eighth question asked whether or not the participant had PHI; if yes then a follow on question asked the participant to state the level of cover to which he/she is entitled (such as VIP, A, B, or C). However, because insurance companies in SA call levels of cover by different names, a blank was provided for the participant to state their level of cover instead of selecting from a range of levels. The stated level can then be converted to one of the four levels. After the participant states his/her level of cover, a follow on question is included asking who provided the Private Health Insurance i.e. employer, Out of Pocket, or the person is included in the eligibility of the health insurance of one of his family. If the latter is chosen then a further question is included to ascertain where the major eligible person works. Question nine asked whether or not the participant has any chronic diseases and was included to know how participants with a chronic disease(s) would respond to the questions differently to those with no chronic disease. The final question asked participants to rate his/her current level of health from excellent to poor. Similarly, to question nine, this question was included to ascertain whether participants with different levels of self-rated health status responded differently (see Sample 3 in the Appendix).

3. **Eligibility to Healthcare;** this section was designed to identify each participant's eligibilities to healthcare. The primary concern in this section was to make sure that every participant report all the eligibilities that are available to him/her as a major or dependent beneficiary. To serve this purpose, there were three questions in this section. These questions were carefully designed and sequenced to link to the questions in Section four (below). In the first question, each participant was asked if they were eligible to any

healthcare services outside of the domain of the MOH healthcare facilities (such as the private sector, security, defence, university, specialist, or ARAMCO). From the answer to this question, it would be identified whether or not the participant was in the first slice of Figure 3. If no, then guidance was provided to answer only one of the six questions in Section four (below); the guidance was based on whether or not the participant is in receipt of income. For example, Saudis and non-Saudis who receive an income were guided to answer one question and there was a different question for those in receipt of no income. If yes, then the participant would be guided to the second question asking whether or not these eligibilities are provided in the private sector. If yes, then the participant would be in the second or the fourth slice part A or B. The exact slice is identified by answering the questions in Section four (below), where the participant was guided to answer only one question. If no, then the stated eligibility must be in the third provision (i.e. security, defence, university, specialist, or ARAMCO). Because it is possible to have triple eligibility, the third question asks the participant whether or not they have any eligibility to healthcare services provided in security, defence, university, specialist, or ARAMCO facilities. Based on their answer to this question, participants are directed to one specific question in Section four of the data instrument, such that by answering that specific question, it would be identified whether the participant is in slice 3, 5 or 6 part A or B (see Sample 3 in the Appendix).

It is important to note that every participant was required to answer all three questions in this section. In other words, even if a participant answered *no* to the first question (such that it might appear obvious that the answer to questions two and three must also be *no*), they were still required to answer questions two and three. This is because some participants might forget that they have an eligibility that they have never used via one of their family members. Requiring participants to answer questions two and three is likely to ensure that the information collected in this section is robust.

4. **Willingness to Pay**; all of the questions in Section three (above) lead the participant to answer only one question in this section, even if more than one eligibility is available. Saudis and non-Saudis who access healthcare services just in the MOH healthcare facilities and who are in receipt of income were guided to answer question one. This question investigated whether or not the participant is willing to pay a proportion of his/her total income to increase their access to the healthcare services that are provided in MOH healthcare facilities. Participants who are not in receipt of income were guided to answer question four. This question asks if there is a willingness to contribute a proportion of the future total income, or the total income of the person on whom the participant is dependent to increase the access to MOH healthcare services. Saudis who are in receipt of income and have access to healthcare services outside of MOH healthcare facilities answered question two, which investigates their WTP a proportion of their total income to keep their access to MOH healthcare services (as an extra access to healthcare services). Saudis not in receipt of income and have access to healthcare services outside of MOH healthcare facilities answered question five, which asks if there is a willingness to contribute part of their future total income or the total income of the person on whom they are dependent to maintain their access to the healthcare services that are provided in the MOH (as an extra source of healthcare services). Non-Saudis who receive income and can access healthcare services outside of MOH healthcare facilities answered question three, which investigates whether or not they are willing to pay a percentage of their income to obtain access to healthcare services that are provided in MOH healthcare facilities. Non-Saudis who receive no income and can access healthcare services outside of MOH healthcare facilities answered question six, which asks if they are willing to pay a percentage of their future income, or the income of the person on whom they are dependent to obtain access to healthcare services that are provided in MOH healthcare facilities (see Sample 3 in the Appendix).

5. **Options for Funding the Saudi Healthcare System**; this section was designed to discuss the three suggested healthcare funding mechanisms in Figure 8. One of the main concerns in this section was to include answers from all the participants, even if they answered *no* in Section four. To do so, the questions in this section were designed to be theoretical. The participant's task in this section was to rank three funding options based on which would be the most preferred for them, by indicating 1 as the most preferred option, 2 to the second, and 3 to the least preferred option. Taxation and MSA were separated from PHI, because the payment method for these two options would be direct deductions from the total income, whereas PHI requires payment in form of premiums. Therefore, an instruction was provided for the first two options to tell the participant that these options suggest direct deductions from total income if the person is employed, a pensioner, self-employed, or in receipt of benefit from social welfare, citizen account, disability fund, studying reward, or human resources development fund. In addition, this part states that if the person is not in receipt of any income, then the deductions would be taken from the future income or the total income of the person on whom he/she is dependent.

More information was included on Taxation in order to inform the participant that the deducted percentage would be deposited in the MOH account to partially cover the costs of all healthcare services. For MSA, it is explained that the deducted percentage would be deposited in a personal account belonging to the participant, to cover only his/her healthcare costs. Also, the account would be controlled by the MOH, and if the participant's account balance ran out, the MOH would intervene to cover any further costs. In addition, in case of death, the remaining fund would go to the participant's family.

For PHI, this part explains that the participant could purchase the healthcare insurance directly from the insurance companies, who in turn would cover the healthcare costs in

the MOH healthcare facilities. It also states that the health insurance would be compliant with Sharia rules, and could be obtained by anyone, regardless of their age or health status, and that the price would be based on the whole community's level of health. Moreover, if the person was on a low income, the MOH would pay part of the premiums, whereas in case of no income, the MOH would pay part of the premiums and the rest would be incurred by the person on whom he/she is dependent (see Sample 3 in the Appendix).

6. **Support Services**; this part included contact details for two physicians who work in King Saud's Medical City in Riyadh. Each participant was told here that if distress or any negative conditions arose during their participation in the study or within a month from their contribution, assistance could be sought from one of these two physicians. The contact details of the researcher and the major supervisor were also provided, and this was to lend more assistance to the participant in relation to the study, their rights, or any other inquiries. These contact details were provided in the form of a mobile number from SA to answer any inquiry during the period of the sampling, a mobile number from Ireland to answer any inquiries after the sampling. E-mail addresses were also provided. Details for the Saudi Council of Cooperative Health Insurance were provided if any inquiries arose with regard to the healthcare financing options (see Sample 3 in the Appendix)

4.2.7 Conclusion

This study aims to assess the suitability of a basic healthcare financing mechanism to mitigate the fiscal burdens on the MOH to fund healthcare in SA. The solution proposed in this study involves individuals paying to increase, maintain, or obtain access to healthcare services provided in MOH healthcare facilities. Due to the deterioration in the Saudi national budget induced by the decline in oil prices, the financial constraints that followed, and the fact that there is no history of payment for public healthcare in SA, the

first part of the study focused on the participation equation to identify whether or not the population are willing to pay for the MOH healthcare services. The second part employed the contingent ranking method to investigate individual preferences for the three healthcare funding options that were selected in this study as being appropriate in the Saudi setting. In order to do so, this study provided an overview of the publicly and privately employed, pensioners, and the unemployed in SA and also outlined the proportion of people who have PHI. A questionnaire was used as the data instrument to investigate people's willingness to pay, and their preferences in relation to all three funding options. The study chose Riyadh City with five more provinces as a place for the sampling.

4.3 Study Survey

4.3.1 Ethical Approval

In line with UCC rules, ethical approval was required before commencing the data collection. On 27th November 2017, all the required documents were submitted to the Social Research Ethics Committee (SREC), which were received and a log number was given (2017-131). On Monday 18th December, the SREC sent the approval letter (see Sample 4 in the Appendix).

4.3.2 Pilot Study

On the same day that the ethical approval was received, 10 Arabic questionnaires were printed and the pilot study commenced; English versions were also available in case a participant did not speak Arabic. The pilot study took place in Riyadh City centre from 18th December 2017 until 19th December 2017. All the participants were cooperative and all the questionnaires were collected, transformed into English versions and then sent to the supervisors on the morning of Wednesday, 20th December 2017. The participants' answers were investigated on the same day and a few issues were found.

Two Saudi participants did not answer the third question of Section A, and another Saudi did not answer either the second or the third question. In fact, Sections A, B, and C contained many details and any additional instruction could confuse the participants. To deal with this issue, it was decided to ensure that every participant answered all questions in Section A before proceeding. Another issue that arose during the pilot study was with the word for eligibility (*Ahlih* in Arabic); most of the participants asked for the meaning of this word. Therefore, Arabic literature teachers were asked if there is another word that could do the same as this word without affecting the meaning of the sentence. The teachers confirmed that this word was appropriate and was the only one that could work in the context of Section A. Therefore, it was decided to ensure that every participant understood the meaning of this word before commencing Section A. The pilot test showed that most of the people read neither the information sheet nor the consent form. In relation to the consent form, no one signed the second copy, as they said they did not want it.

4.3.3 Data Gathering

It was decided to start collecting data from the provinces furthest from Riyadh first and to finish with Riyadh City. To do so, one or two days were devoted for each province depending on the size of the province, the collected number of samples, the availability of potential participants, and the level of cooperation. The plan was to conduct the sampling in 20 days starting in the 21st December 2017, and finishing by the 9th of January 2018. 600 survey forms were printed in Arabic, and 100 in English were also kept available. Each form consisted of 8 pages. Two pages for the information sheet were printed on two sides, two copies of the consent form printed on one side, and four pages for the questionnaire, were printed on two sides.

4.3.3.1 Ad Dilam

The first journey was to Ad Dilam, which is about 150 KM away from Riyadh City, and about a two hour drive south east of Riyadh (see Table 16). The city is small, with one main street called King Abdulaziz and farms on both sides. There are a few grocery shops, mosques, petrol stations, schools, public and private PHCs, and one main hospital called Prince Salman Ibn Muhammad, which is relatively small.

People were selected from the street, outside the grocery shops, petrol stations, and the healthcare facilities. The people looked nomadic, some were cooperative and filled the questionnaire very quickly with some instructions, and others started asking where I worked, who sent me, where I am originally from, if I was working for the MOH or the MOF. Some people refused to participate because they were busy, others had a very quick look at the information sheet and said they could not help.

At sunset, I was around Prince Salman Ibn Muhammad hospital giving some instructions to a participant. Before he started, we were interrupted by an old man who asked if it was true that we (Saudis) had to buy PHI to cover our healthcare costs? I was totally shocked and pretended that I did not know what was going on. The participant answered the old man by asking: "who said that?" The old man replied that people were saying that the government had come and asked how people wanted to pay for their healthcare. The participant told him that this man (Me) was collecting data for a health insurance study. The old man came to me and started to shout and accuse me of taking their money. He said that everything had become very expensive and I was coming to take their money. I tried to calm him down, but he continued to curse.

I decided to go back to Riyadh because I was told (and as I experienced) that Ad Dilam is a tribal area, and because it was getting late it was likely to become dangerous for me to remain. I called one of my friends while I was on my way to Riyadh and explained

what had happened. He told me that the reason for the frustration I experienced was because the citizen account that has been implemented to cover increasing costs was not a large as people expected, i.e. the majority of people were only paid around $80 but social media indicated that most expected that they would receive between $300 and $500. People blamed Vision 2030 and expressed themselves in many sensitive ways. This news changed my plan. I decided to start sampling in Riyadh City to guarantee a good number before a serious incident occurred and/or time ran out.

Table 16 The Geographical Characteristics of Five Provinces of Riyadh[34]

Province / Character	Direction	Distance from Riyadh in Kilometres	Distance from Riyadh in Minutes	Population in Thousands
Ad Dilam	South East	145 KM	110 M	80
Al Kharj	South East	132 KM	106 M	750
Al Muzahimiyah	South West	102 KM	73 M	40
Al Uyaynah	North West	69 KM	57 M	4
Ad Diriyah	West	50 KM	50 M	73

4.3.3.2 Riyadh City

The sampling was continued on the next day. I believed that cooperation in the city would be better because it was likely that some Saudis in the city may not receive benefit from the CAF (the cause of contention in Ad Dilam), and because of the higher proportion of non-Saudis in the city (none of whom benefit from this fund). As expected, the people of Riyadh City were more cooperative, but many still refused to participate. A variety of people were approached in a variety of public places occupied by both Saudis and non-Saudis. The females I approached were broadly cooperative and, in order to avoid any potential discomfort or misunderstanding, I often tried to invite a group of them to participate at the same time (i.e. three or more rather than by single selection). I tried to ignore any people loudly discussing any public issues, such as the CAF, the Saudi budget,

[34] The distance in minutes were counted manually, this is regulated by how busy the roads were. Therefore, the period could be more or less.

or any other related issues. The data collection started every day at 8:00 am, and went on until 12:00 pm at night. I worked double shifts to minimise the time spent in (and so the cost of living associated with working in) Riyadh City. On 31st December 2017, I decided to go to Ad Diriyah to collect samples.

4.3.3.3 Ad Diriyah

Ad Diriyah is the oldest province of Riyadh. It was a short journey to this province to the west of Riyadh. There were many schools, public and private organisations, parks, and healthcare facilities. People were selected from the public places such as Al Bujairi square, outside Prince Sultan PHC, outside Ad Diriyah municipality, and from the streets. Contrary to my experience in Ad Dilam, many people in Ad Diriyah approached me to ask to participate in the study while I was with other participants. Many gave their full names on the consent form, and others provided their phone number and indicated that they were willing to receive calls at any time in the future.

4.3.3.4 Al Kharj

I then decided to collect more samples from Riyadh City. I took this decision because the government has already announced that they were about to cut subsidies on energy products, such that the price of gasoline octane 91 would increase by 82.6% by 1st January 2018, and 126.6% for octane 95 (Alarabiya, 2018c). Electricity bills, which were previously heavily subsidised by the government, would also increase sharply (Alarabiya, 2017). Moreover, it had already been announced that the value added tax (VAT) would also be introduced on all products on the same date, with the exception of the governmental education and healthcare (Alarabiya, 2018e). I thought that it would be prudent to not go to any province until the resentment on the streets associated with these changes had dissipated. The sampling in Riyadh City progressed slowly for three days and on 4th January 2018, I decided to travel to Al Kharj an hour and half drive to the south east of Riyadh.

Al Kharj is one of the biggest provinces of Riyadh and has a large military presence — the General Organisation for Military Production is located there (the only such organisation in the Arabian Gulf countries) as is Prince Sultan Air Base (one of the largest bases in the world) also the General Administration of the Arms and Ammunition, and many military sectors belong to the Ministry of Defence. This province also contains most of Almarai's farms and factories[35]. The province also has many education facilities (the most important being Prince Sattam University) as well as many healthcare facilities, such as King Khaled hospital and another three military hospitals. The samples were collected outside the military hospital, the armed forces hospital, and also from Al Burj Park. Those employed in the military were less cooperative than other participants; they pretended that they did not understand, or that they could not read or did not know how to answer. Those from the private sector were cooperative and filled the forms in quickly.

4.3.3.5 Al Muzahimiyah

On 6th January 2018, I travelled 73 KM to the south west of Riyadh to Al Muzahimiyah. This province is very small and surrounded by mountains and hills. There are a few schools and supermarkets and one small hospital called Al Muzahimiyah general hospital and a few PHCs. The samples were collected on the streets and outside the municipality building. The people in this region are nomadic but were cooperative. Some were hesitant about the signature on the consent sheet, and were guided to write, "*I participated of my own volition*". Some of them struggled to understand MSA and PHI, and I explained to them how each would work.

4.3.3.6 Al Uyaynah

Al Uyaynah, a one hour drive north west of Riyadh City, was my last destination on 7th January 2018. The province is the smallest of those I selected. It has many farms, and has

[35] Almarai is the leading company in Middle East for dairy products, juices, and bread.

a small number of PHCs and schools. King Abdul-Aziz Military College is located in the north of this province. People were invited to participate from the streets, petrol stations, and grocery shops. People cooperated with the study and there were no remarkable issues observed during the sampling. I then went back to Riyadh City where a few data collections remained to be filled in. I started working on those on the 8th and 9th January. This totalled 20 days for the data collection as planned.

4.3.3.7 Observations

During my data collection, no participant took away the information sheet, but all asked me to summarise it verbally. Also, no one signed the second copy of the consent form, and all refused to retain it. In addition, only a few people read the introduction, with the majority proceeding directly to the questions. I had a conversation with the two physicians nominated on the information sheet and they informed me that no one had called. Overall, I noticed that the elderly, nomadic, soldiers, and people with a low level of education were the most resistant to participating. No English data collection version was used, because all the non-Arabic speakers asked for the questionnaire to be read, translated, and for their answers to be taken down by me. Many non-Saudis stated before participating that they were leaving the country because they had been made redundant from a Saudi company.

On the negative side, I was stopped in King Abdul-Aziz airport in Jeddah because of the quantity of papers that I had in my hand luggage; I was searched, interrogated, and asked for documentation to show that I was a student. I was also asked for the approval for collecting these samples, and the data collections were checked. Although uncomfortable for me, these investigations were understandable due to the contemporaneous and well-advertised mission to fight corruption in SA. I also believe that the changes that occurred (cuts to energy subsidies and the introduction of VAT) during the data collection period influenced the number of people who refused to take part and/or insulted me. That said,

however, I do not believe that the timing of this survey was wrong time. This is because the Saudi government is reforming the system very quickly such that it could be argued that a time period before or after the one chosen for this study might have been even worse.

4.3.4 Conclusion

This section discussed how the researcher obtained the ethical approval, piloted the data collection, and gathered the data. The SREC gave the final approval after three weeks from the first submission, and the data collection was pilot tested on 10 participants in the centre of Riyadh City. The official sampling was conducted in five provinces in addition to Riyadh City. During the sampling, it was found that new governmental rules that were applied at the end of December and at the beginning of the New Year had affected people's cooperation to the study. These new rules slowed the pace of sampling and caused some additional challenges. The old people, nomadic, and those with a low level of education in addition to solders were the least cooperative. As planned, the data collection period was 20 days.

4.4 Study Results

All the questionnaires were collected with a response rate of 100%. The collected data were analysed using STATA 15.1. This section discusses descriptive statistics on the participants' characteristics (Demographic and Socio-Economic). In addition, percentages and frequencies will be examined to generate a response profile for the WTP to improve the current level of access to healthcare. Also, this chapter will create another response profile discussing participants' rankings of the three selected healthcare funding options. Finally, a conclusion will be included in this section.

4.4.1 Demographic Characteristics

4.4.1.1 Gender

The majority of the sample is male, representing 78% of the total sample (see Table 17). This is because the access to males was easier than females, and this is due to traditional and religious matters, where a conversation with a female requires effort and must be carried out with extreme caution. This was explained in Sections 4.2.6 and 4.3.3.2.

4.4.1.2 Age

The study sample shows that more than 91% of the participants were aged between 18 and 45, with the majority (about half of the sample) aged from 26 to 35 (see Table 17). This was in line with expectations because the majority of Riyadh's population is young (65%), and considering the fact that those younger than 18 were excluded. This increases the exposure to the young group to 97%. Moreover, those aged from 26 to 35 were the most willing to take a part in the study in comparison to the other groups.

4.4.1.3 Nationality

Nearly 81% of the participants were Saudis, and the rest were from a variety of different nationalities (see Table 17). I observed that it was far easier to access Saudis than non-Saudis. Also, most of the non-Saudis in SA in general, and in Riyadh in particular, are those with a low income (73% of private sector employees in Riyadh (see Table 15)). This category are less willing to participate for many reasons, the most obvious of which is the language barrier — they do not understand the materials well and are fearful that the materials may be prejudicial to them. In addition, non-Saudis in SA are likely to have a low level of education, which caused some resistance to participate among this cohort.

4.4.1.4 Marital Status

Most of the participants were married and only a small portion were widowed (55% and 0.07%, respectively) (see Table 17). The high percentage of married participants is explained by the average marriage age in SA, where the majority of people in SA are

more likely to marry in their mid-twenties. However, 15% of the study sample is above the average marriage age and still single[36].

4.4.1.5 Chronic Illness and Health Status

The study sample shows that 91% of the sample have no chronic diseases, and the majority have either excellent or very good health status (60% and 32%, respectively) (see Table 17). The reason for overall good health and the low number of participants with chronic diseases, is because the majority of Riyadh's population is young and therefore more healthy and less likely to have chronic disease.

Table 17 Participants' Demographic Characteristics

		Surveyed Participants	%
Gender			
	Male	468	78.0
	Female	132	22.0
	Total	**600**	**100**
Age			
	18 - 25	162	27.0
	26 - 35	285	47.5
	36 - 45	102	17.0
	46 - 55	39	6.5
	56 - 65	11	1.8
	65 <	1	0.2
	Total	**600**	**100**
Nationality			
	Saudi	485	80.8
	Non-Saudi	115	19.2
	Total	**600**	**100**
Marital Status			
	Single	252	42.0
	Married	333	55.5
	Divorced	11	1.8
	Widowed	4	0.7
	Total	**600**	**100**
Chronic Illnesses			
	Yes	54	9.0
	No	546	91.0
	Total	**600**	**100**
Health Status			
	Excellent	360	60.0
	Very Good	193	32.2
	Good	39	6.5
	Fair	7	1.2
	Poor	1	0.2
	Total	**600**	**100**

[36] The percentage of those over 26 is 73% and those who are married, divorced, or widowed is 58%, this means that the difference (15%) are in fact single.

4.4.2 Socio-Economic Characteristics

4.4.2.1 Level of Education

Table 18 shows that 86% of the participants have either high school or undergraduate level of education; the majority of which hold a bachelor degree. For the reason that most of the study sample were Saudis and employed (81% for both), the statistics for the whole country show that in 2016, 81% of Saudis employed in the public and private sectors had a high school certificate, diploma, or a bachelor's degree (37%, 9.5%, and 34%, respectively) such that the sample collected in this study accurately represents the general population (GAFS, 2016).

Table 18 Participants' Socio-Economic Characteristics

		Surveyed Participants		%
Level of Education				
	Primary	11		1.8
	Secondary	14		2.3
	High School	104		17.3
	Diploma	104		17.3
	Bachelor	311		51.8
	Higher Diploma	15		2.5
	Master's	30		5.0
	PhD	11		1.8
	Total	**600**		**100**
Employment				
	Employed	**487**		**81.2**
		Public Sector	174	35.7
		Private Sector	230	47.2
		SDU	83	17.0
		Total	487	100
	Unemployed	**113**		**18.8**
		Self-employed	2	1.8
		Public Pensioner	3	2.7
		Private Pensioner	1	0.9
		Unemployed	45	39.8
		Student	62	54.9
		Total	113	100
	Total	**600**		**100**
Total Monthly Income	SR[37]			
	< 3,000	114		19.0
	3,000 - 5,999	90		15.0
	6,000 - 8,999	136		22.7
	9,000 - 11,999	116		19.3
	12,000 - 14,999	66		11.0
	15,000 <	78		13.0
	Total	**600**		**100**

[37] The exchange rate between the US dollar and the Saudi Riyal (SR) is fixed at $1 = SR3.75.

4.4.2.2 Employment

The majority of the study sample (Saudis and non-Saudis) are employed (81%). About half of those employed are in the private sector, 35% in the public sector, and 17% are employed in security, defence, and universities (see Table 18). The high proportion of the privately employed participants (47%) is explained by the high percentage of the privately employed people in Riyadh, who represent more than 81% of those aged over 18 of Riyadh's population (see Table 13 and 15). Moreover, from those who are not employed, 95% are students and unemployed, and 5% are self-employed, public and private pensioners.

4.4.2.3 Income

66% of the participants receive monthly income above the Saudi average monthly income (SR 6,384) and Riyadh average monthly income (SR 6,380)[38] (GAFS, 2017b), where the largest share receive income between SR 6,000 and 12,000 (42%) (see Table 18).

4.4.2.4 Private Health Insurance

The study data indicates that about half of the participants have PHI. This is because almost half of the study sample work in the private sector, and are guaranteed PHI from their employer. However, as was noted in Part Two, Section 4.2.6.3, the insurance companies in SA provide different levels of healthcare insurance, which are named differently from one company to another, where the most common range of levels are: VIP, A, B, and C. Therefore, to unify and put all the respondents' levels of health insurance in the same range as the common range, the study investigated the PHI packages of 10 PHI companies in SA, which are: Al Tawuniya, Bupa, Medgulf, Al Rajhi, AXA, Enaya, Walaa, Solidarity, Al Sagr, and the Al Ahlia Cooperative Insurance Company[39]. Moreover, the companies which provided some levels of PHI that are not

[38] The average monthly income by the end of the first half of 2016.
[39] All the packages that are provided by these companies are detailed on their websites.

well explained were discussed with an insurance broker in Riyadh who provides PHI for different insurance companies. Table 19 in the Appendix explains the classifications of all the PHI levels of the 10 companies, as well as the unification in the common range.

The data analyses found that all participants from those who have PHI have reported a level of insurance within the PHI levels that are provided in Table 19 in the Appendix. Moreover, the figures indicate that the majority of those who have PHI hold either level A or B. In addition, 87% of those who hold health insurance received it from their employer, 2% bought it out of their own pocket, and 11% were involved in one of their family member's coverage, where most of the major policy holders of the last category work in the private sector (87%) (see Table 19).

Table 19 Participants' Possession of PHI

		Surveyed Participants	%
Health Insurance			
	Yes	293	48.8
	No	307	51.2
	Total	**600**	**100**
Level of Insurance			
	VIP	47	16.0
	A	112	38.2
	B	80	27.3
	C	54	18.4
	Total	**293**	**100**
Insurance Provider			
	Employer	255	87.0
	OOP	6	2.0
	From Family[40]	32	10.9
	Total	**293**	**100**
Family Major Eligible			
	Public	4	12.5
	Private	28	87.5
	Total	**32**	**100**

[40] Included in the eligibility of one of the family members

4.4.3 Eligibility to Healthcare

4.4.3.1 Eligibilities Based on the three Basic Provisions

The data shows that 85% of the study sample are eligible to receive healthcare services in MOH healthcare facilities — this is unsurprising given that 81% of the study sample are Saudis. On the other hand, 15% of the participants are not eligible to receive healthcare in the MOH healthcare facilities, and to some extent, this is close to the percentage of the non-Saudi participants in the study (19%). Moreover, about half of the study sample are eligible for healthcare services in the private sector, and this is explained by the percentage of the PHI holders. In addition, the data shows that 41% can access the other governmental healthcare facilities. However, such a percentage is higher than that of those employed in the SDU, which implies that the majority of those guaranteed this access is through someone on whom they are dependent (see Table 20).

Table 20 Participants' Eligibilities to Healthcare

		Surveyed Participants	%
Eligible to MOH			
	Yes	507	84.5
	No	93	15.5
	Total	**600**	**100**
Eligible to Private Sector			
	Yes	293	48.8
	No	307	51.2
	Total	**600**	**100**
Eligible to SDU			
	Yes	249	41.5
	No	351	58.5
	Total	**600**	**100**

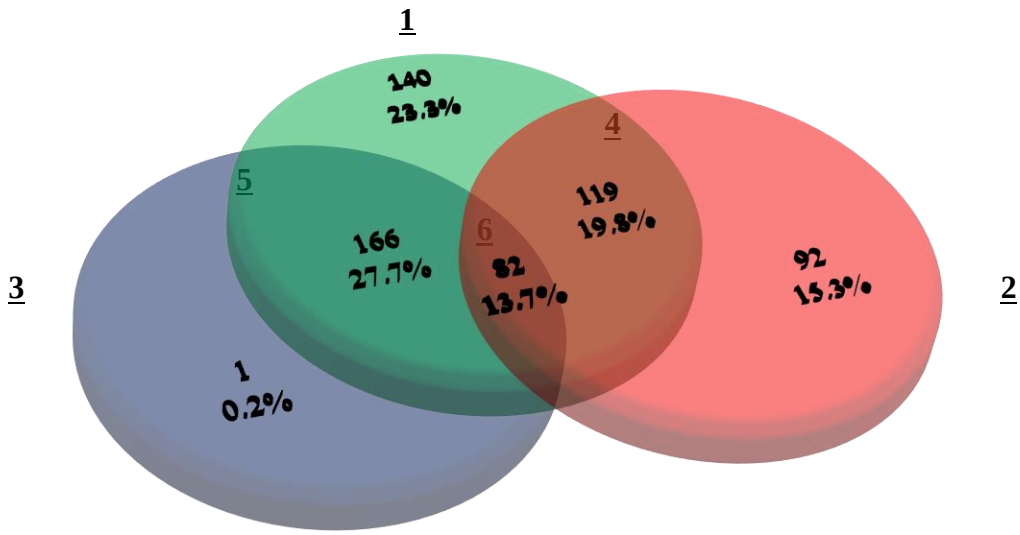
4.4.3.2 Eligibilities Based on the Six Slices[41]

Data analyses found that the study sample contained all the six healthcare eligibilities that are provided by the Saudi healthcare system. Moreover, when the sample was categorised based on the six eligibilities, it was found that those who are eligible to healthcare only in the MOH represent 23.3% of the study sample, those who can seek healthcare solely in private sector represent 15.3%, and there was less than 1% that can only access

[41] The six slices are explained in Figure 3, Section 1.2.3.

healthcare in the other governmental healthcare facilities (see Figure 9). Moreover, the figures indicate that 27% of the study sample are eligible to healthcare in SDU in addition to the MOH, 20% can access healthcare in the private sector in addition to the MOH, and 13% have triple eligibility.

Figure 9 Participants' Eligibilities to Health



[1]Eligible to healthcare only in MOH. [2]Eligible to healthcare only in private sector. [3]Eligible to healthcare only in SDU. [4]Eligible to healthcare in MOH and private sector. [5]Eligable to healthcare in MOH and SDU. [6]Eligible to healthcare in all health provisions.

4.4.3.3 Classification of Each Slice

Further analyses were conducted to know the classification of each slice. It was found that the majority of the first slice are Saudis who are employed in the public sector (69%), where the rest are split between non-Saudis who are employed publicly and unemployed Saudis (see Table 21). Moreover, the analysis points to the fact that 98% of the second and the third slices are occupied by the non-Saudis who work in the private sector and their dependents, where 1% is represented by the only one non-Saudi participant who is employed in SDU sector. Furthermore, the study found that three quarters of the fourth slice are Saudis who are employed privately, where the remaining quarter is Saudis who

are employed publicly and have PHI, and the dependents of the Saudis who are employed privately (17% and 9%, respectively). The fifth slice is predominantly (82%) Saudis who are employed in SDU sector and their dependents. The remaining 18% comprises Saudis who are employed in the public sector and are eligible for the same level of access to healthcare. Finally, the sixth slice predominantly consists of the Saudis who work in the private sector and are eligible to healthcare in all three provisions; this category represents three quarters of the slice, where the remaining quarter is distributed among the Saudis who are employed in SDU and public sectors and unemployed Saudis (12%, 5%, and 7%, respectively) (see Table 21).

Table 21 Classifications of the Eligibilities in Figure 9

		Surveyed Participants	%
MOH S1[42]			
	Saudis employed in public	97	69.2
	Non-Saudis employed in public	22	15.7
	Unemployed Saudis[43]	21	15.0
	Total	**140**	**100**
Private Sector S2			
	Non-Saudis employed in private	80	87.0
	Non-Saudis employed in public with PHI	1	1.0
	Dependent on Non-Saudis employed in private	11	12.0
	Total	**92**	**100**
SDU S3			
	Non-Saudis employed in SDU	1	100
	Total	**1**	**100**
MOH & Private Sector S4			
	Saudis employed in public with PHI	20	16.8
	Saudis employed in private	88	74.0
	Dependent on Saudis eligible in private	11	9.0
	Total	**119**	**100**
MOH & SDU S5			
	Saudis employed in public eligible to SDU	30	18.0
	Saudis employed in SDU	72	43.4
	Dependent on Saudis employed in SDU	64	38.6
	Total	**166**	**100**
MOH, Private, & SDU S6			
	Saudi employed in public eligible to all	4	4.9
	Saudi employed in private eligible to all	62	75.6
	Saudi employed in SDU eligible to all	10	12.2
	Dependent Saudi eligible to all	6	7.3
	Total	**82**	**100**

[42] Slice 1

[43] In this slice, there are no Saudi dependents, because all Saudis are eligible to free access in the MOH healthcare facilities, where in all other slices, the dependents are guaranteed to healthcare because they are dependent on someone who is a major eligible to healthcare in the private sector or the SDU. This is the reason they were called unemployed in the first slice and dependents in the others.

4.4.4 Willingness to Pay

4.4.4.1 Overall Willingness to Pay

The study found that 58.5% of the study participants who have access to healthcare services only in MOH healthcare facilities are willing to pay to increase their access. In addition, it was found that 53% of the Saudi participants who can access healthcare services in the private sector or other governmental healthcare facilities in addition to the MOH, or who can access all the three healthcare provisions, are willing to pay to keep MOH healthcare services available to them.

Table 22 Participants' Overall Willingness to Pay for the MOH Healthcare Services

		Surveyed Participants	%
Total Willingness to Increase			
	Yes	82	58.6
	No	58	41.4
	Total	**140**	**100**
Total Willingness to Maintain			
	Yes	195	53.1
	No	172	46.9
	Total	**367**	**100**
Total Willingness to Obtain			
	Yes	55	59.1
	No	38	40.9
	Total	**93**	**100**
Overall Willingness			
	Yes	332	55.4
	No	268	44.6
	Total	**600**	**100**

Furthermore, 59% of non-Saudis who can access healthcare services only in the private sector or in the other governmental healthcare facilities are willing to pay to obtain access to MOH healthcare services. Thus, it can be seen that the majority of the study participants showed a WTP to improve their access to the healthcare services that are provided in the MOH healthcare facilities (55%) (see Table 22).

4.4.4.2 Willingness to Pay Based on the Entitlement to Income

In this part, the study will show the responses of the participants who receive income in comparison to those who do not. This will be presented based on the three major classifications (*increase*, *maintain*, *obtain*).

1. **Group *increase***; the study found 61% of participants who are eligible to healthcare only inside the MOH healthcare facilities who are in receipt of income (130 participants) are willing to pay a percentage of their total income to increase their access to the healthcare services that are provided in MOH healthcare facilities. However, the majority of those who have the same level of access and are in receipt of no income (7 out of 10 participants) have no WTP a percentage of their future total income or the income of the person on whom they are dependent to increase their access to the healthcare services that are provided in MOH healthcare facilities (see Table 23).

2. **Group *maintain***; for the Saudi participants with income who are eligible to receive healthcare services in the private sector, other governmental healthcare facilities, or both, the study figures indicate that 53% are willing to pay a percentage of their total income to keep MOH healthcare services available to them. However, for those who have the same level of eligibilities but receive no income, it was found that 13 out of 25 participants are unwilling to pay a percentage of their future total income or a percentage from the income of the person on whom they are dependent to maintain their access to MOH healthcare services (see Table 23).

3. **Group *obtain***; study data shows that 61% of non-Saudis who are eligible to healthcare services only in either the private sector or other governmental healthcare facilities of those in receipt of income are willing to pay a percentage of their total income to obtain access to MOH healthcare facilities. However, the majority of those who have the same level of eligibility, but are in receipt of no income are unwilling to pay a percentage of

their future total income or a percentage from the income of the person on whom they are dependent to obtain access to MOH healthcare facilities (see Table 23).

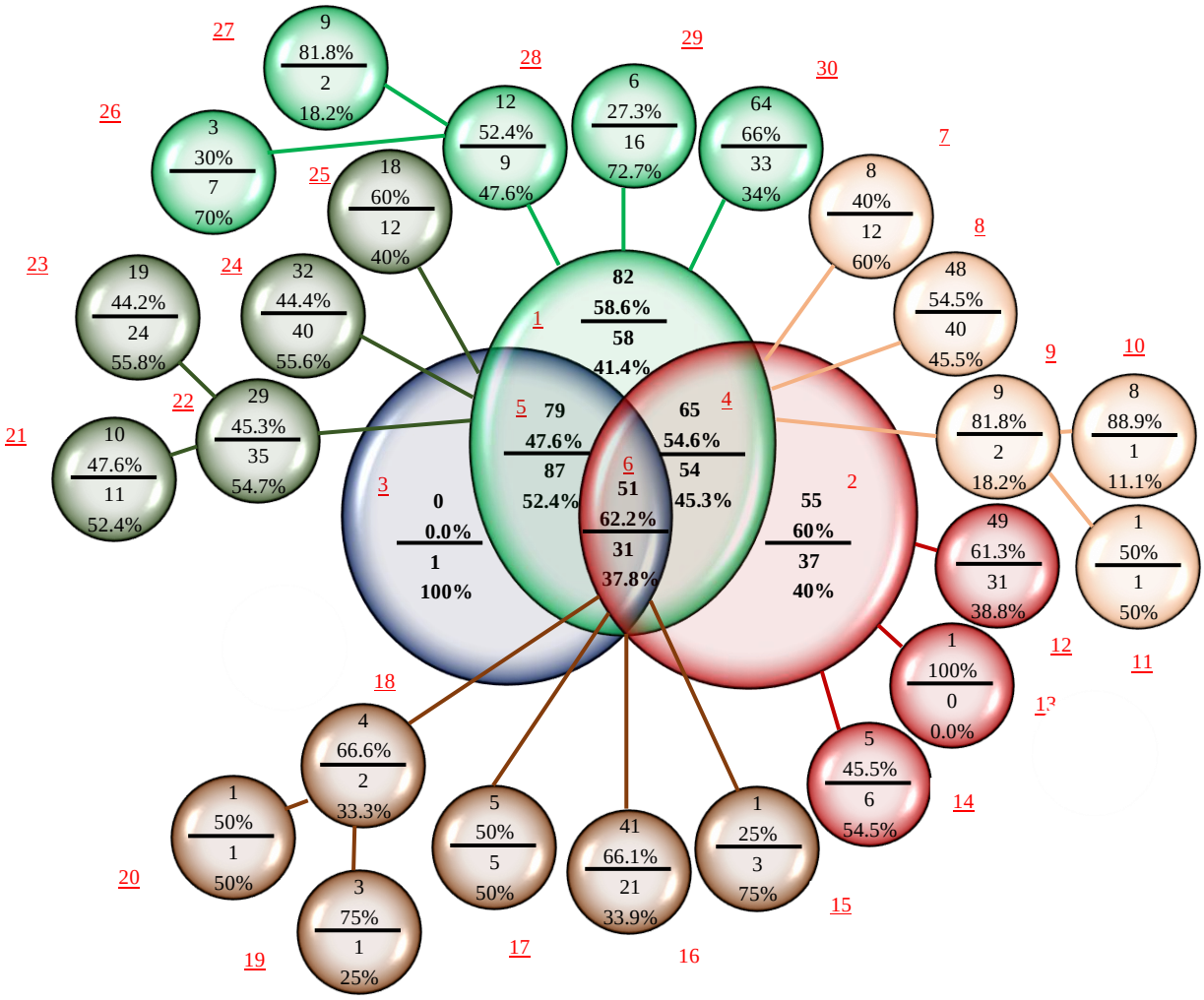
Table 23 Participants' Willingness to Participate Based on the Entitlement to Income

		Surveyed Participants	%
Willingness to Increase (For those with income)			
	Yes	79	60.8
	No	51	39.2
	Total	**130**	**100**
Willingness to Increase (For those with no income)			
	Yes	3	30.0
	No	7	70.0
	Total	**10**	**100**
Willingness to Maintain (For those with income)			
	Yes	183	53.5
	No	159	46.5
	Total	**342**	**100**
Willingness to Maintain (For those with no income)			
	Yes	12	48.0
	No	13	52.0
	Total	**25**	**100**
Willingness to Obtain (For those with income)			
	Yes	50	61.0
	No	32	39.0
	Total	**82**	**100**
Willingness to Obtain (For those with no income)			
	Yes	5	45.5
	No	6	54.5
	Total	**11**	**100**

4.4.4.3 Willingness to Pay Based on the Six Slices and Each Slice's Classification

The study carried out additional analysis on each slice to identify the WTP of each group. In the first slice, it was found that the 66% of Saudis who are employed in public sector are willing to pay to increase their access in the MOH healthcare facilities. However, only 27% of non-Saudis who are employed in the public sector are willing to pay (see Figure 10 in the Text and Table 20 in Appendix). In contrast, the data shows that the majority of non-Saudis who are employed privately are willing to pay to obtain access to healthcare services that are provided by the MOH (61%).

Figure 10 Participants Willingness to Pay Depending on some Socio-Economic Charactersitics (The Numerator is Yes, The Denominator is No)



1 Saudis and Non-Saudis eligible to healthcare just in MOH. **2** Non-Saudis eligible to healthcare just in private sector. **3** Non-Saudis eligible to healthcare just in SDU. **4** Saudis eligible to healthcare in MOH & private sector. **5** Saudis eligible to healthcare in MOH & SDU. **6** Saudis eligible to healthcare in all three provisions. **7** Saudis working in public sector with healthcare insurance. **8** Saudis working in private sector. **9** Dependents on Saudis eligible in private sector. **10** Dependents on Saudis eligible in private sector with income. **11** Dependents on Saudis eligible in private sector without income. **12** Non-Saudis working in private sector. **13** Non-Saudis working in public sector with Private Health Insurance. **14** Non-Saudis dependent on Non-Saudis working in Private Sector. **15** Saudis working in public sector and eligible to all. **16** Saudis working in private sector and eligible to all. **17** Saudis working in SDU and eligible to all. **18** Dependents on Saudis eligible to all. **19** Dependents on Saudis with income eligible to all. **20** Dependents on Saudis with no income eligible to all. **21** Dependents on Saudis working in SDU without income. **22** Dependents on Saudis working in SDU. **23** Dependents on Saudis working in SDU with income. **24** Saudis working in SDU. **25** Saudis working in public and receiving healthcare in SDU. **26** Unemployed without Income receiving healthcare just in MOH. **27** Unemployed with Income receiving healthcare just in MOH. **28** Unemployed receiving healthcare just in MOH. **29** Non-Saudis employed in public and receiving healthcare just in MOH. **30** Saudis, employed in public and receiving healthcare just in MOH.

In the fourth slice, study analysis indicates that the majority (55%) of Saudis who are employed privately are willing to pay to keep the MOH healthcare services available to them. However, 60% of the Saudis who are employed in the public sector with PHI are unwilling to pay. Moreover, study figures state that most of the Saudis who are employed in SDU, as well as their dependents with and without income, are unwilling to pay to maintain their access to MOH healthcare services (56%, 56%, and 52%, respectively).

On the other hand, 60% of the Saudis who are publicly employed showed a willingness to pay. The last slice shows that 66% of the Saudis who are privately employed are willing to pay to maintain their access to MOH healthcare services (see Figure 10 in the Text and Table 20 in Appendix).

4.4.4.4 Willingness to Pay Based on the Demographic Classification

Study data shows that the majority of all categories (males and females, Saudis and non-Saudis, those with chronic diseases and those without, all health status) are willing to pay either to increase, maintain, or to obtain access to MOH healthcare services (see Table 21 in the Appendix). The same is true for all age groups, except for the only participant who is aged over 65. Also, the data shows that the majority of all marital status (single, married, and widowed) are willing to pay, except for the group of divorced, where only five out of eleven showed a WTP.

4.4.4.5 Willingness to Pay Based on the Socio-Economic Classification

The analysis indicates that the majority of all categories of education are willing to pay to increase, maintain, or to obtain access to MOH healthcare facilities except for holders of master's degrees (see Table 22 in the Appendix). Moreover, the majority of participants in all income categories showed a WTP, and the same is true for those who have PHI and those without, where a majority of those with PHI at all levels (VIP, A, B and C) are willing to pay.

4.4.5 Ranking of the three Funding Options

4.4.5.1 Overall Ranking of the three Funding Options

The study data shows that the minority (only 8.5%) of participants see Taxation as the most suitable insurance mechanism for them to pay to increase, maintain, or to obtain healthcare services in MOH healthcare facilities. In addition, it was found that nearly 39.5% of the participants considered MSA as the most appropriate mechanism to pay for healthcare services that are provided in MOH healthcare facilities. Moreover, the data

shows that 52% of the respondents ranked PHI as the most appropriate insurance mechanism. On the other hand, the study found that nearly 15% of participants see MSA the least preferable insurance mechanism, and 19% considered PHI unsuitable. However, the majority see Taxation as the least preferable insurance option (66%) (see Table 24).

Table 24 Participants' ranking to three Healthcare Funding Mechanisms

Insurance Mechanism		Surveyed Participants	%
Taxation			
	Most preferred	51	8.5
	Second preferred	151	25.1
	Least preferred	398	66.3
	Total	**600**	**100**
Medical Saving Accounts			
	Most preferred	237	39.5
	Second preferred	275	45.8
	Least preferred	88	14.7
	Total	**600**	**100**
Private Health Insurance			
	Most preferred	312	52.0
	Second preferred	174	29.0
	Least preferred	114	19.0
	Total	**600**	**100**

The data shows that the PHI had the lowest mean among the three health funding options, followed by MSA and then Taxation (1.6, 1.7, and 2.6, respectively). Moreover, the PHI median and mode is 1, MSA 2, and 3 for Taxation (see Table 25).

Table 25 Mean, Median, and Mode of three Healthcare Funding Mechanisms

Insurance Mechanism		Result
Taxation		
	Mean	2.58
	Median	3
	Mode	3
Medical Saving Accounts		
	Mean	1.75
	Median	2
	Mode	2
Private Health Insurance		
	Mean	1.67
	Median	1
	Mode	1

4.4.5.2 Ranking Based on the six Slices and Each Slice Classification

The data analyses show that 72% of publicly employed Saudis who are eligible to healthcare only in the MOH, and are willing to pay, ranked Taxation as the least preferred option. However, 59% see the PHI as the best payment method, and 50% ranked MSA second. Moreover, those who are unwilling to pay within this category placed the options in the same order, but in different percentages (see Table 23 in the Appendix).

The data also shows that twelve out of the 16 non-Saudis who are employed publicly and are unwilling to pay placed Taxation the last option, where half of this group prefer MSA and the other half prefer PHI (see Table 23 in the Appendix).

Study figures indicate that the majority of non-Saudis who are privately employed and eligible to healthcare only in the private sector (who are willing and unwilling to pay) ranked Taxation as the least preferred (61%, 84%), ranked PHI as the best mechanism (59%, 77%), and MSA as the second funding option (41%, 77%) (see Table 24 in the Appendix).

The figures in Table 26 in the Appendix indicate that nine out of twelve Saudis who are employed publicly from those who are eligible to healthcare in the private sector in addition to the MOH, and are unwilling to pay, see PHI as the most suitable insurance mechanism; eight ranked MSA second, and eight placed Taxation third. Moreover, the data shows that half the Saudis who are employed privately, and willing to pay, prefer PHI (24 out of 48 participants), and almost half do not prefer Taxation. Furthermore, half of those who are unwilling to pay within this category ranked PHI first (21 out of 40 participants), 22 placed MSA second, and 25 participants ranked Taxation third (see Table 26 in the Appendix).

Study data states that the Saudis who are employed publicly and eligible to health in the other governmental healthcare facilities from who are willing and unwilling to pay ranked PHI first, MSA second, and Taxation third (67% and 58% PHI, 55% and 75% MSA, 78% and 75% Taxation)[44] (see Table 27 in the Appendix). Also the figures show the same results for Saudis who are employed in SDU but at different levels of preferences (65% and 47% PHI, 56% and 45% MSA, 75% and 62% Taxation). However, the dependents on Saudis who are employed in SDU from those with income and willing to pay prefer MSA the most, then Taxation, and lastly PHI (74%, 58%, and 47%). The same is true for those who are unwilling to pay in this group, but they ranked PHI second and Taxation third (71%, 75% and 87%) (see Table 27 in the Appendix).

The data in Table 28 in the Appendix indicate that 51% of the Saudis who are employed privately and eligible to healthcare in all provisions from those who are willing to pay ranked MSA first, 39% ranked PHI second, and 63% ranked Taxation third, where 57% of those who are unwilling to pay placed PHI first and the same percentage placed MSA second, and 71% ranked Taxation third.

4.4.5.3 Ranking Based on the Demographic Classification

Study figures indicate that males who are willing and unwilling to pay ordered the three health financing options in the same way as the majority of the other groups (PHI first, MSA second, and Taxation third). Moreover, the figures show that the females placed the options in the same order (see Table 29 in the Appendix).

Table 30 in the Appendix implies that the people who are willing to pay from those aged between 18 and 25 favour MSA and see Taxation as the least suitable option (52%, 57%, respectively). On the other hand, those who are unwilling to pay from this age range ranked the options as the majority of the other categories (53% PHI first, 52% MSA

[44] The first percentage is for those who are willing to pay, the second one for those who are unwilling to pay.

second, and 74% Taxation third). The data states that people aged between 26 and 35 who are willing and unwilling to pay have the same preference as the majority of participants (54% and 59% PHI first, 45% and 56% MSA second, 68% and 69% Taxation third). Also, the figures show that those aged between 36 and 45 and are willing to pay do not prefer Taxation (61%), and 56% ranked PHI first. Furthermore, 46% of those who are unwilling to pay ranked MSA first, and the same percentage selected PHI first as well, where the majority placed Taxation as the last option (68%). For those who are aged between 46 and 55 and willing to pay, the data shows that the majority prefer PHI the most and Taxation the least (56% and 52%, respectively). On the other hand, those who are unwilling to pay ranked MSA first and Taxation last (50% and 71%, respectively).

The data analysis found that the Saudis who are willing and unwilling to pay reported the same preference as the majority of other participants but at different levels (48% and 50% PHI first, 40% and 48% MSA second, 64% and 67% Taxation third). The same is true for the non-Saudis from those who are willing and unwilling (59% and 70% PHI first, 41% and 68% MSA second, 61% and 83% Taxation third) (see Table 31 in the Appendix).

The figures in Table 32 in the Appendix show that the majority of those who are single and willing to pay prefer MSA the most and Taxation as the third option (46% and 61%, respectively). On the other hand, the majority of those who are unwilling to pay in this group placed the options in the same order as the majority of participants (50% PHI first, 49% MSA second, and 74% Taxation third). Moreover, study analysis observed that most married participants who were willing and unwilling to pay placed the funding options in the same order as the majority of the other groups, but in different percentages (55% and 59% PHI first, 43% and 56% MSA second, 66% and 66% Taxation third).

Study data shows that the majority of people with chronic diseases from those who are willing and unwilling to pay selected the options as the majority of the other groups (54% and 47% PHI, 39% and 47% MSA, 70% and 67% Taxation) (see Table 33 in the

Appendix). The same is true for those without chronic diseases from those who are willing and unwilling to pay, where the majority ranked the options in the same order (50% and 55% PHI first, 41% and 52% MSA second, 62% and 70% Taxation third).

The figures in Table 34 in the Appendix show that half of those in excellent health and willing to pay gave the priority to PHI, 40% ranked MSA second, and 68% ranked Taxation third. Moreover, those who are unwilling to pay reported the same but at a higher level of preference for this order, where 52% ranked PHI first, 50% ranked MSA second, and 70% ranked Taxation the last. The same is true for those in very good health status, but in varying degrees (53% and 56% PHI first, 41% and 53% MSA second, 56% and 70% Taxation third). Also for those in good health status, where they showed the same response as the majority of the other groups (50% and 68% PHI first, 50% and 63% MSA second, 60% and 68% Taxation third).

4.4.5.4 Ranking Based on the Socio-Economic Classification

The data indicate that the majority of those who hold secondary level of education and are willing to pay see Taxation as the second most suitable option and PHI as the least suitable, where MSA was seen as the best insurance method (see Table 35 in the Appendix). Moreover, the majority of those educated in high school (either the willing and unwilling to pay) placed MSA first, PHI second, and Taxation as the last option (61% and 60% MSA first, 44% and 50% PHI second, 68% and 73% Taxation third).

The figures in Table 36 in the Appendix found that the majority of participants of who hold a diploma, either from those who are willing or unwilling to pay ranked the three funding mechanisms in the same order as the majority of the other groups (54% and 60% PHI first, 48% and 62% MSA second, 59% and 74% Taxation third). The same is true for those who hold bachelor degree (willing and unwilling to pay), the data shows that the majority selected PHI as the best option (54% and 58%), then MSA second (42% and 52%), and Taxation as the least suitable option (65% and 67%).

Study figures indicate that those who are willing and unwilling to pay of those who hold master's degree favour PHI the most (64% and 81%, respectively), then MSA (57% and 75%, respectively), and Taxation as the least suitable method (78% and 75%, respectively) (see Table 37 in the Appendix).

The data in Table 38 in the Appendix shows that the majority of participants who are not in receipt of income and those who receive income less than SR 3,000 including those who are willing and unwilling to pay have ranked MSA as the most suitable option, then PHI, and lastly Taxation (57% and 48% MSA first, 36% and 44% PHI second, 62% and 75% Taxation third). For those in receipt of income between SR 3,000 and 5,999, the data shows that half of those who are willing to pay chose MSA as the first insurance method and 44% placed Taxation as second. On the other hand, the majority of those who are unwilling to pay in this group ranked the options in the same order as the other groups (57% PHI first, 52% MSA second, 67% Taxation third). Moreover, the data state that the majority of participants who are in receipt of income higher than SR 6,000 have ranked the financing options in the same order as the majority of the other groups, but at different levels (see Table 38 in the Appendix)

Study data implies that the majority of people who have PHI from those who are willing and unwilling to pay see PHI as the best health insurance mechanism, then MSA as the second, and Taxation as the least suitable method (50% and 65% PHI first, 38% and 64% MSA second, 59% and 72% Taxation third). The same is true for those who do not have PHI from those who are willing and unwilling to pay, but in varying degrees (see Table 39 in the Appendix).

4.4.6 Conclusion

This section gave an overview on the study sample demographic and socio-economic characteristics. It was indicated that the study sample covered the predominant characteristics of the population of SA. The demographic figures showed that most of the participants were males, Saudis, aged between 26 and 35, married, having no chronic diseases, and in excellent or very good health. Moreover, the socio-economic factors indicate that the majority of the respondents have undergraduate education, work for the private sector, receive income over the Saudi average income, and a significant proportion have PHI.

In addition, the study found that the majority of participants are willing to pay to *increase*, *maintain*, or to *obtain* access to the MOH healthcare facilities. When further analyses were conducted, it was found that most of those who are not in receipt of income are unwilling to pay to improve their level of access. Also, it was found that the majority of those who can access healthcare in the private sector are willing to pay to maintain and to obtain access to the MOH healthcare facilities, and this was testament to the high level of healthcare services that are provided by the MOH in comparison to the private sector. On the other hand, it was noticed that those who are provided with access to healthcare in the other governmental healthcare facilities view their employer's healthcare services as sufficient for them. This suggests that this sector provided the highest quality healthcare services in SA.

Finally, when the participants' preferences for the three healthcare financing options were investigated, it was found that the majority prefer PHI and MSA. By a distance, the majority rank Taxation as being the least preferred potential funding mechanism.

4.5 Discussion

This section will discuss the fundamental findings in the sections dealing with the WTP and the ranking of the three funding options and will provide details about the tests and model that will be used to test the relationship between the WTP with some demographic and socio-economic factors. The same tests (but a different model) will also be used to test the relationship between the ranking of the three funding options with the demographic and socio-economic factors.

4.5.1 Willingness to pay

When the participants' willingness was divided according to the six slices of eligibilities, it was found that the response of slice 2 participants confirms the overall observations in Table 22, which indicates that the majority of those who are restricted to healthcare only in the private sector or in the other governmental healthcare facilities are willing to pay to obtain access to the MOH healthcare services, except for those who are not in receipt of income. Moreover, what was found in the overall response of those who want to maintain their access to the MOH healthcare services was also confirmed by the response of those who represent slice 4 (MOH and private sector), except for the Saudis who are employed publicly and are provided with PHI, and the dependents who are not in receipt of income. In addition, the same was confirmed by those who represent slice 6 (MOH, private sector and SDU), except the Saudis who are employed publicly and eligible to health in all three provisions, the Saudis who are employed in the SDU, and unemployed Saudis without income. However, the response of those who represent slice 5 (MOH and SDU) did not confirm the overall findings, except for the Saudis who are employed publicly in this slice.

This suggests that the healthcare services which are provided by the MOH are better to some extent than those which are provided in the private sector, and this was shown in the choice of the majority of slice 2 who expressed their willingness to obtain access to

the MOH healthcare services, and also by the response of the majority of slice 4 who are willing to pay to keep the MOH services available, as well as by the Saudis in slice 6 who are employed privately and unemployed with income, who deem the MOH healthcare services worth paying for. This provides an indication that the MOH will receive financing from the majority (who are willing to pay) who are guaranteed access in the private sector, as the MOH services are more attractive to them. Moreover, the rest (the Saudis who are not willing to pay) will benefit the MOH by eliminating a significant cost from being spent on them, and this will be attained though suspending their access to the MOH healthcare facilities, which in turn will reduce the pressure on the MOH healthcare facilities and make it more attractive.

On the other hand, the data indicates that the healthcare services that are provided by the other governmental healthcare facilities are better than those which the MOH provide to some extent, and this was noticed by the majority agreement of those who represent slice 5, and some groups of slice 6, where a higher percentage preferred not to keep the MOH healthcare services available to them. These findings confirm the common perception that the other governmental healthcare facilities come out on top in terms of quality to healthcare services in SA. This will lead to a lower financing to the MOH by this category, but it will eliminate their access to the MOH, which will reduce a proportion of fund from being spent on them.

Following on the overall observation of Table 22 in terms of those who want to increase their access, the majority of slice one confirmed this observation, and see the current access to healthcare as insufficient, and seek to apply the proposed plan in the Saudi healthcare system to improve their level of access to health. However, the data showed that non-Saudis and unemployed Saudis without income see this access as sufficient. This promised reform will be attained by eliminating those who do not want to maintain their

access to the MOH healthcare services. As a result, this slice will contribute a significant proportion of funding to the MOH.

In terms of the demographic classification, the study found that males' WTP is lower than females (2% difference). This could be due to traditional facts, where the male in SA takes primary responsibility for life's needs; for example, the family housing, food, transportation, and even the entire cost of having a family. On the other hand, the female takes lower responsibility in this regard, and, as a result, the males may value money more than the females do to some extent, resulting in a lower WTP.

The findings of this study confirm the fact that a person needs more healthcare services as he/she gets older. The study data shows that when people get older, their WTP increases as well. For example, it was found that 52% of the participants who are aged between 18 and 25 are willing to pay, while about 64% of people aged between 56 and 65 are willing to pay.

It was expected that the non-Saudis will have lower WTP than Saudis, and this is because the majority of non-Saudis are either receiving income below the Saudi average income, or are dependent and in receipt of no income. This reason lowers the non-Saudis' WTP. Moreover, the lower willingness to pay observed by non-Saudis could be due to the reason that some of them come to SA to work and make saving and are less likely to look after additional healthcare services.

The single participants showed lower WTP for the reason that the average marriage age in SA is 26 years, and the data showed that younger participants have lower WTP than older (64% of those aged 56 to 65 are willing to pay in comparison to 52% of those aged between 18 and 25), where the majority of the single people fit into the younger categories. The same findings confirm the reason for the higher WTP among the married participants who are, as one might expect, usually older.

The findings of this study contradict the fact that when a person becomes in actual need for a product or service, then his/her value on such a product or service will increase. This study's frequencies indicate a higher willingness by those in excellent health and lower willingness by those at a lower level of health. In fact, it was expected that people without chronic diseases would have a lower WTP than those who had chronic diseases.

In terms of the socio-economic classification, it is true that the person's knowledge is an important factor to decide whether to pay for a healthcare service or not, and this is due to his/her ability to recognise how important the healthcare service is to him/her, and also the discernment to evaluate the offered service in comparison to what he/she has in relation to what he/she exactly needs. The findings of this study showed that groups in the higher level of education have lower WTP in comparison to those in the primary levels (moving from the first level to the second, to the third).

It was expected that people with greater income would have more WTP than those in receipt of a low level of income. This is because those who have no or a low level of income may value money more than those who receive a higher income. The current study found that those who are over than the Saudi average level of income have higher WTP in comparison to those with income lower than the average.

In terms of the possession of PHI, the findings here confirm that the majority of those who are entitled to healthcare in the private sector see the services that are provided to them as not sufficient and that the healthcare services that are provided by the MOH are desirable. Moreover, it was observed that those who have a low level of health insurance (level C) are more willing to pay in comparison to those with a high level of PHI (VIP level) (68% vs 59%, respectively).

4.5.2 Relationship between the Decision to Pay and People's Characteristics

This part of the study examines the relationships between the dependent variables (WTP) and the respondents' characteristics. In the literature review, parametric and nonparametric tests are employed to find relationships between dependent and independent variables (Coolidge, 2012). Moreover, the type of test depends on the nature of the variables, whether they are categorical, ordinal, or interval, and also on the distribution of the data (normal or non-normal distribution).

In this study, the dependent variable is categorical in nature as long as it measures respondent's decision to pay or not, and will be coded as zero if a participant is unwilling to pay, and 1 if the participant is willing to pay. In addition, the independent variables that measure respondents' demographic and socio-economic characteristics are all categorical in nature as well (2 or more categories). Therefore, if the relationships between categorical dependent variables and categorical independent variables with two or more categories want to be investigated, then the nonparametric Chi square test is appropriate (Coolidge, 2012). Chi square is used to identify if there is a significant difference between the expected and the observed frequencies. In other words, it tests whether the distribution of categorical variables differ from each other. There are three assumptions of Chi square, which most of the data satisfies; first, individual observations are independent. Second, the dependent variable is categorical. Third, there is a minimum of five frequencies in each cell (Coolidge, 2012). If the latter assumption was violated, then the Fisher exact test can be employed (Everitt, 1992). However, the Fisher exact test does not provide test statistics, and only provides a p-value.

In the Appendix, Table 40 presents the results of the chi-square and Fisher exact tests. The variables that are marked with asterisks are the variables that had less than five observations, where the Fisher exact test was performed.

The figures show that the majority of the independent variables are in line with outcomes of the frequencies that were discussed in the previous Section (4.5.1). The figures indicate

that there is no significant difference between the variables' groups and the overall WTP (the categorical variables distribution do not differ from the overall), where the majority are willing to pay. However, one of the variables that showed a significant difference is *Slice 5*, which showed a *p-value* of *0.02*. This significant p-value rejects the Fisher exact test null hypothesis, which states that groups do not differ. In this variable, it was noted that 47.6% (79 out of 166 respondents) are willing to pay, where the bulk are not, whereas, the majority of the overall are willing to pay (55.4%) (see Table 40 in the Appendix). This confirms the findings of the previous section, where one of the characteristic that showed a majority of unwillingness to pay was slice 5. Moreover, the *Employed* variable was also found significant at the 10% level (*p-value* 0.051), and this was due to the major difference between the willingness to pay of those who are employed in SDU (45% are willing to pay and 55% are not) in comparison to all the employed participants (56% are willing to pay and 44% are not).

4.5.3 Factors Influencing People's WTP

This section will outline the factors that affect people's WTP based on what was found in previous studies, then will discuss the econometric model that will be used to investigate the factors that influence people's WTP for the MOH healthcare services. Additionally, this part will present the model results, and discuss them.

4.5.3.1 Factors Influencing WTP (Literature Review)

The literature review show that the factors that are associated with people's WTP vary across studies. Of the demographic factors, some of the previous studies indicate that age positively influences WTP. Precisely, younger people are more willing to pay than older (Asgary et al., 2004, Basu, 2013, Donfouet et al., 2011, Golinowska and Tambor, 2012, Liu et al., 2012, Milligan et al., 2010, Olsen and Donaldson, 1998, Bergmo and Wangberg, 2007). In addition, it was found that the WTP is influenced by the health status, where better health status is associated with a higher WTP (Golinowska and

Tambor, 2012, Liu et al., 2012). On the other hand, the lower the health status is, the lower the WTP is (Baji et al., 2012).

In terms of the socio-economic factors, some studies provided evidence of the relationship between income and WTP. Studies found that people with greater income are more willing to pay (Baji et al., 2012, Basu, 2013, Donfouet et al., 2011, Golinowska and Tambor, 2012, Milligan et al., 2010, Nosratnejad et al., 2014). Moreover, a positive association with education was found. Many studies indicated that when a person's education increases, his/her WTP for healthcare services increases as well (Asgary et al., 2004, Baji et al., 2012, Nosratnejad et al., 2014). Also it was found that people access to healthcare significantly influence their WTP (Asgary et al., 2004). In addition, evidence suggests that being insured significantly influences people's WTP. Nosratnejad found that the WTP increased in the insured members of households (Nosratnejad et al., 2014).

4.5.3.2 Econometric Model

Multivariate analysis will be used in this study to determine which independent variables influence respondents' WTP. The following probit regression will be employed to estimate respondents' decision to pay for the MOH healthcare services.

MODEL 1

$Z^* = x_i\alpha + \varepsilon_i$

$Z_i = 0$ *if* $Z_i \leq 0$;

$Z_i = 1$ *if* $Z_i > 0$

The participation equation above is assumed to be a probit model where Z indicates a binary variable, *1* if the dependent variable is observed and *0* otherwise. x_i is a vector of the independent variables for the participation equation, and α is a vector of coefficient. The error term ε_i assumed to be normally distributed with a mean of zero, variance equal to 1, and correlation coefficient ρ. The probit model is used to find a consistent estimator of α (Fonta et al., 2010).

Because the probit model is nonlinear, it is difficult to describe the relationship between the variables and their outcome probabilities. Therefore, to facilitate the interpretation of the results from the participation equation, the marginal effects at the mean (MEM) will be presented. These marginal effects measure the discrete change in all the binary explanatory variables in the model (i.e. how the predicted probabilities change as the explanatory variables change from 0 to 1) (Cameron and Trivedi, 2005). For a categorical variable the discrete change is computed as following (Cameron and Trivedi, 2005):

$$X_k = Pr(y = 1|X, X_k = 1) - Pr(y = 1|X, X_k = 0)$$

where X_k indicates the explanatory variable, *Pr* is the probability change, *y* is the dependent variable, and *X* denotes the other covariates at their means.

When the probit regression was applied, multi-collinearity arose in the eligibility variable (*increase was coded 1*, *maintain 2*, and *obtain 3*- named as *Access of Three*), the six slices variable (named as *Access*), and *Health Status*. Also, some categories in Age, Marital Status, Health Status, and Access were dropped due to the low observations. Therefore, variance inflation factor (VIF) was investigated.

The VIF quantifies the level of multi-collinearity, where if it was not addressed, then it would result in large standard errors, and consequently the results would not be accurate (Ott, 2015). A VIF of 1 means no collinearity, whereas 10 indicates a significant collinearity. When the VIF was applied to the study data, the programme drooped the eligibility variable (*Access of Three*) and the last category of the six slice variable (*Access*), and showed 14.1 average VIF, with high VIF in some variables, such as; *Health Status*, *Education*, and *Income* (see Table 41 in the Appendix). Therefore, it was necessary to merge some categories of independent variables in a meaningful way that predicted the WTP.

For this reason, the last two categories of the *Health Status* (fair and poor) were merged into one category. Moreover, the levels of *Education* were merged into three categories

as following: *First* level (primary, secondary, and high school), *Undergraduate* (diploma and bachelor), and *Postgraduate* (higher diploma, master's, and PhD). Furthermore, the *Incomes* were divided into two categories, one representing those under the average level of income in Saudi Arabia (< SR 3,000 and SR 3,000 to 5,999) and another one representing those in receipt of income above the average (SR 6,000 <). Moreover, the last two *Age* categories (56 to 65 and 65 <) were merged into one category. The same is true for the last two categories of the *Marital Status* (divorced and widowed), which was merged into one category. After these changes, the VIF was applied, and the result shows 4.01 average VIF (see Table 42 in the Appendix). However, the collinearity appeared in the *Access* and *Access of Three* variables. Therefore, the *Access* variable was removed. As a result, the collinearity issue resolved with 4.1 VIF (see Table 42 in the Appendix).

4.5.3.3 Results

The probit regression analyses indicate that the participants' nationality is highly associated with the decision to pay. The figures in Table 26 show a significant p-value for this demographic variable (0.00 p-value). Moreover, the marginal effect shows that if the participant is Saudi then there is a probability of 45.8% that he/she is more likely to be willing to pay than a non-Saudi; in other words, if the participant is Saudi, the willingness to pay increases by 45.8% relative to a non-Saudi. In addition, the study data showed that a participant's having PHI or not, highly affects his/her decision to pay (*p-0.03*). The marginal effect shows that the participant who has PHI is 11.9% more likely to be willing to pay than one not having PHI (being insured increases WTP by 11.9% than not being). Furthermore, the analysis showed a significant relationship between the type of eligibility to healthcare (*increase*, *maintain*, and *obtain*) and the decision to pay (*Maintain p-value 0.00* and *Obtain p-value 0.01*). The marginal effect indicates that each of those who want to maintain their access (in group *maintain*) to the MOH health healthcare facilities is -17% less likely to be willing to pay than those who want to

increase their access (in group *increase*). Moreover, those who want to obtain access to the healthcare services that are provided in the MOH (in group *obtain*) are 27.9% more likely to be willing to pay than those who want to increase their access (in group *increase*).

Table 26 Probit Model Results for the Willingness to Pay

Independent Variable	Observation	P-value	Coefficient	Marginal Effect
Gender				
	Base Category (Female)			
	Male	0.27	-0.15	-0.05
Age				
	Base Category (18 - 25)			
	26 - 35	0.75	-0.04	-0.01
	36 - 45	0.51	0.13	0.05
	46 - 55	0.10	0.47	0.17
	56 <	0.74	0.13	0.05
Nationality				
	Base Category (Non-Saudis)			
	Saudis	**0.00*** **	**1.25**	**0.45**
Marital Status				
	Base Category (Single)			
	Married	0.90	0.01	0.00
	Divorced & Widowed	0.68	0.15	0.05
Education				
	Base Category (First Level)			
	Undergraduate	0.59	-0.07	-0.02
	Post-graduate	0.63	-0.10	-0.04
Employment				
	Base Category (Unemployed)			
	Employed	0.95	-0.01	-0.00
Income				
	Base Category (< Average)			
	6,000 <	0.31	0.16	0.06
PHI				
	Base Category (Without PHI)			
	With PHI	**0.03****	**0.30**	**0.11**
Chronic Disease				
	Base Category (Without)			
	With	0.24	0.22	0.08
Health Status				
	Base Category (Fair & Poor)			
	Good	0.55	-0.30	-0.12
	Very Good	0.74	-0.15	-0.06
	Excellent	0.97	-0.01	-0.00
Eligibility to Health				
	Base Category (Increase)			
	Maintain	**0.00*** **	**-0.42**	**-0.17**
	Obtain	**0.01*** **	**0.92**	**0.27**
cons		0.18	-0.81	-

Note: *** = significance at 1% level, **=significance at 5% level, *=significance at 10% level.

4.5.3.4 Discussion

The data outcomes showed significant results at levels between 0.00 and 0.03 which is high (<0.05). Moreover, the result of the first demographic variable seems logical, as was explained in Section 4.5.1. Usually the non-Saudis who work in SA receive income below the Saudi average income ($1,700), where the majority (88% of those who work in the private sector) are from those in receipt of income less than $800. In addition, their dependents who do not work are not in receipt of benefit from the government. Therefore, this gives the priority of those who work and are in receipt of low income to make savings and not to pay additional costs to serve their purpose of working in SA, and also their dependents who do not work and are not in receipt of income not to pay so as not to put a burden on those on whom they are dependent. Consequently, their WTP is lower than that of Saudis.

Moreover, the study result confirmed the findings of the previous studies, where insured people are more willing to pay than those who are not. This might be attributed to those who hold PHI perceiving that the MOH healthcare services are better than those which are provided in the private sector.

The findings also confirmed the literature that the access to healthcare affects people WTP. In addition, the figures showed that people who want to maintain their access to the MOH healthcare facilities was affected by those who are eligible to healthcare in the other governmental healthcare facilities, where the majority of them are unwilling to pay, as they see that their access to these superior healthcare facilities is enough. On the other hand, the group of those who are in a position to obtain access to the MOH healthcare facilities showed the highest WTP than the other groups. However, these results represent a contradiction to the previous result, as this group consists entirely of non-Saudis, where the previous results showed that the non-Saudis are less willing to pay than Saudis.

After the investigation, it was noted in Table 22 that 59% of those who want to obtain access are willing to pay, 58.6% of those who want to increase, and only 53.1% of those who want to maintain their access are willing to pay. When further analyses were carried out, it was found that the contradiction happened because the *nationality* variable contains one group of only Saudis, and the other one, is purely non-Saudis. However, in the *eligibility* variables, those in group *maintain* are 100% Saudis, and all those in *obtain* group are 100% non-Saudis as well. Whereas, the *increase* group contains 84% of Saudis, and the rest non-Saudis (16%, 22 participants). Of those 22, there are 16 participants (73%) unwilling to pay to increase their access. Consequently, those 22 participants changed the dynamic of group *increase*, bringing down the overall WTP of this group, and increasing the overall WTP of group *obtain* at the same time.

As a conclusion for the WTP sections, the results of the frequencies suggest that the healthcare services that are provided by the MOH are perceived as better than those which are provided in the private sector, and this was illustrated from the willingness of those who are entitled to healthcare in the private sector to keep or to obtain access to the MOH healthcare facilities. On the other hand, the healthcare services that are provided by the other governmental healthcare facilities are perceived as better than those of the MOH, and this was demonstrated from the response of those who are entitled to healthcare in these facilities. In addition, Chi square and Fisher exact tests' results showed that *Slice 5* and the variable *Employed* are significantly different. Moreover, the probit model findings indicate that Saudis are significantly more willing to pay than non-Saudis; it also showed those who hold PHI are more willing to pay in comparison to those who do not. Finally, it was found that those who are entitled to healthcare only in the private sector are the most willing to pay, followed by those who are entitled to healthcare only in the MOH.

4.5.4 Healthcare Funding Mechanisms

It was clear from the study results that participants tended to have higher preferences for the PHI than the other funding mechanisms. The figures showed that the majority of participants (312 out of 600 participants) preferred this option to the other options. In addition, 237 participants preferred MSA as a first method. However, only 51 participants chose Taxation first (see Table 24).

On the other hand, Taxation was predominantly chosen as the third option (398 participants). The figures showed fewer people chose MSA as the third option (88 participants), whereas, 114 participants chose PHI as third option,

Moreover, the study observed that slightly more than half of those who are willing to pay, and who hold PHI, do not see PHI as the most appropriate method for funding their healthcare services. Moreover, it was clearly shown that 52% of those who do not have PHI do not view PHI as the preferred funding mechanism either. This suggests that about half the study sample do not consider PHI as an ideal funding method.

These facts demonstrate that even if the PHI showed the lowest mean, median, and mode among the funding options, it does not mean that it is the best insurance mechanism, and this was shown in many cases in this study. First, the mean was very close to MSA mean, with a difference of just 0.08 points. Second, 114 participants chose it as the least suitable option, where a lower number of participants chose MSA as least suitable option. Third, PHI was ranked below first by more than the half of those who currently hold it (from those who are willing to pay), more than half those who do not have it, and about half the study sample.

4.5.5 Relationship between the Preference and People's Characteristic

In Section 4.4.5, Section 4.5.4, and in the Tables from 23 to 39 in the Appendix, the demographic and socio-economic variables were discussed. While it seems that most of this study's variables follow the overall ranking of the three health funding mechanisms, it was not obvious whether these variables *significantly* represent the same level of ranking or not. Therefore, it was necessary to employ statistical tests on these variables to understand their distribution (trend).

Following on from the information discussed in Section 4.5.2, this part of the study will employ Chi square and the Fisher exact tests to discover whether the distribution of the categorical variables significantly differ from the overall ranking (test if there are any significant differences). The independent variables are the demographic and socio-economic factors, where the dependent variables are the healthcare funding options ranking. Table 43 in the Appendix shows the tests results, where each insurance option was tested separately.

4.5.5.1 Taxation

The data shows that four independent variables indicate significant differences among their groups in terms of the level of preference, which are education (*p-value 0.00*), income (*p-value 0.04*), level of PHI (*p-value 0.03*), and slice 4 (*p-value 0.00*) (see Table 43 in the Appendix). These significant p-values reject the null hypothesis, which states that groups do not differ. Generally speaking, as discussed in Section 4.4.5.1, the data showed that the majority of the overall participants (66.3%) rank Taxation the least, 25% rank it second, and only 8.5% rank it first (see Table 24). However, the education groups showed differences ranging from 28.5% (secondary level) to 81.8% (primary level) in terms of the last option, between 13.3% (higher diploma and master's) to 45.4% (PhD) as a second option, and from 0.0% (PhD and primary) to 28.5% (secondary level) as the first option (see Table 43 in the Appendix). For the income, as the third option, the data

differentiated between 53.3% (SR 3,000-5,999) to 74.2% (SR 6,000-8,999), from 18.3% (SR 6,000-8,999) to 36.3% (SR 12,000-14,999) as the second option, and between 3% (SR 12,000-14,999) and 13.3% (SR 3,000-5,999) as the first option. The data also showed that 55.5% of slice four respondents ranked Taxation third, and 36% ranked it second.

In the level of PHI, the percentages of the participants' response in terms of the preference to the funding mechanisms differ in this variable in comparison to the previous three variables, as the percentages of preferences in the previous variables are based on all the respondents (600 participants), where in this variable, they are based exclusively on the PHI holders (293 participants) (64.8% rank it third, 27% second, and 8.1% ranked it first (see Table 39 in the Appendix))[45]. The data shows that percentages of those who rank Taxation third range from 51.8% (level C) to 74.1% (level A), 23.2% (level A) to 33.3% (level C) as second, and 2.6% (level A) to 14.8% (level C) for those who ranked it first (see Table 43 in the Appendix).

4.5.5.2 Medical Saving Accounts

Study figures observed nine variables indicating significant p-values in terms of the preference for the medical saving accounts. This rejects the null hypothesis, which states that groups do not differ. In the previous sections, it was outlined that the majority of participants ranked MSA second (45.8%), 40% first, and 14% third (see Table 24). However, Chi square and Fisher exact tests' results showed that the preference percentages of eight out of the nine variables are shifting away from these percentages. First, nationality (*p-value 0.01*), the data shows 43.9% of Saudis ranked MSA second and 53.9% of non-Saudis ranked it second. In addition, 27.8% of non-Saudis ranked it first, and 42.2% of Saudis ranked it first. Second, marital status (*p-value 0.03*), the difference in the percentage of those who ranked MSA as the third option ranged between 11.9%

[45] The overall preference for Taxation based on the 600 participants ranked it third (66.3%), 25% ranked it second, and 8.5% ranked it first. Based on the PHI holders who are 293 participants, the preference percentages change to 64.8% who ranked it third, 27% second, and 8.1% ranked it first.

(single) and 27.2% (divorced), between 0.0% (widowed) and 48.6% (married) for who ranked it second, and between 35.1% (married) and 75% (widowed) for those who ranked it first. Third, Education (*p-value 0.00*), in this variable the percentages of the groups that ranked MSA third ranged between 0.0% (primary level) and 45.4% (PhD), 9% (primary level) and 66.6% (higher diploma and master's) as second, and from 9% (PhD) to 91% (primary level) for those who ranked it first. Fourth, employment (*p-value 0.00*), the data showed that 36.3% of the employed participants and 53.1% of those who are not employed ranked MSA first. Also, 33.6% of those who are unemployed and 48.6% of those who are employed ranked it second. Fifth, Income (*p-value 0.04*), the participants response to MSA ranged between 10.2% (SR 6,000-8,999) and 20% (SR 3,000- 5,999) among the groups who ranked it third, 36.8% (< SR 3,000) and 52.5% (SR 15,000 <) as second, and between 29.5% (SR 15,000 <) and 52.6% (< SR 3,000) among those who placed it first. Sixth, *maintain* (*p-value 0.03*), the data indicates that 43% of those who want to maintain their access to the healthcare services that are provided in the MOH placed MSA first, and the same percentage ranked it as second. Seventh, *obtain* (*p-value 0.00*), study figures show that 23.6% of those who want to obtain access to the healthcare services that are provided in the MOH placed MSA first, and 59.1% ranked it second. Eighth, slice 2 (*p-value 0.00*), the data showed that 23.9% of those in slice 2 ranked MSA first, and 58.7% as second (see Table 43 in the Appendix).

Ninth, PHI provider (*p-value 0.04*), the percentage of the majority of this group differ to the other previous eight variables, due to the different overall number of respondents in this variable (293 participants) (49.1% placed it second, 35.8% first, and 15% placed third (see Table 39 in the Appendix)). The percentages of the participants' response in these variables who ranked MSA third ranged between 6.2% (family) and 33.3% (OOP), from 0.0% (OOP) to 53.1% (family) for those who ranked it second, and between 34.5% (employer) and 66.6% (OOP) of those who ranked it first (see Table 43 in the Appendix).

4.5.5.3 Private Health Insurance

The data in Table 43 in the Appendix shows thirteen variables had significant p-values. This rejects the null hypothesis, which states that groups do not differ. In the previous sections, it was discussed that the majority of the study participants ranked PHI first (52%), with smaller numbers ranking it second (29%), and third (19%) (see Table 24). However, Chi square and the Fisher exact tests observed that the preferences according to thirteen variables are significantly different to this ranking (to the overall ranking). First, nationality (*p-value 0.00*), study analyses observed that 49% of Saudis and 64.3% of non-Saudis ranked PHI first, and 21% of Saudis and 10.4% of non-Saudis ranked it third. Second, marital status (*p-value 0.01*), the figures showed that the ranking of those who placed PHI third ranged between 9% (divorced) and 25% (widowed), 25.5% (married) and 75% (widowed) for those who ranked PHI second, and between 0.0% (widowed) and 56.7% (married) of those who placed it first. Third, education (*p-value 0.00*), marked differences among all the preferences of the categories of this variable were observed (first 9% to 90%, second 9% to 72.2%, and third zero to 50%). Fourth, employment (*p-value 0.00*), study analyses found 55.4% of those who are employed and 37.1% of those who are not ranked PHI first, and 25.4% of the former and 44.2% of the latter ranked it second. Fifth variable: income (*p-value 0.00*), the percentages of those who ranked PHI third ranged between 12% (SR 9,000-11,999) and 26.6% (SR 3,000-5,999), 18.1% (SR 12,000-14,999) and 40.3% (> SR 3,000) for who ranked it second, and between 38.5% (> SR 3,000) and 60.2% (15,999 <) for those who placed it first. Sixth, PHI (*p-value 0.02*), the analyses found 56% of those who have PHI and 48.2% of those who do not ranked PHI first, and 23.9% of those who hold PHI and 33.8% who do not ranked PHI second. Seventh, *maintain* (*p-value 0.01*), it was found that the percentage of those who want to maintain their access in the MOH and ranked PHI third is 21.8%, 30.5% ranked it second, and 47.7% ranked it first. Eighth, *obtain* (*p-value 0.00*), the data analysis indicates that 20.4% of those who want to obtain access to the MOH selected

PHI as the second option, and 69.9% placed it first. Ninth, slice 2 (*p-value 0.00*), it was observed that 20.6% of participants in this slice ranked PHI second, and 69.5% ranked it first. Tenth, slice 4 (*p-value 0.00*), the percentages of the respondents who ranked PHI second in this slice is 17.6%, and 28.5% ranked it third. Eleventh, slice 5 (*p-value 0.03*), it was found that 36.7% of participants in this slice ranked PHI second, and 45.1% ranked it first.

Twelfth, PHI provider (*p-value 0.02*), as discussed in the previous sections, the percentage of the bulk of this group is not the same as other variables because the total number of participants in this group is 293 (56% placed it first, 23.8% second, and 20.1% placed it third (see Table 39 in the Appendix)). The percentages in the PHI provider variable differ between 0.0% (OOP) and 44.4% (family) for those who ranked it third, 21.9% (employer) and 83.3% (OOP) for those who ranked it second, and 16.6% (OOP) and 59.3% (family) for those who ranked it first. Thirteenth, level of PHI (*p-value 0.00*), the percentages of participants who ranked PHI first range between 44.4% (level C) and 69.6% (level A), between 16.9% (level A) and 33.7% (level B) as second, and between 13.4% (level A) and 35.1% (level C) as the last option.

4.5.6 Factors Influencing People's Preference

In this section, the study will outline the factors that affect people's preferences for a set of alternatives based on what was found in the literature review, then will discuss the econometric model that will be used to examine the factors that influence people's preference for the three health funding mechanisms. This section will also present the model results, and then discuss them.

4.5.6.1 Factors Influencing People's Preferences (Literature Review)

The previous studies indicate that the factors that affect people's preferences for a set of alternatives differ from one set of options to another, from field to field, and from one population to another. The previous studies show that the common demographic and

socio-economic factors such as gender, age, health status, income, education, employment, and religion possibly affect the person's preference depending on what they are presented with. Previous studies stated that the person's preference for a set of products or services can also be influenced by whether the person had previous experience of the proposed options or not, and whether he/she can discuss the option with another person. Studies implied that people's actual need for the proposed options, the features of the product or services, accessibility, trademark, and a swift refund in case of insurance schemes all influenced the person's preference.

A study was conducted by Churchill et al (2000) to investigate people's preference for depression treatments, such as the anti-depressant medication and psychological approaches. The study found that people's preferences are positively associated with gender and their previous experience with the treatments, and negatively associated with age (Churchill et al., 2000). Mead et al (1995) developed a study to investigate the impact of medical and non-medical factors on the cardiopulmonary resuscitation (CPR) preference of patients to determine which treatments were the most important to patients in relation to CPR. The study found that age and health status affected patients' preference (Mead et al., 1995). Chung et al (2008) carried out a study to explore the preference of the elderly people to three long term care services, which are: home care, nursing home, and community based care. The study found that ethnicity and the need for additional healthcare services affect elderly people's preference to choose among these healthcare programmes (Chung et al., 2008). In a study conducted by Dwight et al (2000) to examine preferences for treatments among depressed primary care patients, it was found that ethnicity, gender, income, and experience significantly influence patients' preferences (Dwight-Johnson et al., 2000). Cohen et al (1992) developed a study to investigate hospital patients' preference for future life sustaining treatments. The study examined if elderly hospitalised patients expressed a preference regarding the use of specific medical

treatments. The study found that education, the healthcare discussion with someone, and religion significantly affect their preference (Cohen-Mansfield et al., 1992). Wang et al (2004) examined the preference of elderly people and their primary family caregivers in long-term care arrangements. The study found that the previous experience and education significantly affect their preference (Wang et al., 2004). In a study carried out by Singh (2011) investigating factors affecting people's preferences when selecting an insurance company for purchasing policy, it found that the product features, accessibility, price, and the way of refunding all influence people's preferences when deciding to choose an insurance company (Singh, 2011). Guo et al (2015) examined the long-term preferences between different delivery modes. The study found that the preference depends significantly on the level of health status and the need for the services (Guo et al., 2015). A study was carried out by Janssen and Jager (2001) to explore the dynamics of markets from a psychological perspective, to understand the consumer preference when new products are introduced. The study implied that the products that are relevant to people's need, and those which quickly satisfy their need are most likely to be selected first (Janssen and Jager, 2001).

4.5.6.2 Econometric Model

In the preference-based approach studies, it was found that the ordered probit is a useful model in determining individuals' preferences for a set of choices in different fields, such as healthcare (Marnane and Ching, 2015), nutrition (Aquilani et al., 2015), social science (Bönte, 2015), and transportation (Abdel-Aty, 2001). The conventional regression methods are not appropriate for the statistical analyses of the discrete and ordinal dependent variables, which are the ones used in this study. This is because the linear regression (OLS) assumes that the dependent variable is continuous, which would treat the difference between 3 and 2 identically to the difference between 2 and 1. However, the numbers in this study (preferences first, second, and third) are only a ranking and have

no cardinal significance. Consequently, the linear regression assumption does not exist in this study. Therefore, to estimate an econometric relation with ordinal dependent variable it was found that the ordered probit model is commonly used and a describable measurement in this regard (Borooah, 2002).

Below is the ordered probit equation. Q_i^* is a vector of the dependent variable, which is the level of preference (most, second, lowest). x_i is a matrix of the independent variables, α is a vector of coefficients, and ε_i is a vector of error terms (Maddala, 1983).

$$Q_i^* = x_i\alpha + \varepsilon_i$$

It should be noted that the observed y_i is determined from y_i* using the rule. *M* denotes categories.

MODEL 2

$$Q_i = \begin{cases} 0 if\ Q_i^* \le \gamma_1 \\ 1 if\ \gamma_1 < Q_i^* \le \gamma_2 \\ 2 if\ \gamma_2 < Q_i^* \le \gamma_3 \\ \vdots \\ M\ if\ \gamma_M < Q_i^* \end{cases}$$

The probabilities of observing each value of y are given by

$$Pr(Q_i = 0 | x_i, \alpha, \gamma) = F(\gamma_1 - x_i'\alpha)$$

$$Pr(Q_i = 1 | x_i, \alpha, \gamma) = F(\gamma_2 - x_i'\alpha) - F(\gamma_1 - x_i'\alpha)$$

$$Pr(Q_i = 2 | x_i, \alpha, \gamma) = F(\gamma_3 - x_i'\alpha) - F(\gamma_2 - x_i'\alpha)$$

…

$$Pr(Q_i = M | x_i, \alpha, \gamma) = 1 - F(\gamma_M - x_i'\alpha)$$

where F is the cumulative distribution function of ε.

To better explain the level of preference to each health insurance option in terms of the independent variables, the marginal effect will be included. The marginal effect will help to identify the order of the preference of each participant characteristic exactly.

Multi-collinearity issues were observed in the eligibility (*Access of Three)* variable and the six slices (*Access*) variable when the ordered probit regression was applied. Therefore, the Access variable was removed. As a result, the multi-collinearity disappeared.

4.5.6.3 Results

Table 27 present the results of the ordered probit regression. The data shows that gender is significant in the Taxation regression *(p-value 0.03)*, and has a negative coefficient, which suggests that males are more likely to rank Taxation first, and less likely to rank it third. The health status is also significant *(p-value 0.04)*, with a negative coefficient as well, that suggests that people in a lower level of health status are more likely to rank Taxation first, and less likely to rank it third.

The marginal effect suggests that for each person added to the males' group, there is a probability of only 3.8% that this person is more likely to rank Taxation first, 6.1% that this person is more likely to rank it second, and 10% less likely that he will rank it third, compared to females. Moreover, for each unit the health status decreases (moving from excellent to poor), there is a probability of 2.3% that this person is more likely to rank Taxation first in comparison to healthy people, 3.3% to rank it second, and 5.6% less likely to rank it third in comparison to healthy participants (see Table 27).

Study data shows that education is the only variable that showed a significant result in MSA *(p-value 0.00)* with a positive coefficient. The data indicates that people with a higher level of education are more likely to place MSA last, and less likely to rank it first. The marginal effects suggest that for each unit education increases, it will be accompanied

by 8.2% less likely to rank MSA first, 3.5% more likely to place it second, and 4.6% more likely to rank it as the last financing option (see Table 27).

Table 27 Ordered Probit Regression and Marginal Effect

Options	Variable[1]	p-value	Coef[2]	1st, M Effect	2nd, M Effect%	3rd, M Effect%
Taxation						
	Gender	**0.03****	**-0.28**	**3.87**	**6.16**	**-10.04**
	Age	0.98	0.00	0.01	0.02	-0.03
	Nationality	0.44	-0.14	2.04	3.09	-5.13
	Marital Status	0.44	-0.08	1.22	1.73	-2.96
	Education	0.66	-0.02	0.32	0.45	-0.77
	Employment	0.78	0.04	-0.75	-1.04	1.79
	Income	0.34	0.04	-0.67	-0.95	1.633
	PHI	0.12	-0.21	3.25	4.55	-7.80
	Chronic Disease	0.63	0.08	-1.26	-1.89	3.15
	Health Status	**0.04****	**-0.15**	**2.34**	**3.31**	**-5.66**
	Access to Three	0.15	0.18	-2.73	-3.86	6.59
MSA						
	Gender	0.31	0.12	-4.75	2.17	2.57
	Age	0.83	-0.01	0.52	-0.22	-0.29
	Nationality	0.89	-0.02	0.83	-0.35	-0.47
	Marital Status	0.26	0.10	-4.21	1.82	2.39
	Education	**0.00*****	**0.21**	**-8.26**	**3.57**	**4.69**
	Employment	0.51	0.10	-4.13	1.88	2.24
	Income	0.94	0.00	0.12	-0.05	-0.07
	PHI	0.60	0.06	-2.53	1.09	1.43
	Chronic Disease	0.44	0.12	-4.84	1.88	2.95
	Health Status	0.15	0.10	-3.91	1.69	2.22
	Access to Three	0.56	0.06	-2.58	1.11	1.46
PHI						
	Gender	0.37	0.11	-4.45	1.61	2.84
	Age	0.85	-0.01	0.47	-0.16	-0.30
	Nationality	0.53	0.1	-4.32	1.57	2.74
	Marital Status	0.90	-0.01	0.47	-0.16	-0.30
	Education	**0.00*****	**-0.18**	**7.42**	**-2.56**	**-4.85**
	Employment	0.48	-0.11	4.63	-1.50	-3.13
	Income	0.45	-0.03	1.33	-0.46	-0.87
	PHI	0.41	0.1	-4.16	1.43	2.73
	Chronic Disease	0.39	-0.14	5.86	-2.21	-3.64
	Health Status	0.58	0.04	-1.61	0.55	1.05
	Access to Three	**0.06***	**-0.22**	**8.94**	**-3.08**	**-5.85**

Note: *** = significance at 1% level, **=significance at 5% level, *=significance at 10% level.

Abbreviations: [1] Independent Variable. [2] Coefficient

On the other hand, study figures show that education is significant *(p-value 0.00)* in terms of the PHI mechanism, and has a negative coefficient. This indicates that participants holding a higher level of education are more likely to rank PHI first, and less likely to rank it third. The marginal effects show that for each unit the participants' education

increases, it is 7.4% more likely that PHI is placed first, 2.5% less likely to be placed second, and 4.8% less likely to be ranked last (see Table 27).

For the participants' level of eligibility to healthcare, the regression showed a significant p-value *(p-value 0.06)*, and a negative coefficient, which suggests that participants in groups *maintain* and *obtain* are more likely to rank PHI first and less likely to rank it last. The marginal effects also show that people in groups *maintain* and *obtain* are 8.9% more likely to rank PHI first in comparison to group *increase*, 3% less likely to rank it second, and 5.8% are also less likely to place it third (see Table 27).

4.5.6.4 Discussion

The results of the ordered probit regression were expected. This is because these results were explained by the frequencies in the tables of the ranking according to the demographic and socio-economic characteristics, which confirm the regression results. For example, the data in Table 29 in the Appendix shows that 9.4% of males prefer Taxation as the first option in comparison to females where 5.3% of them prefer Taxation first. Moreover, 26% of males prefer this mechanism as second, while 22.7% of females prefer it as the second option, and 64.7% of males showed a lower preference to rank Taxation third, whereas 72% of females prefer it as the third option. These frequencies reflect the ordered probit results exactly, which states that males are more likely to rank Taxation first than females. In addition, the marginal effect confirmed that the males prefer Taxation as the second option more than the first option (6.1% vs 3.8%) (see Table 27 in the Text and Table 29 in Appendix).

The data in Table 34 in the Appendix show that when we move from a higher level of health status down to a lower level, the percentage of participants who rank Taxation as the best option increases (from 8% excellent to 28.6% fair). However, as a third option the preference decreases from 69% to 57%. These results also confirm the findings of the

study regression. Moreover, the marginal effect shows that when people's level of health decreases then they prefer Taxation as the second option more than the first option (3.3% vs 2.3%) (see Table 27 in the Text and Table 34 in Appendix).

The data analysis indicates that people with higher education do not prefer MSA, and this was shown in their higher probability to place it third (third 4.6% vs second 3.5%) (see Table 27). This was confirmed by the frequencies that are presented in Tables 35, 36, and 37 in the Appendix. The data in these three Tables showed that 9.3% of the participants in the first level of education (primary, secondary, and high school) prefer MSA last, 15.2% of those with second level of education placed it third, and 23.2% who were highly educated placed it as the last insurance mechanism. On these bases and as second choice, the preferences of those three groups of education increased from 28.7% to 48.7% to 62.5%. In addition, the data confirms that participants with higher education have a lower preference to rank it first, where 61.2% of those at the first level of education rank it first, 36.1% of those at the second level of education, and only 14.3% of those with a higher level of education prefer it as the first option (see Table 27 in the Text and Tables 35, 36, and 37 in Appendix).

In contrast, those with a higher level of education prefer PHI the most. This is confirmed by the data in Tables 35, 36, 37 in the Appendix. The frequencies in these Tables indicate that 28.7% of those at the first level of education placed PHI first, 46.5% placed it second, and 25.6% ranked it last. Moreover, the preference of those at the second level of education increased in terms of the best option to 56.1%, and decreased 25.1% and 18.8% in terms of the second and third respectively. In addition, the preference of those at the highest level of education increased to 73.2% in respect of the first insurance option, and decreased again to 18% and 9% in respect of the second and third (see Table 27 in the Text and Tables 35, 36, and 37 in Appendix).

The regression results indicate that people in groups *maintain* and *obtain* prefer PHI the most, which was explained by the higher percentage of marginal effect. This was observed in the Tables 23, 24, and 26 in the Appendix. The data which confirms the regression results are those in slice 1 (*increase*), those in slice 4 (*maintain*), and those in slice 2 (*obtain*). The data shows that the preference of participants in slice 4 in terms of the PHI as the first option increased in comparison to slice 1, and increased at higher percentages in slice 2 (51.4%, 53.8%, and 69.6%, respectively). This could be due to the reason that participants in slices 2 and 4 have good experience with PHI in comparison to those in slice 1 who do not[46]. However, the data indicates that people in slices 5 and 6 who are eligible to healthcare in the other governmental healthcare facilities behaved differently to those in slice 4 in terms of the preference to PHI (53.8% of slice 4, 45% of slice 5, and 44% of slice 6 preferred PHI), and this could be due to the reason that they are eligible to the highest quality level of healthcare services in SA (SDU), which people in slice 4 do not have access to (see Table 27 in the Text and from Table 23 to 28 in Appendix).

As a conclusion for the preference sections, the results of the frequencies indicate that even if it seems that the PHI is the most preferred option among the majority of participants, there is some evidence suggesting that MSA is still another preferred option. Moreover, Chi square and Fisher exact tests found four independent variables in Taxation, nine in MSA, and thirteen independent variables in PHI are significantly different to the overall ranking. Furthermore, the ordered probit regressions indicate to two demographic and two socio-economic variables significantly affected people's preference for the three health funding mechanisms which are gender, health status, education, and eligibility to healthcare (*increase*, *maintain*, and *obtain*). The findings imply that males prefer Taxation more than females and are more likely to rank Taxation as the second funding

[46] Slice 3 was not involved in the comparison as it contains only one participant.

mechanism. In addition, people with lower levels of self-assessed health have the same trend in comparison to those who are healthy, and are also more likely to rank Taxation second. Moreover, people with higher education are more likely to rank MSA third and PHI first in comparison to people with a low level of education. In addition, it was found that participants who want to maintain their access have a higher preference to rank PHI first than those who want to increase their access, and those who want to obtain access have the highest preference in comparison to those who want to maintain and increase. Finally, based on the overall outcomes, it seems that Taxation is by far the least preferable of these three funding options, while the PHI and MSA are the most suitable and advisable mechanisms to raise funds for the Saudi MOH, as the differences between them are minor.

4.6 Conclusion

This study investigated the population of SA's willingness to participate in raising a fund for the Saudi MOH and their preferences for these three health funding mechanisms that were found in line with the Saudi setting. This study proposed limiting the MOH healthcare services only to those who cannot access healthcare from other provisions, and this was to increase their access in return for a monetary contribution. People who are provided with access in other provisions would have the right to maintain or to obtain access to the MOH facilities for the same level of contribution. The mission started by reviewing the literature to develop the best approach to investigate people's WTP for the proposal of this study, and applied the best format to elicit people's preference for the three funding options. Afterwards, a survey was developed to achieve this goal. After receiving ethical approval, the researcher travelled to six provinces in Riyadh, the capital of SA, in a journey which took more than twenty days to pilot the study documents and to do the official sampling on 600 participants. The study targeted public and private employees and pensioners, self-employed, dependents and unemployed including those with and without financial benefits. The data analysis found that all the questionnaires

were collected at 100% response rate. The majority of the participants were Saudis, males, aged between 26 and 35, married, not with chronic diseases, in excellent health, bachelor degree holders, privately employed, in receipt of income between SR6,000 – 8,999, and half the sample have PHI, of whom the majority had level A. Moreover, 15% of the sample do not have access to the MOH, half are eligible to healthcare in the private sector, and 41% can access health in SDU. In addition, the majority of participants lay in the fifth slice, then the first, followed by the fourth.

When participants' WTP was investigated, the data showed that 55% of the sample are willing to pay to improve their level of access to healthcare, where those who are in group *obtain* were the most willing to pay, then those who are eligible to healthcare only in the MOH. Moreover, the study showed that being in receipt of income or not affects WTP, where the majority of those with no income in all the three major groups were unwilling to pay. Also, it was found that most non-Saudis of those in slice one are unwilling to pay, whereas the bulk of non-Saudis of those in the second slice are willing to pay. In addition, the majority of slice four are willing to pay, and similarly with the sixth slice, where most of the latter are employed in the private sector. However, the majority of those in the fifth slice are unwilling to pay. Moreover, most of the participants according to their demographic and socio-economic characteristics were willing to pay to improve their level of access to healthcare. This indicates that the healthcare services that are provided by the MOH are perceived as being better than those which are provided by the private sector. However, they are not seen as superior in comparison to the other governmental healthcare facilities. All in all, this implies that the MOH can raise a significant fund from those who are eligible to healthcare only in the MOH, the private sector, and those who are provided with double eligibilities (MOH and private sector). Moreover, those who represent the remaining proportion will forsake their eligibility to healthcare in the MOH, enabling greater access to those who are willing to pay. Moreover, when the Chi square

and the Fisher exact tests were performed on the study variables, the results confirmed the findings of this study, which states that the majority of participants according to their eligibilities and characteristics are willing to pay except for those in group five and group employed.

Moreover, when the probit model was employed, it was found that the level of access that people have to healthcare services affects their WTP. In addition, the analysis confirmed that those who are eligible to healthcare only in the private sector are the most willing to pay, then those who want to increase their level of access. However, it was shown that those in group *maintain* are the least willing to pay and this was due to the influence of those in slice five. Furthermore, the findings of the probit model showed that those who had experience of PHI are more willing to pay; this confirms the findings of the literature review, and also confirms the fact that those who are entitled to healthcare in the private sector see what is provided in the MOH as necessary and better than what they already have. Also, the model confirmed the concept that non-Saudis come to SA to make savings, and are less likely to look for quality healthcare.

When participants' preferences for the three funding options were investigated, it was found that the majority of participants see PHI as the most suitable insurance mechanism for them, followed by MSA, where the means of those two options are relatively similar. Also, the latter was chosen as the least preferred option at a lower percentage compared to the former. However, Taxation reported the highest mean, and was viewed as the least preferred option. Furthermore, when the study performed the Chi square and the Fisher exact tests to understand the distribution of participants' preference for these options, it was found that four independent variables in Taxation, nine in MSA, and thirteen independent variables in PHI are significantly different to the overall ranking.

Moreover, when the ordered probit regression was conducted on the study variables, it was found that gender, health status, and education affect people's preference, and this

confirms the findings of the literature review. Moreover, the analysis found that males prefer Taxation more than females and are more likely to rank it as the second funding option, and the same is true for those with a lower level of health in comparison to those who are healthy. Furthermore, those with higher education are more likely to rank MSA third and PHI first in comparison to people with a low level of education. In addition, it was found that participants who want to maintain their access have a higher preference for ranking PHI first than those who want to increase their access, and those who want to obtain access have the highest preference in comparison to those who want to increase and maintain their access.

Finally, this study concludes that the PHI and MSA are the most suitable funding methods to raise funds for the Saudi MOH. It also found that most of the participants are willing to pay to improve their level of access to healthcare. This study suggests undertaking another study to investigate how much the population of SA are willing to pay to raise a fund for the MOH.

Chapter 5: The Maximum Willingness to Pay for the Healthcare Services that are provided by the Saudi MOH

In the pricing decision process, it is important to understand consumers' values for goods and services. Scientists find that estimating consumers' response to prices is an important element for developing pricing strategy (Breidert et al., 2006). As discussed in the previous sections of this thesis, involving healthcare users to participate in funding the healthcare system is widely used among countries to alleviate financial pressure on governments. However, it is crucial that healthcare services are delivered to users at prices that they are willing to pay. Therefore, understanding the population's WTP for healthcare services is important, for the reason that their response to price will affect the level of public financing to healthcare system (Uzochukwu et al., 2010).

In light of the rapid and continuous changes in the Saudi system in general, which focus on reducing the reliance on oil as a main source for the government budget (by diversifying the public financial resources strategies incorporating the citizens and residents), it was expected that the vast majority of the population of SA would reject the proposal to participate in funding the MOH as borne out in the former WTP study. However, the findings in that study implied that the majority were willing to participate, which was a sign of their readiness for the country-transforming plan. Therefore, this study will proceed to assess people's level of WTP for the healthcare services that are provided by the Saudi MOH.

5.1 Study Objective

This study aims to reveal the population of Saudi Arabia's WTP for the healthcare services that are provided by the Saudi MOH, with respect to the developed plan in the former study (see Section 4.2.1). To serve the purpose of this study, a question must be answered that is:

> *What is the maximum value that the population of Saudi Arabia are willing to pay for the healthcare services that are provided by the Saudi MOH?*

This question leads to a specific objective, which is identifying the factors that influence the Saudi population's WTP.

5.2 Study Methodology

In this section, the study will discuss the valuation method, and then will review the WTP previous studies to benefit from the best practice in this regard. In respect of the study targeted individuals, study dimensions, and the data collection, the study will follow the same approach as the former one, and will only outline the changes that were applied in terms of the inclusions and exclusions.

5.2.1 Valuation Method

Following on from the former study methodology, this study will build on the financial strategy that was developed in Chapter 4, which proposed restricting every person only to the healthcare in the sector where he/she is eligible (see Section 4.2.1). Moreover, this study will employ the WTP, which is one of the CVMs that was discussed in Section 4.2.2. In this section, the study will discuss the elicitation formats to find the most appropriate one for this study, and then argue the methodological issues, and suggest what can be implemented to minimise these issues.

5.2.1.1 Elicitation Format

To assess the level that people can afford to contribute towards the healthcare services that are provided by the MOH, the WTP method will be employed in such a way as to elicit the maximum amount that people are willing to pay. In the previous studies, there is a debate regarding the suitable elicitation format to measure people's level of WTP. The elicitation format refers to the technique in which the WTP question is asked. The most common elicitation formats that exist in the literature review are: the open ended question, bidding game, payment scale, discrete choice, and discrete choice with follow up question. In this section, the study will discuss each format and decide on the most suitable one for this study.

1. **Open Ended Question**; in this format, the participant is asked directly to state the maximum amount that he/she is willing to pay (Smith, 2000). For instance, one of the previous studies asked female respondents about the maximum amount that they are willing to pay for a bone density scan (Donaldson et al., 1997). The open-ended question was: *what is the most you would pay to have the scan?* In this case, participants were guided to state the maximum amount in the blank space provided. In fact, the open-ended questions are easy to analyse and do not require a large sample. However, participants' answers could be unreliable and likely to include a strategic bias (Donaldson et al., 1997, Smith, 2000). This kind of bias occurs when participants' WTP value represents what they would like to pay, but not the maximum value (Bergmo and Wangberg, 2007). Moreover, the open-ended question does not have a reference value, which makes participants estimate the cost and state the value instead of their maximum WTP.

2. **Bidding Game**; the bidding game and payment scale formats were developed to overcome the aforementioned challenges. The first one offers participants an initial amount, which they can accept or reject, and, based on the answer, the bid increases or decreases until the willingness is reached (Smith, 2000). Usually, the question includes a

scenario describing the benefit that the participant will be asked to pay for, then the participant is asked, for example: *would you be willing to pay $X?* In case a positive answer is given, a higher bid is offered. In contrast, if a negative answer was reported, then a lower bid is offered. This format requires face-to-face interviews with participants. However, face-to-face interviews are not appropriate if the study targets a large sample with a limited timeframe. As with the open ended, the bidding format provides a reference value. Despite this advantage, this format is still prone to bias due to the starting point. It was found that the last WTP value in this format is influenced by the first bid, which means that a higher starting bid leads to a higher WTP value. Therefore, the bidding game is likely to produce a high WTP value, and consequently the results are unreliable.

3. **Payment Scale**; this format offers participants a range of values, where they choose the maximum amount that they are willing to pay. The scale begins at zero, and then increments with a blank at the end, to allow the participant to state the WTP value if it exceeds the offered values in the scale (Smith, 2000). In comparison to the previous two elicitation formats, the payment scale is more representative of real life situations, as it gives the respondent different values where he/she can search for the values that best represent his/her maximum WTP (Donaldson et al., 1997).

In the healthcare field, the payment scale format is the most widely used (Diener et al., 1998). This format provides reference values and decreases the risk of the starting point. However, it could be prone to a range or midpoint bias. The first one occurs when the values in the range can influence the participants' WTP (Ryan et al., 2004). The second one arises when a participant reveals their maximum WTP by the mid value of the range. The range bias can be solved by including a blank option at the end of the range, where the midpoint bias can be reduced by making no mid choice (Smith, 2000). It was found that the payment scale generates consistent mean and median values, and an association

between the WTP and the ability to pay, which makes the results more reliable (Donaldson et al., 1997).

4. **Discrete Choice and Discrete Choice with Follow up**; the discrete choice experiment includes some choice sets, that contain hypothetical options (two or more), which the participant chooses from. Each choice set is explained by some attributes, where each include different levels (Lancsar and Louviere, 2008). For example, the participant is provided with a scenario to measure his/her WTP for two different hospitals (options: hospital X and hospital Y). The scenario includes three attributes, such as travelling time to reach the needed healthcare services, the waiting time to meet the doctor, and the cost of the healthcare service. Each of these attributes is provided with some levels. For example, for the first attribute, travelling time to hospital X is 30 minutes, and 40 minutes to hospital Y. The waiting time is 25 minutes in X and an hour in Y. The cost of services in X is $1,000 and $600 in Y. Here, the participant makes the decision based on these varying attributes, where the discrete choice experiment encourages the participant to make trade-offs (Lancsar and Louviere, 2008).

This format is similar to the payment scale in terms of the realistic representation of the real life market as participants are provided with characteristics and price variations (Ryan et al., 2004). Moreover, this format provides participants with a good understanding of the scenario, which results in a reliable WTP estimate. Furthermore, it minimises the strategic bias, and this is due to the limited number of bids. Therefore, participants cannot strategically manipulate their WTP estimate (Price, 1989). One of the disadvantages of the discrete choice experiment is that the participant is forced to choose from the options (this is called Yea-saying), while in practice they may choose none. This can result in values which are biased (Ryan et al., 2004). This bias can be reduced by allowing participants to choose none of the options. Finally, this format requires a large sample size, since little information is retrieved from participants (Kjær, 2005).

The discrete choice with follow up is the same as the previous format, with follow up question to enhance the information that is generated. Depending on the answer to the first question, this format provides more bids upward if the participant accepted, or downward if he/she rejected the first bid.

5.2.1.2 Methodological Issues

There are some methodological issues, which had to be addressed before conducting the WTP study. Three of the methodological effects that could arise when conducting CVM studies are: the ordering effects, embedding effects, and protest zeros (Fonta et al., 2010, Stewart et al., 2002). In this section, the study will discuss each of these methodological issues, and outline how they will be addressed.

1. **Ordering Effects**; the ordering effect occurs when a study aims to estimate the WTP values for more than one healthcare service. This refers to the order in which the scenarios are presented to participants (Drummond et al., 2015, Stewart et al., 2002). Stewart et al (2002) tested the existence of the order effect for three healthcare services that are: the increase in pain relieving treatment for cancer patients, the increase in the number of heart operations, and the increase in community care services. The researchers examined if the WTP values change when the services were presented in different sequences to participants. The study sample was divided into two, where each sample was given the healthcare services in a different order. The researchers found that the mean of the WTP values for the three healthcare services was different in both samples, where it should be consistent between the two samples (Stewart et al., 2002). The researchers suggested that this kind of issue occurs due to what is called “the fading glow” in the literature review. The fading glow is when participant acquires moral satisfaction from the contribution to the scenarios that are presented (Stewart et al., 2002). The first healthcare service in the order usually acquires the majority of the moral satisfaction. The researchers added that participants exaggerate their WTP for the first healthcare service in the order, where their

valuation for the rest of the order becomes lower. Also the authors suggest that this occurs as participants feel that they met their social obligation once they state their contribution for the first healthcare service in the sequence (Stewart et al., 2002).

This type of methodological issue is not of concern in the current study. This is because this study aims to estimate the maximum WTP for the healthcare services that are provided by the Saudi MOH in total. Therefore, there are no specific healthcare services or programmes that this study targets.

2. **Embedding Effects**; the embedding effect occurs when participants' WTP for a good is not different from the participants' WTP for the overall good from which the identified good is part (Bateman et al., 1997, Carthy et al., 1998, Boyle et al., 1994, Morrison, 2000). In other words, participants value a broader or narrower policy package than the one intended by the researcher (Price, 1989). Researchers suggest that providing details describing what participants are requested to value can potentially alleviate the embedding effect (Price, 1989).

For the same reason that was mentioned in the previous section, participants' valuation in this study is unlikely to be affected by the embedding effect, and this is due to the fact this study aims to estimate the maximum WTP value for the entire healthcare services that are provided by the MOH, and not for specific healthcare services, and this will be explained clearly in the question that each participant is required to answer.

3. **Protest Zeros**; protest zeros occur when participants simply do not respond and when participants report zero value for a good which they actually value (Remonnay, 2008). The previous studies proposed some reasons for such behaviour. When participants are asked about their maximum WTP, some of them consider placing a value on a public good or service as unethical, while others argue that public services should be provided free of charge (Halstead et al., 1992). The differentiation between the protest zeros from

genuine zero in the WTP is considered as a challenge. Usually, researchers use debriefing techniques to distinguish the protest zeros from the genuine ones (Fonta et al., 2010). For example, Fonta et al (2010), in one of their WTP studies, added these options: *cannot pay due to lack of income, and the scheme is not important for me* to identify protest zeros.

The protest zeros do not reflect preference as they have no economic value (Lindsey, 1994). But they are likely to occur in the WTP studies, where a suitable approach is required to be adopted to address it. One of the most commonly used approaches to deal with this issue is to remove the protest responses. However, this results in sample selection bias. Another solution is to address them in the analysis. The health economics literature proposes the double hurdle approach as the best way to address genuine and protest zeros (Halstead et al., 1992). The econometric analysis uses a two-part model to address this issue and to control selection bias (this was outlined in Section 4.2.2, and will be discussed more in the coming sections).

5.2.1.3 The Decided Elicitation Format

There is much debate regarding the most appropriate elicitation format in terms of the WTP studies. In the literature review, many studies compared the elicitation formats in the healthcare field (Frew et al., 2004, Ryan et al., 2004). Frew et al (2004) compared the bidding game with the open-ended and payment scale. They found that the WTP values for colorectal cancer screening were higher in the bidding game format than the open-ended and payment scale. The researchers found significant differences in the WTP values when participants were offered different starting bids, whereas, the open-ended and the payment scale were not affected by the starting point bias, as much as the bidding game was. Moreover, they found that the open-ended question is difficult to answer and may cause a hasty valuation. Also, this format raises concerns regarding validity, as it does not reflect real life situations. However, the payment scale alleviates this issue due to the presentation of ranges of values. Ryan et al (2004) found no evidence of range bias

or starting point bias associated with the payment scale. The researchers used initial and amended payment scales with different ranges, and found no significant difference in the WTP values between both scales. This confirms that the starting point and the mid-point bias are not issues in the payment scale. The previous studies indicate that the open-ended format should be avoided when conducting WTP studies (Arrow et al., 1993, Donaldson et al., 1997, Johannesson et al., 1991). Moreover, the discrete choice experiment is subject to Yea-saying bias, and if participants are provided with the choice "none", it still generates little information to understand participants' maximum WTP values as is the case with the open-ended format. Finally, the discrete choice with or without follow up are appropriate when more than one option or many attributes are provided.

Based on the evidence in previous studies, and for the reason that the population in SA has no experience with participation in funding the public sector (recently VAT was introduced), especially in the healthcare services, the payment scale will be used in this study as a format to measure the population of Saudi Arabia's maximum value that they are willing to pay for the healthcare services that are provided by the Saudi MOH. This format will provide the population of SA with reference values that: are easy to understand and opt out of, include zero and blank choice, provide results that are more reliable, generate additional information, minimise bias, shorten the sampling period, reduce the cost of sampling, and are also able to overcome the other disadvantages that were experienced from the other elicitation formats.

5.2.2 Willingness to Pay Literature Review

There is a large variation in WTP studies in the healthcare field in general in terms of studies' objectives, population, elicitation formats, and analysis method (Baker et al., 2008, Diener et al., 1998). While it seems that there is no standard approach for designing the WTP studies, reviewing the previous studies and acknowledging best practice guidelines is the most effective method to design a reliable study. In addition to the studies

that were provided in Section 5.2.1.1, this part will draw more details from the literature reviews that were outlined in Sections 4.2.2, and 4.5.3.1, and will also include more literature from the health insurance and healthcare areas. This part will outline each study's aim, elicitation format, method of analysis, and result. By the end of this section, the study will discuss the findings of these literature reviews.

5.2.2.1 Health Insurance Literature Review

Shimamura et al (2018) conducted a study to explore factors associated with people's WTP for family based health insurance covering the whole family in central Vietnam. This study employed an open-ended technique and performed multivariate regression. It was found that the household head having health insurance, a higher level of education, and wealth impact positively on the WTP (Shimamura et al., 2018). Nosratnejad et al (2014) carried out a study to estimate the WTP for health insurance in Iran to suggest an affordable SHI; the study used the double-bounded discrete choice format, and applied interval regression analysis. The findings indicate that people with a higher level of education and income are more willing to pay. Also, it was found that the WTP increases among insured people, and decreases as the family size increases (Nosratnejad et al., 2014). Ghosh and Mondal (2011) developed a study to assess the WTP for health insurance among the urban poor in Mumbai. The study conducted double-bounded dichotomous choice format and applied multivariate regression. It was found that households who have morbid conditions and had an experience with inpatient admission (past hospitalisation experience) are more willing to pay for health insurance. Also, it was found that households with higher income within the urban poor are more willing to pay. Furthermore, the study found that people who had severe illnesses that required high expenditure were more willing to pay (Ghosh and Mondal, 2011). Ichoku et al (2010) carried out a study to assess the WTP of rural Nigerians for one aspect of the nation's new National SHI Scheme initiated in 2004. Authors used the payment scale technique

and performed OLS regression on the data. They found that WTP is positively associated with households' size, wealth, level of education, and their trust in the management of the proposed scheme (Ichoku et al., 2010). Onwujekwe et al (2009) developed a study to investigate people's WTP for Community Based Health Insurance (CBHI) in Nigeria. The study used the bidding game as the elicitation format, and conducted OLS regression. This study found that males and people with higher education are more willing to pay, and those who had an experience with Out of Pocket payment for healthcare are less willing to pay, while those who had previously paid for healthcare using any health insurance mechanism are more willing to pay (Onwujekwe et al., 2009). Lofgren et al (2008) conducted a study to investigate Vietnamese' WTP for health insurance among a rural population in northern Vietnam. This study implemented the bidding game technique and performed interval regression. The findings of this study imply that nearly half the sample are unwilling to pay, also it was found that higher income, healthcare need, and level of education are associated with a higher WTP, where age is not (Lofgren et al., 2008). In the same year, Ataguba et al (2008) developed a study to investigate the WTP of rural households for a community health payment scheme in Nigeria. This study used a payment scale alongside the dichotomous choice as the elicitation format, Heckman's 2 step was employed, with applying probit regression on the participation step, and OLS (Including the Inverse Mills' Ratio) on the consumption step. Study results indicate that female-headed households, educationally disadvantaged, and poor people have lower WTP (Ataguba et al., 2008). Also, in the same year, Lang and Lai (2008) carried out a study to investigate people's WTP to sustain the current National Health Insurance programme in Taiwan and to extend that programme to cover long-term care services. The study employed closed ended format, and applied Logistic regression to analyse the WTP. The study findings implied that higher income and education are associated with greater WTP. The study also found that a household's WTP is less than

for an individual. Also it was found that need for healthcare services significantly impact people's WTP (Lang and Lai, 2008). Dror et al (2007) conducted a study to estimate the maximum WTP among rural and bottom of the pyramid (BoP- i.e. those on low income who represent the majority) in India, to find the major determinants that influence their choice. This study used the bidding game technique, and performed linear multiple regression. The result showed that people who are covered by micro health insurance units (MIUs) are more willing to pay than those who are not. The same is true for people with: higher income, education, experience of high healthcare costs, and for males (Dror et al., 2007). In the same year, Barnighausen et al (2007) developed a study to assess the maximum WTP for basic health insurance (BHI) in Wuhan City in China. The study used the payment scale and performed multiple regression. It was found that a higher level of income increases people's WTP for BHI, and the same is true for the increase in the healthcare expenditure incurred previously. Also the study found that being a migrant, or not having permanent employment decrease the WTP (Bärnighausen et al., 2007). Asgary et al (2004) conducted a study to estimate the demand and the WTP for health insurance. The study used bidding game technique, and applied OLS regression. The study found that age, level of education, healthcare facilities, access to healthcare services, and healthcare needs significantly influence people's WTP for health insurance (Asgary et al., 2004). Hengjin et al (2003) carried out a study to investigate people's WTP for a CBHI scheme. This study employed the bidding game as the elicitation format and applied Logistic and OLS regression. The study found that people with higher income, higher education, younger people, and males are more willing to pay (Dong et al., 2003). Asenso et al (1997) conducted a study to assess the willingness of households in the informal sector of Ghana to join and pay premiums for a proposed National Health Insurance scheme. The study employed the bidding game and applied an ordered probit model. The study found that as income increases and unemployed households decrease,

the level of WTP increases. In addition, the study found that households with a higher level of health expenditure or people who find healthcare cost difficult to contain are likely to pay more. In addition, it was found that males and people with a higher level of education are willing to pay more (Asenso-Okyere et al., 1997).

5.2.2.2 Healthcare Literature Review

Alhanawi et al (2018) developed a study to assess the value and importance of improvement in the quality of public healthcare services in Saudi Arabia (investigate the WTP for improvement to quality of public healthcare services). The study employed the double-bounded dichotomous choice with follow up question, and used partial Tobit regression with marginal effect. The study found that people with higher income are more willing to pay for improvement to quality of public healthcare services (Al-Hanawi et al., 2018b). Liu et al (2012) carried out a study in Hong Kong to estimate patients' maximum WTP for primary healthcare services. The study employed a payment scale, benefited from the two-stage model to address selection bias, and conducted OLS regression. The study found that age negatively impacts patients' WTP. In addition, it was found that income and better health status increase WTP (Liu et al., 2012). Havet et al (2012) conducted a study to estimate the WTP for home blood transfusions and to analyse determinants of their choice. This study used the bidding process as an elicitation format, and Tobit and truncated regression. Long home-hospital distance, poor quality of life, and previous experience of home care were the determinants of patients' WTP (Havet et al., 2012). Baji et al (2012) developed a study to elicit consumers' preference of the choice of healthcare providers for outpatient service (visit to specialist) and inpatient services (planned surgery). The study conducted the discrete choice experiment, and applied binary probit regression with random effects. The study found that people with higher education and income are willing to pay more (Baji et al., 2012). Bergmo and Wangberg (2007) carried out a study to investigate patients' WTP for electronic communication with

their general practitioner. The study used the open-ended method, conducted Spearman's correlation coefficient, Mann-Whiteny test, and Logistic regression. It was found that more than half the sample were willing to pay, and it was found that patients who already had electronic access revealed lower WTP than those without (Bergmo and Wangberg, 2007). Olsan and Donaldson (1998) developed a study to investigate people's WTP for increased earmarked Taxation for a helicopter ambulance service, more heart operations, and more hip replacements. A payment scale was used as an elicitation format, and OLS regression was applied to the study data. It was found that education and age negatively affect the WTP (Olsen and Donaldson, 1998).

5.2.2.3 Discussion

In terms of the factors that affected people's WTP, the findings of this section's literature review confirm the findings of Section 4.5.3.1 literature review. This section shows that almost all the health insurance studies confirm that higher level of income and education are associated with a higher WTP. Moreover, Lofgren et al (2008), and Hengjin et al (2003) confirmed that younger people are willing to pay more than older people. Also, Shimamura et al (2018), Onwujekwe et al (2009), as well as Dror et al (2007) confirmed that being insured with a health policy, is associated with a higher WTP. Furthermore, the literature in this section added more demographic and socio-economic factors such as the fact that males, those who are employed, and people in need of healthcare are more willing to pay. The same is true for those who had experience with inpatient admission, severe illness that required high expenditure, and incurring higher healthcare costs. In contrast, people with a larger family size and migrants are less willing to pay. Also, it was found that the trust in the management of the proposed scheme has an impact on WTP.

With regard to the elicitation format and the method of analysis, the previous studies in this section used different elicitation formats and methods of analysis. Out of the five studies that employed a payment scale, it was found that four applied OLS regression,

and the last one applied multiple regression. In addition, two out of four studies that conducted an open-ended technique performed Logistic regression, another one used probit regression, and the last one multiple regression. Moreover, three studies employed a double bounded technique, and used three different types of regression (Interval, Multivariate, and Tobit regression). Furthermore, seven studies conducted the bidding game format, four of which applied OLS regression, where three applied three different analysis methods (Interval, Order Probit, and Tobit regression).

In addition to the guidance for choosing the elicitation format that were discussed in the previous section, the literature in this part indicates that researchers should employ the format that best helps them to achieve the study objectives, in terms of suitability for the sample characteristics, and ease of comprehension of questions to guarantee reliable responses. Moreover, it was noted that the analysis methods differed even in studies that used the same elicitation format, and this implies that the analysis method is employed based on the variables' characteristics. For instance, different ways of presenting the answers will require different analysis methods, and this is based on whether the type of answers fit the requirements of the analysis method or not. In the coming sections, the reasons for choosing specific analysis methods for the current study will be outlined, where the decision will be based on the payment scale format that was decided on as the elicitation format for this study.

5.2.3 Targeted Individuals

This study is targeting the same five types of individuals who were targeted in the former study (see Section 4.2.4). In addition, the classifications for the targeted individuals in the former study, which are based on their eligibilities to healthcare, were the same in this study (i.e. three groups; *increase*, *maintain*, and *obtain*, and six slices). Likewise for the contribution techniques that were discussed in the same section (e.g. people in slice one will contribute a proportion of their total income to increase their access to the healthcare

services that are provided by MOH etc.). Furthermore, the same external suggestions that were outlined in Section 4.2.4.6 were included in this study.

5.2.4 Study Dimensions

This study followed the same approach that was used in the former study in respect of the data collection. A survey was conducted to share thoughts and decisions of the individuals who were defined in the previous section to fund the MOH. In addition, this study targeted the same sample size, and included only those who are aged 18 and above from both genders. Moreover, the study was held in Riyadh City in the same six provinces where the former study took place. This was to make the current study consistent with the former one, and systematic in terms of the processing. Furthermore, the study sampling was carried out in the summer of 2018. This period was chosen to avoid a gap in the research and to keep the work ongoing.

5.2.5 Data Collection

The data collection took the form of written documents and was designed to be filled in face-to-face as the former study to ensure that participants would understand their task to guarantee reliable answers. Moreover, the documents were provided in Arabic and English, and the same approach that was followed in the former study was implemented in case a participant is neither an Arabic or English speaker (see Section 4.2.6). Moreover, this study used the same information sheet that was used in the former study (minor change to the question that is required to be answered as it is different to the former study) (see Section 4.2.6.1) and the same consent form (see Section 4.2.6.2). With respect to the data instrument: participant background, eligibility to healthcare, and support services sections were the same. However, changes were made to the introduction and WTP sections, where the options for funding the Saudi MOH were removed as it is not targeted in this study.

In this part, the study will outline the changes that were added to the data instrument's introduction and WTP sections.

5.2.5.1 Introduction

The introduction of the current study gave a brief of the sharp decreases in oil prices and deficits in the Saudi budgets in the past four years, and how this could threaten the sustainability of the healthcare services that are provided by the MOH. This section informed participants that a study was carried out last year to investigate the willingness of the population of SA to contribute to funding the Saudi MOH to ensure the sustainability of the provided healthcare services and to attain a better level of healthcare, where the results showed that the majority were willing to pay. Therefore, this study is attempting to estimate the maximum value that people are willing to pay.

5.2.5.2 Willingness to Pay

This section provided participants with six questions, where each question was designed to be answered by specific categories of individuals. The determinants of these questions were outlined in Section 4.2.6.3 and were the same in this study. Moreover, participants were guided to the relevant question to be answered based on their answers to the questions of the eligibility to healthcare section. Furthermore, in this study the design of each question changed from asking whether participants are willing to participate to asking about their maximum WTP value instead.

The values that this study offered to participants to estimate their maximum WTP were decided based on the two primary objectives of this thesis, which are:

1. *Implementing a basic healthcare insurance mechanism.*

2. *Raising funds for the Saudi MOH, to ensure the sustainability of their healthcare services.*

To achieve the first objective, this study investigated the early percentages that seven countries with old healthcare systems started with when they began levying contributions. The countries are Australia, USA, Switzerland, Germany, Netherlands, France, and Austria. These countries are using major health funding mechanisms such as: Taxation, SHI, and PHI. Moreover, to implement the second objective, it was estimated how much these percentages could raise for MOH to ensure the sustainability of its healthcare services. This section will start by presenting the contribution percentages in the seven countries, estimate how much funding such percentages could rise for the Saudi MOH, and then show the order and number of choices in the payment scale.

1. **Australian Healthcare System**; in 1975, the Australian government established Medibank (national health insurance not for profit owned by the government) to be administrated by the health insurance commission. The initial percentage that the Medibank started with was 1% mandatory on income, which was then raised to 1.5% after the Medicare was introduced in 1984 (Healy et al., 2006).

2. **US Healthcare System**; in 1965, the US government introduced Medicaid and Medicare. Medicaid provides healthcare coverage for people with low income, which is fully funded by the government. Medicare provides healthcare coverage for older people and those with severe disability. This programme is funded from four sources which are: employer and employee, where each mandatorily pays tax of 1.45% (2.9% from both), the government, and the last source is the self-employed, where they have to pay the full percentage (2.9%) (Rice et al., 2013).

3. **German Healthcare System**; the German health healthcare system is considered the oldest system using SHI. In 1885, the percentage of contribution paid by employee and employer was 2% (2:1). Up to 1992, the total percentage rose to 12.7% (1:1). After two years, the percentage rose to 13.2%, and to 13.5% after another two years. This equal percentage of contribution changed in 2005 (1.13:1), where by 2013 the employee

proportion became 8.2% with the employer pay 7.3% of the pre-taxed income (Busse and Blümel, 2014).

4. **Netherlands Healthcare System**; the PHI in Netherlands is compulsory. In 2011, the average price of the basic healthcare plan was €1,199 and €1,158 by 2015 on a yearly basis. In 2011, when the government started tracking down uninsured people, the National Healthcare Institute were authorised to purchase a one year PHI standard plan for those who failed to be insured within six months from the first notice (€99 in 2015 and €122.3 in 2016 on monthly basis) (Kroneman et al., 2016). This is equal to 2.48% of the average monthly income of 2016[47] (OECD, 2018b).

5. **French Healthcare System**; the French healthcare system was almost exclusively funded through contributions by the employers and employees. Between 1992 and 1997, the level of contribution was 6.8% of gross earnings for employees, and 12.8% for employers. In 2013, the employer contribution rose to 13.1% (Chevreul et al., 2015).

6. **Switzerland Healthcare System**; in Switzerland, by 2013 there were 61 health insurance companies. These companies provide various coverage plans of mandatory health insurance (MHI). In 2015, it was estimated that the median monthly premium was SW.FR406 ($429). This is equal to about 12% of the average monthly income (Pietro et al., 2015).

7. **Austria Healthcare System**; in Austria, the contribution level is regulated by law, and cannot be set by the health insurance funds. Up to 2017, the health insurance contribution was 7.65% of the base income. The contribution rate is nearly the same between employer and employee (50.6% by employee and 49.4% by employer) (Bachner et al., 2018).

[47] Calculated based on 2016 average monthly income in Netherlands (OECD Source).

When the percentage of people's contributions to the healthcare systems in different countries was investigated, it was found that the percentages ranged between 1% and 12%. In fact, some of the percentages rose recently due to some systems being old and a series of changes that were applied. For example, the contribution in Germany has increased 1.9% in about 20 years, and the contribution has risen to 12% in Switzerland in the past three years. This suggests that the percentages should start at a low level in SA, taking into consideration that the Saudi government is entirely transforming the whole system, which focuses mainly on diversifying the government resources, and this may push the government to introduce further tax in addition to what they have already started. Therefore, the lower the contribution is, the more acceptable the participation will be.

Based on the data discussed above, and the available information, if the employed people in the private and public sector and pensioners contributed 5% of their income, the MOH would reduce their reliance on the government general budget by 74% (*12,041 Thousand employees and pensioners by the end of 2015 × $1,700 the average monthly income by the beginning of 2016 × 12 month × 5% contribution ÷ $16.6 Billion the MOH 2015 budget*). Where if the contribution is 10%, this will exceed what the MOH needs, and result in a diversion to the second primary objective of this thesis, which focuses on raising funds, not covering the whole, or collecting extra funds. Moreover, the 74% of reduction was theoretically calculated based on the available information, which represents the income (not the total income) of only a third of the population of SA. However, the employees of the Ministries of Defence, Interior, and National Guards were not included, nor were the rest of the Saudi population who is entitled to income from the government agencies' funds that were discussed previously. Furthermore, this calculation was taken from the theoretical side, as some people will be unwilling to pay, where they might see that their current access to healthcare is sufficient. This will result in an indirect reduction in the MOH budget by reducing the allocated resources.

Based on the data that were discussed in the previous sections, the payment scale was designed to be incremented by 1%. However, due to the fact that some people's maximum WTP might lie within the decimals of the percentages (for example 2.3%), the scale values were designed with such ranges (for example 3% or more and less than 4%). Moreover, so as not to bias the scale by restricting participants from choosing a percentage over 1%, a zero value was added to the scale. In addition, the scale included six positive values to eliminate the risk of the midpoint bias. Also, the last option was for those who have maximum WTP exceeding 5%, and this was to eliminate the range bias. Subsequently, the payment scale that was used in this study was: zero, more than zero and less than 1%, 1% or more and less than 2%, 2% or more and less than 3%, 3% or more and less than 4%, 4% or more and less than 5%, 5% or more (see Sample 5 in the Appendix).

5.2.6 Conclusion

After it was found that the majority of the population of SA are willing to contribute to raising a fund for the MOH, this study investigates the maximum value that they are willing to pay. This study discussed the elicitation formats and outlined the pros and cons of each, as well as what methodological issues may arise in this regard. It was decided to employ the payment scale with values based on two factors: the experience of countries with an old healthcare system, and how much funding a given percentage may raise for the MOH. Moreover, a broad vision of the elicitation formats and statistical analysis methods were included in this section to benefit from the best practice of the WTP previous studies. Furthermore, this study is targeting the same individuals as the former study, and uses the same data collection with some changes.

5.3 Study Survey

5.3.1 Ethical Approval

On the 27th February 2018, the SREC was contacted to inquire whether an ethical approval for the second study is required, as the data collection is almost the same as the one in the former study. They informed that a new application had to be submitted, briefing the changes. On 8th March, all the documents were submitted to the SREC. On 22nd March, the final ethical approval was received (see Sample 6 in the Appendix).

5.3.2 Pilot Study

On 12th May 2018, I travelled to Riyadh, and by the next day I printed 10 Arabic questionnaires, and a few English versions in case a participant did not speak Arabic, then I started the pilot study. The same approach as the former study was followed. I introduced myself to participants and tried not to say anything unless I was asked. The piloting took two days, which was held in Riyadh City. No specific questions or new observations were noticed except that some participants used their phones' calculators to check the amount of money that the provided percentages equated to their total income. All participants were cooperative, and all the questionnaires were filled, collected, transformed into English versions, and then sent to the supervisors on 15th May, which was the last day before Ramadan. We investigated participants' answers and discussed whether any major observation was noticed. The same behaviour of participants in the previous piloting test was observed. It was found that most people did not read the information sheet or the consent form, where people just asked for a general idea of the information sheet and the consent form, and then signed only one copy of the latter. It was found that all questionnaires were filled in correctly, where only one participant was unwilling to pay, in comparison to four in the former piloting.

5.3.3 Data Gathering

On 18th May, I received the final decision from my supervisor to start the official sampling. I followed the same plan as the former study, by devoting two to three days for provinces outside Riyadh City, and this plan was dependent on several factors: the province size, the collected number of questionnaires, the availability of the potential participants, and participants' cooperation. I was planning to finish the sampling in 20 days (more or less) for different reasons; first, it is Ramadan month, and people would be less cooperative in the last 10 days of this month, for the reason that they devote the majority of their time to prayer, as they are considered as the most precious days in this month. Second, working days would be missed by the end of Ramadan, as the government agencies start Eid Al Fitr holiday this year on 7th June, which is 23rd of Ramadan, and 13th June for private sector (29th of Ramadan). Third, in the last few days of Ramadan, people also become busier in preparing themselves for Eid Al Fitr, which takes four days as a celebration after Ramadan.

The targeted time for the sampling was 10:00 am every day, as the working hours in Ramadan are lower (five working hours in the public sector, and six in the private sector), which start at 10:00 am. In addition, in this study I decided to start from the furthest province as I did in the former study. On 19th May, I took all the copies, informed the physicians that I was travelling and told them that they may receive a call from participants, and I started my first trip.

5.3.3.1 Ad Dilam

On 19th May, I travelled to Ad Dilam in the early morning in order to encounter employees and people in the early hours of the day, before the temperature increases. I tried to change the places where I took my sample from in the former study, to avoid any tribal issues. I started sampling in King Abdullah Road, where there are a lot of public and private agencies, as well as some stores and public facilities. People looked overtired from the

fasting, but were receptive to participate. The sampling was processed more slowly as the temperature became higher. By midday, I recognised that the temperature rose to over 55 degrees Celsius, and I noticed that people disappeared. I decided to go back to Riyadh City, and wait until sunset (Iftar Time), when people can start eating. At 8:00 pm I travelled back to Ad Dilam, where in the meantime people had taken a rest as the body gets tired after Iftar, and also people can pray the usual Ramadan prayer, which starts at 8:00 pm and takes from an hour to an hour and a half. I arrived in Ad Dilam, and invited people to participate from the same locations as in the morning. People looked better at this time and more active. Usually, people at Ramadan stay awake up to an hour before the dawn (Al Fajr time), where people start fasting. I had two days in Ad Dilam, where I sampled during the day up to 1:00 pm, and at night from 10:00 pm until 3:00 am. During this period, a good number was collected.

5.3.3.2 Al Kharj, Al Muzahimiyah, Al Uyaynah and Ad Diriyah

The same plan was followed in the other four provinces, which are outside Riyadh City, where two visits were undertaken to each. The provinces with lower traveling distance afforded the chance to collect more samples. All the areas where I experienced resistance from participants in the former study were ignored, as well as the areas where I was informed that they may contain risk. The sampling during the day was extremely difficult, but I was insistent to include it as a part of the sampling for the reason that many people who may show up during the day, may not appear at night; especially old people, those with specific illness, public and private employees, and visitors to public and private agencies and facilities, which close at night. I spent eight days in these four provinces, and I was confident about the number that I had collected.

5.3.3.3 Riyadh City

The rest of the sampling period was spent in Riyadh City, where the majority of the population reside. The same sampling approach was followed. People were happy to participate in all places. Broad access to people was attained, where many places were occupied by Saudis and non-Saudis. However, it was recognised that in the last few days of the sampling plan, it slowed as fewer people appeared. By 7th June, all the required 600 questionnaires had been collected.

5.3.4 Conclusion

This section discussed how the ethical approval was obtained, how the data collection was piloted, and the way in which the data was collected. In addition, this study followed the same steps as the former one with regard to the data collection. Moreover, the study benefited from the previous experience in each step, which facilitated the work processing. The ethical approval was obtained in a shorter period than the former study. The piloting study took two days, where the questionnaires were filled in correctly, and no issues or misunderstandings were observed. The data collection took 20 days in Ramadan, where the processing was undertaken in two shifts: one in the morning and the other one at night to ensure that all people categories were involved. Finally, the sampling was held in the same six provinces where the former study took place, and the targeted number was achieved.

5.4 Study Results

All Questionnaires were collected with a 100% response rate. The STATA 15.1 package was used to analyse the collected data. In this section, the study will present participants' demographic and socio-economic characteristics and will discuss them in relation to what was found in the former study. Moreover, the percentages and frequencies will be examined in order to generate another profile for the WTP to improve people's access to the healthcare services that are provided by the Saudi MOH.

5.4.1 Demographic Characteristics

The majority of the study sample was males, who represent 74% of the total sample (see Table 28). This percentage is almost the same as the former study (74% vs 78%, respectively), and this was attributed to the broad access to males as explained previously. Moreover, the study data shows that over 88% of participants are aged between 18 and 45, where the most are aged between 26 and 35. This comes in line with the former study, where almost the same frequencies were observed.

Table 28 Participants' Demographic Characteristics

		Surveyed Participants	%
Gender			
	Male	443	74.0
	Female	157	26.0
	Total	**600**	**100**
Age			
	18 - 25	126	21.0
	26 - 35	273	45.5
	36 - 45	131	21.8
	46 - 55	54	9.0
	56 - 65	11	1.8
	65 <	5	0.8
	Total	**600**	**100**
Nationality			
	Saudi	434	72.3
	Non-Saudi	166	27.7
	Total	**600**	**100**
Marital Status			
	Single	238	39.7
	Married	337	56.2
	Divorced	13	2.2
	Widowed	12	2.0
	Total	**600**	**100**
Chronic Illnesses			
	Yes	48	8.0
	No	552	92.0
	Total	**600**	**100**
Health Status			
	Excellent	346	57.7
	Very Good	186	31.0
	Good	58	9.7
	Fair	8	1.3
	Poor	2	0.3
	Total	**600**	**100**

In addition, Table 28 indicates that 72% of the study sample are Saudis, and the rest are from different nationalities. This follows the same pattern as in the former study, where non-Saudis are resistant somehow to take part due to language barriers and being fearful

of the study materials. However, the response rate of non-Saudis in this study was higher relative to the former one (28% vs 19%, respectively). Furthermore, a relatively higher response rate from married, divorced, and widowed people was reported in comparison to the former one (56% vs 55%, 2.2% vs 1.8%, and 2% vs 0.7%, respectively) (see Table 17 and 28). Specifically, a greater response from married participants was anticipated due to the fact that the majority of the study sample was older than the average marriage age in SA (mid-twenties). However, 18% of those above the average marriage age are still single in comparison to 15% in the former study, which is likely to occur. The data shows that people without chronic diseases represent the majority of the study sample, with almost the same response rate as the former study (91%) (see Table 28). Finally, nearly every percentage in each health status is the same as the former study.

5.4.1.1 Methodological Considerations

Sampling in SA is different to other countries, such as in Europe. This is because SA is ruled by Islamic principles and traditions which prohibit gender mixing without utmost necessity, which makes a contact with a female subject to questioning and potential prosecution. In addition, the provinces where the sampling was undertaken comprise tribes and nomadic people who are usually less educated and highly conservative and religious (sticking with the fundamentals of Islam). Therefore, they are very strict in the case of gender mixing. These categories are prevalent in Ad Dilam, Al Muzahimiyah, and Al Uyaynah. In fact, this study was aware of all these constraints and barriers which may expose the researcher to risks and potential harm. However, because these categories are prevalent in many areas over the country, an inclusion to the sample was necessary to ensure randomisation and a good representation of the population of SA.

Other methodological options were considered to facilitate the sampling procedures and to reduce the researcher's exposure to risks; such as telephone interviews. However, such an option is likely to bias the sample because sourcing participants using the phone book

would be very difficult due to Islamic and traditional constraints which would make the researcher select males to avoid any judicial sanctions that may result of calling females, as a call to a female in SA from an unknown person is considered to some extent to be a crime. Moreover, the issue of low levels of education is likely to make the sampling end up with a highly educated sample due to an expected refusal from those less educated to participate, release, or even to give a consent for financial matters to a person over the telephone. Therefore, the randomisation is not possible through telephone interviews, which is likely to bias the study sample.

The online option was also considered. However, because the study questionnaire contains technical questions, many people are likely to ignore them, or may discontinue answering them, and even if they answered them in full may do so without a full reading and understanding, such that they would give unreliable answers or answer questions they were not required to answer. In addition, the number of questions and data provided in the questionnaire were kept to a minimum. However, the reality is that the Saudi healthcare system is complex, such that it needs a lot of explanation that could not be accomplished online. Moreover, this approach excludes those with reading difficulty due to illiteracy or failing eyesight, those who do not have internet access, and also those who do not speak Arabic or English who might need assistance from someone who speaks their language. Therefore, the online option is likely to deliver unreliable data, and might bias the sample due to dismissing different categories of the population.

The inclusion of females to the study sample was broadly difficult and was performed with extreme caution. Therefore, to avoid any discomfort or misunderstanding from females or from other people in the same location, females were invited in groups at the same time (more than three). Moreover, it was very important not to start by introducing myself to them as when I approach males (unless they specifically asked about my details), but to go straightforward to the study details, such as telling them that this is a

study for a project and needs your help to share your thought which could benefit the whole country. Also, when presenting details about the study, it was very important not to mention my contact details, as females in SA are highly sensitive to this point. However, if they needed the contact details, they could be found in the information sheet.

It is true that with all these efforts to include females to the study, and the attempt to change locations within each province even at different times each day to ensure randomisation and a good representation of the population, the percentage of the females in the study was low. However, the truth is that the Islamic principles and the Saudi traditions oblige males to take the full responsibility to provide life's needs to their families; for example, the family housing, food, transportation, and even the entire cost of having a family, whereas the females take lower responsibility in this regard. Therefore, females are more likely to stay at homes as they are provided with all life's needs, and are less likely to be in public places where the study sampling was required and authorised by the SREC to take place. In addition, the attempt to obtain permission to conduct the sampling in specific organisations in order to approach females may bias the sampling, as there would then be a focus on employed females. In addition to this bias, sampling from organisations may make the mission more difficult because females are strictly segregated from males in the workplace, where they are always placed in specific areas restricted to them. Moreover, employed females in SA represent less than 17% of total jobs in 2018 (GAFS, 2018a), such a percentage also makes approaching females in organisations hard taking into account that this percentage should be even lower as it does not include the security and defence employees where the vast majority of jobs are held by males in this sector.

Based on the Islamic principles, Saudi traditions, population statistics and according to the proposal of this thesis, those who will pay for the MOH healthcare services are more likely to be males. Therefore, the secured percentages of females that was included in this

thesis, although low, may be better to represent the category of those who actually will take the responsibility to pay, who are most likely to be males. Moreover, it was expected that such females percentages (22% in the former study and 26% in the second study) or even lower would stand in a study in SA. According to a willingness to pay study conducted by Al-Hanawi et al (2018) in Jeddah, the percentage of the females in this study was less than 13% (Al-Hanawi et al., 2018b). Al-Aboudi et al (2016) investigated the association between knowledge and attitude with health-related quality of life among patients with type 2 diabetes mellitus in Riyadh, in which the female proportion was less than 23% (Al-Aboudi et al., 2016). In addition, Al Ghobain et al (2011) estimated the prevalence of chronic obstructive pulmonary disease among smokers in SA. The percentage of females in this study was less than 11% (Al Ghobain et al., 2011).

One way that was considered to better access females was to hire females to conduct part of the sampling. However, this would require significant effort to recruit groups of females in each province to do the sampling, where a refusal is highly expected because of traditions, the high degree of conservativism and low levels of education in some provinces. Also, a refusal is expected because the sampling will be conducted in public places and includes the day period where the weather is extremely hot, such that would be very difficult for females to do, particularly during Ramadan. Moreover, those females would need sessions in each province to ensure that they can perform the sampling properly which would be very hard to do in some provinces. All these challenges would lengthen the sampling period, which would result in a longer stay in Riyadh, and so extra funding for the researcher himself and a budget to fund those females recruited to do the sampling.

5.4.2 Socio-Economic Characteristics

Study data shows that 86% of the sample comprises those who have either high school or undergraduate level of education, where the majority are those who hold a bachelor

degree (see Table 29). This is attributed to the higher number of people employed in public and private sectors who hold one of these three levels of education. Moreover, a high percentage of employed people were reported in this study, where the majority were those who are privately employed, and this is due to the high percentage of the privately employed people in Riyadh. Moreover, 88% of the unemployed are students and people without jobs.

Table 29 Participants' Socio-Economic Characteristics

		Surveyed Participants		%
Level of Education				
	Primary	15		2.5
	Secondary	13		2.2
	High School	81		13.5
	Diploma	100		16.7
	Bachelor	333		55.5
	Higher Diploma	12		2.0
	Master's	41		6.8
	PhD	5		0.8
	Total	**600**		**100**
Employment				
	Employed	**527**		**87.8**
		Public Sector	176	33.4
		Private Sector	287	54.5
		SDU	64	12.1
		Total	527	100
	Unemployed	**73**		**12.2**
		Self-employed	3	4.1
		Public Pensioner	5	6.8
		Private Pensioner	1	1.4
		Unemployed	36	49.3
		Student	28	38.4
		Total	73	100
	Total	**600**		**100**
Total Monthly Income	SR			
	< 3,000	108		18.0
	3,000 - 5,999	92		15.3
	6,000 - 8,999	129		21.5
	9,000 - 11,999	89		14.8
	12,000 - 14,999	82		13.7
	15,000 <	100		16.7
	Total	**600**		**100**

Furthermore, study figures show that 66% of the study sample are those in receipt of income above the Saudi average monthly income (SR 6,384), and approximately the same percentage was reported in the former study (see Table 18 and 29).

In addition, the data indicates that more than half of the study sample have PHI, and this is because of the high percentage of privately employed people. This response rate, is higher than that which was reported in the former study (52.5% vs 48.8%). Also, the data implies that the majority of the privately insured participants are at level A, with exactly the same percentage as the former study (38%) (see Table 19 and 30).

Table 30 Participants' Possession of Private Health Insurance

		Surveyed Participants	%
Health Insurance			
	Yes	315	52.5
	No	285	47.5
	Total	**600**	**100**
Level of Insurance			
	VIP	37	11.7
	A	119	37.8
	B	73	23.2
	C	86	27.3
	Total	**315**	**100**
Insurance Provider			
	Employer	300	95.2
	OOP	0	0.0
	From Family	15	4.8
	Total	**315**	**100**
Family Major Eligible			
	Public	1	6.7
	Private	14	93.3
	Total	**15**	**100**

5.4.3 Eligibility to Healthcare

5.4.3.1 Eligibilities Based on the three Basic Provisions

The figures show that 79% of the study sample are eligible to access healthcare in the MOH healthcare facilities, and this is due to the high percentage of Saudis in this study. This percentage is slightly lower to what was observed in the former study (84.5%). Moreover, more than half the sample are entitled to healthcare in the private sector, and this is attributed to the high percentage of participants who are privately employed. However, a lower response was reported by this group in the former study (48.8%). In addition, more than a third of respondents are eligible to healthcare in other governmental healthcare facilities. This figure exceeded the number of participants who are employed in this sector, which indicates that the eligibilities of many participants in this sector were

secured though their relatives. The same scenario was detected in the former study, but with a higher response rate of those who are eligible to healthcare in SDU (41.5%) (see Table 31 and Table 20).

Table 31 Participants' Eligibilities to Healthcare

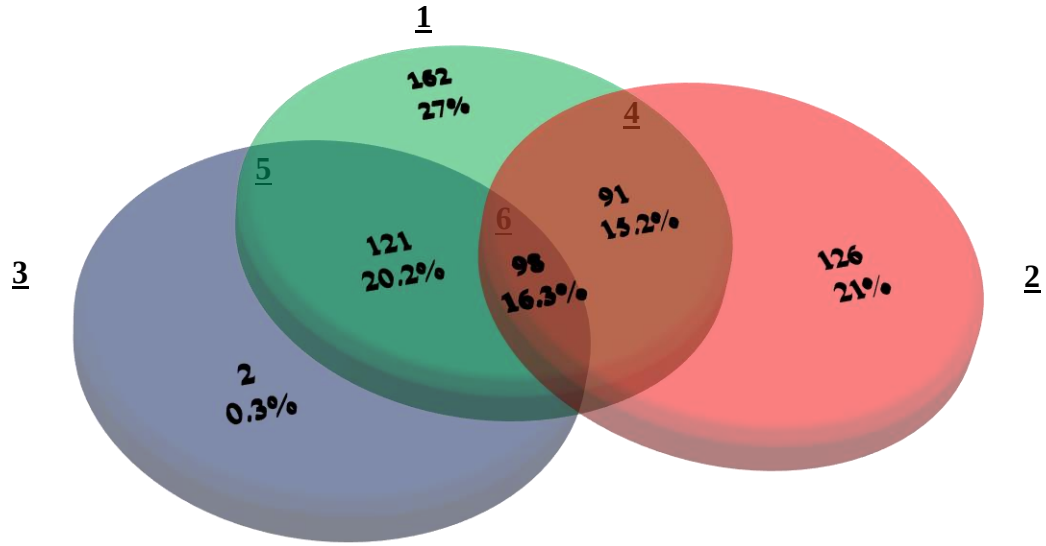
		Surveyed Participants	%
Eligible to MOH			
	Yes	472	78.7
	No	128	21.3
	Total	**600**	**100**
Eligible to Private Sector			
	Yes	315	52.5
	No	285	47.5
	Total	**600**	**100**
Eligible to SDU			
	Yes	221	36.8
	No	379	63.2
	Total	**600**	**100**

5.4.3.2 Eligibilities Based on the Six Slices

The study figures indicate that all the six eligibilities to healthcare in the Saudi healthcare system were involved in this study. It was found that the largest group of the study sample are those who can access healthcare solely in the MOH, who represent 27% of the sample. This percentage is higher than that which was found in the former study (23.3%). Moreover, a higher response was observed in this study by those who are eligible to healthcare only in the private sector relative to the former one (21% vs 15.3%, respectively), and the same is true for those who are eligible to healthcare only in SDU (0.3% vs 0.2%, respectively) (see Figure 11 and Figure 9).

In addition, a lower response was reported by those who are entitled to access in the MOH and private sector (15.2% vs 19.8%, respectively), in the same way as those who are guaranteed access to the MOH and the other governmental healthcare facilities (20.2% vs 27.7%, respectively). On the other hand, the number of participants who are eligible to healthcare in all provisions is higher in comparison to the former study (16.3% vs 13.73%, respectively) (see Figure 11 and Figure 9).

Figure 11 Participants' Eligibilities to Health



[1]Eligible to healthcare only in MOH. [2]Eligible to healthcare only in private sector. [3]Eligible to healthcare only in SDU. [4]Eligible to healthcare in MOH and private sector. [5]Eligible to healthcare in MOH and SDU. [6]Eligible to healthcare in all health provisions.

5.4.3.3 Classification of Each Slice

When further analyses were conducted, it was found that 63% of the first slice are Saudis and 22.8% non-Saudis employed publicly. This implies a lower response from the first group and higher from the second in comparison to the former study (63% vs 69.2, and 22.8% vs 15.7%, respectively). Also, it was found that 13.6% of this slice are unemployed Saudis, and only one dependent on a non-Saudi. Moreover, only one participant of the second slice is a dependent on non-Saudi employed in the private sector, where the rest are non-Saudis employed privately. This indicates a lower percentage for the former, and a higher for the latter compared to the former study (0.8% vs 12%, and 99.2% vs 87%, respectively). In addition, the third slice contains two non-Saudi participants who are employed in SDU, where the former study contained only one participant in this slice. Furthermore, the majority of the fourth slice is represented by Saudis who are employed privately (90.1%), then 8.8% is Saudis employed publicly and entitled to healthcare in

the private sector, and only one dependent on a Saudi is eligible to healthcare privately. These percentages are different to what was observed in the former study (74%, 16.8%, and 9%, respectively). Furthermore, the Saudis who are employed in the public sector and eligible to healthcare in the other governmental healthcare facilities in addition to the MOH represent 19% of the fifth slice, 46.3% are those who are employed in SDU, and 34.7% are dependents on Saudis employed in SDU. These percentages mirror the former study to some extent. Finally, the majority of the last slice is occupied by Saudis who are privately employed, who represent 81.6% of this slice, 6.1% by Saudis who are employed publicly, the same percentage by Saudis who are employed in SDU, and also the same by unemployed Saudis (6.1%). These figures are different to what was found in the former study (75.6%, 4.9%, 12.2%, and 7.3%, respectively) (see Table 32).

Table 32 Classifications of the Eligibilities in Figure 11

		Surveyed Participants	%
MOH S1			
	Saudis employed in public	102	63.0
	Non-Saudis employed in public	37	22.8
	Unemployed Saudis	22	13.6
	Dependent on Non-Saudis employed in public	1	0.6
	Total	**162**	**100**
Private Sector S2			
	Non-Saudis employed in private	125	99.2
	Dependent on Non-Saudis employed in private	1	0.8
	Total	**126**	**100**
SDU S3			
	Non-Saudis employed in SDU	2	100
	Total	**2**	**100**
MOH & Private Sector S4			
	Saudis employed in public with HI	8	8.8
	Saudis employed in private	82	90.1
	Dependent on Saudis eligible in private	1	1.1
	Total	**91**	**100**
MOH & SDU S5			
	Saudis employed in public eligible to SDU	23	19.0
	Saudis employed in SDU	56	46.3
	Dependent on Saudis employed in SDU	42	34.7
	Total	**121**	**100**
MOH, Private, & SDU S6			
	Saudi employed in public eligible to all	6	6.1
	Saudi employed in private eligible to all	80	81.6
	Saudi employed in SDU eligible to all	6	6.1
	Dependent Saudi eligible to all	6	6.1
	Total	**98**	**100**

5.4.4 Willingness to Pay (Participation)

5.4.4.1 Overall Willingness to Pay

The study found that the majority of the study sample are willing to pay to improve their level of access to the healthcare services that are provided by the Saudi MOH (as indicated by the percentage whose willingness to pay was greater than zero). The figures indicate that almost three quarters of this study are willing to pay, while 55.4% was reported in the former study. Moreover, it was found that people in group *increase* as well as those in group *obtain* were more likely to be WTP relative to what was observed by people in these categories in the former study (61.7% vs 58.6%, and 64.8% vs 59.1%, respectively). However, a significant percentage of WTP was reported by those in group *maintain* in comparison to the former study (81.3% vs 53.1%) (see Table 33 and Table 22).

Table 33 Participants' Overall Willingness to Pay for the MOH Healthcare Services

		Surveyed Participants	%
Total Willingness to Increase			
	Yes	100	61.7
	No	62	38.3
	Total	**162**	**100**
Total Willingness to Maintain			
	Yes	252	81.3
	No	58	18.7
	Total	**310**	**100**
Total Willingness to Obtain			
	Yes	83	64.8
	No	45	35.2
	Total	**128**	**100**
Overall Willingness			
	Yes	435	72.5
	No	165	27.5
	Total	**600**	**100**

5.4.4.2 Willingness to Pay Based on the Entitlement to Income

The study data implies that participants who are in receipt of income tend to be more likely to express a willingness to pay than those with no income in both studies. Figures indicate that those who are in groups *increase* or *obtain* and are in receipt of income have relatively the same level of WTP in comparison to what was observed by those who were in these two groups in the former study (64% vs 61% and 65% vs 61%). With regard to

those in group *increase* who have no income, there is a similar response (33% vs 30%). The only participant in group *obtain* in this study who has no income is unwilling to pay, where six out of eleven participants in the former study were unwilling to pay. In addition, this study observed a higher level of willingness by those in group *maintain* of those in receipt of income relative to the former one (82% vs 53%), and nearly the same percentage from those with no income (see Table 34 and Table 23).

Table 34 Participants' Willingness to Participate Based on the Entitlement to Income

		Surveyed Participants	%
Willingness to Increase (For those With Income)			
	Yes	96	64.0
	No	54	36.0
	Total	**150**	**100**
Willingness to Increase (For those With No Income)			
	Yes	4	33.3
	No	8	66.7
	Total	**12**	**100**
Willingness to Maintain (For those With Income)			
	Yes	248	82.1
	No	54	17.9
	Total	**302**	**100**
Willingness to Maintain (For those With No Income)			
	Yes	4	50.0
	No	4	50.0
	Total	**8**	**100**
Willingness to Obtain (For those With Income)			
	Yes	83	65.4
	No	44	34.6
	Total	**127**	**100**
Willingness to Obtain (For those With No Income)			
	Yes	0	0.0
	No	1	100
	Total	**1**	**100**

5.4.4.3 Willingness to Pay Based on the Six Slices and Each Slice's Classification

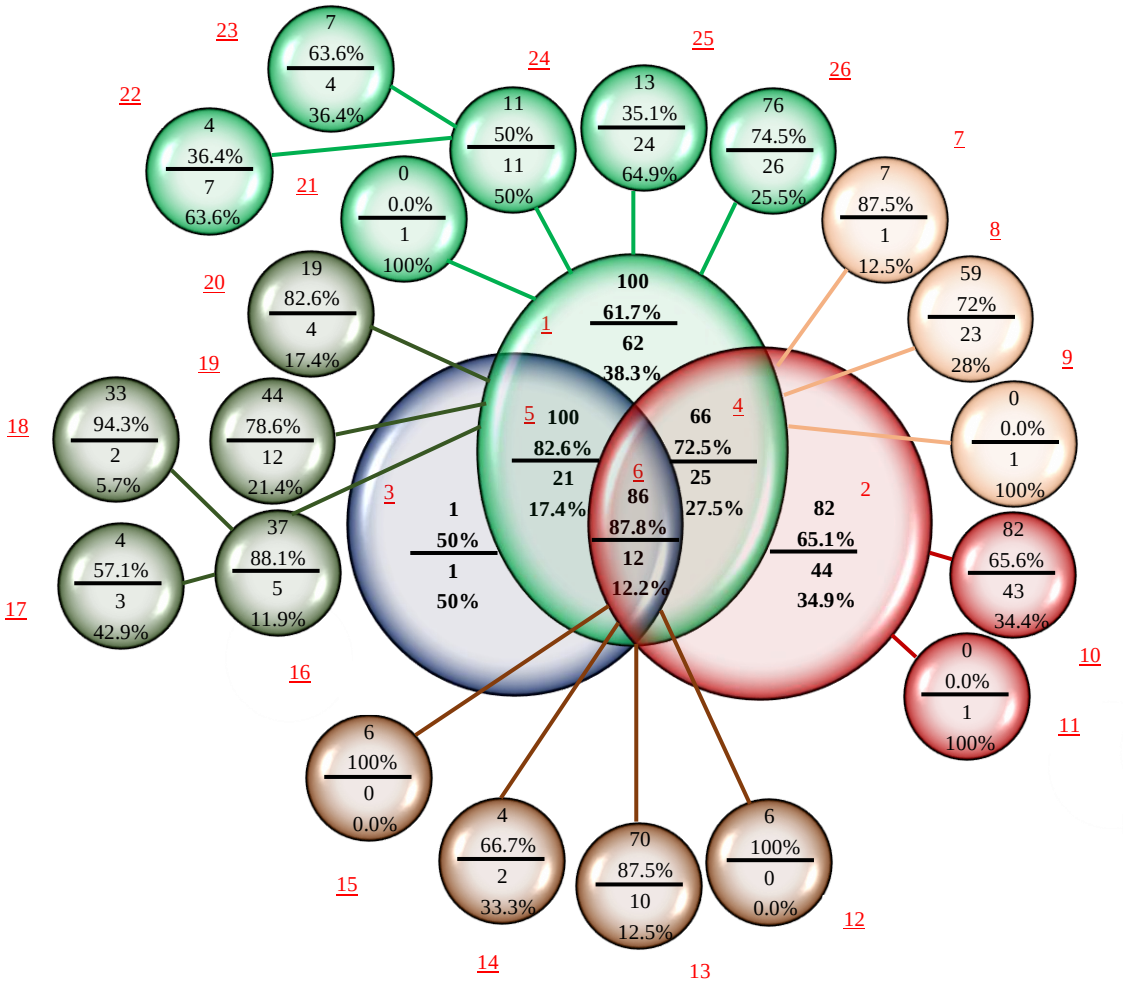
When additional analysis was conducted to identify the WTP of groups within each slice, it was found that three quarters of Saudis who are employed publicly and entitled to healthcare only in slice one are willing to pay. This level of WTP is higher in comparison to the same group in the former study (75% vs 66%, respectively). On the other hand, only a third of non-Saudis who are employed publicly are willing to pay. This is higher than what was reported by the same group in the former study, where only a quarter was willing to pay (see Figure 12 in the Text and Table 44 in Appendix).

The study figures indicate that two thirds of non-Saudis who are privately employed are willing to pay, where nearly the same level was reported by the same category of the former study (see Figure 12 in the Text and Table 44 in Appendix). Moreover, it was found that almost three quarters of the Saudis who are employed privately from those entitled to healthcare in slice four are willing to pay. This percentage is different to what was observed in the same categories in the former study (72% vs 54%, respectively).

The study found a significant difference between the levels of WTP of all groups in slice five in comparison to the same groups in the former study. The study figures indicate that 82.6% of the Saudis who are publicly employed and entitled to healthcare in SDU are willing to pay, where 60% was reported by the same group of the former study. Moreover, 78% of the Saudis who are employed in SDU are willing to pay, whereas 44% were willing to pay in the former study. In addition, 94% of the Saudi dependents of those with income are willing to pay, where 44% in the former study were willing to pay (see Figure 12 in the Text and Table 44 in Appendix).

The data found that the level of WTP by the Saudis who are employed privately and eligible to healthcare in all the three healthcare provisions is higher than the same group in the former study (87% vs 66%, respectively) (see Figure 12 in the Text and Table 44 in Appendix).

Figure 12 Participants' Willingness to Pay Depending on some Socio-Economics Charactersitics (The Numerator is Yes, The Denominator is No)



1 Saudis and Non-Saudis eligible to health just in MOH. **2** Non-Saudis eligible to health just in private sector. **3** Non-Saudis eligible to health just in SDU. **4** Saudis eligible to health in MOH & private sector. **5** Saudis eligible to health in MOH & SDU. **6** Saudis eligible to health in all three provisions. **7** Saudi work in public sector with health insurance. **8** Saudi work in private sector. **9** Dependent on Saudi eligiable in private sector without income. **10** Non-Saudi work in private sector. **11** Non-Saudi dependents on Non-Saudi work in Private Sector. **12** Saudi work in public sector and eligible to all. **13** Saudi work in private sector and eligible to all. **14** Saudi work in SDU and eligible to all. **15** Saudi dependent with income eligible to all. **16** Dependent on Saudi work in SDU. **17** Dependent on Saudi work in SDU without income. **18** Dependent on Saudi work in SDU with income. **19** Saudi work in SDU. **20** Saudi work in public and recive health in SDU. **21** Unemployed Non-Saudi recive health just in MOH**. 22** Unemployed Saudi without Income recive health just in MOH. **23** Unemployed Saudi with Income recive health just in MOH. **24** Unemployed Saudi recive health just in MOH. **25** Non-Saudi, employed in public and recive health just in MOH. **26** Saudi, employed in public and recive health just in MOH.

5.4.4.4 Willingness to Pay Based on the Demographic Classification

The study figures indicate that the majority of participants are willing to pay according to each demographic characteristic, with 58% minimum WTP, which was observed by non-Saudis. This high level of WTP was found to be higher than what was observed in the former study in relation to each demographic characteristic (see Tables 45 and 21 in the Appendix).

5.4.4.5 Willingness to Pay Based on the Socio-Economic Classification

Study data shows a significant level of WTP by participants in all socio-economic characteristics, with a minimum level of 61% by those who hold secondary level of education. This level of WTP is considered higher than that in the former study, except for those who hold secondary level of education and those with PHI level C (see Tables 46 and 22 in the Appendix).

5.4.5 Willingness to Pay (Consumption)

5.4.5.1 Overall Willingness to Pay

The study data shows that 27% of the study sample selected zero, 20% are willing to pay between 1% and 2%, 13.5% between zero and 1%, and a similar percentage are willing to pay more than 5%. When further analysis was carried out, it was found that 38% of participants who are eligible to access healthcare only in the MOH selected zero and 22% are willing to pay between zero and 1%. In addition, it was found that a quarter of those who can seek healthcare in the private sector or other governmental healthcare facilities in addition to the MOH, or those who can access all the three healthcare provisions, are willing to pay between 1% and 2%, 18% chose zero and a similar percentage are willing to pay more than 5%, where 14% are willing to pay between 2% and 3%. Moreover, more than a third of those who can access healthcare services only in the private sector or in the other governmental healthcare facilities selected the first choice (zero), 16% willing to pay between 1% and 2%, and 15% willing to pay between 2% and 3% (see Table 35).

Table 35 Participants' Levels of Willingness to Pay Based on their Eligibilities

	Total	Zero	>0&<1	>1&<2	>2&<3	>3&<4	>4&<5	≥5
Willing to Increase	**162**	**62**	**36**	**20**	**11**	**8**	**14**	**11**
	%	38.3	22.2	12.3	6.8	4.9	8.6	6.8
Willing to Maintain	**310**	**58**	**39**	**79**	**45**	**13**	**19**	**57**
	%	18.7	12.6	25.5	14.5	4.2	6.1	18.4
Willing to Obtain	**128**	**45**	**6**	**21**	**19**	**15**	**8**	**14**
	%	35.2	4.7	16.4	14.8	11.7	6.3	10.9
Overall Willingness	**600**	**165**	**81**	**120**	**75**	**36**	**41**	**82**
To Pay	**%**	27.5	13.5	20.0	12.5	6.0	6.8	13.7

5.4.5.2 Maximum Willingness to Pay Based on the Entitlement to Income

Figures in Table 36 indicate that more than a third of those in group *increase* of those in receipt of income chose zero, and nearly a quarter are willing to pay between zero and 1%. Two thirds of those who are not in receipt of income chose zero, and a quarter are willing to pay between zero and 1%. Moreover, a quarter of those in group *maintain* of those in receipt of income are willing to pay up to 2%, 18% over 5%, 15% up to 3%, and 18% chose zero. However, half of those with no income selected zero and a quarter were willing to pay between 1% and 2%. In addition, more than a third of those in group *obtain* of those in receipt of income selected the first choice (zero), and 16% are willing to pay up to 2%, where the only non-Saudi dependent in this group chose zero (see Table 36).

Table 36 Participants' Maximum Willingness to Pay Values Based on the Entitlement to Income

	Total	Zero	>0&<1	>1&<2	>2&<3	>3&<4	>4&<5	≥5
Willing to Increase								
(For those With Income)	**150**	54	33	20	11	8	13	11
	%	36.0	22.0	13.3	7.3	5.3	7.8	7.3
Willing to Increase								
(For those Without Income)	**12**	8	3	0	0	0	1	0
	%	66.7	25.0	0.0	0.0	0.0	8.3	0.0
Willing to Maintain								
(For those With Income)	**302**	54	38	77	45	13	19	56
	%	17.9	12.6	25.5	14.9	4.3	6.3	18.5
Willing to Maintain								
(For those Without Income)	**8**	4	1	2	0	0	0	1
	%	50.0	12.5	25.0	0.0	0.0	0.0	12.5
Willing to Obtain								
(For those With Income)	**127**	44	6	21	19	15	8	14
	%	34.6	4.7	16.5	15.0	11.8	6.3	11.0
Willing to Obtain								
(For those Without Income)	**1**	1	0	0	0	0	0	0
	%	100	0.0	0.0	0.0	0.0	0.0	0.0

5.4.5.3 Maximum Willingness to Pay Based on the Six Slices and Each Slice's Classification

The data indicates that more than a third of the first slice selected zero, and nearly a quarter are willing to pay between zero and 1%. When additional analysis was conducted, it was found that a quarter of Saudis who are employed publicly and can access healthcare only in the MOH chose zero, 19% are willing to pay between zero and 1%, and 17% are willing to pay between 1% and 2%. In addition nearly two thirds of non-Saudis who are

publicly employed chose zero, and nearly a third are willing to pay between zero and 1% (see Table 47 in the Appendix). Moreover, In the second slice, it was found that a third of non-Saudis chose zero, 17% are willing to pay between 1% and 2%, and 15% between 2% and 3% (see Table 48 in the Appendix).

The data shows that more than a quarter of slice four chose zero, and nearly a quarter are willing to pay between 1% and 2%. Moreover, further analysis indicates that 28% of those who are privately employed and eligible to healthcare in this slice selected the first option, 26% are willing to pay between 1% and 2%, and 15% are willing to pay more than 5% (see Table 49 in the Appendix).

Study figures imply that more than a quarter of slice five are willing to pay between 1% and 2%, and nearly a quarter are willing to pay more than 5%. When more analysis was performed, it was found that more than a quarter of the Saudis who are employed in the public sector and eligible to healthcare in SDU in addition to the MOH are willing to pay between 1% and 2%, 22% are willing to pay more than 5%, and 17% selected zero. Moreover, the figures indicate that 29% of the Saudis who are employed in SDU are willing to pay between 1% and 2%, 27% are willing to pay more than 5%, and 21% chose zero. In addition, it was found that more than a quarter of the dependents with income are willing to pay between 2% and 3%, nearly a quarter are willing to pay between 1% and 2%, 20% between zero and 1%, and 17% more than 5% (see Table 50 in the Appendix).

The data shows that more than a quarter of slice six are willing to pay between 1% and 2%, 18% more than 5%, and 17% are willing to pay between 2% and 3%. Further analysis indicates that a quarter of those who are employed privately in this slice are willing to pay between 1% and 2%, 20% are willing to pay more than 5%, and 16% between 2% and 3% (see Table 51 in the Appendix).

5.4.5.4 Maximum Willingness to Pay Based on the Demographic Classification

The data shows that a quarter of males selected zero, 20% are willing to pay between 1% and 2%, and 15% are willing to pay more than 5%. On the other hand, a third of females chose zero, 21% are willing to pay between 1% and 2%, and 18% between zero and 1%. In terms of nationality, 23% of Saudis are willing to pay between 1% and 2%, and 22% chose zero; whereas, 42% of non-Saudis selected zero, and 13% are willing to pay between 1% and 2% (see Table 52 in the Appendix).

The data shows that more than a quarter of those who are aged between 18 and 25 are willing to pay between 1% and 2%, 20% put zero, and 17% are willing to pay more than 5%. Moreover, a third of those aged between 26 and 35 selected zero, and 19% are willing to pay between 1% and 2%. In addition, it was found that more than a quarter of those aged between 36 and 45 chose zero, and 14% are willing to pay between 1% and 2% (see Table 52 in the Appendix).

The study figures show that more than a quarter of single participants selected the first option, and 21% are willing to pay between 1% and 2%. Of those who are married, more than a quarter chose zero, and 19% are willing to pay between 1% and 2% (see Table 52 in the Appendix).

The data shows that a quarter of those with chronic diseases are willing to pay between 1% and 2%, 17% between zero and 1%, and the same percentage are willing to pay more than 5%. On the other hand, it was found that 29% of those without chronic diseases selected zero, and 20% are willing to pay between 1% and 2%. Moreover, the study figures indicate that 31% of those in excellent health status chose zero, and 22% are willing to pay between 1% and 2%. Moreover, 20% of those in very good health status put zero, 17% are willing to pay between 2% and 3%, 16% are willing to pay between zero and 1%, and the same percentage are willing to pay between 1% and 2% (see Table 52 in the Appendix).

5.4.5.5 Maximum Willingness to Pay Based on the Socio-Economic Classification

The study figures show that a third of those who hold first level of education selected zero, 16% are willing to pay between zero and 1%, and the same percentage are willing to pay between 2% and 3%. When further analysis was conducted, it was found that a third of who have high school education selected zero, 20% are willing to pay between zero and 1%, and 17% between 2% and 3%. Furthermore, the data indicates that more than a quarter of those who have second level of education put zero, and 22% are willing to pay between 1% and 2%. When further analysis was performed, it was found that a third of the diploma holders are willing to pay between 1% and 2%, 20% chose zero, and 15% are willing to pay between zero and 1%. Moreover, 29% of those with a bachelor degree selected zero, and 18% are willing to pay between 1% and 2%. In addition, it was found that nearly a quarter of those who hold third level of education are willing to pay more than 5%, 21% selected zero, and 17% are willing to pay between 1% and 2%. Further analysis was conducted and showed that more than a quarter of the master's degree holders chose zero, and nearly a quarter are willing to pay more than 5% (see Table 53 in the Appendix).

The data indicates that a third of those who are in receipt of income less than the Saudi average monthly income chose zero, and 18% are willing to pay between 1% and 2%. When more analysis was carried out, it was found that more than a third of participants without income or those in receipt of income less than the Saudi monthly minimum selected zero, 16% are willing to pay between 1% and 2%, and another 16% are willing to pay between 2% and 3%. Moreover, the data figures show that nearly a quarter of those in receipt of income over the Saudi average monthly income selected zero, and 21% are willing to pay between 1% and 2%. The additional analysis indicated that nearly a quarter of those with income between 6,000 and 8,999 Saudi Riyals chose zero, and 22% are willing to pay between 1% and 2%. In addition, it was found that nearly a quarter of those

in receipt of income over 15,000 Saudi Riyals are willing to pay between 1% and 2%, 20% are willing to pay more than 5%, and another 20% selected zero (see Table 53 the in Appendix).

The figures show that more than a quarter of participants who have PHI selected zero, and 22% are willing to pay between 1% and 2%; whereas, 29% of those who do not have PHI chose zero, 18% are willing to pay between 1% and 2%, and 17% are willing to pay between zero and 1%. Moreover, it was found that a third of those who have VIP PHI are willing to pay more than 5%, and 19% would pay between 2% and 3%. More than a quarter of those who hold level A are willing to pay between 1% and 2%, and 23% selected zero. In addition, nearly a third of those who have level B are willing to pay between 1% and 2%, and 23% chose zero. Finally, more than a third of level C holders put zero, and 16% are willing to pay between 2% and 3% (see Table 54 in the Appendix).

5.4.6 Participants' Average Willingness to Pay

In this section, the study will outline the average maximum WTP values based on the three major eligibilities to healthcare, groups across the six slices, and demographic and socio-economic characteristics. However, for the reason that this study used ranges of values to determine people's maximum WTP, the average maximum WTP will be calculated using the formula of the mean for grouped data, which starts by finding the midpoint of each range, then to be multiplied by the frequencies of the corresponding ranges (number of people selected each option), then the sum of the results is divided by the total number of participants who are WTP. Nevertheless, due to the reason that the last option in the payment scale that was used in the study was an open-ended option (5% <), the value of this option is set based on adding the width of the option before it (1%) to 5%.

This study also calculated the average with the last option being set at 8%. This percentage was chosen based on people level of contribution in a group of countries with long established healthcare systems, which are Germany, Austria, Netherlands, and Singapore (see Sections 5.2.5.2 and 3.3.8). The outcomes of this part is shown in Table 55 in the Appendix.

In addition, Table 55 in the Appendix shows the results using another calculation for the average, which was based on the order of the options. For example, it multiplies the number of participants who chose the first option by one, and the participants who chose the second option by 2 and so on, then to be divided by the total number of participants in the same group.

When the average was calculated in these three ways, the second method yielded figures that were approximately 0.3 percentage points higher than the first method, while the third method yielded results that were approximately 0.5 percentage points higher than the first method. However, the relativities remained the same in most cases. Therefore, the results that will be presented in this section will be the one that was calculated based on the first method.

5.4.6.1 Overall Average

The data shows that the overall average maximum WTP values of all participants is 2.7%. In addition, the data indicates that the average of those who are eligible to healthcare only in the MOH is about 2.3%. Moreover, the figures imply that the average was higher for those who can access healthcare in the private sector or other governmental healthcare facilities in addition to the MOH, or those who can access all the three healthcare provisions (2.7%). In addition, the average of all those who can access healthcare only in the private sector or the other governmental healthcare facilities is 3%, which is considered the highest average among the three groups (see Table 55 in the Appendix).

5.4.6.2 The Average Based on the Six Slices and Each Slice's Classification

Study figures indicate that the overall average maximum WTP by all participants of slice one is about 2.3%. When further analysis was conducted, it was found that the average for all Saudis who are employed publicly is 2.5%, where the average was very low among the non-Saudis in this slice who are publicly employed (0.8%). In addition, the data shows that the average among non-Saudis who are privately employed was nearly 3%, and the average for Saudis who are privately employed and eligible to healthcare in the private sector in addition to the MOH was 2.6% (see Table 55 in the Appendix).

In slice five, the overall average WTP is 2.9%. The further analysis on this slice's data indicates that the average of those who are publicly employed and eligible to healthcare in SDU in addition to the MOH was 3.2%, and 3.1% for those who are SDU employed. Also, in this slice, it was found that the average for dependents who are eligible to healthcare in SDU of those with income was 2.5%. In addition, the overall average of slice six is 2.8%. The figures show that the average for those who are privately employed is 2.9% (see Table 55 in the Appendix).

5.4.6.3 The Average Based on the Demographic Classification

Study figures indicate that the average maximum WTP by males is higher than that of females (2.8% vs 2.2%, respectively). Moreover, the data shows that Saudis' average is the same as non-Saudis (2.7%). In addition, it was found that the highest average maximum WTP among age groups is for those aged between 36 and 45 (2.9%). Moreover, the data indicates that those who are married have the highest average among marital status groups (2.8%). Furthermore, it was found that those with chronic diseases have a higher average WTP than those without (2.8% vs 2.7%, respectively). Additionally, those who have very good health status have the highest average among health status groups (2.7%), with the exception of the group with fair self-reported health status, which contains 8 participants (see Table 55 in the Appendix).

5.4.6.4 The Average Based on the Socio-Economic Classification

Study data shows that the overall average maximum WTP by those in the first level of education is 2.4%, 2.7% of participants at the second level of education, and 3.1% by those holding one of the third level of education degrees. Moreover, the figures imply that the overall average for those who are in receipt of income less than the average monthly income is 2.5%, and 2.7% for those receiving income higher than the monthly average income. Furthermore, the figures indicate that those who hold PHI showed a higher average than those without (2.7% vs 2.6%) (see Table 55 in the Appendix).

5.4.7 Conclusion

This section outlined the study sample characteristics, where it was found that data covered all the expected features. Moreover, the figures implied that participants' demographic and socio-economic characteristics are broadly similar to those in the former study, which suggests that both study samples are representative of the targeted population. The demographic results showed that the majority of participants were males, Saudis, aged between 26 and 35, married, having no chronic diseases, and in excellent or very good health. Moreover, the socio-economic characteristics implied that most of the respondents are bachelor degree holders, employed, in receipt of income higher than the Saudi monthly average, and more than the half of the sample are privately insured. In addition, this study data indicates that the differences in the responses in terms of the basic three eligibilities to healthcare varied within a rate of 5 percentage points up or down in comparison to the former study.

Furthermore, the study found that the majority of participants are willing to pay to increase, maintain, or to obtain access to the MOH healthcare facilities. When further analysis was conducted, it was found that participants who are in receipt of income tend to have more WTP than those with no income. Also, there was a similar level of WTP by the current and the former study in relation to those who are in groups *increase* and *obtain*.

However, a significant level of WTP was reported by those in group *maintain* in this study. In addition, when the WTP of groups within each slice was investigated, a higher level of WTP was observed by almost all groups within the six slices of this study compared with the former one. Furthermore, this study showed that the majority of participants are willing to pay according to each demographic and socio-economic characteristic, with a level of WTP higher than what was seen in the former study.

Moreover, the consumption figures indicate that the majority of participants who are willing to pay in groups *maintain* and *obtain*, are willing to pay between 1% and 2%, where those in group *increase* are willing to pay between zero and 1%. Also, the same percentages were shown when they were grouped based on the entitlement to income. Moreover, it was found that the majority of the answers lay between the first, second, third and the seventh choices, with more weight on the first and the third. This indicates that the payment scale design overcame the midpoint bias. Finally, the data showed that the average maximum WTP value is 2.7% for the whole sample.

5.5 Discussion

This section will discuss the fundamental findings of the study results, and will compare them with what was found in the former study, then will provide details about the tests and models that will be used to test the relationship between the WTP with the demographic and socio-economic factors.

5.5.1 Willingness to Pay (Participation)

The data in this study shows that nearly three quarters of the participants are willing to contribute to raising a fund for the MOH to improve their current level of access to healthcare services. This level of willingness is very much higher than what was observed in the former study, which was attributed to the fact that the former study sampling was simultaneous with a raft of changes to the Saudi system, such as: introducing tax (VAT) for the first time in Saudi Arabia, increases in fuel and electricity prices, and the setting

up of the citizen's account (which was found to be limited to specific categories of people who met the funding criteria, and actually provided a relatively low level of funding). All these factors put the Saudi citizens under pressure, and as a result affected the attitude, cooperation, and decision of many to contribute to raising a fund for the MOH in the previous study; whereas, during the sampling of the second study, it was recognised that the pressure was released due to the introduction of the royal grant of the King of Saudi Arabia to offset the rising cost of living. The stated grant includes $267 monthly payments for one year starting at the end of January 2018 to be given to the civil and military personnel, and at a lower level to the public and private pensioners, as well as social security beneficiaries and students (Alarabiya, 2018f). In addition, hundreds of the middle and large size private companies have cooperated and followed the royal decree (Argaam, 2018). Therefore, this grant compensated people, and put them back to the same previous living conditions, which encouraged them to reveal their genuine opinion.

Moreover, the result of the former study showed a level of willingness exceeding half the sample size in spite of the financial pressures that were caused by the change in the Saudi system. This indicator suggests that an improvement to the current access to healthcare services was required, while taking into account that the groups and categories that showed a minority acceptance for the proposal of the previous study were highly affected by the reforms to the Saudi system. This became clearer when people received the royal grant, which has offset the fiscal damage that was caused by the reforms to the system, where participants showed significant WTP, and a desire to implement what is proposed to them.

One of the reasons for the high level of WTP among participants is the payment scale, which gave participants a chance to compare and evaluate the opportunity to improve the current level of access to healthcare with the level of contributions that are provided to them in the questionnaires. In fact, every 1% of income (which is the increment in the

range offered in the designed scale), equates to about $17 per month for someone on the average income in SA. This amount ($17) accounts for small proportion of the royal grant (which is $267 per month), and is considered very low in comparison to the size of benefit that will be guaranteed. This was highly attractive for many categories of people, especially those who thought carefully, which led to a high acceptance.

The data shows that the responses from all categories across the six slices are in line with the overall responses from the major three eligibilities to healthcare, except for non-Saudis who are publicly employed and entitled to healthcare only in the MOH, as well as Saudis without income. This confirms the same findings in the former study, which showed a minority of WTP by these two categories. Moreover, the level of WTP in this study is more consistent with the overall WTP than what was observed by the former study, where the latter showed about eight categories with a minority willingness.

The figures indicate that non-Saudis who are restricted to healthcare only in the private sector showed a greater desire to obtain access to the MOH healthcare services than what was observed in the former study, as well as Saudis who are entitled to healthcare in the private sector in addition to the MOH, who view the MOH healthcare services as desirable. This confirms the findings of the former study, and emphasises that the healthcare services that are provided by the MOH are perceived as better and more attractive to healthcare seekers than what is provided by the private sector.

In this study, what was found from the responses of those who are eligible to healthcare in the other governmental healthcare facilities in addition to the MOH was different to what was found in the former study. This slice, which dragged down the overall WTP of group *maintain* and the overall WTP in the former study, showed a different orientation in the current study. This could be due to several factors: first, the decision of participants in this slice could be greatly affected by the royal grant. Second, different locations and participants may have swayed the result. Third, the payments scale, which might have

given them a chance to contribute an amount of money that represents little in terms of monetary value to them, but means a lot in terms of the benefits derived. However, the first two factors are more likely to be the reason, because the last one is unlikely as slice 5 showed one of the highest average WTP among other slices.

In the former study, a small majority (52%) of those who are eligible to healthcare in the other governmental healthcare facilities were willing to pay, despite the fact that these facilities provide the highest quality of healthcare services, and are universally agreed as the best healthcare facilities in SA. The findings of this study show an even larger majority (85%) of these people willing to pay, which raised uncertainty as to whether quality was the main reason.

Therefore, further investigations were carried out on the available data from the MOH, and the other governmental healthcare facilities. It was found that the hospitals of the latter represent only 9% of the total number of hospitals in SA by the end of 2016, compared with 58% of hospitals that are MOH hospitals. Moreover, SDU hospitals' beds represent 16% of the total, whereas the hospitals' beds in the MOH represent 59% of the total. In addition, the number of physicians in SDU represents 19% of the total physicians in SA, where physicians in the MOH represents 48% of the total. Furthermore, the distribution of the other governmental healthcare facilities is centralised, and not as vast as the MOH. For example, in Najran City, in the south of SA, the MOH provides their healthcare services for nearly six hundred thousand people throughout about one hundred healthcare facilities (68 PHCs, 11 hospitals, one medical centre, one diabetes centre, 7 dialysis centres, 2 dental centres, one rehabilitation centre, one central laboratory, 4 Anti-smoking clinics, one forensic centre, and two preventive centres at the entrance) (MOH, 2016, GAFS, 2017a). On the other hand, there are only three other governmental healthcare facilities (one for the University of Najran, and two for the security and

defence, where one of the latter is PHC). This data implies that the access to these facilities is incomparable to what the MOH provides.

In terms of the demographic classification, this study found that males are more willing to pay than females, and this contradicts the findings of the former study. However, because males in Saudis Arabia take responsibility for most of life's needs, they were greatly affected by the reforms to the Saudi system in the former sampling, whereas by acquiring the royal grant, they had more willingness to benefit from the proposal of this study, where they showed higher willingness to participate than females. Moreover, with exception to the group of participants aged between 18 and 25, who showed the highest willingness to participate, older age brackets are more willing to pay to some extent. This confirms the findings of the former study, and the fact that people need more healthcare services as they get older. In addition, it was found that non-Saudis are less willing to participate than Saudis. This confirms the findings of the former study, since non-Saudis have lower salaries and tend to save money. In addition, more willingness of married participants than those who are single was observed as in the former study, also participants with chronic disease were found to be more willing to pay in both studies. Finally, this study found that people in very good and good health status are more willing to pay than those in excellent health status.

According to the socio-economic classification, this study showed a higher willingness to participate by people with a higher level of education, where the opposite was perceived in the former study (moving from the first level to the third). This could be attributed to the capability to evaluate their current access to healthcare service, and the willingness to pay as was explained previously. Moreover, those in receipt of income above the average monthly income are more willing to participate than those who fell below. This confirms the fact that people with higher income are more willing to pay, and also confirms the findings of the former study, but in greater percentages. This suggests

that the affordability and the availability of income is one of the important reasons to take a decision to participate or to refuse. This was clear from the former study, where people with a higher income were still willing to participate in spite of the raft of changes that were applied to the Saudi system, which reduced people's disposable income. Finally, those who have PHI are more willing to pay than those who do not, and this confirms the same findings of the former study, and also suggests that people with experience in the private sector see the MOH healthcare services as essential.

5.5.1.1 WTP at Times of Austerity and Government Generosity (Prosperity)

The WTP results in the former study showed that the majority of the study sample were willing to pay notwithstanding that they were hit by the austerity measures that the government adopted since April 2016, where the WTP responses in the second study were significantly higher, impacted by the generosity of the government, which recompensated people through a royal grant. Both of these WTP scenarios are representative to their own circumstances. However, to design sustainable and persistent healthcare policy, it is suggested for decision makers in SA or in other countries experiencing (or having plans to apply in the future) austerity measures to take the former WTP scenario (55.4% WTP) into account more than the second one (72.5% WTP) when designing healthcare policy that might involve people incurring part of their healthcare costs. This is because in SA, there is more than a decade ahead for Vision 2030, which is still reviewing the Saudi system (public and private) in order to cut unnecessary spending and to raise different sources of funding, such as increasing the energy prices (Alarabiya, 2018a). Moreover, the royal grant which created a more prosperous climate was planned to be only for the year of 2018 due to the remarkable shock among the Saudi citizens that year, and was just renewed in 2019, where it is highly possible not to be continued in coming budgets (Alarabiya, 2018d).

The two WTP scenarios in this research provided a great experience for policy makers at national and international levels, which are expected to impact their future decisions that concern obtaining funds. For example, the WTP scenario during the austerity period would make policy makers design (or reform) healthcare policies more cautiously and to build on intensive investigation of the current and future economic trends at national and global levels (e.g. a further drop in oil prices or costly military intervention) in addition to any current or future governmental planned reforms. Therefore, it will make them think of policies (i.e. financial contribution) that are more likely to be accepted and match the government need or to develop cost containment policies so as not to face great resistance from the population. These should all strengthen the design of healthcare policies. On the other hand, the experience of the WTP during the more prosperous period would make policy makers prudent and aware that imposing a financial contribution at a time of prosperity (specifically at a high percentage because the economy is flourishing) may be resisted more if economic downturns followed, despite the government being in great need to raise funds (i.e. pre and post 2008 crisis, pre and post 2014 oil prices drop or at time of the Saudi royal grant and after stopping it).

Therefore, it is suggested that the decision makers in SA or in other countries with similar austerity and prosperity experience should consider a lower percentage than the average maximum WTP (2.7%) that was found in the second scenario. Evidence in this regard comes from the Irish healthcare system which shows that notwithstanding the country's deep and long GDP decline compared to what SA had recently (-10% between 2008 and 2010 in Ireland vs -0.87% only in 2017 in SA (Thomas et al., 2012, SAMA, 2018)), the government in 2009 increased the healthcare levy from 2% to 4% on earnings up to €75,036, and from 2.5% to 5% on earnings above this level (the health levy was subsumed into the Universal Social Charge in 2011) (Thomas and Burke, 2012), taking into account

that the Irish population have long experience with sharing costs of many public services compared with Saudis.

Another example from a long established healthcare system is Greece, where the economy contracted between 3% and 7% in the period from 2009 to 2012 (Maresso et al., 2015). Nonetheless, the pensioners' contribution rate to SHI increased only 1.45% to be 4% in 2013, and what is more important is that the levy increased gradually between 2011 and 2013 (Economou et al., 2015). Evidence from a developing country such as Hungary where the economy contracted 6.7% in 2009 shows that the government increased the SHI levy by only 1 percentage point in 2011 (from 6% to 7%) (Maresso et al., 2015). An example from the prosperity period in Europe (between 2000 and 2007) is the German healthcare system experience, where the government increased employees' SHI share 0.9 percentage points in 2005 (Busse and Blümel, 2014, Stock et al., 2006). These experiences suggest that relatively modest changes are feasible and that significant increases in payment rates for citizens should be approached with caution.

If policy makers in SA or in other countries with similar austerity or prosperity experience see imposing new (or increasing the existing) financial contributions as unreasonable decisions, then further funds could be attained through containing healthcare costs. For example, at a time of prosperity, the Belgian government introduced a number of reforms between 2002 and 2005 to control public spending over drugs with more focus on generic drugs (Janssen et al., 2016), Latvia reduced the number of sickness funds in 2002 (which reduced administrative costs) (Mitenbergs et al., 2012a), and the Italian government set strict rules between 2001 and 2004 on regions' healthcare spending with a continuous monitoring to improve their financial spending (Ferré et al., 2014). On the other hand, at times of austerity, Greece, Portugal, Romania and Georgia centralised the procurement of medical supplies for more negotiation power and to reduce administrative costs (Fragkoulis, 2012, Sakellarides et al., 2014b, Maresso et al., 2015, Richardson and

Berdzuli, 2017), and Croatia appointed a group of hospitals with the best procurement history to purchase supply for other hospitals (Džakula et al., 2014). In addition, there was a focus on generic drugs in the Netherlands, Hungary, Greece, Romania and Portugal to obtain savings (Thomson et al., 2015, Gaal, 2011, Kaitelidou and Kouli, 2012, Maresso et al., 2015, Barros, 2012). Moreover, Greece, Portugal and Romania implemented e-prescription systems to control spending and contain costs (Fragkoulis, 2012, Barros, 2012, Maresso et al., 2015). Furthermore, countries such as Romania and Greece merged hospitals (Mitenbergs et al., 2012a, Houston et al., 2011), Latvia merged public health agencies (i.e. Health Payment Centre with the Centre of Health Economics) (Mitenbergs et al., 2012a), and Georgia closed underutilized facilities (Richardson and Berdzuli, 2017). In addition, Italy, Ireland and Hungary reduced number of hospital beds and Ireland also closed wards (Ferré et al., 2014, Burke et al., 2014a, Richardson and Berdzuli, 2017).

5.5.2 Willingness to Pay (Consumption)

In terms of the maximum values that people are willing to pay, when all participants were involved, the data shows that the first choice (zero) was chosen the most. However, when only those who are willing to pay are included, the range from 1% to 2% was the most frequently chosen, then 5% and above, then from zero to 1%. Moreover, study figures indicate that people in group *maintain* are willing to pay more than those in group *increase* to keep their access to the MOH available. This shows how valuable the healthcare services that are provided by the MOH are. The same is true for the people from group *obtain*, who showed more WTP to guarantee a chance to access the MOH facilities, similarly in terms of the slices, where groups within slices two, four, five, and six are willing to pay more than groups in the first slice.

The study figures indicated that among 21 demographic categories of those who are willing to pay, it was found that 17 groups were most likely to choose to pay between 1%

and 2%, where three of the rest contained a few participants, and the last group is for those in very good health status, where 16% chose to pay between zero and 1%, the same percentage chose to pay between 1% and 2%, and the same percentage chose to pay between 2% and 3%. In respect of the socio-economic groups, the data shows that the third choice (1% to 2%) was also selected most frequently among the socio-economic groups of those who are willing to pay (12 out of 20 groups).

The average maximum WTP value was 2.7% among those who are willing to fund the MOH to receive better access to healthcare in return. This percentage would reduce the MOH budget burden by up to 40% ($6.6 Billon), taking into consideration that this was calculated based on the public and private employees and pensioners, who represent only a third the population of Saudi Arabia. More funds will be attained from the other two thirds, taking into account that the budget will be cut as some people may prefer to keep their current access. In addition, the data figures indicate that moving from incomes below the monthly average income to incomes above this average, and from lower level of education to higher, the average maximum WTP value increases. The same holds true for those who have PHI. This is also the case when moving from group *increase* to *maintain* to *obtain*, females in comparison to males, single to married, and those without chronic disease to those with.

5.5.3 Relationship between the Decision to Pay and Participants' Characteristics

This part of the study will investigate the relationship between participants' WTP for the healthcare services that are provided by the MOH healthcare facilities and their demographic and socio-economic factors. In a similar way to the previous study, this part of this study will apply Chi square and the Fisher exact tests to test the relationship between participants' WTP and their demographic and socio-economic characteristics. Table 56 in the Appendix presents the results of Chi square and the Fisher exact tests.

The variables that are marked with asterisks are the variables that had categories less than five, where the Fisher exact test was performed.

The data shows eleven independent variables, where each is significantly different to the overall WTP. First, age (*p-value 0.03*), it was observed that the percentage of those who are willing to pay ranged between 66.6% and 100%, where the overall WTP is 72.5% (see Table 56 in the Appendix). Second, nationality (*p-value 0.00*), the percentage of the Saudis who are willing to pay is 78%, where 58% of non-Saudis are willing. Third, chronic diseases (*p-value 0.00*), the data shows that 71% of those who do not have chronic diseases are willing to pay, while 90% of those who have chronic disease are willing to pay. Fourth, fifth, and sixth represent groups *increase* (*p-value 0.00*), *maintain* (*p-value 0.00*), and *obtain* (*p-value 0.03*). The data indicates that the percentages of those who are willing to pay in these three groups differ between 8% up to 11% in comparison to the overall. For instance, the difference between the percentage of those who are willing to pay of group *increase* in comparison to the overall is 11% (61.7% versus 72.5%). Group *maintain* is 9% (81.3% versus 72.5%). Group *obtain* is 8% (64.8% versus 72.5%). The seventh, eighth, ninth, and tenth comprise slice 1 (*p-value 0.00*), slice 2 (*p-value 0.04*), slice 5 (*p-value 0.00*), and slice 6 (*p-value 0.00*). The data showed that the willingness to pay in these four slices varied between 8% and 15% in comparison to overall. For example, the difference between those who are willing to pay in slice 1 in comparison to the overall is 11% (61.7% versus 72.5%). Slice 2 is 8% (65% versus 72.5%). Slice 5 is 10% (82.6% versus 72.5%). Slice 6 is 15% (87.7% versus 72.5%). The last variable is the level of PHI; this variable is different to the other variables because the total participants who hold PHI is 315 participants. Therefore, the overall percentage of those who are willing and unwilling to pay changed (willing 74.2%, unwilling 25.8%). The data showed that the percentage of those who are willing to pay changed between 2% to 12% relative to the overall.

The Chi square and Fisher exact test results showed significant differences between these independent variables in comparison to the overall response in terms of the WTP. This provides a good understanding of the sample distribution, which might be difficult to understand by only referring to the frequencies in the previous sections. Moreover, the data showed that the response of the participants in half of the characteristics (11 out of 23 variables) did not come in line with the overall response. The data showed that three of the demographic and almost all of the socio-economic factors are different to the overall response, given the fact that all participants' responses showed a high WTP. This is different to the results of the former study, which observed two variables were significantly different to the overall responses (slice 5 and those employed).

5.5.4 Relationship between Values and Participants' Characteristics

This section will investigate the relationships between participants' maximum WTP values for the healthcare services that are provided in the MOH and participants demographic and socio-economic characteristics. In this section, only participants who are willing to pay (WTP > zero) will be included. The dependent variables here are continuous in nature, which measure participants' WTP. The independent variables are the participants' demographic and socio-economic factors. In the literature review, depending on the nature of the variable, parametric and non-parametric tests are performed on data to test for significant relationships. The parametric tests assume the variables are normally distributed. Therefore, in this study normality of the dependent variables was tested using the Shapiro-Wilk test in Stata (see Sample 7 in the Appendix). The p-value for the continuous dependent variable is significant (levels of WTP *p-value 0.00*). Therefore, the study rejects the hypotheses that the continuous dependent variable is normally distributed. Consequently, non-parametric tests are appropriate. Mann Whitney is a non-parametric test that measures whether there is a significant difference between two groups by comparing the median values. This test makes no assumptions

about normality and is therefore appropriate to compare the continuous dependent variable and the categorical independent variables in this study. Moreover, the Kruskal-Wallis test is used to assess the relationship between the continuous dependent variable and the categorical independent variables that have more than two groups. The data satisfies the Kruskal-Wallis assumption that the observations are independent (Schlotzhauer, 2007).

Tables 57 and 58 in the Appendix show the results of the Mann Whitney and Kruskal-Wallis tests. These two tables present the variables categories, observations, the rank sum, and the *p* values. In addition, they present the z test statistic for the former, and Chi square for the latter.

The results of Mann Whitney test shows that gender (z = -3.099 p = 0.00), group *increase* (z = 3.246, p = 0.00), group *obtain* (z = -2.248, p = 0.02), slice 1 (z = 3.246, p = 0.00), and slice 2 (z = -2.083, p = 0.03) impact the amount that participants are willing to pay for the healthcare services that are provided by the MOH.

Moreover, Kruskal-Wallis test results shows that education (χ^2 = 15.55, p = 0.02), employed (χ^2 = 6.14, p = 0.04), unemployed (χ^2 = 13.62, p = 0.00), level of PHI (χ^2 = 22.04, p = 0.00), three eligibilities (*Access of Three*) (χ^2 = 12.09, p = 0.00), six slices (*Access*) (χ^2 = 15.52, p = 0.00) also impact the amount that participants are willing to pay for the healthcare services that are provided by the MOH.

5.5.5 Factors Affecting Peoples' WTP

This section will investigate the factors that affect participants' willingness to participate and to pay for the healthcare services that are provided by the MOH. To do so, this section will outline the econometric models that will be employed to serve this purpose. Afterwards, this part will present the models results, and discuss them.

5.5.5.1 Econometric Model

This study used multivariate analysis to identify the factors that influence participants' WTP. To do so, a joint process was employed. The first step involves whether the participant is willing to pay or not. The second step includes participants' decision on the maximum value that they are willing to pay. Therefore, a two-part model is suitable for identifying what participants are willing to pay for the healthcare services that are provided by the MOH. In the first part of this model, a probit regression will be used to estimate participants' decision to pay (participation equation) (*the same as what the former study used in Section 4.5.3.2*). The second part will use OLS regression to estimate the factors that are associated with the maximum amount that participants are willing to pay (consumption equation). This model is appropriate as it predicts the actual response, and does not make inferences regarding parameters, but predicts the conditional means (Duan et al., 1983, Manning et al., 1987).

The participation equation and the marginal effects equation are the same as employed previously. For the consumption equation, Y is a continuous variable and represents participants' maximum WTP value. w_i is a vector for the independent variables. The error terms in the model μ_i is assumed to be normally distributed with zero mean, variance = 1, and correlation coefficient ρ. Also, the two decisions are independent when $\rho = 0$ and the two equations can be estimated separately (Fonta et al., 2010).

MODEL 3

$Y^* = w_i\alpha + \mu_i$

$Y_i = Y^* if\ Z_i = 1$

Y_i *not observed if* $Z_i = 0$

For the reason that the second part of this model (OLS) is focusing on estimating the factors that are associated with the maximum amount that participants are willing to pay,

only the positive WTP values will be included (WTP > zero). Consequently, this part might include selection bias (O'donnell et al., 2008). This could be due to the fact that the participants' decisions to pay is not a random process as they are made by them. Therefore, participants who are willing to pay constitute self-selected sample and not random sample. Accordingly, the selection bias needs to be addressed. This issue is solved by the inverse mills ratio (IMR), which is generated using probit coefficient and included in the OLS regression to control the selection bias (Heckman, 1976).

The last equation $\lambda(x_i\alpha) = \phi(x_i\alpha)|\Phi(x_i\alpha)$ is the inverse mills ratio, σ is the standard deviation and ϕ and Φ are the standard normal density and standard normal function (Fonta et al., 2010).

INVERSE MILLS RATIO

$E(Y_i|Z_i = 1, w) = w_i\beta + \rho\sigma\lambda(x_i\alpha)$

The first step of the model is used to find a consistent estimator of α. Then the second α value is used to construct the mills lambda (λ). In the second step, λ is included as a regressor in the consumption equation allowing the parameters to be consistently estimated using OLS.

In respect of the participation equation, the dependent variable is binary in nature, which was generated from the continuous variable and coded as 0 if the participant is not willing to pay, and 1 if WTP > 0 was reported. Moreover, the explanatory variables that will be included in this model are all the variables that were included in the former study (see Section 4.5.3.2).

With regards to the consumption equation, the dependent variable includes only the positive WTP values. The explanatory variables that will be included in this part are the same variables that will be included in the probit model.

When the probit regression was performed, multi-collinearity occurred in the three eligibilities variable (Access of Three), the six slices variable (Access). Also, some categories in age, and education were dropped due to the low observations. Therefore, the variance inflation factor (VIF) was conducted, which indicated to 8.4 average VIF (see Table 59 in the Appendix). Also, some variables showed high VIF. For this reason, the same categories within Health Status, Education, Income, Marital Status, and Age that were merged in the former study, were also merged in the same way. Afterwards, the VIF was applied, and the results showed that it was reduced (3.7 average VIF). However, the collinearity rose again in the *Access* and *Access of Three* variables. Therefore, the Access variable was excluded, and as a result, the collinearity resolved with 3.9 average VIF (see Table 60 in the Appendix).

5.5.5.2 Results

Tables 37 and 38 presents the results of the two-part model, which was used to identify the factors that influence participants' decision and the maximum value that they are WTP for the MOH healthcare services (participation and consumption equations).

The probit regression shows significant p-value for nationality (*p*-value 0.00), which indicates that the participant's nationality influences the decision to pay. The marginal effect points to a 48% probability that Saudis are more likely to pay than non-Saudis, which means that there is a 48% increased likelihood that a Saudi will be WTP compared with a non-Saudi. The regression indicates that the participant's education significantly influences his/her decision to pay. The figures show that when a participant's education increases, then he/she is more likely to be willing to pay (second level of education *p*-value 0.01, third level of education *p*-value 0.01). Moreover, the marginal effect indicates that if a participant holds a diploma or bachelor degree, then he/she is 14.6% more likely to be willing to pay than if he/she holds one of the first level of education certificates (primary, secondary, or high school certificates). In addition, if the participant is highly

educated (higher diploma, master's, or PhD), then the likelihood of his/her WTP increases by 19.7% relative to those in the first level of education. Study results show that chronic diseases is also one of the factors that influences participants' decision to pay (*p*-value 0.00). The marginal effect interprets that participants with chronic disease are 19% more likely to pay than those who do not have a chronic disease.

Table 37 Probit Model Results for the Willingness to Pay (Second Study)

Independent Variable	Observation	P-value	Coefficient	Marginal Effect
Gender				
	Base Category (Female)			
	Male	0.70	-0.06	-0.01
Age				
	Base Category (18 - 25)			
	26 - 35	**0.03****	**-0.37**	**-0.11**
	36 - 45	0.61	-0.12	-0.03
	46 - 55	0.93	0.02	0.00
	56 <	0.82	0.10	0.02
Nationality				
	Base Category (Non-Saudis)			
	Saudis	**0.00*****	**1.38**	**0.48**
Marital Status				
	Base Category (Single)			
	Married	0.90	0.01	0.00
	Divorced & Widowed	0.38	0.32	0.09
Education				
	Base Category (First Level)			
	Undergraduate	**0.01*****	**0.42**	**0.14**
	Post-graduate	**0.01*****	**0.6**	**0.19**
Employment				
	Base Category (Unemployed)			
	Employed	0.23	0.30	0.10
Income				
	Base Category (< Average)			
	6,000 <	0.74	-0.05	-0.01
PHI				
	Base Category (Without PHI)			
	With PHI	0.19	-0.25	-0.07
Chronic Disease				
	Base Category (Without)			
	With	**0.00*****	**0.79**	**0.19**
Health Status				
	Base Category (Fair & Poor)			
	Good	0.76	0.14	0.03
	Very Good	0.26	0.52	0.16
	Excellent	0.85	0.08	0.05
Eligibility				
	Base Category (Increase)			
	Maintain	**0.01*****	**0.45**	**0.16**
	Obtain	**0.00*****	**1.31**	**0.36**
cons		0.01	-1.38	-

Note: *** = significance at 1% level, **=significance at 5% level, *=significance at 10% level.

In addition to these factors, the study found that people's level of access to healthcare significantly influences their decision to pay (*Maintain p*-value 0.01, *Obtain p*-value 0.00). The marginal effect indicates that if a person is in group *maintain,* he/she is 16.8% more likely to pay relative to people in group *increase*, and if a person is in group *obtain*, he/she is 36.7% more likely to pay for the MOH healthcare services than people in group *increase*. Finally, the regression shows significant p-value for those who are aged between 26 and 35 (p-value 0.03). The marginal effect interprets that a person aged between 26 and 35 is 11.9% less likely to pay than people aged between 18 and 25 (see Table 37).

The OLS regression (see Table 38) shows that gender significantly affects the values that participants are willing to pay (*p*-value 0.07), which indicates that males are willing to pay more than females. In addition, the data implies that nationality influences the value that participants place on the MOH healthcare services (*p*-value 0.02). This suggests that Saudis are more willing to pay relative to non-Saudis. Moreover, the data shows that education significantly affects the level of payment that people are willing to pay. The data shows that people who hold diploma or bachelor degrees (second level of education) are more willing to pay comparative to those who hold primary, secondary, or high school level of education (first level of education) (*p*-value 0.03). In addition, those who hold PhD, master's, or higher diploma (third level of education) are willing to pay more relative to those in the first level of education (*p*-value 0.00). Also, the regression shows that employment significantly affects the level that people are willing to pay (*p*-value 0.07). The results indicate that employed people are willing to pay more than those who are not. Furthermore, it was found that having PHI influences the percentage that people are willing to pay (*p*-value 0.00). The data shows that people who hold PHI are willing to pay less than those who do not.

Table 38 OLS and Ordered Probit Regression's Results for the Willingness to Pay

Independent Variable	Observation	OLS P-V	Coef[1]	O-Probit P-V	Coef
Gender					
	Base Category (Female)				
	Male	**0.07***	**0.41**	**0.09***	**0.23**
Age					
	Base Category (18 - 25)				
	26 - 35	**0.05****	**-0.81**	0.11	-0.44
	36 - 45	0.30	-0.37	0.47	-0.15
	46 - 55	0.14	-0.62	0.23	-0.30
	56 <	0.79	-0.16	0.94	0.02
Nationality					
	Base Category (Non-Saudis)				
	Saudis	**0.02****	**3.42**	**0.00*****	**2.84**
Marital Status					
	Base Category (Single)				
	Married	**0.09***	**0.37**	0.12	0.20
	Divorced & Widowed	0.17	0.76	0.24	0.38
Education					
	Base Category (First Level)				
	Undergraduate	**0.03****	**0.92**	**0.03****	**0.62**
	Post-graduate	**0.00*****	**1.61**	**0.00*****	**1.04**
Employment					
	Base Category (Unemployed)				
	Employed	**0.07***	**0.76**	**0.04****	**0.55**
Income					
	Base Category (< Average)				
	6,000 <	0.59	-0.13	0.26	-0.16
PHI					
	Base Category (Without PHI)				
	With PHI	**0.00*****	**-0.93**	**0.00*****	**-0.61**
Chronic Disease					
	Base Category (Without)				
	With	**0.10***	**1.02**	0.13	0.62
Health Status					
	Base Category (Fair & Poor)				
	Good	0.83	0.15	0.94	-0.03
	Very Good	0.34	0.78	0.47	0.37
	Excellent	0.88	0.10	0.92	-0.03
Eligibility					
	Base Category (Increase)				
	Maintain	**0.00*****	**1.23**	**0.00*****	**0.87**
	Obtain	**0.00*****	**4.24**	**0.00*****	**3.48**
cons		0.24	-3.55	-	-
Inverse mills ratio		0.16	2.79	0.21	1.71

Note: *** = significance at 1% level, **=significance at 5% level, *=significance at 10% level.

Abbreviations: [1] Coefficient.

Moreover, it was found that having chronic disease influences people maximum willingness to pay (*p*-value 0.10). The figures imply that those who have chronic diseases are willing to pay more than those who do not. In addition, the regression indicates that the level of access that people have influences the values that they are willing to pay. Data

results indicate that people who are in group *maintain* are willing to pay more than those in group *increase* (*p*-value 0.00). Also, people in group *obtain* are willing to select values higher than those in group *increase* (*p*-value 0.00). Finally, the data shows significant *p*-values for those who are aged between 26 and 35, and those who are married (*p*-value 0.05 and 0.09, respectively). The results imply that those aged between 26 and 35 are WTP less than those who are aged between 18 and 25, and those who are married are WTP more than those who are single (see Table 38).

5.5.5.3 Discussion

Study analysis found five factors influencing people's decision to participate, and nine factors influencing the level of payment that they are willing to pay for the healthcare services that are provided by the MOH. The binary probit and OLS regressions confirmed that nationality is one of the factors that influences people's willingness to pay as is the case in the probit regression in the former study (see Section 4.5.3.3). Moreover, the marginal effects for both studies (in terms of the decision to pay) are almost the same (current study 48% and 45.8% in the former study), where both show that Saudis are more likely to pay compared with non-Saudis. Moreover, this finding confirms the reason that was mentioned in the former study, which justifies this by the fact that the majority of non-Saudis have low income, and come to work in SA to save money. In addition, the findings of this study confirm the previous studies related to education, whereby when people's education increases, their WTP increases. The findings of this study indicate significant *p*-values for education, where both regressions confirm that when the level of education increases, the decision to pay (participation) and the level of contribution (consumption) are more likely to increase.

The significant *p*-value for employment confirms the findings of the literatures, which seems to be logical that an employed person would be more willing to pay relative to unemployed. This is because the later would be in receipt of no income or could be

entitled to a low compensation from the Saudi government, and would value the money more than the employed people. The same is true for the gender, where many of the WTP studies indicate that males are more willing to pay than females. This is attributed to the fact that the majority of jobs in SA are occupied by males. Therefore, females who are less widely employed, or could be unemployed and in receipt of low compensations from the social welfare, citizen's account, or the HRDF are willing to pay less than males.

In terms of PHI, the data indicate that fewer of those who have PHI are willing to pay higher percentages compared to those who do not have PHI. The data in Table 54 in the Appendix indicates that 9.0% of those who have PHI chose the sixth option and 18% chose the last option compared to 10% of those who do not have PHI chose the sixth and 19% chose the last option. This explains the OLS regression, which stated that people who have PHI are willing to pay less than those who do not. Moreover, this study found that those with chronic diseases are more willing to participate and to pay than those without. Surprisingly, the findings of the literature review suggest that healthy people are more willing to pay than the less healthy.

For people aged between 26 and 35, the data showed that 66.7% of this category are willing to pay, which is the lowest percentage among the other age categories, whereas 80% of those aged between 18 and 25 are willing to pay, and this is the highest percentage excluding those aged above 65 years, where there are only 5 participants in this category. Moreover, the figures in Table 52 in the Appendix shows that more than 31% of those aged between 18 and 25 are willing to pay values higher than 4% compared to 25% of those aged between 26 and 35. This confirms the findings of the previous studies, where it was found that younger people are more willing to pay than older. In addition, the figures in Table 52 in the Appendix indicate that higher percentages of married participants are willing to pay higher values in comparison to single people (40% of married participants are willing to pay more than 3% relative to 31% of singles).

The findings of this study also indicate that people in groups *maintain* and *obtain* are more willing to pay than people in group *increase*, where people in group *obtain* are the most willing compared with the other groups. These findings were explained by the marginal effects of the probit regression, which show a probability of 16% that people in group *maintain* are more likely to pay relative to group *increase*, and a probability of 36% that people in group *obtain* are more likely to pay than people in group *increase*. This concludes that people in group *obtain* are the most willing to pay. Also in the OLS regression, people in group *maintain* are willing to pay higher values in comparison to people in group *increase*, and people in group *obtain* are the most willing to pay (coefficient 1.23 and 4.24, respectively). These findings confirm what was shown by the previous studies that the access to healthcare services affects people's WTP.

Moreover, the results of the probit regression confirm the former study, where both showed that people in group *obtain* are the most willing to pay for the healthcare services that are provided by the MOH. However, the current study found that people in group *maintain* are more willing than people in group *increase*, while the former study found that people in group *maintain* are the least willing to pay in comparison to the other groups. The difference between two studies results could be due to the period of sampling, where the former study was conducted at a time when the government introduced VAT, increased the fuel and electricity prices, and introduced the citizens' account, which turned out to be much lower than expected. In contrast, in the second period of sampling, the government increased its employees' and pensioners' salaries to meet the price increases, as many companies of the private sector did. This could also be attributed to the fact that participants in this study were provided with payment scale to choose from. One of the other reasons could also be the demographic and socio-economic differences between group *maintain* who participated in the former and the current study.

This study observed that Saudis are more willing to participate and to pay than non-Saudis. However, people in group *obtain*, which consists purely of non-Saudis, are more willing to participate and to pay than people in group *increase*. This same contradiction appeared in the former study, which occurred due to the same reason. Data analysis found that 76.5% of people in group *increase* are Saudis, and the rest are non-Saudis (38 participants), of whom, 25 participants (66%) are unwilling to pay. Therefore, those participants brought down the overall WTP of group *increase*, and raised the overall WTP of group *obtain* due to the reason that a significant percentage of non-Saudis who are unwilling to pay are not included in this group. This confirms that the non-Saudis who are eligible to healthcare only in the MOH find their current access to healthcare satisfactory for their needs.

For the reason that the last option that was used in the payment scale was an open-ended option (5 <), this option could be categorical rather than continuous. Given the presence of uncertainty in the nature of the order of the payment scale used in this study, it was necessary to perform a robustness test on the participation part figures to investigate the degree to which a different model would function correctly and give the same significant results as the OLS that was used initially, and also how these estimates to the payment scale (that the last option is continuous or categorical) could be sensitive to changing the model.

The OLS model assumes that the dependent variable is continuous (the difference between 1 and 2 is equal to the difference between 2 and 3). However, because some uncertainties arose regarding the nature of the payment scale that the last option could be categorical rather than continuous, this was addressed using the ordered probit regression, which is used specifically to deal with the variable that is categorical and ordered, that could be the case in this part of the study (Borooah, 2002).

When the ordered probit model was performed on the consumption part, the results showed that both models (OLS and ordered probit) are broadly similar, where most of the variables that were found significant in the OLS regression, were also found to be significant when the ordered probit model was used, with three more variables found to be significant in the OLS (those aged between 25 and 35, married participants, and those with chronic diseases), and these few additional results were due to the different assumptions of each model, which is likely to occur. Finally, the overall results are robust, and show that the majority of the variables are similarly significant in both models (see Table 38).

As a conclusion, this study attributed the significant increase in participants' decision to participate in comparison to the former study primarily to the royal grant that offset the rises in living costs. Also, the study attributed the reason to the payment scale that gave the audience a chance to compare the proposal's benefits to their maximum willingness to pay. Moreover, the study emphasises that quality could be a primary reason for those who are eligible to healthcare in the other governmental healthcare facilities, but only for those who have broad access to them, while those living in places limited to such access would value the MOH healthcare services and consider them desirable. In addition, this study confirmed the findings of the former study that people with access to the private sector find the MOH healthcare services desirable. Furthermore, the study findings indicate that the average maximum WTP would enable the MOH to reduce the reliance on the government budget by up to 40%, by taking into account that more would be raised, as this percentage was estimated based on the contribution of a third of the population of SA. Moreover, Chi square and Fisher exact tests indicated that eleven factors are significantly different from the overall distribution. In addition, Mann Whitney and Kruskal-Wallis tests found eleven factors have a significant association between dependent and independent variables.

Furthermore, the two-part model indicated that nationality affected people's decision to participate as is the case in the participation part in the former study, and the current study added that nationality influences the maximum level that people are willing to pay. Moreover, it was found that when people's education increases, the likelihood of participation and maximum amount people are willing to pay increase as well, and the same is true for those who have chronic diseases. It was also found that males are willing to pay more than females, employed compared to unemployed, and married relative to single, whereas people who have PHI are willing to pay less than those who do not, and those aged between 26 and 35 are less willing to participate and to pay than those aged between 18 and 25. In addition, it was found that people who are in group *maintain* are more willing to participate and to select higher values to pay than people in group *increase*, and those in group *obtain* are the most willing to participate and to select higher values to pay. This confirmed the findings of the former study, which stated that people in group *obtain* are the most willing to participate. However, it contradicted the findings in terms of group *maintain*, and this was attributed to the royal grant, payment scale, and the different sample. Finally, it should be noted that the majority of the significant results that were presented in the consumption stage which were based on the OLS regression were also found significant using the ordered probit model, which indicate that the study results were reasonably robust.

5.6 Conclusion

This study investigated the population of Saudi Arabia's maximum WTP for the healthcare services that are provided by the MOH through adopting the same proposal plan as the former study (in Chapter 4). Moreover, this study benefited from the literature review to develop the best approach to attain the pursued objective, and to eliminate the occurrence of any methodological issues. In addition, from the previous experiences of different countries with an old healthcare system, this study designed the most suitable

payment scale that is in line with the primary objective of this thesis, which focuses on developing a basic funding model to raise funds for the Saudi MOH. Furthermore, the study targeted the same population as the former study, used the same data collection with few changes to the data instrument, followed the same sampling technique, and had the same sample size from the same places where the former sampling took place.

When the collected data was analysed, it was found that the sample characteristics were very similar to the former study, which indicated that both samples are representative of the target population. In fact, the former study findings indicated that more than half the sample agreed to participate in raising a fund for the MOH to attain better access to healthcare, in spite of the raft of reforms that the Saudi government introduced during the sampling. A few months after the announcement of the royal grant that was introduced at the beginning of this year (2018) to offset the rise in living costs, this study sampling was conducted. At that time, people had almost reverted back to the same previous living conditions as before the reforms that caused damage to people's living conditions. Subsequently, people revealed their actual level of WTP, where nearly three quarters were found to be willing to pay. In addition, when contributors were given the payment scale, which allowed them to evaluate the benefits that they would attain from this proposal, and compare it to the percentage in the scale, the situation became different.

Moreover, this study confirmed the findings of the previous study that people with experience of healthcare in the private sector, see the access to the MOH healthcare facilities as desirable. Also, with respect to those with experience of healthcare in the other governmental healthcare facilities, it is true that a significant proportion of them in the former study were unwilling to participate, and this was attributed to the reputation of the high quality of the healthcare services that are provided in this sector. However, when further investigation was carried out on the former study and matched with what was found in this study, it seemed that the quality could be sufficient to those with varied

access to such facilities. However, due to the centralisation, limited number, and unreachable access to these facilities by a significant number of the seekers, the MOH services were seen as desirable.

Furthermore, the findings of this study showed that people who are able to access healthcare outside the MOH are willing to pay higher values than those who can access healthcare only in the MOH. In addition, the data showed that a level of contribution between 1% and 2% were selected most often by those who are willing to contribute to raising the fund, then above 5%, and then from zero to 1%. Moreover, the overall average maximum WTP suggest that the Saudi MOH could levy up to 2.7% as the maximum level of contribution at the current time. Such a percentage would reduce the reliance on the government general budget by up to 40%, by taking into consideration that these estimates were based on a third of the population of SA, and extra funding is attainable from the other two thirds.

When statistical analyses were performed on the study data to find whether there are demographic and socio-economic factors associated with participants' decision as well as the maximum WTP, the study showed that people with higher education are willing to participate and to pay more than those in lower levels of education. The same is true in terms of Saudis relative to non-Saudis and people with chronic disease comparative to those without, whereas people aged between 26 and 35 are less willing to participate and to pay than those aged between 18 and 25. Moreover, it was found that having PHI negatively affects people's maximum WTP, whereas being male, married, or employed positively affect the maximum WTP. Finally, this study found that the level of access that people have also influences their decision to participate and the maximum values that they are willing to pay. It was found that those who are in group *obtain* are the most willing to participate and to pay; this confirms the findings of the former study. Also, those in group *maintain* were found to be the second most willing to pay and those in

group *increase* are the least. The difference in the response of those in group *maintain* in this study to the former one could be due to the stabilisation in people's living conditions, the fact that participants were presented with different elicitation format, and the different sample.

Chapter 6: Conclusion

This Chapter will give an overview of what this research was about, then will summarise the methodology of each topic. Afterwards, this Chapter will present the major findings of each topic. Moreover, recommendations for the MOH and the contribution of this research will be presented, then the limitation and the recommendations will be outlined. At the end, a conclusion will summarise the major points of this Chapter.

6.1 An Overview

This research explored funding options for the Saudi healthcare system. The main objectives of this research as set out in Section 1.4 were achieved by investigating the MOH books, exploring literature in relation to other countries' experiences with funding options, as well as designing two specifically constructed questionnaires to collect primary data from the population of Saudi Arabia. This research examined four main topics in the Saudi healthcare system and, consequently, generated four datasets. The first topic explored the drivers for the sharp increases in the Saudi MOH budgets over the past ten years at macro and micro levels. The second topic investigated the various funding mechanisms in other countries, and which are suited to the Saudi society model and its needs. The third topic conducted a survey which investigated the Saudi population's willingness to participate to raise a fund for the Saudi MOH in return for improving their current level of access to healthcare services. It also determined which healthcare funding mechanism is most preferred. The fourth topic was concerned with understanding the population of Saudi Arabia's willingness to fund their healthcare services. This part also conducted a survey to collect data from the Saudi population to estimate the most that they would be willing to pay to raise a fund for the MOH.

6.2 Research Methodologies

This section summarises the methodologies that were employed to attain the four studies' objectives that were conducted in this research.

6.2.1 The First Topic

Topic one reviewed the previous studies that were carried out to find the major drivers of the increases in healthcare spending in different countries. Moreover, all the MOH healthcare services, and financial resources were investigated relying on ten statistical books representing the Saudi MOH activities covering the period from 2006 to 2015. More data was collected from ten statistical books from the Saudi General Authority for Statistics (GAFS), ten statistical books from the Saudi Arabian Monetary Agency (SAMA), and ten annual reports from the Saudi Ministry of Finance (MOF). All these sources of data were searched in depth by examining each healthcare service that was provided by the MOH with the relevant budget to find out the reasons behind the increases in the MOH healthcare expenditure.

6.2.2 The Second Topic

Topic two reviewed the healthcare funding mechanisms in more than thirty countries from different continents to find the possible methods for raising a fund for the Saudi MOH. The reasons for implementing a new financing method, and the degree of the success were investigated. Evidence was brought from countries that have long-established, stable, and successful healthcare systems, and from countries who implemented approaches to overcome a fiscal deterioration. Specifically, this topic reviewed the healthcare funding experience of the Central Eastern Europe (CEE), Former Soviet Union (FSU), and Western Europe (WE) countries, as well as the United States, Australia, Switzerland, and Singapore. Afterwards, this topic investigated each of these healthcare funding options in line with the Saudi context and needs to find the possible funding options for SA.

6.2.3 The Third Topic

This topic developed a questionnaire to investigate the population of SA's willingness to participate in raising a fund for the MOH in return for improving their level of access to

the MOH healthcare facilities, as well as investigating their preference for the funding mechanisms that are in line with the Saudi context. The study relied on the literature review to develop the best WTP elicitation and preference formats that could help to achieve the objectives of this study given the current situation in SA. Therefore, closed ended (*Yes, No*) questions were employed to investigate people's willingness to participate, and the contingent ranking method to investigate people's preference for the funding options. The Chi square and Fisher exact tests were performed on the willingness to participate and the ranking to understand the data distribution. Moreover, for the former part of the study, a probit model was employed to identify the factors that affect people's willingness to participate, and an ordered probit model was used for the latter to understand the factors that affect people's preference for the healthcare funding mechanisms.

6.2.4 The Fourth Topic

Finally, topic four developed a questionnaire to investigate the population of SA's maximum WTP for improving their level of access to the healthcare services that are provided by the Saudi MOH. The questionnaire was based on the literature review and the previous experiences of other countries with old healthcare systems to develop the best data collection instrument that could implement the most reliable answers from participants. Therefore, a payment scale was employed as the elicitation method, and a two-part model was applied to the study data. For the first part of this model, Chi square and Fisher exact tests were applied to understand the data distribution, then a probit regression was performed to identify the factors that affect people's willingness to participate. For the second part, Mann Whitney and Kruskal-Wallis tests were conducted to test if there was a significant difference between study groups, then OLS regression was performed to find the factors that are associated with the maximum amount that participants are willing to pay. An ordered probit regression was also applied on this part

to make sure that the study results are robust, and this is because the last option that was used in the payment scale was an open-ended option.

6.3 Research Findings

6.3.1 The Findings of the First Study

Having successfully completed a review of the previous studies, thirteen reasons were found to have significantly affected healthcare spending in different countries. However, when the available sources of data were investigated, no data was accessible in relation to medical technology, drugs, smokers' visits, and the misuse of healthcare resources.

After the other nine reasons were inspected, it was found that the MOH budgets more than doubled without inflation. Also, the average increase in the total population of SA was 3% per annum during the time under investigation, and the Saudi citizens who consume more than 90% of the MOH healthcare services grew just 2% per annum on average. Moreover, the proportion of elderly people in SA was found to be one of the lowest among 62 countries distributed over four continents. In addition, total patient visits increased only 0.83% per annum on average, which was inconsistent with the sharp increases in the MOH budgets. The same is true for the foreign patient visits, which were relatively low in comparison to the increases in the MOH budgets. Furthermore, the patient visits to chronic disease clinics decreased -2% on average, and showed decreases in all the investigated years except in 2012.

Moreover, it was found that one Medical City and six cardiology centres were inaugurated during the investigated period; however, all these were opened before 2011, and they cannot explain the increases in the MOH budgets, due to the fact that the cost of construction is incurred by budgets of previous years. In addition, the data indicated to significant variations between the increase in the number of physicians and the MOH budgets, except in 2012. Furthermore, the designation of Dr. Abdulla Al Rabeaa in 2009 as the minster of the MOH was the only appointment which was followed by the highest

increase in the MOH budgets; however, the budgets already increased by similar percentages in 2007 and 2009 in the period of Dr. Hamad Al Mana.

These findings suggest that all the reasons that researchers found significantly affected the increases in healthcare spending globally, do not clearly explain the sharp and continuous increases in the Saudi MOH budget. Therefore, this research continued investigating at micro level to include what healthcare services, activities, and items the MOH spent money on throughout the past ten years.

The study found that the projects budget trebled during the period of investigation, to account for more than 9% of the MOH total budget on average. When the numbers of healthcare facilities were analysed alongside the projects budget, it was found that both grew significantly, but at different levels. Moreover, the study found that Primary Healthcare Centres (PHCs) are unlikely to explain the sharp increases in the projects budget, and this is attributed to the fact that up to 80% of them are rented and funded from other budgets, and also for the reason that such type of healthcare facilities require less funding in comparison to hospitals and Medical Centres (MCs).

In contrast, it seems that the hospitals which are entirely owned by the government had the biggest portions of the projects budget throughout the ten years. However, due to the reason that the healthcare facilities funding process is based on the stage of completion in construction, the entire cost of the new healthcare facilities that open every year cannot be accounted for by the MOH projects budget every year. Moreover, it was observed that there was a higher focus from the MOH on the expansion of eight hospitals' departments, which are: the general, internal medicine, intensive care, paediatric, surgery, isolation, OB & Gyn, and psychiatry & neurology. However, it was noticed that the size of hospitals does not reflect the increases in CAPEX, but it indicates which departments and specialities got more attention from the MOH than others.

Furthermore, the data found that the growth in the total number of healthcare facilities slowed in the last four years of the period under investigation in all three types of healthcare facilities. This was attributed to the slow growth in the total Saudi budget, which affected the MOH budget as well. All these downward trends were a result of the plummet in oil prices from $124.64 per barrel in 2012 down to $30.74 in 2015.

When the salaries and the operations and maintenance budgets were investigated, they were found to have increased significantly in the past ten years, where the first one trebled to represent almost half of the MOH budget, and the second one increased fivefold to represent a quarter of the budget on average.

The data showed that manpower numbers came in line with the increases in manpower's salaries, and operation and maintenance budgets. Also, it was observed that the changes in numbers of manpower were concurrent with the changes in the number of healthcare facilities. This implied that the high increases in all types of manpower occurred as a need to recruit more employees to occupy the new healthcare facilities. In addition, it was found that the 19 hospitals and 83 PHCs, which were completed in 2009, increased the number of healthcare practitioners by a half, and the number of technicians, administrators, and workers by about three quarters in 2009 and 2010. Sharp increases were seen also in 2012 and 2013 after the opening of 150 PHCs, 21 hospitals, and 61 MCs, which encouraged the MOH to hire more staff.

Such increases in the number of healthcare facilities induced the MOH to spend $5.10 on staff salaries of those who are employed directly though the Ministry of Civil Service (MOCS) on average, and $5.50 on the operative and maintenance programmes including their employees for each US dollar that it spends on the CAPEX. Also, it creates a need to employ 103 persons directly by MOCS on average, and about 181 healthcare practitioners from MOCS and the operative companies for every new healthcare facility the MOH opens.

In addition, it was found that the 5% per annum increases in the salaries of the public sector for the period between 2009 and 2011 to meet the high living costs, were found to be an insignificant reason for the increases in the manpower salaries' budget, and the same is true for the decreases in the number of manpower. Furthermore, the data found that the number of healthcare practitioners who were recruited between 2009 and 2010 is much higher than those who were recruited between 2012 and 2014 (45,938 vs 39,897, respectively), and this was attributed to the larger size of the 25 hospitals that were opened between 2009 and 2010 in comparison to the 25 hospitals opened between 2012 and 2014 (10,804 vs 9,026 beds). Moreover, the data shows that the psychiatric, OB & GYN, isolation, surgery, paediatric, intensive care, internal medicine, and general departments which had the highest expansion in healthcare facilities led to a significant increase in the number of physicians who work in these departments.

After investigating the frequent expenditure budgets, it was found that they trebled in the period under investigation, to represent 15% of the MOH budgets on average. Moreover, when healthcare activities were analysed alongside these budgets, the only activities that realistically explained the increases in frequent expenditure budgets were the laboratory investigations and treatment abroad. In addition, healthcare facilities' preparations and furnishing items were also found to be another reason, due to the concurrent changes with the year prior to the inauguration of healthcare facilities, especially in the cases of the medical centres and hospitals.

The data analysis found repeated declines in total patient visits in some years and declines in patient visits per capita in most of the years under investigation. Specifically, visits to PHCs and to chronic diseases clinics reported average decreases, whereas visits to hospitals almost doubled, with significant increases cited in musculoskeletal diseases, OBS and GYN, Eye, and general diseases.

In addition, it was found that the malaria and dengue fever are the only two among 38 communicable diseases that increased significantly. From the medical activities, it was found that x-rays increased considerably, and number of served meals in 2015 trebled comparing to 2014, and more than quadrupled comparing to 2006. On the supervision activities side, samples of food investigated and food destroyed in kilograms are the only activities that showed increases, but at low levels. On the side of the awareness and educational activities, all increased on average, but similar levels were noted in some years, which could be attributed to reporting reasons. However, all these increases cannot entirely explain the increases in the frequent expenditures budgets, as they were not in line with the changes in these budgets, and some account for only minor costs. Moreover, the data found that the major driver for these increases cannot be attributed to the petty cash expenses nor to the payment for the PHCs buildings' rents, which accounted for relatively low costs.

Actually, the reason that the changes in the MOH healthcare activities cannot fully explain the increases in the frequent expenditure budgets is that these budgets have not been prepared based on demand expectations. This was evident from the absence of the correlation in the data between the frequent expenditures' budgets and the total number of healthcare practitioners, the total manpower who are employed directly by MOCS, total population, the Saudi population in the same year or one year later, or with patient visits per capita. Also, it was observed that there was no relation between the number of patient visits and the increases in the number of healthcare facilities, healthcare providers, nor with the manpower who are employed directly by MOCS. On the other hand, the frequent expenditure budgets responded to the changes in the MOH and the Saudi total budgets.

When the healthcare services that were provided in Al Hajj season were investigated, it was found that the majority of the increases in the number of PHCs were from the

seasonal units, which represents a low cost. On the other hand, most of the increases in the number of hospitals occur with reference to permanent units, which represent about 10% of the increases in total MOH hospitals during the ten years. Moreover, the increases in the number of beds represent 8.4% of the total increase in the same period, which was due to expansions in the existing hospitals.

In addition, in spite of the significant increases in the number of physicians, nurses, administrators, and allied health personnel, technicians and others, they are still very low in comparison to total manpower. Consequently, they represent an insignificant percentage of the increase in the salaries and operative and maintenance budgets. Furthermore, the patient visits and the inpatient cases account for a negligible fraction of the total patient visits and inpatient cases. Therefore, they represent an insignificant percentage of the frequent expenditures' budget.

It was found that the total vaccinations given to pilgrims did not correlate with the increase in the frequent expenditures' budget in any year. In addition, the investigations found that the seasonal PHCs and hospitals which require a short preparation period, showed an insignificant correlation with the historical changes in the number of pilgrims or with the number of patient visits in the same year or the year prior, as is the case with the changes in the amount of manpower in all specialities, except for the sum of the allied health personnel, technical personnel, and others who partially matched the number of pilgrims in the year prior. Also no correlation was found between the changes in the seasonal healthcare facilities with the projects budget, nor the frequent expenditures budget. However, it exists between the changes in the salaries and operation and maintenance's budgets with manpower in all specialities.

Finally, this part showed that the historical demand for healthcare services was not given any priority when the MOH financial needs were set, but rather on the Saudi economic situation. This was evident from the high correlation between Saudi total budgets and the

MOH four budgets. Therefore, this study concludes that the primary reason for the continuous increases in the MOH budget over the ten years under investigation was due to the weak strategy used to estimate the actual budgets for financing the MOH.

6.3.2 The Findings of the Second Study

After reviewing the healthcare systems of more than thirty counties around the world, it was found that CEE and FSU counties which had a deterioration in their economies in general, and their healthcare system in particular, who implemented a financial strategy to meet such parlous situation, have safeguarded the sustainability of their healthcare services, especially those which implemented suitable methods to their systems. However, those who did not, experienced sharp decreases in public spending on healthcare.

In addition, it was found that Taxation and SHI play a significant role in funding the healthcare systems of the WE countries. These two funding mechanisms showed stabilised share of the total spending on healthcare in the past two decades of these countries. Moreover, USA, Australia, Switzerland, Netherlands, and Germany showed a good experience with the regulated PHI, where it was noticed that the regulated PHI increased the number of insured people. In addition, MSA had great success in ensuring the stability of funding the Singaporean healthcare system, but is still not widely used. Furthermore, it was found that many of the WE countries rely on OOP for less than 20% in funding their healthcare systems, and more than 35% in many of the FSU and CEE countries. It was also found that few countries rely on funding healthcare through Donations and Loans.

When all these six healthcare funding mechanisms (Taxation, SHI, PHI, MSA, OOP, Donations and Loans) were investigated in line with the Saudi context and needs, it was found that Taxation, MSA, and the regulated PHI are appropriate for Saudi Arabia, with

the PHI being *Takaful*. Also, the SHI, OOP, donation and loans were excluded as they are not suitable for the Saudi healthcare system.

6.3.3 The Findings of the Third Study

After the study conducted a survey to investigate people's willingness to pay to improve their level of access according to the proposal of this study, as well as their preferences for the funding options that were found suitable for the Saudi system, the data showed that 55% of participants are willing to pay to improve their level of access to healthcare, where those who are in group *obtain* were the most willing to pay, then those who are eligible to healthcare only in the MOH. Moreover, the study showed that most of those who are in receipt of no income in all the three major groups were unwilling to pay. Also, it was seen that most non-Saudis of those eligible to healthcare only in the MOH are unwilling to pay, whereas the majority of those who are eligible to healthcare only in the private sector are willing to pay.

When participants' WTP was investigated based on their eligibilities to healthcare, it was found that the majority of those who are eligible to healthcare only in the MOH see that their current access to healthcare is not enough and they want to increase it. Also, those in the second slice (non-Saudis eligible to healthcare only in the private sector) and the fourth slice (Saudis eligible to healthcare in the MOH and the private sector) as well as those who are employed privately and unemployed with income in the sixth slice (Saudis eligible to healthcare in all provisions) see the healthcare services that are provided in the MOH as desirable for them. However, it was observed that the majority of those who are guaranteed access in the other governmental healthcare facilities in addition to the MOH viewed the healthcare services which are provided via their employers as sufficient for them (i.e. they were unwilling to pay). This implies that the healthcare services that are provided by the MOH are perceived as being better than what is provided by the private

sector. However, it seems that what is provided by other governmental healthcare facilities is perceived as the best.

It was found that most participants according to their demographic and socio-economic characteristics were willing to pay to improve their level of access to healthcare except for those aged above 65 and those who have a master's degree. On the whole, these findings indicate that the MOH can raise a fund from a large proportion of the population of SA, and those are summarised in the majority of those who are eligible to healthcare only in the MOH, the private sector, and those who are eligible to healthcare in the private sector in addition to the MOH. In addition, those who are representing the remaining groups will reduce the demand on the MOH healthcare services, which will improve the access of those who are willing to pay.

When the Chi square and Fisher exact tests were performed on the study variables, the results confirmed the findings of this study, which state that the majority of participants, depending on their eligibilities and characteristics, are willing to pay except for those in slice five (Saudis eligible to healthcare in the MOH and SDU) and those employed.

The probit model results showed that those who are eligible to healthcare only in the private sector are the most willing to pay (to obtain access to the MOH facilities), then those who want to increase their level of access. However, it was shown that those in group *maintain* are the least willing to pay and this was due to the influence of those in slice five. This also confirms the findings that were observed in the overall WTP. The outcomes of the probit model also found that Saudis are more willing to participate than non-Saudis. This came in line with the concept which states that non-Saudis come to SA to make savings, and as a result are less likely to spend more money to receive better healthcare. This situation does not apply if nationalities were mixed into different divisions, as is the case in group *increase* which contains both categories of nationality. Moreover, the model showed that those who had an experience with the PHI are more

WTP. This confirms the fact that those who are entitled to healthcare in the private sector see that what is provided in the MOH is necessary and better than what they already have.

When the study analysed participants' preference for the three healthcare funding options that were found suitable for the Saudi setting, it was found that PHI was the most preferred, MSA second, then Taxation. Moreover, it was obvious that the first two methods were similar in terms of participants' preference for them, where both showed almost the same mean. In addition, both appeared as the last option by few participants. In contrast, Taxation was far from the other two mechanisms due to the high mean and the fact that it was chosen as the last option by the majority of the study sample.

The Chi square and Fisher exact tests' results showed that four independent variables in Taxation (education, income, level of PHI, and slice 4), nine variables in MSA (nationality, marital status, education, employment, income, *maintain*, *obtain*, slice 2, and PHI provider), and thirteen variables in PHI (nationality, marital status, education, employment, income, PHI, *maintain*, *obtain*, slice 2, slice 4, slice 5, PHI provider, and the level of PHI) are significantly different to the overall ranking.

When the ordered probit regressions were conducted on the study variables, it was found that those at a lower level of health prefer Taxation more than those at higher levels and are more likely to rank Taxation as the second funding option. Exactly the same was found for males, who had the same trend relative to females. Moreover, people with a higher level of education are more likely to rank MSA third and PHI first in comparison to people with a low level of education. In addition, it was found that participants who want to maintain their access have a higher preference to rank PHI first than those who want to increase their access, but those who want to obtain access were found to have the highest preference relative to those who want to increase and maintain their access.

6.3.4 The Findings of the Fourth Study

After study data instruments were collected and analysed, it was found that the sample characteristics of the second survey were almost the same as the first one's, this suggests that both data sets are representative of the target population. The data analysis showed that almost three quarters of the study sample were willing to pay. This percentage was significantly high compared to what was observed in the former study.

In fact, the data collection was conducted a few months after the announcement of the royal grant to offset the rise in living costs. In between this announcement and the data collection, people's living conditions had stabilised and almost returned to the same level as before the introduction of VAT, and the rise in fuel and electricity prices. Therefore, people revealed their actual WTP. This suggests that the system reforms (either negative or positive to people's living conditions) significantly affected people's willingness to pay. Moreover, it was obvious in both studies that what people were presented with is crucial and essential, given the current global and domestic economic conditions. Moreover, when people were given a chance to reveal their maximum WTP based on well-conceived payment scale, people showed their real WTP, as they were able to compare what they are willing to pay to what they would receive in return.

The findings of this study confirmed what was found by the former one, that those with experience with PHI, and those who are eligible to healthcare only in the private sector see that the healthcare services that are provided by the Saudi MOH are desirable. This study's findings also confirmed that those who are provided with healthcare only in the MOH see their current access as insufficient, and view the improvement as necessary. However, for those who are eligible to healthcare in the other governmental healthcare facilities, the findings of this study surprisingly contradicted what was observed in the former one. It was speculated in the former study that the high percentage of unwillingness to pay of this group was due to the reason that they are provided with

healthcare in the top quality healthcare facilities in SA. Nevertheless, uncertainty was raised as to whether quality was the main reason or not, as this group in the current study showed a high WTP.

After further analyses were conducted, it was found that the other governmental healthcare facilities represent only 9% of all healthcare facilities in SA, compared with 58% of hospitals that are MOH hospitals. In addition, these facilities provide 16% of the total beds in all provisions, whereas the hospitals' beds in the MOH represent 59% of the total. Furthermore these facilities provide their healthcare services relying on only 19% of the total physicians in SA, where physicians in the MOH represents 48% of the total.

Moreover, there was a lack of access to other governmental healthcare facilities over the cities in SA due to the nature of distribution. This is evident from a data for the number of these healthcare facilities, which was obtained from one city in the south of SA called Najran where nearly 600 thousand people live. In this city it was found that only three other governmental healthcare facilities exist, where one of them is PHC. In contrast, about 100 healthcare facilities owned by the MOH provide healthcare services there (68 PHC, 11 hospitals, one medical centre, one diabetes centre, 7 dialysis centres, 2 dental centres, one rehabilitation centre, one central laboratory, 4 Anti-smoking clinics, one forensic centre, and two preventive centres at the entrance). This suggests that there is a significant difference in terms of accessibility to what the MOH provide relative to the other governmental healthcare facilities.

The study found that the majority of participants (according to all their demographic and socio-economic characteristics, and almost all groups within the six slices) are willing to pay, except non-Saudis who are publicly employed and eligible to healthcare only in the MOH. This category confirms the findings of the former study that non-Saudis who are publicly employed see that the healthcare services which are provided by the MOH are sufficient for them.

The overall figures for participants' WTP showed that those in group *obtain* had a higher WTP than those in group *increase*. This is exactly the same as what occurred in the former study, where the unwillingness of non-Saudis who are publicly employed and eligible to healthcare only in the MOH brought down the overall WTP of the group *increase*. Moreover, this study's findings confirmed what was concluded in the former study in terms of the willingness of those who have no income, where both studies found that people who have no income are less willing to pay than those who receive income in all the three major groups.

The data showed that among those who are willing to contribute, the majority are willing to pay between 1% and 2%, then above 5%, and then from zero to 1%. Moreover, it was found that the average level of WTP was 2.7%, which suggests that the Saudi MOH could minimise the reliance on the government budget by up to 40%. These estimates were based on public and private employees' and pensioners' average income, who represent only a third of the population of SA, where extra funding is possible from the other two thirds.

When the Chi square and Fisher exact tests were employed in the participation part of the study, it was found that the WTP of eleven independent variables are significantly different to the overall (age, nationality, chronic diseases, slice 1, slice 2, slice 5, slice 6, level of PHI, groups *increase*, *maintain*, and *obtain*). In addition, after performing the Mann Whitney and Kruskal-Wallis tests on the consumption part, the results showed that gender, education, employed, unemployed, level of PHI, three eligibilities (as one variable), six slices (as one variable), group *increase*, group *obtain*, slice 1, and slice 2 significantly influence the amount that participants are willing to pay for the healthcare services that are provided by the MOH.

After the study performed the probit model and the OLS regression, it was found that when people's level of education increases, their likelihood to participate and their

maximum WTP value increases. The same is true for Saudis relative to non-Saudis and people having chronic diseases comparing to those without. In addition, it was found that males are willing to pay more than females, and the same is true for married people relative to singles, and employed comparing to unemployed. Furthermore, it was found that a person having PHI is less WTP than one who does not and a person aged between 26 and 35 is less willing to participate and to pay than one who is aged between 18 and 25. Moreover, it was found that access to healthcare significantly influences people's WTP decision, and the maximum amount that they are willing to pay. Specifically, it was found that those in group *obtain* are the most willing to pay, then those in group *maintain*. The first finding confirms what was observed in the former study, but the second one contradicts it. However, this was perhaps due to the fact that the royal grant that was introduced at the beginning of this year stabilised people living conditions. This could also be attributed to the fact that people were provided with reference prices to opt out of, and for the reason that people with different demographic and socio-economic characteristics were involved in this study. Finally, the ordered probit model showed broadly the same results as those shown by the OLS, and this indicates that the study results were reasonably robust.

6.4 Recommendations for the MOH

The primary recommendation of this study is that the Saudi MOH should suspend the MOH eligibility of those in slices 4, 5, and 6, and require them to utilise the non-MOH healthcare facilities in which they are entitled to free healthcare. This will reduce the consumption of the MOH resources and will increase the access of those in slice 1 to the MOH healthcare facilities. In so doing, the MOH healthcare services will be improved as there would be a focus on a smaller proportion of the population rather than on those in all four slices.

This thesis proposes mandating those in slice 1 to pay for their healthcare because, as a result of the reforms suggested here, their access to the MOH facilities will improve. It also proposes a voluntary subscription for the rest of the slices where those in slices 4, 5, and 6 must pay to maintain their access to MOH healthcare facilities. The same is proposed for those in slices 2 and 3, who must pay to obtain access to MOH healthcare facilities.

In the event that a major eligible Saudi citizen in slices 4, 5 or 6 loses his/her job, then this person and his/her dependents can retrieve their eligibility in the MOH healthcare facilities, and the payments will begin once he/she starts earning income from any source.

According to the financial policy designed in this research, it is proposed to give those who only have access to MOH facilities improved access to those facilities by removing the access entitlements from those with multiple eligibilities. However, those who will no longer have access to MOH facilities would also be given the option of regaining such access if they are willing to pay extra for it. Therefore, the main beneficiaries of this policy are any Saudi or non-Saudi who is publicly or privately employed or a pensioner, self-employed, a dependent or unemployed either with or without financial benefits.

The MOH has the option to implement either the PHI *Takaful* or MSA as a funding mechanism, as both were found to be suitable to the Saudi context and shown to be favoured by the population of SA in surveys .

If the MOH chooses MSA, this study proposes the following:

- Each individual's contributions will be deposited in a personal account belonging to him/her to cover their healthcare costs in MOH healthcare facilities.
- The account will be maintained by the MOH, and in case of death the remaining fund goes to the individual's family.

- The proposed number of accounts at this stage is one basic fund for the entire system, within which every subscriber would have his/her own account without the need for catastrophic accounts or multiple accounts.
- If an individual's MSA runs out, then it is proposed that the MOH intervene to ensure the coverage of any further costs rather than creating additional protections such as catastrophic accounts.
- The contributions to MSA will be deducted directly as a percentage of individuals' total income.
- If an individual is employed or a pensioner, this percentage will be deducted from the salary plus any other income or benefits received from the government.
- If not employed or pensioner, the percentage will be deducted from whatever income they receive (i.e. self-employment income, social welfare, citizen account, human resources development fund, disability benefits, or studying rewards).
- If an individual is unemployed and not in receipt of any benefits, then the percentage will be deducted from the total income of the person on whom they are dependent.

If the choice were to be PHI, the following is proposed:

- Individuals will purchase health insurance directly from insurance companies, which in turn will cover their healthcare costs in the MOH healthcare facilities.
- The health insurance will be compliant with Sharia rules (*Takaful)*.
- The PHI can be obtained by any person no matter his/her age or health status.
- The PHI is priced based on the whole community level of health.
- If an individual receives a low income (less than $800 where the majority of social funds compensate for less than this amount), the MOH pays a part of the premiums. It is also suggested that once the person's income increases, then

he/she pays the full cost. This will be based on a sliding scale depending on the person's income and on the cost of the community rated PHI that will be decided between the MOH and the PHI companies.

- In case an individual receives no income, the MOH pays a part of the premiums and the rest by the person on whom they are dependent.
- Once those receiving no income start earning in the future, then they must pay some or all of their own premiums depending on the level of their total income.

Both WTP scenarios (at time of austerity and prosperity) in this thesis are right and representative to their own circumstances. However, it is proposed that the MOH take the former WTP scenario (more than half the sample were WTP) into consideration more than the second one (three quarters were WTP) at this time. This is because there is still more than ten years ahead for the Saudi Vision 2030 which are expected to be full of reforms, such as increasing the energy prices again (Alarabiya, 2018a), and the possibility to stop the royal grant, which was planned to be only for the year of 2018, where it was just renewed in 2019, such that, it might be not in place in the coming years (Alarabiya, 2018d). Therefore, this thesis proposes that the MOH consider a percentage even lower than the average maximum WTP (2.7%).

The MOH as a supervisory and monitoring organisation of the Saudi healthcare system should assist the other governmental healthcare facilities and the private sector on the administrative side through facilitating the procedures to attain new licenses to run healthcare activities or the expansions to other healthcare specialities. An assistance should also be provided on the financial side, such as supporting their position to obtain loans from the government or banks. Such an assistance is necessary to enhance the investments in these two provisions because the demand on their healthcare services will increase, as Saudis with multi-eligibilities will be mandated to utilise healthcare services in these two provisions.

This thesis proposes that the Saudi MOH should take into account the historical demand for healthcare services and activities when estimating the future required budgets, also the proportion of people who will be eligible to healthcare in the MOH under the proposed changes (in other words excluding those who will no longer have eligibility to the MOH facilities), and the demographic projections for this cohort as well as the likely revenue that would be raised from this cohort. This would allow the MOH to better plan for how much funding it would require from the government general budget.

It is also proposed that the MOH stop building more healthcare facilities, and to reduce the percentage of the rented PHCs considering the actual demand within each city and the proportion of people eligible to healthcare in the MOH within each city and the changes in their ages.

The same is proposed for the MOH manpower, where the MOH should stop hiring more staff, and limit the renewal of contracts for people who work for the MOH for a specified duration. This must be implemented based on the demand for healthcare services and the proportion of people eligible to healthcare in the MOH within each city, and also based on changes to their ages. On these bases, it is also proposed to redistribute the MOH existing staff to other cities.

Finally, this thesis proposes to shift new applicants and those with non-renewed contracts to the private sector and the other governmental healthcare facilities, subject to there being capacity in the latter sectors for these people.

6.5 Research Contributions

This research contributes to the literature by examining the WTP and the preference for a set of funding mechanisms of a population that have limited experience with participation in funding public services. Moreover, this research examined the WTP and the preference for public services that are almost entirely funded from the government

budget and are provided almost free of charge. In addition, this research examined the WTP and preferences at a time when system reforms have negatively affected people's living conditions. It also examined the WTP at a time when reforms have positively affected people's living conditions. Moreover, this research applied the WTP to a unique healthcare system that is free of charge and delivered through different provisions and eligibilities that do not exist in other healthcare systems. Furthermore, this study's contribution comes at a critical time for the government, when the general budgets have been reporting deficits, and the government is in the process of implementing a reforming vision to diversify public resources. Also, this research designed a survey and created new data sets at different periods, which might be useful to future researchers and policy makers.

This research has added to the literature in stating that the current financing for the Saudi public healthcare system is set mainly based on the oil prices trend, which funds the bulk of the country's general budget, and there is no clear plan that has yet been implemented to regulate the financial resources of the public healthcare system. This research also examined the option of reducing the burden on the Saudi MOH by removing the automatic entitlement to people who are already guaranteed free access from other provisions.

This research has added to the literature that PHI and MSA are much preferred as basic funding mechanisms among the population of a developing country and emerging market. Also, this research confirmed the findings of the literature that gender, health status, and education affect people's preference, and this research added that the level of access that people have to a set of healthcare provisions also affects their preferences.

This research also confirmed the findings of the previous studies that the level of access to healthcare that people have, having PHI, education, employment, marital status, age, and gender affect people's willingness to pay. It added that whether the participant is a

citizen or a foreigner affects his/her WTP. This research also added that people with chronic diseases are more willing to pay than those without.

The results in this thesis regarding people's responses to different healthcare funding mechanisms, and their willingness to take responsibility for funding their healthcare services have generated an important policy contribution to the Saudi government especially at this time when the government is trying to find other sources for the general budget than oil. This research also provided recommendations to the Saudi MOH for how to achieve its aims under the Vision 2030.

6.6 Research Limitations and Future Recommendations

This research investigated the WTP and the preference for a set of funding options in six provinces of the capital of SA. Further research could include more cities from different destinations over the country. Perhaps, future studies could include a larger sample.

This study suggests that the Saudi MOH should estimate the future required budgets based on the historical demand for healthcare services and activities, and on the population growth rate while taking into consideration the fact that most of the Saudi population are now young (67% on average), and they will require extra healthcare services in the future. This study also suggests that the MOH stop building more healthcare facilities, and reduce the percentage of the rented PHCs based on the actual demand within each city. In addition to this, the MOH should stop hiring more staff, and limit the renewal of contracts for people who work for the MOH for a specified duration. Instead, new applicants and those with non-renewed contracts should be shifted to the other two healthcare provisions. Also, this thesis recommends the redistribution of existing staff to other cities based on the actual demand for healthcare services.

The government authority should implement the proposal of this thesis by reducing the MOH commitment to provide healthcare to those who receive free healthcare from the

other two provisions, and to urge the introduction of either the PHI or MSA as a basic funding mechanism, as there are many risky indicators surrounding the healthcare system currently. Moreover, the government authorities should prioritise levying low percentages initially so as not to garner unnecessary funds, and also to give a chance to other public services to benefit from any further tax plans envisaged for the future.

6.7 Conclusion

This research has investigated the reasons for the increases in the Saudi MOH budgets in the period from 2006 to 2015 at macro and micro levels. By reviewing previous studies that investigated the reasons for the increases in healthcare system spending globally, as well as the investigation of the MOH, SAMA, MOF, and GAFS books and reports, the research found none of the reasons that affected other countries healthcare systems were the case in SA, but rather the increases were primarily due to the Saudi economic conditions which are mainly based on oil price trends.

In the second study, the healthcare funding mechanisms existing in other economies were explored to find which are in line with the Saudi context and needs. By a thorough review of more than 30 healthcare systems, there are six options in operation, of which three were found to be suitable for the Saudi public system: PHI, MSA, and Taxation.

Afterwards, a specifically designed questionnaire was developed to collect data about the population of SA's willingness to contribute to funding their healthcare, and their preferences for the healthcare funding options which were aligned to the Saudi setting and needs. The results found that the majority of the population prefer PHI and MSA, and it was found that gender, health status, education and people's level of access to healthcare affect people's preferences. Moreover, the results indicated that the majority were willing to participate, and implied that having PHI, being a citizen, and the level of access to healthcare services all affect people's decision to pay.

In the last study, another questionnaire was designed to investigate people's maximum WTP for their healthcare services. The results implied that the majority are willing to pay, and it was found that they are willing to pay up to 2.7% on average of their total income. Also it was found that gender, being a citizen, chronic disease, employment, having PHI, age, marital status, education, and the level of access to healthcare all affect people's WTP.

In conclusion, this research suggests that involving the population of SA to contribute a percentage based on their willingness to pay to fund their healthcare through PHI or MSA, and restricting the MOH services only to those who are willing to pay, is a feasible plan for the Saudi MOH to start raising funds to ensure the sustainability of the public healthcare services.

It is hoped that this research will inspire future studies in this evolving method of healthcare financing in Saudi Arabia.

Chapter 7: Appendix

Table 1 Number of Tables investigated

Y	Number of Pages	Number of Tables Investigated
06	337	63
07	336	63
08	340	62
09	340	51
10	356	52
11	342	54
12	248	52
13	267	54
14	248	62
15	276	64
Total		577

Table 2 Saudi GDP, Total Budgets, and the Changes in the MOH Budgets in Billions of US Dollars without Inflation[48]

		Saudi GDP		Government		Ministry of Health			
	IF%[1]	**Saudi GDP**	**I or D%**	**Total B**	**I or D%**	**MH B**	**I or D%**	**MH GDP**	**MH T B**
05	0.7								
06	2.2	353.6		88.7		5.2		1.4	5.9
07	4.1	373.7	5.7	98.4	11.0	5.9	13.4	1.6	6.0
08	9.9	444.5	18.9	112.0	13.7	6.2	6.2	1.4	5.6
09	4.1	364.4	-18.0	107.5	-3.9	6.6	6.5	1.8	6.2
10	3.8	429.8	17.9	117.4	9.2	7.6	14.1	1.7	6.5
11	3.7	526.2	22.4	121.5	3.5	8.3	9.5	1.6	6.8
12	2.9	556.3	5.7	139.4	14.7	9.5	13.9	1.7	6.8
13	3.5	548.2	-1.4	161.0	15.4	10.6	12.2	1.9	6.6
14	2.7	536.4	-2.1	162.2	0.74	11.3	6.6	2.1	7.0
15		447.6	-16.5	158.9	-2.0	11.5	1.2	2.57	7.2
A[2]	4.04	**Av**	2.65	**Av**	6.7	**Av**	9.2	1.8	6.5

Abbreviations: [1]Inflation. [2]Average inflation.

Table 3 Saudi Population in Millions

	T P[1]	**%**	**I D**	**SC[2]**	%	ID	**NO[3]**	%	ID
06	23.6			17.2			6.4		
07	24.2	2.3	0.56	17.6	2.5	0.43	6.5	2.0	0.13
08	24.8	2.3	0.56	18.1	2.4	0.42	6.6	2.1	0.14
09	25.3	2.2	0.56	18.5	2.3	0.42	6.8	2.0	0.13
10	27.1	6.9	1.70	18.7	0.89	0.16	8.4	23.4	1.50
11	28.3	4.5	1.20	19.4	3.7	0.69	8.9	6.4	0.54
12	29.1	2.8	0.81	19.8	2.2	0.43	9.3	4.2	0.38
13	29.9	2.7	0.79	20.2	2.1	0.42	9.7	3.9	0.37
14	30.7	2.5	0.77	20.7	2.1	0.43	10.0	3.5	0.34
15	31.5	2.4	0.75	21.1	2.0	0.42	10.3	3.2	0.32
	Av	3.2	0.87	**Av**	2.2	0.43	**Av**	5.5	0.44

Sources: 2015 Ministry of Health MOH 2006-2015.

Abbreviations: [1]Total Population. [2]Saudi Citizens. [3]Non-Saudis.

[48] This table has the same sources and abbreviations as in Table 1 in the Text.

Table 4 Demand on Healthcare, Foreign and Chronic Diseases' Visits

	P V[1]	%[2]	I D[3]	F V[4]	%	I D	C V[5]	%	I D
06	61.8			5.3					
07	58.8	-4.8	-2.9	4.9	-7.3	-0.39			
08	65.3	10.9	6.4	5.3	8.9	0.43	5.2		
09	65.9	1.0	0.65	5.1	-3.9	-0.21	4.9	-5.3	-0.28
10	66.3	0.62	0.41	5.4	5.9	0.30	4.8	-2.8	-0.14
11	65.9	-0.61	-0.40	5.8	6.7	0.36	4.7	-2.1	-0.10
12	65.2	-1.1	-0.72	6.2	7.8	0.45	4.9	3.7	0.17
13	64.6	-0.95	-0.62	6.3	0.71	0.04	4.6	-5.5	-0.27
14	63.3	-2.0	-1.2	6.2	-0.42	-0.026	4.6	-0.21	-0.009
15	66.0	4.35	2.7	6.7	7.9	0.50	4.5	-1.3	-0.06
	Av	0.83	0.47	**Av**	2.9	0.16	**Av**	-1.9	-0.09
	DIB[6]	**%**	**I D**	**BD[7]**	**%**	**I D**	**NV[8]**	**%**	**I D**
06	403.8			121.0			328.0		
07	399.6	-1.0	-4.1	120.0	-0.83	-1.0	353.3	7.7	25.3
08	413.9	3.5	14.2	126.1	5.0	6.1	338.3	-4.2	-14.9
09	405.2	-2.1	-8.6	133.8	6.1	7.7	329.3	-2.6	-8.9
10	426.6	5.2	21.3	128.3	-4.1	-5.5	338.3	2.7	8.96
11	434.3	1.8	7.6	127.7	-0.47	-0.65	362.9	7.2	24.6
12	453.0	4.3	18.7	154.5	20.9	26.7	411.1	13.2	48.1
13	466.0	2.8	13.0	152.1	-1.5	-2.3	390.5	-5.0	-20.5
14	477.2	2.4	11.2	178.8	17.5	26.6	435.0	11.4	44.5
15	660.2	38.3	183.0	233.8	30.7	54.9	579.5	33.2	144.4
	Av	6.1	28.4	**Av**	8.1	12.5	**Av**	7.0	27.9
	HYP[9]	**%**	**I D**	**HR[10]**	**%**	**I D**	**RH[11]**	**%**	**I D**
06	301.4			145.9			127.1		
07	300.1	-0.43	-1.2	157.6	8.0	11.6	137.8	8.4	10.7
08	309.5	3.1	9.3	160.7	1.9	3.11	132.9	-3.5	-4.8
09	312.2	0.87	2.7	163.7	1.8	3.04	132.7	-0.15	-0.26
10	312.3	0.03	105	167.4	2.2	3.70	140.3	5.7	7.61
11	328.8	5.2	16.4	169.4	1.1	2.0	147.3	4.9	7.02
12	361.9	10.0	33.1	173.7	2.5	4.23	149.8	1.7	2.52
13	361.1	-0.22	-0.77	161.3	-7.1	-12.3	144.8	-3.3	-5.0
14	389.2	7.7	28.0	168.9	4.7	7.6	147.5	1.8	2.72
15	525.6	35.0	136.3	201.2	19.1	32.2	203.9	38.2	56.3
	Av	6.8	24.9	**Av**	3.8	6.13	**Av**	5.9	8.53

Sources: Ministry of Health MOH 2006-2015

Abbreviations: [1]Total Patient Visits in Millions. [2]Change as a percentage. [3]Change as Figure [4]Foriegner Patient Visits in Millions. [5]Patient Visits to PHCs' Chronic Clinics in Millions. [6]Diabetes mellitus Visits in Thousands. [7]Blood diseases Visits in Thousands. [8]Nervous system diseases Visits in Thousands. [9]Hypertension diseases Visits in Thousands. [10]Coronary heart diseases Visits in Thousands. [11]Rheum & other heart diseases Visits in Thousands.

Table 5 Specialised Hospitals and Number of Physicians

	CR[1]	%	I D	ON[2]	%	I D	MC[3]	%	I D	PH[4]	%	I F	DF
06	3			3			5			21.2			
07	4	33.3	1	3	0.0	0	5	0.0	0	22.6	10.2	2.1	-.79
08	4	0.0	0	3	0.0	0	5	0.0	0	24.8	11.0	2.4	-.34
09	6	50.0	2	4	33.3	1	6	25.0	1	25.8	9.1	2.2	-1.2
10	6	0.0	0	4	0.0	0	6	0.0	0	31.5	23.8	6.1	-.47
11	9	50.0	3	4	0.0	0	6	0.0	0	33.9	8.5	2.7	-.22
12	9	0.0	0	4	0.0	0	6	0.0	0	35.8	6.2	2.1	-.26
13	9	0.0	0	4	0.0	0	6	0.0	0	37.8	6.5	2.3	-.28
14	9	0.0	0	4	0.0	0	6	0.0	0	38.4	3.7	1.4	-.84
15	9	0.0	0	4	0.0	0	6	0.0	0	41.2	8.1	3.1	-.34
	Av	12.9	0.6	**Av**	0.03	0.11	**Av**	2.5	0.11	**Av**	9.7	2.7	(.53)

Sources: (MOH, 2006-2015)

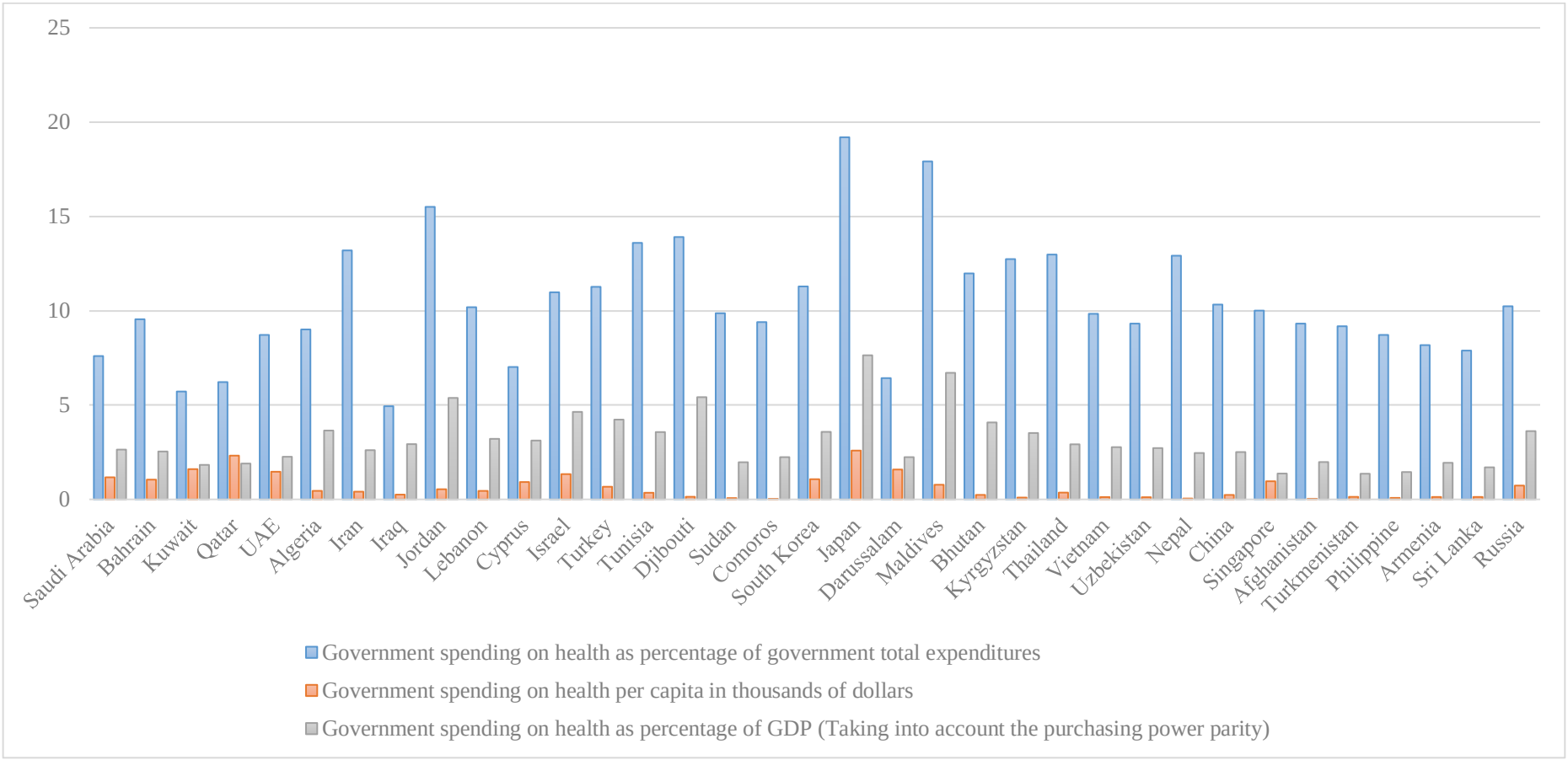
Abbreviations: [1]Cardiology Centres. [2]Oncology Centres. [3]Medical Cities. [4]Total number of physicians in thousands considering the offsetting.

Table 6 The Ministers of the Saudi Ministry of Health in the Period from 2006 to 2015

	Minister Name	Designating Date
06	Hamad Al Mana	
07	Hamad Al Mana	
08	Hamad Al Mana	
09	Hamad Al Mana	
	Abdulla Al Rabeaa	14/02/2009
10	Abdulla Al Rabeaa	
11	Abdulla Al Rabeaa	
12	Abdulla Al Rabeaa	
13	Abdulla Al Rabeaa	
14	Abdulla Al Rabeaa	
	Adel Fakeh (Temporary)	21/04/2014
	Mohamad Al Hizae	08/12/2014
15	Ahmad Al Khateeb	29/01/2015
	Mohamad AlShik (Temporary)	11/04/2015
	Khaled Alfaleh	29/04/2015

Sources: (MOH, 2006-2015)

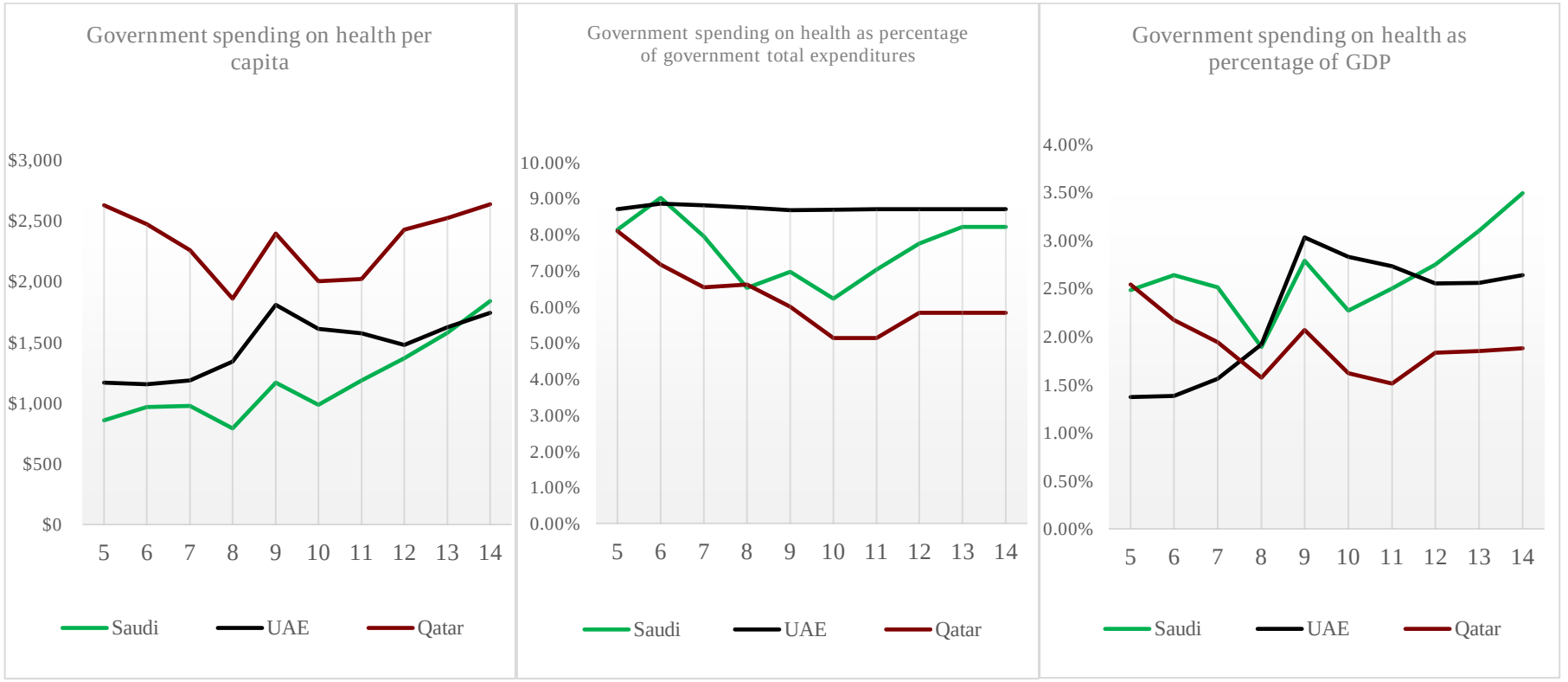
Figure 1 GCC, Middle East, Arabic, Asian, and OPEC Countries' Spending on Health in the Last Ten Years on Average[49]



Sources: World Health Organisation (WHO)

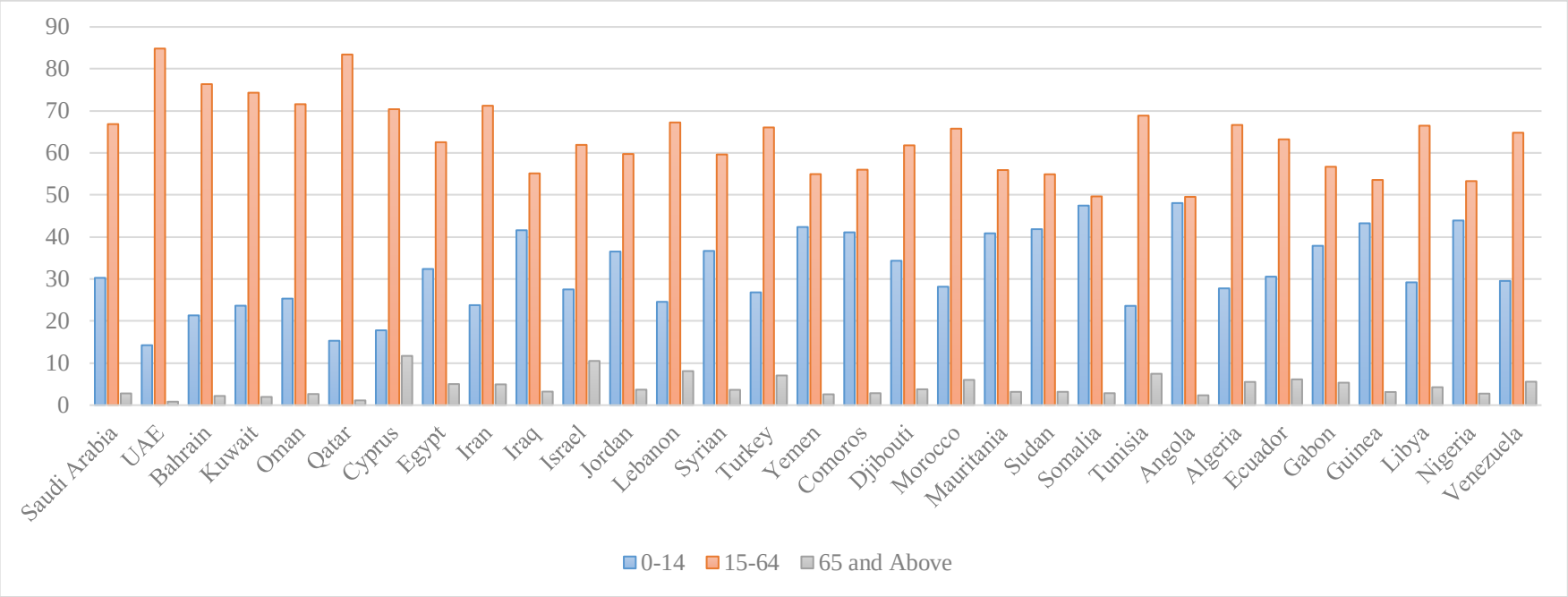
[49] This Figure shows the performance of the GCC, Middle East, Arabic, Asian, and OPEC countries that spent more than the Saudi government on healthcare in any of the three measurements on average for the period from 2005 to 2014.

Figure 2 Saudi Arabia, UAE, and Qatar Spending on Health in the Last Ten Years



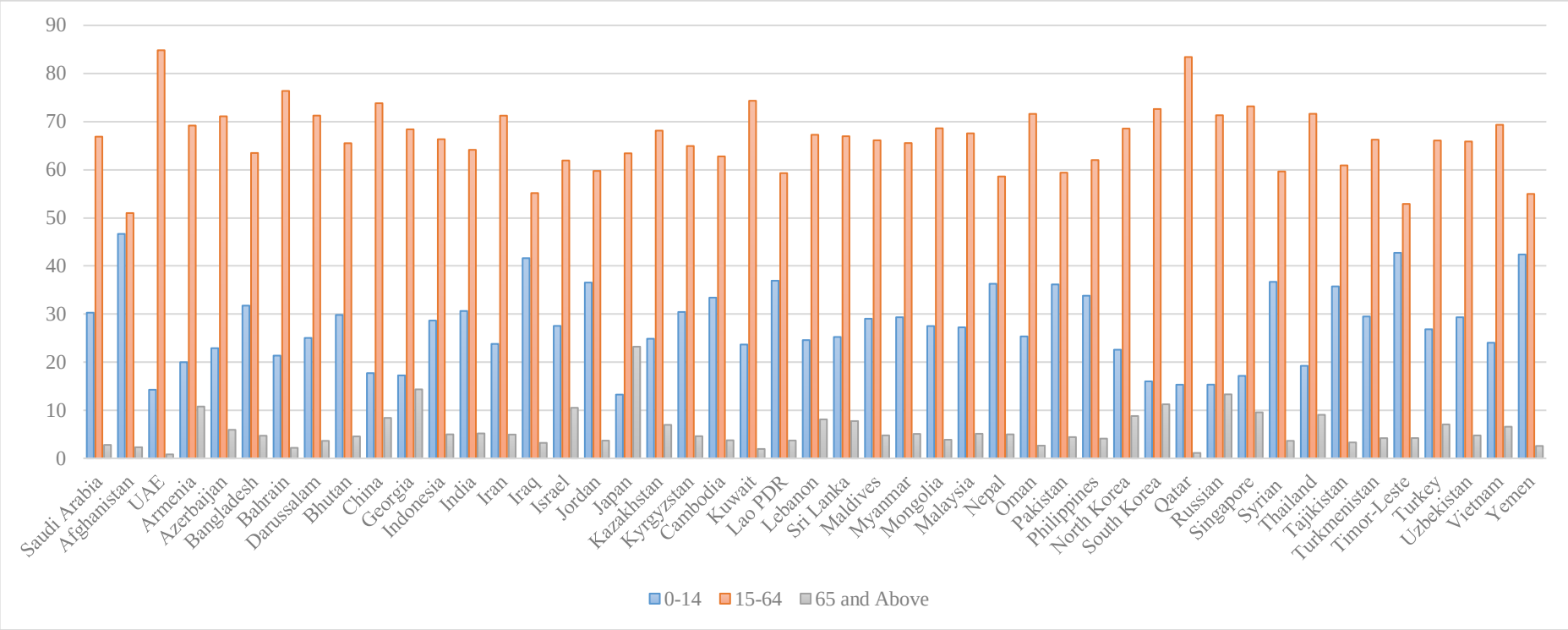
Sources: World Health Organisation (WHO)

Figure 3 GCC, Middle East, Arabic, and OPEC Countries' Population Ages in the Last Ten Years on Average



Sources: The World Bank (WB)

Figure 4 Asian Countries' Population Ages in the Last Ten Years on Average



Sources: The World Bank (WB)

Table 7 Average Annual Increases in Number of Hospitals[50]

	G H[1]	I D	O&P[2]	I D	E&E[3]	I D	C&F[4]	I D	P&O[5]	I D
06	163		20		4		4		29	
07	168	6	20	0	4	0	4	0	29	0
08	174	6	20	0	4	0	4	0	29	0
09	185	17	21	1	4	0	5	1	29	0
10	188	4	21	0	4	0	6	1	30	1
11	192	6	21	0	4	0	6	0	28	0
12	201	9	21	0	4	0	5	0	28	0
13	211	10	22	1	4	0	4	0	27	1
14	214	4	21	0	4	0	4	0	27	0
15	218	4	22	1	4	0	3	0	27	0
	Av	7.33	**Av**	0.33	**Av**	0	**Av**	0.22	**Av**	0.22

Sources: (MOH, 2006-2015)

Abbreviations: [1]General hospitals. [2]OBS and Gyn & paediatric. [3]Eye & ENT. [4]Chest & Fever. [5]Psychiatric, Convalescence, Leprosy & Rehabilitation.

Table 8 Average Annual Increase in Number of Hospitals' beds in Thousands of Units

	G[1]	I D	Og[2]	I D	In[3]	I D	Sr[4]	I D	Or[5]	I D	U[6]	I D	F[7]	I D	P[8]	I D
06	4.6		4.8		4.6		4.3		1.1		.45		.08		3	
07	4.1	.63	4.8	0.0	4.7	.01	4.3	0.0	1.1	0.0	.45	0.0	.08	0.0	3	0.0
08	4.4	.30	4.8	0.0	4.7	0.0	4.3	0.0	1.1	0.0	.45	0.0	.08	0.0	3	0.0
09	5.3	1.9	3.9	.13	5.0	.86	3.9	.27	1.5	.37	.48	.13	.08	.01	3.3	.40
10	5.4	1.1	4.2	.27	4.6	.05	3.6	.04	1.5	.06	.50	.04	.11	.04	3.2	.03
11	5.0	.62	4.1	.06	4.6	.34	3.4	.18	1.4	.04	.48	.03	.13	.04	3.4	.21
12	6.3	1.4	4.1	0.0	4.6	0.0	3.4	0.0	1.4	0.0	.48	0.0	.13	0.0	3.4	0.0
13	8.7	2.7	4.3	.20	5.2	.68	4.0	.54	1.4	.04	.45	.01	.12	0.0	3.3	.10
14	8.9	.94	4.4	.09	5.4	.27	4.3	.38	1.4	.04	.44	.01	.13	.01	3.4	.13
15	7.9	.34	4.6	.23	6.2	.86	4.8	.57	1.5	.06	.46	.02	.13	0.0	3.4	.03
	Av	1.1	**Av**	.11	**Av**	.34	**Av**	.22	**Av**	.07	**Av**	.03	**Av**	.01	3	.10
	P[9]	**I D**	**Ic[10]**	**I D**	**E[11]**	**I D**	**O[12]**	**I D**	**C[13]**	**I D**	**S[14]**	**I D**	**B[15]**	**I D**	**Iso[16]**	**I D**
06	4.5		1.5		.43		.80		.60		.04		.26		393	
07	4.5	.02	1.5	0.0	.43	0.0	.79	0.0	.61	.01	.04	0.0	.26	0.0	399	6.0
08	4.5	0.0	1.5	0.0	.43	0.0	.79	0.0	.61	0.0	.04	0.0	.26	0.0	399	0.0
09	2.9	.01	3.5	2.0	.57	.18	.75	.06	.58	.13	.06	.03	.28	.07	741	501
10	4.2	1.2	3.3	.12	.61	.06	.80	.06	.78	.20	.12	.07	.29	.02	752	98
11	4.8	.69	3.1	.12	.59	.03	.77	.03	.80	.06	.14	.03	.28	.04	1,003	265
12	4.8	0.0	3.1	0.0	.59	0.0	.77	0.0	.80	0.0	.14	0.0	.28	0.0	1,003	0.0
13	4.8	.28	3.2	.18	.56	.02	.76	.02	.45	.01	.11	.01	.29	.02	1,049	147
14	5.1	.28	3.1	.05	.57	.02	.76	.01	.45	.07	.14	.03	.28	0.0	1,158	120
15	4.8	.10	3.6	.47	.55	.01	.77	.01	.49	.06	.14	.01	.28	0.0	1,199	73
	Av	.29	**Av**	.33	**Av**	.03	**Av**	.02	**Av**	.06	**Av**	.02	**Av**	.02	**Av**	134

Sources: (MOH-2015)

Abbreviations: [1]General Beds. [2]OBS and Gyn. [3]Internal medicine. [4]Surgery. [5]Orthopedics. [6]Urology. [7]Faciodental. [8]Psychiatry & Neurology. [9]Paediatrics. [10]Intensive care units. [11]ENT. [12]Ophthalmology. [13]Chest & Fever. [14]Skin. [15]Burns and Plastics. [16]Isolation.

[50] This table shows the actual increases, and ignores the decreases. The same for hospital beds, and medical centers.

Table 9 The Average Annual Increases or Decreases in Medical Centres

	Dental	I D	Rehab	I D	Lab[1]	I D	Lab[2]	I D	Smok[3]	I D	Forensic	I D
06	19		11		3		22		42		18	
07	19	0	12	1	3	0	22	0	43	2	18	0
08	20	1	13	1	8	5	25	3	31	3	18	0
09	20	0	14	1	9	1	25	0	36	9	18	0
10	30	10	15	2	9	0	25	0	38	3	19	1
11	31	2	15	1	10	1	23	1	55	19	19	0
12	32	1	11	1	11	1	23	0	56	3	19	0
13	32	0	19	8	10	0	23	0	62	17	20	1
14	35	3	18	0	10	0	25	3	53	12	20	0
15	35	0	16	1	10	0	22	0	53	0	20	0
	Av	1.9	**Av**	1.8	**Av**	0.9	**Av**	0.78	**Av**	7.56	**Av**	0.22
	Card[4]	**I D**	**Onc[5]**	**I D**	**Dia[6]**	**I D**	**Dyl[7]**	**I D**	**T.B**	**I D**	**Others**	**I D**
06	3		3		0		116		2		3	
07	4	1	3	0	0	0	116	0	2	0	4	1
08	4	0	3	0	0	0	115	0	3	1	3	0
09	6	2	4	1	0	0	117	2	4	1	1	0
10	6	0	4	0	0	0	119	2	2	0	0	0
11	9	3	4	0	0	0	120	1	2	0	0	0
12	9	0	4	0	20	0	143	23	0	0	0	0
13	9	0	4	0	20	2	144	4	0	0	0	0
14	9	0	4	0	21	1	146	7	0	0	0	0
15	9	0	4	0	21	0	146	0	0	0	0	0
	Av	0.6	**Av**	0.11	**Av**	0.33	**Av**	4.33	**Av**	0.22	**Av**	0.11

Sources: (MOH, 2006-2015)

Abbreviations: [1]Central laboratories. [2]Laboratories at entry points. [3]Anti-smoking. [4]Cardiology centres. [5]Oncology centres. [6]Diabetes centres. [7]Dialysis centres.

Table 10 Number of Technicians, Administrators and Workers in Thousands

	Total[1]	I %	I F[2]	D F[3]	T &A[4]	I %	I F	D F	W[5]	I %	I F	D F
06	60				17.3				42.6			
07	60	12.4	7.4	-7.4	18.9	22.0	3.8	-2.1	41	8.5	3.6	-5.2
08	63.8	20.8	12.5	-8.6	26.3	44.2	8.3	-1	37.5	10.0	4.1	-7.5
09	77.3	26.5	16.9	-2.4	31.8	25.8	6.7	-0.24	45.5	27.1	10.1	-2.1
10	89	32.8	25.3	-13.5	40.8	32.2	10.2	-1.1	48.1	33.2	15.1	-12.4
11	99.1	21.8	19.4	-9.3	44.2	10.6	4.3	-0.98	54.8	31.3	15.1	-8.4
12	115.2	22.1	21.9	-5.8	61.7	39.6	17.5	0.0	53.5	8.1	4.4	-5.8
	Av	22.7	17.2	-7.8	**Av**	29.0	8.5	-0.93	**Av**	19.7	8.7	-6.9

Sources: (MOH, 2006-2015)

Abbreviations: [1]Total technicians, administrators and workers. [2]Increases as figures. [3]Decreases as figures. [4]Total number of technicians and administrators. [5]Total number of workers.

Table 11 Number of Physicians Who Work in Hospitals in All Specialities and Levels

	T.S[1]	I D	R[2]	I D	C[3]	I D	GE.S[4]	I D	R	I D	C	I D
09	8,370		6,994		2,722		1,960		51		3	
10	11,470	3,100	7,976	982	3,288	566	2,790	830	0.0	-51	1	-2
11	13,014	1,544	8,670	694	3,491	203	2,221	-569	0.0	0.0	0.0	-1
12	13,506	492	8,812	142	3,948	457	3,188	967	2	2	11	11
13	14,195	689	9,264	452	4,278	330	2,173	-1,015	13	11	0.0	-11
14	14,141	-54	9,281	17	4,439	161	3,079	906	162	149	23	23
15	15,312	1,171	9,490	209	4,591	152	3,237	158	46	-116	9	-14
	Av	1,157	**Av**	416	**Av**	312	**Av**	213	**Av**	-1	**Av**	1
	IN.S[5]	**I D**	**R**	**I D**	**C**	**I D**	**SU.S[6]**	**I D**	**R**	**I D**	**C**	**I D**
09	931		603		241		344		681		267	
10	938	7	637	34	252	11	1,407	1,063	725	44	311	44
11	1,206	268	707	70	255	3	1,650	243	827	102	302	-9
12	1,111	-95	687	-20	281	26	1,340	-310	789	-38	337	35
13	1,235	124	642	-45	268	-13	1,505	165	781	-8	354	17
14	1,189	-46	782	140	339	71	1,272	-233	816	35	325	-29
15	1,341	152	791	9	335	-4	1,347	75	815	-1	330	5
	Av	68	**Av**	31	**Av**	16	**Av**	167	**Av**	22	**Av**	11
	OR.S[7]	**I D**	**R**	**I D**	**C**	**I D**	**UR.S[8]**	**I D**	**R**	**I D**	**C**	**I D**
09	217		338		106		91		190		54	
10	221	4	375	37	118	12	75	-16	203	13	67	13
11	270	49	426	51	131	13	95	20	241	38	83	16
12	257	-13	433	7	127	-4	84	-11	232	-9	83	0.0
13	291	34	449	16	158	31	94	10	252	20	98	15
14	265	-26	459	10	164	6	81	-13	225	-27	97	-1
15	299	34	453	-6	161	-3	80	-1	228	3	103	6
	Av	14	**Av**	19	**Av**	9	**Av**	-2	**Av**	6	**Av**	8
	CA.S[9]	**I D**	**R**	**I D**	**C**	**I D**	**NE.S[10]**	**I D**	**R**	**I D**	**C**	**I D**
09	20		33		30		48		45		45	
10	3	-17	22	-11	31	1	52	4	71	26	48	3
11	10	7	47	25	55	24	84	32	70	-1	60	12
12	5	-5	44	-3	61	6	67	-17	83	13	75	15
13	18	13	54	10	66	5	83	16	104	21	92	17
14	5	-13	43	-11	91	25	78	-5	90	-14	101	9
15	6	1	43	0.0	98	7	86	8	91	1	106	5
	Av	-2	**Av**	2	**Av**	11	**Av**	6	**Av**	8	**Av**	10
	PL.S[11]	**I D**	**R**	**I D**	**C**	**I D**	**EN.S[12]**	**I D**	**R**	**I D**	**C**	**I D**
09	37		63		27		87		230		75	
10	31	-6	61	-2	32	5	96	9	246	16	87	12
11	34	3	73	12	40	8	115	19	278	32	89	2
12	32	-2	60	-13	48	8	98	-17	272	-6	109	20
13	38	6	71	11	38	-10	122	24	307	35	118	9
14	40	2	63	-8	50	12	107	-15	291	-16	111	-7
15	45	5	64	1	50	0.0	121	14	291	0.0	113	2
	Av	1	**Av**	0.2	**Av**	4	**Av**	6	**Av**	10	**Av**	6
	OP.S[13]	**I D**	**R**	**I D**	**C**	**I D**	**OB.S[14]**	**I D**	**R**	**I D**	**C**	**I D**
09	132		240		185		617		671		190	
10	142	10	261	21	150	-35	628	11	741	70	228	38
11	170	28	278	17	155	5	829	201	877	136	271	43
12	217	47	274	-4	179	24	705	-124	824	-53	266	-5
13	251	34	293	19	183	4	887	182	864	40	303	37
14	149	-102	288	-5	190	7	805	-82	807	-57	286	-17
15	160	11	284	-4	183	-7	905	100	823	16	284	-2
	Av	5	**Av**	7	**Av**	-0.3	**Av**	48	**Av**	25	**Av**	16

Cont'd Table 11

	CA.S[15]	I D	R	I D	C	I D	CH.S[16]	I D	R	I D	C	I D
09	39		143		71		46		131		41	
10	75	36	161	18	117	46	40	-6	129	-2	33	-8
11	173	98	191	30	130	13	52	12	149	20	45	12
12	123	-50	212	21	168	38	38	-14	141	-8	38	-7
13	217	94	252	40	149	-19	60	22	156	15	44	6
14	149	-68	217	-35	150	1	42	-18	148	-8	47	3
15	167	18	211	-6	166	16	43	1	141	-7	46	-1
	Av	21	**Av**	11	**Av**	16	**Av**	-0.5	**Av**	2	**Av**	0.8
	SK.S[17]	**I D**	**R**	**I D**	**C**	**I D**	**NL.S[18]**	**I D**	**R**	**I D**	**C**	**I D**
09	29		179		53		40		57		34	
10	41	12	184	5	55	2	22	-18	36	-21	43	9
11	50	9	215	31	69	14	65	43	114	78	51	8
12	40	-10	202	-13	71	2	44	-21	37	-77	47	-4
13	55	15	218	16	80	9	25	-19	40	3	71	24
14	35	-20	204	-14	86	6	50	25	40	0.0	47	-24
15	43	8	201	-3	91	5	47	-3	40	0.0	53	6
	Av	2	**Av**	4	**Av**	6	**Av**	1	**Av**	-3	**Av**	3
	PH.S[19]	**I D**	**R**	**I D**	**C**	**I D**	**RD.S[20]**	**I D**	**R**	**I D**	**C**	**I D**
09	10		79		13		67		259		89	
10	7	-3	94	15	24	11	75	8	273	14	117	28
11	20	13	77	-17	28	4	116	41	322	49	150	33
12	10	-10	67	-10	33	5	102	-14	362	40	179	29
13	27	17	76	9	23	-10	126	24	415	53	182	3
14	6	-21	53	-23	37	14	122	-4	427	12	183	1
15	7	1	52	-1	42	5	128	6	461	34	192	9
	Av	-0.5	**Av**	-4.5	**Av**	5	**Av**	10	**Av**	34	**Av**	17
	LB.S[21]	**I D**	**R**	**I D**	**C**	**I D**	**AN.S[22]**	**I D**	**R**	**I D**	**C**	**I D**
09	22		346		74		187		505		104	
10	20	-2	380	34	121	47	194	7	553	48	169	65
11	36	16	433	53	118	-3	266	72	634	81	191	22
12	26	-10	489	56	138	20	232	-34	617	-17	234	43
13	39	13	508	19	153	15	248	16	655	38	225	-9
14	21	-18	516	8	157	4	242	-6	655	0.0	237	12
15	26	5	534	18	170	13	244	2	670	15	238	1
	Av	0.7	**Av**	31	**Av**	16	**Av**	10	**Av**	28	**Av**	22
	PY.S[23]	**I D**	**R**	**I D**	**C**	**I D**	**PD.S[24]**	**I D**	**R**	**I D**	**C**	**I D**
09	14		59		17		774		826		333	
10	56	42	94	35	45	28	838	64	819	-7	338	5
11	39	-17	97	3	48	3	1,088	250	866	47	396	58
12	51	12	106	9	40	-8	1,098	10	982	116	386	-10
13	60	9	89	-17	32	-8	1,295	197	1,043	61	540	154
14	73	13	83	-6	41	9	1,266	-29	1,020	-23	549	9
15	79	6	96	13	40	-1	1,388	122	1,026	6	592	43
	Av	11	**Av**	6	**Av**	4	**Av**	102	**Av**	33	**Av**	43
	PT.S[25]	**I D**	**R**	**I D**	**C**	**I D**	**FR.S[26]**	**I D**	**R**	**I D**	**C**	**I D**
09	150		184		50		0.0		65		5	
10	170	20	232	48	66	16	0.0	0.0	67	2	8	3
11	176	6	197	-35	83	17	0.0	0.0	67	0.0	8	0.0
12	216	40	273	76	86	3	0.0	0.0	67	0.0	8	0.0
13	228	12	295	22	92	6	0.0	0.0	68	1	10	2
14	208	-20	275	-20	103	11	0.0	0.0	74	6	11	1
15	237	29	270	-5	111	8	0.0	0.0	75	1	11	0.0
	Av	15	**Av**	14	**Av**	10	**Av**	0.0	**Av**	2	**Av**	1

Cont'd Table 11

	FM.S[27]	I D	R	I D	C	I D	EG.S[28]	I D	R	I D	C	I D
09	46		48		22		326		113		20	
10	58	12	56	8	21	-1	1,234	908	143	30	39	19
11	584	526	77	21	32	11	1,557	323	183	40	42	3
12	645	61	85	8	36	4	1,651	94	188	5	75	33
13	836	191	145	60	33	-3	1,812	161	190	2	86	11
14	758	-78	135	-10	62	29	1,697	-115	191	1	90	4
15	795	37	138	3	66	4	1,839	142	205	14	94	4
	Av	125	**Av**	15	**Av**	7	**Av**	252	**Av**	15	**Av**	12
	IU.S[29]	**I D**	**R**	**I D**	**C**	**I D**	**NR.S[30]**	**I D**	**R**	**I D**	**C**	**I D**
09	79		71		38		80		79		28	
10	315	236	265	194	102	64	197	117	161	82	63	35
11	403	88	288	23	107	5	271	74	172	11	74	11
12	484	81	188	-100	139	32	269	-2	189	17	85	11
13	633	149	194	6	102	-37	287	18	212	23	83	-2
14	661	28	186	-8	110	8	267	-20	199	-13	90	7
15	805	144	196	10	114	4	279	12	199	0.0	83	-7
	Av	121	**Av**	21	**Av**	13	**Av**	33	**Av**	20	**Av**	9
	PC.S[31]	**I D**	**R**	**I D**	**C**	**I D**	**BO.S[32]**	**I D**	**R**	**I D**	**C**	**I D**
09	7		72		40		9		45		7	
10	29	22	77	5	40	0.0	7	-2	46	1	44	37
11	37	8	91	14	49	9	10	3	56	10	43	-1
12	35	-2	81	-10	51	2	6	-4	8	-48	38	-5
13	49	14	83	2	60	9	31	25	28	20	44	6
14	51	2	77	-6	73	13	13	-18	2	-26	44	0.0
15	59	8	90	13	73	0.0	13	0.0	2	0.0	48	4
	Av	9	**Av**	3	**Av**	6	**Av**	0.7	**Av**	-7	**Av**	7
	GT.S[33]	**I D**	**R**	**I D**	**C**	**I D**	**ED.S[34]**	**I D**	**R**	**I D**	**C**	**I D**
09	4		28		23		6		21		18	
10	6	2	30	2	31	8	21	15	31	10	42	24
11	10	4	35	5	42	11	30	9	38	7	53	11
12	5	-5	32	-3	40	-2	44	14	45	7	71	18
13	24	19	66	34	62	22	62	18	53	8	55	-16
14	10	-14	32	-34	44	-18	65	3	46	-7	59	4
15	13	3	46	14	44	0.0	72	7	52	6	61	2
	Av	2	**Av**	3	**Av**	4	**Av**	11	**Av**	5	**Av**	7
	OG.S[35]	**I D**	**R**	**I D**	**C**	**I D**	**VL.S[36]**	**I D**	**R**	**I D**	**C**	**I D**
09	0.0		9		8		0.0		5		6	
10	14	14	35	26	45	37	10	10	40	35	17	11
11	16	2	56	21	55	10	11	1	35	-5	21	4
12	23	7	72	16	84	29	9	-2	34	-1	25	4
13	15	-8	54	-18	66	-18	13	4	39	5	32	7
14	13	-2	76	22	81	15	13	0.0	47	8	35	3
15	17	4	76	0.0	84	3	14	1	48	1	32	-3
	Av	3	**Av**	11	**Av**	13	**Av**	2	**Av**	7	**Av**	4

Cont'd Table 11

	DY.S[37]	I D	R	I D	C	I D	OE.S[38]	I D	R	I D	C	I D
09	845		294		79		1,106		231		326	
10	930	85	380	86	142	63	728	-378	348	117	241	-85
11	1,032	102	416	36	147	5	288	-440	37	-311	68	-173
12	982	-50	414	-2	156	9	269	-19	221	184	143	75
13	1,096	114	425	11	184	28	260	-9	130	-91	192	49
14	1,099	3	458	33	205	21	210	-50	94	-36	121	-71
15	1,153	54	478	20	221	16	217	7	254	160	147	26
	Av	51	**Av**	31	**Av**	24	1,106	-148	**Av**	4	**Av**	-30

Sources: (MOH, 2006-2015)

Abbreviations: [1]Total residents. [2]Total registrars. [3]Total consultants. [4]General. [5]Internal medicine. [6]Surgery. [7]Orthopedics. [8]Urology. [9]Cardiothoracic. [10]Neurosurgery. [11]Plastic surgery. [12]E.N.T. [13]Ophthalmology. [14]OBS/GYN. [15]Cardiology. [16]Chest diseases. [17]Skin & Venereology. [18]Neurology. [19]P.H. and Tropical M. [20]Radiology. [21]Laboratory. [22]Anesthesia. [23]Physical medicine. [24]Pediatrics. [25]Psychiatric. [26]Forensic. [27]Family medicine. [28]Emergency. [29]Intensive care units. [30]Nephrology. [31]Plastic surgery. [32]Blood diseases. [33]Gastroenterology. [34]Endocrinology. [35]Oncology. [36]Vascular surgery. [37]Dentistry. [38]Other.

Table 12 Visits to Primary Healthcare Centres in Thousands

	T G[1]	I D %	I D V	D C[2]	I D %	I D V	T A[3]	I D %	I D V	T W[4]	I D %	I D V	T O[5]	I D %	I D V
06	33,288			2,738			995			2,741			10,950		
07	29,741	-10.6	-3,546	2,873	4.9	135	979	-1.7	-16	2,930	6.9	188	10,961	0.11	11
08	30,730	3.3	989	2,726	-5.1	-147	880	-10.0	-98	2,983	1.8	52	11,055	0.85	93
09	32,055	4.3	1,324	2,666	-2.2	-60	866	-1.5	-13	3,100	3.9	116	10,892	-1.47	-162
10	33,026	3.0	971	2,725	2.2	59	771	-11.0	-95	3,084	-0.5	-15	10,492	-3.7	-400
11	33,025	0.0	-1.3	2,646	-2.9	-78	731	-5.2	-40	3,168	2.7	84	10,194	-2.8	-298
12	32,313	-2.1	-712	2,480	-6.3	-166	724	-0.86	-6	3,082	-2.7	-86	10,046	-1.4	-147
13	32,974	2.0	661	2,352	-5.1	-127	716	-1.2	-8	3,137	1.8	55	9,354	-6.9	-692
14	31,740	-3.7	-1,234	2,204	-6.3	-148	699	-2.2	-16	3,100	-1.2	-37	8,872	-5.1	-481
15	30,719	-3.2	-1,020	2,010	-8.7	-193	674	-3.5	-24	3,221	3.9	121	8,409	-5.2	-463
	Av	-0.78	-285	**Av**	-3.2	-80	**Av**	-4.1	-35	**Av**	1.8	53	**Av**	-2.8	-282

Sources: (MOH, 2006-2015)

Abbreviations: [1]Total number of visits to general clinics. [2]Total number of visits to dental clinics. [3]Total number of visits to Antenatal clinics. [4]Total number of visits to well-baby clinics. [5]Total number of visits to other clinics.

Table 13 Number of Hospitals' Visits by Type of Disease in Thousands

	Total[1]	I D	DIB[2]	I D	BD[3]	I D	NV[4]	I D	Eye[5]	I D	ENT[6]	I D
06	11,134		403.8		121		328.0		907.3		859.3	
07	11,390	255.9	399.6	-4.1	120	-1.0	353.3	25.3	978.4	71.1	842.8	-16.4
08	11,657	267.3	413.9	14.2	126.1	6.1	338.3	-14.9	1,086	107.9	835.5	-7.3
09	11,393	-264	405.2	-8.6	133.8	7.7	329.3	-8.9	1,103	16.7	829.1	-6.3
10	11,427	33.4	426.6	21.3	128.3	-5.5	338.3	8.96	1,135	32.5	727.8	-101.2
11	11,459	32.7	434.3	7.6	127.7	-0.65	362.9	24.6	1,055	-79.8	769.6	41.7
12	11,672	212.5	453	18.7	154.5	26.7	411.1	48.1	1,267	211.5	803.2	33.6
13	11,435	-237	466	13.0	152.1	-2.3	390.5	-20.5	1,233	-33.7	750.6	-52.6
14	12,075	639.7	477.2	11.2	178.8	26.6	435.0	44.5	1,435	201.8	794.6	44.0
15	16,474	4,399	660.2	183	233.8	54.9	579.5	144.4	1,873	437.7	1,081	286.9
	Av	593.3	**Av**	28.4	**Av**	12.5	**Av**	27.9	**Av**	107.3	**Av**	24.6
	HYP[7]	**I D**	**HR[8]**	**I D**	**RH[9]**	**I D**	**CH[10]**	**I D**	**DG[11]**	**I D**	**Skin[12]**	**I D**
06	301.4		145.9		127.1		709.7		624.3		696.1	
07	300.1	-1.2	157.6	11.6	137.8	10.7	691.7	-18.0	612.4	-11.8	707.5	11.4
08	309.5	9.3	160.7	3.11	132.9	-4.8	649.6	-42.0	588.5	-23.9	709.0	1.52
09	312.2	2.7	163.7	3.04	132.7	-0.26	620.7	-28.8	593.7	5.18	699.7	-9.33
10	312.3	105	167.4	3.70	140.3	7.61	543.6	-77.1	598.2	4.51	684.2	-15.5
11	328.8	16.4	169.4	2.0	147.3	7.02	520.9	-22.6	581.8	-16.4	688.5	4.28
12	361.9	33.1	173.7	4.23	149.8	2.52	471.2	-49.7	537.8	-43.9	705.1	16.6
13	361.1	-0.77	161.3	-12.3	144.8	-5.0	428.4	-42.7	524.7	-13.0	679.6	-25.4
14	389.2	28.0	168.9	7.6	147.5	2.72	456.2	27.8	542.0	17.3	704.1	24.4
15	525.6	136.3	201.2	32.2	203.9	56.3	619.3	163.0	746.8	204.7	968.3	264.2
	Av	24.9	**Av**	6.13	**Av**	8.53	**Av**	-10.0	**Av**	13.6	**Av**	30.2
	MUS[13]	**I D**	**OB[14]**	**I D**	**OL[15]**	**I D**	**UN[16]**	**I D**	**IFT[17]**	**I D**	**G[18-51]**	**I D**
06	983		1,157		842.8		448.8		216.6		2,261	
07	1,029	46.8	1,195	38.1	797.4	-45.4	465.4	16.6	132.4	-84.2	2,467	206.7
08	1,038	8.21	1,198	3.09	830.5	33.1	480.0	14.6	99.7	-32.6	2,624	156.9
09	1,022	-15.4	1,190	-7.63	808.3	-22.1	478.7	-1.34	91.4	-8.3	2,477	-147.2
10	1,055	32.6	1,217	26.5	789.6	-18.7	487.2	8.52	78.9	-12.4	2,595	117.4
11	1,089	34.0	1,223	6.28	725.9	-63.7	487.1	-0.09	130.7	51.7	2,615	20.2
12	1,093	4.07	1,314	90.8	720.3	-5.63	487.8	0.71	76.3	-54.3	2,490	-124.7
13	1,066	-27.0	1,249	-65.5	672.9	-47.4	477.3	-10.5	68.2	-8.08	2,525	35.1
14	1,095	28.6	1,329	80.6	719.2	46.3	489.9	12.6	76.1	7.8	2,635	109.7
15	1,512	417.1	1,805	476.1	974.3	255.0	677.2	187.3	101.1	25.0	3,710	1,075
	Av	58.7	**Av**	72.04	**Av**	14.6	**Av**	25.3	**Av**	-12.8	**Av**	161

Sources: (MOH, 2006-2015)

Abbreviations: [1]Total patient visits to hospitals. [2]Diabetes mellitus. [3]Blood diseases. [4]Nervous system diseases. [5]Eye diseases. [6]ENT diseases. [7]Hypertension diseases. [8]Coronary heart diseases. [9]Rheum & other heart diseases. [10]Chest diseases. [11]Diseases of digestive system. [12]Skin and subcutaneous tissue diseases. [13]Musculo-skeletal diseases. [14]OBS. and GYN diseases. [15]Oral and dental diseases. [16] Diseases of genito-urinary system. [17]Infectious & parasitic diseases. [18]General diseases.

[51] General patient visits include the visits to primary care clinics, emergency, ICU, paediatric, internal medicine, and to other diseases visits.

Table 14 Number of Cases Reported Communicable Disease

	Total[1]	I D	Co[2]	I D	Wp[3]	I D	Te[4]	I D	Mr[5]	I D	Vs[6]	I D	Ml[7]	I D
06	74,693		10		34		18		1,278		31		807	
07	82,907	8,214	4	-6	68	34	21	3	2,864	1586	41	10	4,648	3,841
08	88,334	5,427	7	3	30	-38	13	-8	1,491	-1373	32	-9	158	-4,490
09	63,271	-25,063	4	-3	26	-4	10	-3	2,333	842	17	-15	81	-77
10	50,024	-13,247	6	2	0.0	-26	4	-6	1,941	-392	8	-9	334	253
11	47,154	-2,870	1	-5	11	11	14	10	2,788	847	7	-1	262	-72
12	44,587	-2,567	5	4	6	-5	14	0.0	3,406	618	8	1	294	32
13	38,850	-5,737	3	-2	0.0	-6	10	-4	2,513	-893	13	5	252	-42
14	31,495	-7,355	0.0	-3	1	1	2	-8	2,305	-208	11	-2	154	-98
15	29,427	-2,068	0.0	0.0	11	10	1	-1	2,620	315	4	-7	219	65
	Av	-5,029	**Av**	-1.1	**Av**	-2.6	**Av**	-1.9	**Av**	149.1	**Av**	-3	**Av**	-65.3
	CH[8]	**I D**	**Rb[9]**	**I D**	**Ms[10]**	**I D**	**M[11]**	**I D**	**Mn[12]**	**I D**	**Mi[13]**	**I D**	**OM[14]**	**I D**
06	43,070		23		79		22		28		6		361	
07	47,691	4,621	32	9	32	-47	13	-9	29	1	3	-3	283	-78
08	60,007	12,316	15	-17	31	-1	7	-6	25	-4	4	1	270	-13
09	31,402	-28,605	13	-2	138	107	6	-1	17	-8	0.0	-4	317	47
10	18,118	-13,284	35	22	45	-93	3	-3	18	1	0.0	0.0	228	-89
11	19,469	1,351	0.0	-35	26	-19	6	3	12	-6	1	1	242	14
12	18,704	-765	18	18	64	38	4	-2	3	-9	1	0.0	215	-27
13	10,934	-7,770	66	48	37	-27	2	-2	3	0.0	3	2	293	78
14	8,204	-2,730	23	-43	18	-19	4	2	2	-1	1	-2	189	-104
15	5,980	-2,224	5	-18	3	-15	6	2	5	3	3	2	171	-18
	Av	-4,121	**Av**	-2	**Av**	-8.4	**Av**	-1.8	**Av**	-2.6	**Av**	-0.3	**Av**	-21.1
	BR[15]	**I D**	**Ti[16]**	**I D**	**Gu[17]**	**I D**	**Ts[18]**	**I D**	**EX[19]**	**I D**	**Ec[20]**	**I D**	**SA[21]**	**I D**
06	3,997		293		105		8		1,070		14		1,572	
07	4,194	197	281	-12	93	-12	6	-2	1,312	242	12	-2	1,894	322
08	3,447	-747	269	-12	121	28	4	-2	1,265	-47	6	-6	1,292	-602
09	4,803	1356	316	47	36	-85	5	1	1,170	-95	0.0	-6	1,372	80
10	4,460	-343	324	8	0.0	-36	6	1	1,305	135	1	1	1,393	21
11	3,942	-518	292	-32	0.0	0.0	12	6	1,231	-74	1	0.0	1,394	1
12	3,661	-281	295	3	0.0	0.0	7	-5	1,022	-209	7	6	1,141	-253
13	3,264	-397	224	-71	0.0	0.0	10	3	876	-146	0.0	-7	1,045	-96
14	3,110	-154	119	-105	0.0	0.0	11	1	807	-69	0.0	0.0	1,186	141
15	3,233	123	149	30	0.0	0.0	11	0.0	841	34	1	1	775	-411
	Av	-84.9	**Av**	-16	**Av**	-11	**Av**	0.3	**Av**	-25.4	**Av**	-1.4	**Av**	-88.6
	AM[22]	**I D**	**Sl[23]**	**I D**	**Ku[24]**	**I D**	**D[25]**	**I D**	**CU[26]**	**I D**	**Bi[27]**	**I D**	**Lp[28]**	**I D**
06	2,907		149		0.0		2		3,602		515		22	
07	3,645	738	154	5	0.0	0.0	3	1	3,286	-316	370	-145	20	-2
08	3,311	-334	188	34	0.0	0.0	0.0	-3	2,321	-965	699	329	23	3
09	3,064	-247	121	-67	59	0.0	1	1	2,549	228	282	-417	15	-8
10	2,852	-212	93	-28	81	22	0.0	-1	4,129	1,580	120	-162	5	-10
11	1,985	-867	54	-39	93	12	2	2	1,951	-2,178	168	48	19	14
12	2,173	188	67	13	58	-35	0.0	-2	1,464	-487	254	86	3	-16
13	1,819	-354	35	-32	59	1	8	8	1,988	524	320	66	8	5
14	2,378	559	24	-11	70	11	2	-6	2,190	202	117	-203	7	-1
15	1,884	-494	24	0.0	60	-10	4	2	1,490	-700	159	42	0.0	-7
	Av	-113.7	**Av**	-14	**Av**	0.1	**Av**	0.2	**Av**	-234.7	**Av**	-39	**Av**	-2.4

Cont'd Table 14

	HA[29]	I D	HB[30]	I D	HC[31]	I D	U[32]	I D	PL[33]	I D	DG[34]	I D	OC[35]	I D
06	2,631		4,264		2,964		691		2,576		1,544		0.0	
07	1,383	-1,248	4,501	237	2,776	-188	192	-499	2,566	-10	490	-1,054	0.0	0.0
08	1,678	295	5,066	565	2,733	-43	255	63	2,653	87	913	423	0.0	0.0
09	1,258	-420	5,020	-46	2,487	-246	220	-35	2,779	126	3,350	2,437	0.0	0.0
10	616	-642	4,854	-166	2,448	-39	82	-138	2,989	210	3,526	176	0.0	0.0
11	321	-295	4,494	-360	2,328	-120	85	3	2,641	-348	3,302	-224	0.0	0.0
12	310	-11	4,609	115	2,340	12	108	23	2,577	-64	1,749	-1,553	0.0	0.0
13	236	-74	4,259	-350	1,577	-763	34	-74	2,447	-130	6,512	4,763	0.0	0.0
14	128	-108	4,323	64	1,686	109	6	-28	2,336	-111	2,081	-4,431	0.0	0.0
15	126	-2	3,486	-837	1,327	-359	9	3	2,505	169	4,312	2,231	0.0	0.0
	Av	-278.3	**Av**	-86	**Av**	-182	**Av**	-76	**Av**	-7.9	**Av**	307.6	**Av**	0.0

Sources: (MOH, 2006-2015)

Abbreviations: [1]Total cases. [2]Cholera. [3]Whooping cough. [4]Tetanus neonatorum. [5]Malaria. [6]Visceral leishmaniosis. [7]Measles. [8]Chickenpox. [9]Rubella [10]Mumps. [11]Meningococcal meningitis. [12]Meningitis pneumococcal. [13]Meningitis, haemophilus. [14]Other meningitis. [15]Brucellosis. [16]Typhoid & Paratyphoid. [17]Guillian Barre syndrome. [18]Tetanus, other forms. [19]Extra pulmonary Tuberculosis. [20]Echinococcosis hydatid. [21]Salmonellosis. [22]Amoebic dysentery. [23]Shigellosis. [24]Khurma Fever. [25]Diphtheria [26]Cutaneous leishmaniosis. [27]Bilharzial. [28]Leprosy. [29]Hepatitis A. [30]Hepatitis B. [31]Hepatitis C. [32]Unspecified hepatitis. [33]Pulmonary tuberculosis. [34]Dengue fever. [35]Other communicable diseases like Poliomyelitis, Cong Rubella, Rift Valley Fever, Yellow Fever, and Plague.

Table 15 Total Number of Inpatients, Surgeries, Deliveries, Laboratory Cases, X-ray Patients, Physiotherapy Patients, Served Meals, and Cases Sent Abroad for Treatment in Thousands

	INP[1]	I D %	I D C[2]	SU[3]	I D %	I D C	DE[4]	I D %	I D C	Lab[5]	I D %	I D C	X-r[6]	I D %	I D C	PH[7]	I D %	I D C	ML[8]	I D %	I D C	CS[9]	I D %	I D C
06	1,432			376			248			106.5			4.6			795			15.8			.57		
07	1,640	14.5	207	409	8.8	33	255	3.1	7.8	102.7	-3.5	-3.7	5.0	8.0	0.37	801	0.8	6.2	15.8	-0.4	-0.06	1.5	174.4	1.0
08	1,612	-1.7	-27	425	3.8	15	259	1.4	3.6	122.2	18.9	19.4	5.1	1.9	0.09	744	-7.1	-57	16.9	7.2	1.1	.67	-57.7	-.91
09	1,655	2.6	42	444	4.3	18	261	0.9	2.2	131.2	7.4	9.0	5.3	3.3	0.17	772	3.8	28	17.8	5.2	0.88	.86	28.3	.19
10	1,700	2.7	45	450	1.3	6	265	1.4	3.8	142.5	8.6	11.2	5.6	5.4	0.29	811	5.0	38	19.1	7.4	1.3	.67	-21.9	-.18
11	1,700	0.0	-0.6	441	-2.0	-9	256	-3.3	-8.9	144.7	1.5	2.1	6.0	8.6	0.48	750	-7.5	-61	20.2	5.5	1.0	.72	7.9	.05
12	1,686	-0.8	-13	451	2.3	10	266	3.9	10	155.6	7.5	10.9	6.3	4.6	0.28	757	1.0	7.3	20.2	0.2	0.04	.89	23.7	.17
13	1,701	0.8	14	462	2.5	11	269	1.2	3.2	150.9	-3.0	-4.7	6.7	5.0	0.31	762	0.6	4.8	20.9	3.5	0.72	.89	0.0	0.0
14	1,699	-0.1	-1.7	485	4.9	22	262	-2.7	-7.0	156.3	3.6	5.4	6.3	-5.3	-0.35	692	-9.1	-69	21.1	0.7	0.15	3.4	288.3	2.5
15	1,705	0.4	6.5	504	3.9	18	247	-5.9	-15	157.2	0.5	0.84	6.6	4.3	0.27	526	-24	-166	68.2	223	47.1	3.8	10.7	.37
	Av	2.06	30	**Av**	3.3	14	**Av**	0.0	0.1	**Av**	4.6	5.6	**Av**	4.0	0.21	**Av**	-4.0	-29	**Av**	28	5.8	**Av**	50.4	.36

Sources: (MOH, 2006-2015)

Abbreviations: [1]Total number of inpatient cases. [2]Increase or decrease as cases. [3]Total number of surgeries. [4]Total number of deliveries. [5]Total cases investigated in laboratories in millions. [6]Total number of patients who had x-rays in millions. [7]Total number of physiotherapy patients. [8]Total number of meals served to nurses, patients, and their company in millions. [9]Cases sent abroad for treatment.

Table 16 Visits to Sources of Water Supply and Public Pleases, Investigated Samples of Water and Food, and Food Destructed in Kg and Litres in Thousands

	TWP[1]	I D V[2]	WS[3]	I D V	PPL[4]	I D V	TIS[5]	I D S[6]	SW[7]	I D S	S F[8]	I D S	TFD[9]	I D	Kg[10]	I D Kg	LITRE	I D Lit
06	255.8		94.4		161.3		71.0		44.2		26.7		57.9		31.2		26.6	
07	256.7	0.85	87.7	-6.7	168.9	7.5	69.5	-1.4	40.9	-3.3	28.6	1.8	125.7	67.7	25.1	-6.14	100.2	73.9
08	262.3	5.6	94.9	7.2	167.3	-1.6	77.5	7.9	43.9	2.9	33.5	4.9	52.3	-73.3	33.4	8.3	18.9	-81.6
09	255.5	-6.7	91.1	-3.8	164.4	-2.8	81.7	4.2	40.7	-3.1	41.0	7.4	28.7	-23.6	20.4	-12.9	8.2	-10.6
10	252.3	-3.1	106	14.6	146.5	-17.8	81.2	-0.49	46.0	5.2	35.2	-5.7	46.0	17.3	27.2	6.7	18.8	10.6
11	230.7	-2.1	89.0	-16.7	141.7	-4.8	97.9	16.6	48.4	2.3	49.5	14.3	39.4	-6.6	26.1	-1.1	13.3	-5.5
12	229.1	-1.5	77.8	-11.1	151.3	9.5	73.9	-24.0	39.6	-8.7	34.2	-15.3	41.5	2.1	23.6	-2.4	17.9	4.6
13	245.1	15.9	77.8	-0.01	167.3	15.9	65.9	-7.9	29.8	-9.8	36.0	1.8	30.6	-1.0	19.4	-4.2	11.2	-6.6
14	207.5	-37.6	80.0	2.2	127.4	-39.8	68.2	2.3	34.6	4.7	33.5	-2.4	76.9	46.2	27.4	8.0	49.5	38.2
15	225.0	17.5	71.3	-8.7	153.6	26.2	65.5	-2.7	33.2	-1.3	32.2	-1.3	65.0	-11.8	48.2	2.0	16.8	-32.7
	Av	-3.42	**Av**	-2.5	**Av**	-0.85	**Av**	-0.6	**Av**	-1.2	**Av**	0.61	**Av**	0.791	**Av**	1.8	**Av**	-1.0

Sources: (MOH, 2006-2015)

Abbreviations: [1]Total visits to sources of water supply and public places. [2]Increase or decrease in number of visits. [3]Total visits to water supply. [4]Total visits to public places. [5]Total investigated samples of water and food. [6]Increases or decrease in samples investigated. [7]Number of samples of water investigated. [8]Number of samples of food investigated. [9]Total food destructed in Kilograms and Litres. [10]Number of Kilograms of food destroyed.

Table 17 Total Number of Lectures, Meetings, Booklets, Newsletters, Posters, and Leaflets in Thousands[52]

	TL[1]	IDF[2]	IN[3]	IDF	OUT[4]	IDF	TM[5]	IDF	IN	IDF	OUT	IDF	BL[6]	IDF	AN[7]	IDF	PS[8]	IDF	LLT[9]	IDN
06	73.6		52.4		21.2		7.3		4.5		2.7		70.2		229.1		46.8		411.3	
07	88.7	15.0	55.8	3.4	32.8	11.6	11.9	4.5	6.9	2.3	4.9	2.2	152.6	82.3	872.1	642.9	106.6	59.7	1,445.3	1.0
08	88.7	0.0	55.8	0.0	32.8	0.0	11.9	0.0	6.9	0.0	4.9	0.0	152.6	0.0	872.1	0.0	106.6	0.0	1,445.3	0.0
09	91.5	2.7	60.1	4.3	31.3	-1.5	17.6	5.7	7.8	0.94	9.7	4.8	402.5	249.9	1,886	1,014	825.2	718.5	3,521.9	2.0
10	89.7	-1.7	50.8	-9.3	38.8	7.5	15.0	-2.6	8.6	0.73	6.4	-3.3	663.7	261.1	1,601	-285	528.7	-296	1,632.0	-1.8
11	71.9	-18	49.6	-1.2	22.2	-16	6.9	-8.0	3.3	-5.3	3.6	-2.7	157.0	-506	1,006	-595	91.1	-437	700.7	-0.93
12	114	42.1	49.7	0.14	64.2	41.9	7.0	0.04	4.6	1.3	2.3	-1.3	103.9	-53.1	479.9	-526	85.9	-5.1	801.7	0.10
13	114	0.0	49.7	0.0	64.2	0.0	7.0	0.0	4.6	0.0	2.3	0.0	103.9	0.0	479.9	0.0	85.9	0.0	801.7	0.0
14	274.2	160	249	199	24.9	-39	12.4	5.4	6.9	2.3	5.5	3.1	195.7	91.8	926.4	446.5	158.9	73	3,546.1	2.7
15	274.2	0.0	249	0.0	24.9	0.0	12.4	0.0	6.9	0.0	5.5	0.0	195.7	0.0	926.4	0.0	158.9	0.0	3,546.1	0.0
	Av	22.2	**Av**	21.8	**Av**	0.40	**Av**	0.57	**Av**	0.26	**Av**	0.31	**Av**	13.9	**Av**	77.4	**Av**	12.4	**Av**	0.34

Sources: (MOH, 2006-2015)

Abbreviations: [1]Total number of lectures. [2]Increase or decrease in total number of lectures as a figures. [3]Number of lectures held inside healthcare facilities. [4]Number of lectures held out healthcare facilities. [5]Total number of meetings. [6]Total number of booklets printed. [7]Total number of announcements (newsletters) printed. [8]Total number of posters printed. [9]Total number of leaflets printed in thousands.

[52] The repetitive figures in most of the years is due to the reporting every two years.

Table 18 Total Healthcare Facilities, Manpower, Patient Visits and Vaccination in AL Hajj Season

	T H[1]	I D	T Ph[2]	I D	T Vis[3]	I D	T Pil[4]	I D	T Phy[5]	I D	T Ad[6]	I D
06	19		132		824.9		2,378		1.8		1.5	
07	19	0	127	-5	838.9	13.9	2,454	75.6	2.0	0.14	1.7	0.20
08	18	-1	133	6	1,038	199.6	2,408	-45.4	3.5	1.5	3.2	1.54
09	21	3	157	24	916.4	-122.1	2,313	-95.5	3.7	0.21	3.3	0.09
10	20	-1	150	-7	998.3	81.8	2,789	476.1	4.0	0.22	4.2	0.93
11	21	1	154	4	924.3	-73.9	2,927	138.3	4.0	0.05	4.2	-0.05
12	23	2	154	0	806.9	-117.3	3,161	233.8	3.6	-0.42	3.9	-0.25
13	23	0	154	0	690.3	-116.5	1,980	-1,181	4.1	0.53	4.4	0.52
14	25	2	158	4	571.4	-118.8	2,085	104.9	4.3	0.17	4.9	0.42
15	22	-3	177	19	538.8	-32.6	1,952	-132.4	4.5	0.18	5.2	0.35
	Av	0.33	**Av**	5	**Av**	-31.7	**Av**	-47.3	**Av**	0.29	**Av**	0.41
	P H[7]	**I D**	**P Ph[8]**	**I D**	**T P V[9]**	**I D**	**PR[10]**	**I D**	**T Nu[11]**	**I D**	**T IP[12]**	**I D**
06	12		27		469.3		273.1		3.4		10.8	
07	12	0	26	-1	549.6	80.2	319.1	46.0	3.6	0.20	10.0	-0.77
08	11	-1	34	8	683.5	133.9	303.0	-16.1	5.8	2.14	9.5	-0.52
09	14	3	38	4	653.6	-29.8	410.0	106.9	6.2	0.41	8.7	-0.82
10	13	-1	35	-3	683.8	30.1	435.5	25.5	6.6	0.38	9.6	0.92
11	14	1	42	7	621.1	-62.6	365.7	-69.7	6.8	0.26	9.5	-0.15
12	15	1	42	0	592.2	-28.9	427.9	62.1	6.3	-0.48	7.7	-1.77
13	15	0	42	0	511.0	-81.1	286.5	-141.3	6.8	0.45	3.5	-4.24
14	17	2	44	2	400.4	-110.6	331.0	44.4	6.6	-0.21	3.8	0.36
15	14	-3	44	0	426.9	26.5	282.9	-48.0	7.4	0.83	6.8	3.03
	Av	0.22	**Av**	1.9	**Av**	-4.7	**Av**	1.0	**Av**	0.44	**Av**	-0.44
	S H[13]	**I D**	**S Ph[14]**	**I D**	**THV[15]**	**I D**	**PL[16]**	**I D**	**T AP[17]**	**I D**	**T B[18]**	**I D**
06	7		105		355.6		0.0		2.9		3.8	
07	7	0	101	-4	289.3	-66.3	440.9		3.1	0.14	3.9	0.18
08	7	0	99	-2	354.9	65.6	491.1	50.1	4.7	1.62	3.6	-0.30
09	7	0	119	20	262.7	-92.2	458.1	-33.0	4.5	-0.21	3.6	-0.03
10	7	0	115	-4	314.4	51.7	463.4	5.3	4.7	0.22	3.4	-0.16
11	7	0	112	-3	303.1	-11.3	532.8	69.3	6.0	1.28	3.4	0.0
12	8	1	112	0	214.6	-88.4	516.4	-16.3	6.0	0.02	4.4	0.97
13	8	0	112	0	179.2	-35.3	430.4	-86.0	6.2	0.16	4.4	0.0
14	8	0	114	2	171.0	-8.2	361.4	-69.0	8.1	1.92	4.5	0.15
15	8	0	133	19	111.9	-59.1	324.9	-36.4	9.1	0.95	5.5	0.93
	Av	0.11	**Av**	3.1	**Av**	-27.0	**Av**	-14.5	**Av**	0.68	**Av**	0.19

Sources: (MOH, 2006-2015)

Abbreviations: [1]Total hospitals. [2]Total primary healthcare centers. [3]Total visits in thousand. [4]Total pilgrims in thousand. [5]Total physicians in thousand. [6]Total administrators in thousand. [7]Permanent hospitals. [8]Permanent primary healthcare centers. [9]Total visits to primary healthcare centers in thousands. [10]Prophylactic vaccination in thousands. [11]Total nurses in thousand. [12]Total inpatient cases in thousands. [13]Seasonal hospitals. [14]Seasonal primary healthcare centers. [15]Total visits to hospitals in thousand. [16]Poliomyelitis vaccination in thousands. [17]Total Allied health personnel, technical personnel, and others in thousand. [18]Total beds in thousands.

Table 19 Private Health Insurance Based on the Common Divisions in Saudi Arabia[53]

Level of / PHI Company	VIP	A	B	C
Al Tawuniya	Diamond	Platinum, Gold	Silver	Silver is the lowest
Bupa	Diamond	Gold	Silver	Bronze, Blue, White, Green, Basic
Medgulf	VIP	A	B	C
Al Rajhi	VIP+, VIP	AAA, AA, A	BBB, BB, B	C+, CCC, CC
AXA	VVIP, VIP	A	B	C, D, E
Enaya	Diamond	Gold	Silver	Bronze, Classic
Walaa	VIP	A	B	C, Raha+, Raha, C-LTD
Solidarity	VVIP, VIP+, VIP	A	B	C
Al Sagr	VIP	A	B	C-Direct, C-Restricted
Al Ahlia	VIP	A	B	C

[53] **Note:** these divisions are based on the most common range of levels in SA, which are VIP, A, B, then C, and based on the common strengths by each level in comparison to the other levels. For example, Diamond level at Al Tawuniya is known as the same as Diamond at Bupa. However, the actual strength of each level, which is set based on the actual benefits that are provided by each level, is not 100% the same, which means that Diamond level at Al Tawuniya could be higher or lower than the one at Bupa, and the same is true with the silver level by Al Tawuniya, which might be equal to level C by Medgulf, and so on. This crossover is determined by the network of healthcare facilities that are covered by each level (which cannot be the same from company to another), the number of healthcare services that are covered by the level, the OOP, and the maximum limit of coverage by the level. Moreover, unifying the levels by investigating how many healthcare services are covered by each level to find which level matches from the other companies is not practical due to the high number of healthcare facilities in SA (5000 in total), the variety of healthcare services, OOP, and the absence of such information.

Table 20 Participants' Willingness to Pay Based on the Classification of the Six Slices

MOH	W2P[1]		%
Saudis employed in public	Yes	**64**	66.0[4]
	No	**33**	34.0
Non-Saudis employed in public	Yes	**6**	27.3
	No	**16**	72.7
Unemployed Saudis WI[2]	Yes	**9**	81.8
	No	**2**	18.2
Unemployed Saudis WOI[3]	Yes	**3**	30.0
	No	**7**	70.0
Private Sector	**Total**	**140**	**23.3[5]**
Non-Saudis employed in private	Yes	**49**	61.3
	No	**31**	38.8
Non-Saudis employed in public with HI	Yes	**1**	100
	No	**0**	0.0
Dependent on Non-Saudis employed in private	Yes	**5**	45.5
	No	**6**	54.5
SDU	**Total**	**92**	**15.3**
Non-Saudis employed in SDU	Yes	**0**	0.0
	No	**1**	100
MOH & Private Sector	**Total**	**1**	**0.2**
Saudis employed in public with HI	Yes	**8**	40.0
	No	**12**	60.0
Saudis employed in private	Yes	**48**	54.5
	No	**40**	45.5
Dependent on Saudis eligible in private WI	Yes	**8**	88.9
	No	**1**	11.1
Dependent on Saudis employed in private WOI	Yes	**1**	50.0
	No	**1**	50.0
MOH & SDU	**Total**	**119**	**19.8**
Saudis employed in public eligible to SDU	Yes	**18**	60.0
	No	**12**	40.0
Saudis employed in SDU	Yes	**32**	44.4
	No	**40**	55.6
Dependent on Saudis employed in SDU WI	Yes	**19**	44.2
	No	**24**	55.8
Dependent on Saudis employed in SDU WOI	Yes	**10**	47.6
	No	**11**	52.4
MOH, Private, & SDU	**Total**	**166**	**27.7**
Saudis employed in public eligible to all	Yes	**1**	25.0
	No	**3**	75.0
Saudis employed in private eligible to all	Yes	**41**	66.1
	No	**21**	33.9
Saudis employed in SDU eligible to all	Yes	**5**	50.0
	No	**5**	50.0
Unemployed Saudi WI eligible to all	Yes	**3**	75.0
	No	**1**	25.0
Unemployed Saudi WOI eligible to all	Yes	**1**	50.0
	No	**1**	50.0
	Total	**82**	**13.7**

Abbreviations: [1]Willingness to Pay. [2]With income. [3]Without income. [4]The percentage of Saudis employed in public who reported yes to the total Saudis employed in public. [5]The percentage of those eligible to healthcare only in MOH to the total participants.

Table 21 Participants' Willingness to Pay Based on Demographic Characteristics

			W2P	%
Gender				
	Male	Yes	**257**	54.9
		No	**211**	45.1
	Female	Yes	**75**	56.8
		No	**57**	43.2
		Total	**600**	**100**
Age				
	18 - 25	Yes	**85**	52.5
		No	**77**	47.5
	26 - 35	Yes	**154**	54.0
		No	**131**	46.0
	36 - 45	Yes	**61**	59.8
		No	**41**	40.2
	46 - 55	Yes	**25**	64.1
		No	**14**	35.9
	56 - 65	Yes	**7**	63.6
		No	**4**	36.4
	65 <	Yes	**0**	0.0
		No	**1**	100
		Total	**600**	**100**
Nationality				
	Saudi	Yes	**271**	55.9
		No	**214**	44.1
	Non-Saudi	Yes	**61**	53.0
		No	**54**	47.0
		Total	**600**	**100**
Marital Status				
	Single	Yes	**133**	52.8
		No	**119**	47.2
	Married	Yes	**190**	57.1
		No	**143**	42.9
	Divorced	Yes	**5**	45.5
		No	**6**	54.5
	Widowed	Yes	**4**	100
		No	**0**	0.0
		Total	**600**	**100**
Chronic Illness				
	With	Yes	**33**	61.1
		No	**21**	38.9
	Without	Yes	**299**	54.8
		No	**247**	45.2
		Total	**600**	**100**
Health Status				
	Excellent	Yes	**202**	56.1
		No	**158**	43.9
	Very Good	Yes	**105**	54.4
		No	**88**	45.6
	Good	Yes	**20**	51.3
		No	**19**	48.7
	Fair	Yes	**4**	57.1
		No	**3**	42.9
	Poor	Yes	**1**	100
		No	**0**	0.0
		Total	**600**	**100**

Table 22 Participants' Willingness to Pay Based on Socio-Economic Characteristics

				W2P	%
Education					
	Primary		Yes	**6**	54.5
			No	**5**	45.5
	Secondary		Yes	**12**	85.7
			No	**2**	14.3
	High School		Yes	**56**	53.8
			No	**48**	46.2
	Diploma		Yes	**54**	51.9
			No	**50**	48.1
	Bachelor		Yes	**174**	55.9
			No	**137**	44.1
	Higher Diploma		Yes	**9**	60.0
			No	**6**	40.0
	Master's		Yes	**14**	46.7
			No	**16**	53.3
	PhD		Yes	**7**	63.6
			No	**4**	36.4
			Total	**600**	**100**
Income					
	< 3,000		Yes	**58**	50.9
			No	**56**	49.1
	3,000 - 5,999		Yes	**48**	53.3
			No	**42**	46.7
	6,000 - 8,999		Yes	**83**	61.0
			No	**53**	39.0
	9,000 - 11,999		Yes	**67**	57.8
			No	**49**	42.2
	12,000 - 14,999		Yes	**35**	53.0
			No	**31**	47.0
	15,000 <		Yes	**41**	52.6
			No	**37**	47.4
			Total	**600**	**100**
Insurance					
	With		Yes	**171**	58.4
			No	**122**	41.6
		PHI Level			
		VIP	Yes	**28**	59.5
			No	**19**	40.4
		A	Yes	**57**	50.9
			No	**55**	49.1
		B	Yes	**49**	61.2
			No	**31**	38.7
		C	Yes	**37**	68.5
			No	**17**	31.5
	Without		Yes	**161**	52.4
			No	**146**	47.6
			Total	**600**	**100**

Table 23 The ranking of three Healthcare Funding Mechanisms for Participants who are Eligible to Healthcare Only in the MOH

			Taxation			M S Accounts[1]			P H Insurance[2]		
	W2P	**Total**	**M P[3]**	**S P[4]**	**L P[5]**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Saudis employed in public	Yes	**64**	3	15	46	23	32	9	38	17	9
	%	**66.0**	4.7	23.4	71.9	35.9	50.0	14.1	59.4	26.6	14.1
	No	**33**	2	10	21	14	14	5	17	9	7
	%	**34.0**	6.1	30.3	63.6	42.4	42.4	15.2	51.5	27.3	21.2
	Both	**97**	**5**	**25**	**67**	**37**	**46**	**14**	**55**	**26**	**16**
	%	**100**	5.2	25.8	69.1	38.1	47.4	14.4	56.7	26.8	16.5
Non-Saudis employed in public	Yes	**6**	3	1	2	1	1	4	2	4	0
	%	**27.3**	50.0	16.7	33.3	16.7	16.7	66.7	33.3	66.7	0.0
	No	**16**	0	4	12	8	7	1	8	5	3
	%	**72.7**	0.0	25.0	75.0	50.0	43.8	6.3	50.0	31.3	18.8
	Both	**22**	**3**	**5**	**14**	**9**	**8**	**5**	**10**	**9**	**3**
	%	**100**	13.6	22.7	63.6	40.9	36.4	22.7	45.5	40.9	13.6
Unemployed Saudis WI	Yes	**9**	0	2	7	6	3	0	3	4	2
	%	**81.8**	0.0	22.2	77.8	66.7	33.3	0.0	33.3	44.4	22.2
	No	**2**	1	1	0	0	1	1	1	0	1
	%	**18.2**	50.0	50.0	0.0	0.0	50.0	50.0	50.0	0.0	50
	Both	**11**	**1**	**3**	**7**	**6**	**4**	**1**	**4**	**4**	**3**
	%	**100**	9.1	27.3	63.6	54.5	36.4	9.1	36.4	36.4	27.3
Unemployed Saudis WOI	Yes	**3**	1	0	2	1	2	0	1	1	1
	%	**30.0**	33.3	0.0	66.7	33.3	66.7	0.0	33.3	33.3	33.3
	No	**7**	3	2	2	2	2	3	2	3	2
	%	**70.0**	42.9	28.6	28.6	28.6	28.6	42.9	28.6	42.9	28.6
	Both	**10**	**4**	**2**	**4**	**3**	**4**	**3**	**3**	**4**	**3**
	%	**100**	40.0	20.0	40.0	30.0	40.0	30.0	30.0	40.0	30.0
All Unemployed	**Yes**	**12**	1	2	9	7	5	0	4	5	3
	%	**57.1**	8.3	16.7	75.0	58.3	41.7	0.0	33.3	41.7	25.0
	No	**9**	4	3	2	2	3	4	3	3	3
	%	**42.9**	44.4	33.3	22.2	22.2	33.3	44.4	33.3	33.3	33.3
	Both	**21**	**5**	**5**	**11**	**9**	**8**	**4**	**7**	**8**	**6**
	%	**100**	23.8	23.8	52.4	42.9	38.1	19.0	33.3	38.1	28.6
All Eligible Only to MOH	**Yes**	**82**	**7**	**18**	**57**	**31**	**38**	**13**	**44**	**26**	**12**
	%	**58.6**	8.5	22.0	69.5	37.8	46.3	15.9	53.7	31.7	14.6
	No	**58**	**6**	**17**	**35**	**24**	**24**	**10**	**28**	**17**	**13**
	%	**41.4**	10.3	29.3	60.3	41.4	41.4	17.2	48.3	29.3	22.4
	Both	**140**	**13**	**35**	**92**	**55**	**62**	**23**	**72**	**43**	**25**
	%	**100**	9.3	25.0	65.7	39.3	44.3	16.4	51.4	30.7	17.9

Abbreviations: [1]Medical Saving Accounts. [2]Private Health Insurance. [3]Most Preferred. [4]Second Preferred. [5]Least Preferred.

Table 24 The ranking of three Healthcare Funding Mechanisms of Participants who are Eligible to Healthcare Only in Private Sector

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Non-Saudis employed in private	Yes	**49**	3	16	30	17	20	12	29	13	7
	%	**61.3**	6.1	32.7	61.2	34.7	40.8	24.5	59.2	26.5	14.3
	No	**31**	3	2	26	4	24	3	24	5	2
	%	**38.8**	9.7	6.5	83.9	12.9	77.4	9.7	77.4	16.1	6.5
	Both	**80**	**6**	**18**	**56**	**21**	**44**	**15**	**53**	**18**	**9**
	%	**100**	7.5	22.5	70.0	26.3	55.0	18.8	66.3	22.5	11.3
Non-Saudis employed in public with PHI	Yes	**1**	0	1	0	0	0	1	1	0	0
	%	**100**	0.0	100	0.0	0.0	0.0	100	100	0.0	0.0
	No	**0**	0	0	0	0	0	0	0	0	0
	%	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Both	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**
	%	**100**	0.0	100	0.0	0.0	0.0	100	100	0.0	0.0
Dependent on Non-Saudis employed in Private Sector	Yes	**5**	0	0	5	1	4	0	4	1	0
	%	**45.5**	0.0	0.0	100	20.0	80.0	0.0	80.0	20.0	0.0
	No	**6**	0	0	6	0	6	0	6	0	0
	%	**54.5**	0.0	0.0	100	0.0	100	0.0	100	0.0	0.0
	Both	**11**	**0**	**0**	**11**	**1**	**10**	**0**	**10**	**1**	**0**
	%	**100**	0.0	0.0	100	9.1	90.9	0.0	90.9	9.1	0.0
All Eligible Only in Private Sector	**Yes**	**55**	**3**	**17**	**35**	**18**	**24**	**13**	**34**	**14**	**7**
	%	**59.8**	5.5	30.9	63.6	32.7	43.6	23.6	61.8	25.5	12.7
	No	**37**	**3**	**2**	**32**	**4**	**30**	**3**	**30**	**5**	**2**
	%	**40.2**	8.1	5.4	86.5	10.8	81.1	8.1	81.1	13.5	5.4
	Both	**92**	**6**	**19**	**67**	**22**	**54**	**16**	**64**	**19**	**9**
	%	**100**	6.5	20.7	72.8	23.9	58.7	17.4	69.6	20.7	9.8

Table 25 The ranking of three Healthcare Funding Mechanisms of Participants who are Eligible to Healthcare Only in SDU

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Non-Saudis employed in SDU	Yes	**0**	0	0	0	0	0	0	0	0	0
	%	**0**	0	0	0	0	0	0	0	0	0
	No	**1**	0	0	1	0	1	0	1	0	0
	%	**100**	0	0	100	0	100	0	100	0	0
	Total	**1**	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**0**
	%	**100**	0	0	100	0	100	0	100	0	0

Table 26 The ranking of three Healthcare Funding Mechanisms of Participants who are Eligible to Healthcare in The MOH & Private Sector

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Saudis employed in public with PHI	Yes	**8**	1	3	4	2	3	3	5	2	1
	%	**40.0**	12.5	37.5	50.0	25.0	37.5	37.5	62.5	25.0	12.5
	No	**12**	1	3	8	2	8	2	9	1	2
	%	**60.0**	8.3	25.0	66.7	16.7	66.7	16.7	75.0	8.3	16.7
	Both	**20**	**2**	**6**	**12**	**4**	**11**	**5**	**14**	**3**	**3**
	%	**100**	10.0	30.0	60.0	20.0	55.0	25.0	70.0	15.0	15.0
Saudis employed in private	Yes	**48**	5	20	23	19	19	10	24	9	15
	%	**54.5**	10.4	41.7	47.9	39.6	39.6	20.8	50.0	18.8	31.3
	No	**40**	3	12	25	16	22	2	21	6	13
	%	**45.5**	7.5	30.0	62.5	40.0	55.0	5.0	52.5	15.0	32.5
	Both	**88**	**8**	**32**	**48**	**35**	**41**	**12**	**45**	**15**	**28**
	%	**100**	9.1	36.4	54.5	39.8	46.6	13.6	51.1	17.0	31.8
Dependent on Saudis eligible in private WI	Yes	**8**	0	5	3	5	1	2	3	2	3
	%	**88.9**	0.0	62.5	37.5	62.5	12.5	25.0	37.5	25.0	37.5
	No	**1**	0	0	1	0	1	0	1	0	0
	%	**11.1**	0.0	0.0	100	0.0	100	0.0	100	0.0	0.0
	Both	**9**	**0**	**5**	**4**	**5**	**2**	**2**	**4**	**2**	**3**
	%	**100**	0.0	55.6	44.4	55.6	22.2	22.2	44.4	22.2	33.3
Dependent on Saudis eligible in private WOI	Yes	**1**	0	0	1	0	1	0	1	0	0
	%	**50.0**	0.0	0.0	100	0.0	100	0.0	100	0.0	0.0
	No	**1**	0	0	1	1	0	0	0	1	0
	%	**50.0**	0.0	0.0	100	100	0.0	0.0	0.0	100	0.0
	Both	**2**	**0**	**0**	**2**	**1**	**1**	**0**	**1**	**1**	**0**
	%	**100**	0.0	0.0	100	50.0	50.0	0.0	50.0	50.0	0.0
All Dependents	**Yes**	**9**	**0**	**5**	**4**	**5**	**2**	**2**	**4**	**2**	**3**
	%	**81.8**	0.0	55.6	44.4	55.6	22.2	22.2	44.4	22.2	33.3
	No	**2**	**0**	**0**	**2**	**1**	**1**	**0**	**1**	**1**	**0**
	%	**18.2**	0.0	0.0	100	50.0	50.0	0.0	50.0	50.0	0.0
	Both	**11**	**0**	**5**	**6**	**6**	**3**	**2**	**5**	**3**	**3**
	%	**100**	0.0	45.5	54.5	54.5	27.3	18.2	45.5	27.3	27.3
All Eligible in MOH and Private Sector	**Yes**	**65**	**6**	**28**	**31**	**26**	**24**	**15**	**33**	**13**	**19**
	%	**54.6**	9.2	43.1	47.7	40.0	36.9	23.1	50.8	20.0	29.2
	No	**54**	**4**	**15**	**35**	**19**	**31**	**4**	**31**	**8**	**15**
	%	**45.4**	7.4	27.8	64.8	35.2	57.4	7.4	57.4	14.8	27.8
	Both	**119**	**10**	**43**	**66**	**45**	**55**	**19**	**64**	**21**	**34**
	%	**100**	8.4	36.1	55.5	37.8	46.2	16.0	53.8	17.6	28.6

Table 27 The ranking of three Healthcare Funding Mechanisms of Participants who are Eligible to Healthcare in The MOH & SDU

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Saudis employed	Yes	**18**	0	4	14	6	10	2	12	4	2
in public eligible	%	**60.0**	0.0	22.2	77.8	33.3	55.6	11.1	66.7	22.2	11.1
to SDU	No	**12**	2	1	9	3	9	0	7	2	3
	%	**40.0**	16.7	8.3	75.0	25.0	75.0	0.0	58.3	16.7	25.0
	Both	**30**	**2**	**5**	**23**	**9**	**19**	**2**	**19**	**6**	**5**
	%	**100**	6.7	16.7	76.7	30.0	63.3	6.7	63.3	20.0	16.7
Saudis employed	Yes	**32**	1	7	24	10	18	4	21	7	4
in SDU	%	**44.4**	3.1	21.9	75.0	31.3	56.3	12.5	65.6	21.9	12.5
	No	**40**	5	10	25	16	18	6	19	12	9
	%	**55.6**	12.5	25.0	62.5	40.0	45.0	15.0	47.5	30.0	22.5
	Both	**72**	**6**	**17**	**49**	**26**	**36**	**10**	**40**	**19**	**13**
	%	**100**	8.3	23.6	68.1	36.1	50.0	13.9	55.6	26.4	18.1
Dependent on	Yes	**19**	3	11	5	14	0	5	2	8	9
Saudis employed	%	**44.2**	15.8	57.9	26.3	73.7	0.0	26.3	10.5	42.1	47.4
in SDU WI	No	**24**	1	2	21	17	4	3	6	18	0
	%	**55.8**	4.2	8.3	87.5	70.8	16.7	12.5	25.0	75.0	0.0
	Both	**43**	**4**	**13**	**26**	**31**	**4**	**8**	**8**	**26**	**9**
	%	**100**	9.3	30.2	60.5	72.1	9.3	18.6	18.6	60.5	20.9
Dependent on	Yes	**10**	1	1	8	6	3	1	3	6	1
Saudis employed	%	**47.6**	10.0	10.0	80.0	60.0	30.0	10.0	30.0	60.0	10.0
in SDU WOI	No	**11**	1	1	9	5	6	0	5	4	2
	%	**52.4**	9.1	9.1	81.8	45.5	54.5	0.0	45.5	36.4	18.2
	Both	**21**	**2**	**2**	**17**	**11**	**9**	**1**	**8**	**10**	**3**
	%	**100**	9.5	9.5	81.0	52.4	42.9	4.8	38.1	47.6	14.3
All Dependents	**Yes**	**29**	**4**	**12**	**13**	**20**	**3**	**6**	**5**	**14**	**10**
	%	**45.3**	13.8	41.4	44.8	69.0	10.3	20.7	17.2	48.3	34.5
	No	**35**	**2**	**3**	**30**	**22**	**10**	**3**	**11**	**22**	**2**
	%	**54.7**	5.7	8.6	85.7	62.9	28.6	8.6	31.4	62.9	5.7
	Both	**64**	**6**	**15**	**43**	**42**	**13**	**9**	**16**	**36**	**12**
	%	**100**	9.4	23.4	67.2	65.6	20.3	14.1	25.0	56.3	18.8
All Eligible in	**Yes**	**79**	**5**	**23**	**51**	**36**	**31**	**12**	**38**	**25**	**16**
MOH and	%	**47.6**	6.3	29.1	64.6	45.6	39.2	15.2	48.1	31.6	20.3
SDU	**No**	**87**	**9**	**14**	**64**	**41**	**37**	**9**	**37**	**36**	**14**
	%	**52.4**	10.3	16.1	73.6	47.1	42.5	10.3	42.5	41.4	16.1
	Both	**166**	**14**	**37**	**115**	**77**	**68**	**21**	**75**	**61**	**30**
	%	**100**	8.4	22.3	69.3	46.4	41.0	12.7	45.2	36.7	18.1

Table 28 The ranking of three Healthcare Funding Mechanisms of Participants who are Eligible to Healthcare in all Three Healthcare Provisions

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Saudis employed in	Yes	**1**	0	0	1	0	1	0	1	0	0
public eligible to all	%	**25.0**	0.0	0.0	100	0.0	100	0.0	100	0.0	0.0
	No	**3**	1	2	0	0	1	2	2	0	1
	%	**75.0**	33.3	66.7	0.0	0.0	33.3	66.7	66.7	0.0	33.3
	Both	**4**	**1**	**2**	**1**	**0**	**2**	**2**	**3**	**0**	**1**
	%	**100**	25.0	50.0	25.0	0.0	50.0	50.0	75.0	0.0	25.0
Saudis employed in	Yes	**41**	5	10	26	21	15	5	15	16	10
private eligible to all	%	**66.1**	12.2	24.4	63.4	51.2	36.6	12.2	36.6	39.0	24.4
	No	**21**	1	5	15	8	12	1	12	4	5
	%	**33.9**	4.8	23.8	71.4	38.1	57.1	4.8	57.1	19.0	23.8
	Both	**62**	**6**	**15**	**41**	**29**	**27**	**6**	**27**	**20**	**15**
	%	**100**	9.7	24.2	66.1	46.8	43.5	9.7	43.5	32.3	24.2
Saudis employed in	Yes	**5**	0	0	5	5	0	0	0	5	0
SDU eligible to	%	**50.0**	0.0	0.0	100	100	0.0	0.0	0.0	100	0.0
all	No	**5**	1	0	4	1	3	1	3	2	0
	%	**50.0**	20.0	0.0	80.0	20.0	60.0	20.0	60.0	40.0	0.0
	Both	**10**	**1**	**0**	**9**	**6**	**3**	**1**	**3**	**7**	**0**
	%	**100**	10.0	0.0	90.0	60.0	30.0	10.0	30.0	70.0	0.0
Unemployed Saudi	Yes	**3**	0	0	3	1	2	0	2	1	0
WI eligible to all	%	**75.0**	0.0	0.0	100	33.3	66.7	0.0	66.7	33.3	0.0
	No	**1**	0	0	1	0	1	0	1	0	0
	%	**25.0**	0.0	0.0	100	0.0	100	0.0	100	0.0	0.0
	Both	**4**	**0**	**0**	**4**	**1**	**3**	**0**	**3**	**1**	**0**
	%	**100**	0.0	0.0	100	25.0	75.0	0.0	75.0	25.0	0.0
Unemployed Saudi	Yes	**1**	0	0	1	1	0	0	0	1	0
WOI eligible to all	%	**50.0**	0.0	0.0	100	100	0.0	0.0	0.0	100	0.0
	No	**1**	0	0	1	1	0	0	0	1	0
	%	**50.0**	0.0	0.0	100	100	0.0	0.0	0.0	100	0.0
	Both	**2**	**0**	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**0**
	%	**100**	0.0	0.0	100	100	0.0	0.0	0.0	100	0.0
All Unemployed	**Yes**	**4**	0	0	4	2	2	0	2	2	0
	%	**66.7**	0.0	0.0	100	50.0	50.0	0.0	50.0	50.0	0.0
	No	**2**	0	0	2	1	1	0	1	1	0
	%	**33.3**	0.0	0.0	100	50.0	50.0	0.0	50.0	50.0	0.0
	Both	**6**	**0**	**0**	**6**	**3**	**3**	**0**	**3**	**3**	**0**
	%	**100**	0.0	0.0	100	50.0	50.0	0.0	50.0	50.0	0.0
All Eligible in all	**Yes**	**51**	5	10	36	28	18	5	18	23	10
three provisions	%	**62.2**	9.8	19.6	70.6	54.9	35.3	9.8	35.3	45.1	19.6
	No	**31**	3	7	21	10	17	4	18	7	6
	%	**37.8**	9.7	22.6	67.7	32.3	54.8	12.9	58.1	22.6	19.4
	Both	**82**	**8**	**17**	**57**	**38**	**35**	**9**	**36**	**30**	**16**
	%	**100**	9.8	20.7	69.5	46.3	42.7	11.0	43.9	36.6	19.5

Table 29 Participants' ranking of three Healthcare Funding Mechanisms according to Gender

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Male	Yes	**257**	20	75	162	109	101	47	128	81	48
	%	**54.9**	7.8	29.2	63	42.4	39.3	18.3	49.8	31.5	18.7
	No	**211**	24	46	141	72	114	25	115	51	45
	%	**45.1**	11.4	21.8	66.8	34.1	54.0	11.8	54.5	24.2	21.3
	Both	**468**	**44**	**121**	**303**	**181**	**215**	**72**	**243**	**132**	**93**
	%	**100**	9.4	25.9	64.7	38.7	45.9	15.4	51.9	28.2	19.9
Female	Yes	**75**	6	21	48	30	34	11	39	20	16
	%	**56.8**	8.0	28.0	64.0	40.0	45.3	14.7	52.0	26.7	21.3
	No	**57**	1	9	47	26	26	5	30	22	5
	%	**43.2**	1.8	15.8	82.5	45.6	45.6	8.8	52.6	38.6	8.8
	Both	**132**	**7**	**30**	**95**	**56**	**60**	**16**	**69**	**42**	**21**
	%	**100**	5.3	22.7	72.0	42.4	45.5	12.1	52.3	31.8	15.9
Male & Female	Yes	**332**	**26**	**96**	**210**	**139**	**135**	**58**	**167**	**101**	**64**
	%	**55.3**	7.8	28.9	63.3	41.9	40.7	17.5	50.3	30.4	19.3
	No	**268**	**25**	**55**	**188**	**98**	**140**	**30**	**145**	**73**	**50**
	%	**44.7**	9.3	20.5	70.1	36.6	52.2	11.2	54.1	27.2	18.7
	Both	**600**	**51**	**151**	**398**	**237**	**275**	**88**	**312**	**174**	**114**
	%	**100**	8.5	25.2	66.3	39.5	45.8	14.7	52.0	29.0	19.0

Table 30 Participants' ranking of three Healthcare Funding Mechanisms according to Age

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
18 - 25	Yes	**85**	9	27	49	44	32	9	32	26	27
	%	**52.5**	10.6	31.8	57.6	51.8	37.6	10.6	37.6	30.6	31.8
	No	**77**	7	13	57	29	40	8	41	24	12
	%	**47.5**	9.1	16.9	74	37.7	51.9	10.4	53.2	31.2	15.6
	Both	**162**	**16**	**40**	**106**	**73**	**72**	**17**	**73**	**50**	**39**
	%	**100**	9.9	24.7	65.4	45.1	44.4	10.5	45.1	30.9	24.1
26 - 35	Yes	**154**	11	38	105	59	69	26	84	47	23
	%	**54.0**	7.1	24.7	68.2	38.3	44.8	16.9	54.5	30.5	14.9
	No	**131**	12	29	90	41	74	16	78	28	25
	%	**46.0**	9.2	22.1	68.7	31.3	56.5	12.2	59.5	21.4	19.1
	Both	**285**	**23**	**67**	**195**	**100**	**143**	**42**	**162**	**75**	**48**
	%	**100**	8.1	23.5	68.4	35.1	50.2	14.7	56.8	26.3	16.8
36 - 45	Yes	**61**	3	21	37	24	23	14	34	17	10
	%	**59.8**	4.9	34.4	60.7	39.3	37.7	23.0	55.7	27.9	16.4
	No	**41**	3	10	28	19	17	5	19	14	8
	%	**40.2**	7.3	24.4	68.3	46.3	41.5	12.2	46.3	34.1	19.5
	Both	**102**	**6**	**31**	**65**	**43**	**40**	**19**	**53**	**31**	**18**
	%	**100**	5.9	30.4	63.7	42.2	39.2	18.6	52.0	30.4	17.6
46 - 55	Yes	**25**	2	10	13	9	8	8	14	7	4
	%	**64.1**	8.0	40.0	52.0	36.0	32.0	32.0	56.0	28.0	16.0
	No	**14**	1	3	10	7	6	1	6	5	3
	%	**35.9**	7.1	21.4	71.4	50.0	42.9	7.1	42.9	35.7	21.4
	Both	**39**	**3**	**13**	**23**	**16**	**14**	**9**	**20**	**12**	**7**
	%	**100**	7.7	33.3	59.0	41.0	35.0	23.1	51.3	30.8	17.9
56 - 65	Yes	**7**	1	0	6	3	3	1	3	4	0
	%	**63.6**	14.3	0.0	85.7	42.9	42.9	14.3	42.9	57.1	0.0
	No	**4**	2	0	2	1	3	0	1	1	2
	%	**36.4**	50.0	0.0	50.0	25.0	75.0	0.0	25.0	25.0	50.0
	Both	**11**	**3**	**0**	**8**	**4**	**6**	**1**	**4**	**5**	**2**
	%	**100**	27.3	0.0	72.7	36.4	54.5	9.1	36.4	45.5	18.2
65 <	Yes	**0**	0	0	0	0	0	0	0	0	0
	%	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	No	**1**	0	0	1	1	0	0	0	1	0
	%	**100**	0.0	0.0	100	100	0.0	0.0	0.0	100	0.0
	Both	**1**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**
	%	**100**	0.0	0.0	100	100	0.0	0.0	0.0	100	0.0
All Ages	Yes	**332**	**26**	**96**	**210**	**139**	**135**	**58**	**167**	**101**	**64**
	%	**55.3**	7.8	28.9	63.3	41.9	40.7	17.5	50.3	30.4	19.3
	No	**268**	**25**	**55**	**188**	**98**	**140**	**30**	**145**	**73**	**50**
	%	**44.7**	9.3	20.5	70.1	36.6	52.2	11.2	54.1	27.2	18.7
	Both	**600**	**51**	**151**	**398**	**237**	**275**	**88**	**312**	**174**	**114**
	%	**100**	8.5	25.2	66.3	39.5	45.8	14.7	52.0	29.0	19.0

Table 31 Participants' ranking of three Healthcare Funding Mechanisms according to Nationality

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Saudi	Yes	**271**	20	78	173	120	110	41	131	83	57
	%	**55.9**	7.4	28.8	63.8	44.3	40.6	15.1	48.3	30.6	21.0
	No	**214**	22	49	143	85	103	26	107	62	45
	%	**44.1**	10.3	22.9	66.8	39.7	48.1	12.1	50.0	29.0	21.0
	Both	**485**	**42**	**127**	**316**	**205**	**213**	**67**	**238**	**145**	**102**
	%	**100**	8.7	26.2	65.2	42.3	43.9	13.8	49.1	29.9	21.0
Non-Saudi	Yes	**61**	6	18	37	19	25	17	36	18	7
	%	**53.0**	9.8	29.5	60.7	31.1	41.0	27.9	59.0	29.5	11.5
	No	**54**	3	6	45	13	37	4	38	11	5
	%	**47.0**	5.6	11.1	83.3	24.1	68.5	7.4	70.4	20.4	9.3
	Both	**115**	**9**	**24**	**82**	**32**	**62**	**21**	**74**	**29**	**12**
	%	**100**	7.8	20.9	71.3	27.8	53.9	18.3	64.3	25.2	10.4
All Nationalities	Yes	**332**	**26**	**96**	**210**	**139**	**135**	**58**	**167**	**101**	**64**
	%	**55.3**	7.8	28.9	63.3	41.9	40.7	17.5	50.3	30.4	19.3
	No	**268**	**25**	**55**	**188**	**98**	**140**	**30**	**145**	**73**	**50**
	%	**44.7**	9.3	20.5	70.1	36.6	52.2	11.2	54.1	27.2	18.7
	Both	**600**	**51**	**151**	**398**	**237**	**275**	**88**	**312**	**174**	**114**
	%	**100**	8.5	25.2	66.3	39.5	45.8	14.7	52.0	29.0	19.0

Table 32 Participants' ranking of three Healthcare Funding Mechanisms according to Marital Status

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Single	Yes	**133**	12	40	81	62	52	19	59	41	33
	%	**52.8**	9.0	30.1	60.9	46.6	39.1	14.3	44.4	30.8	24.8
	No	**119**	9	22	88	50	58	11	60	39	20
	%	**47.2**	7.6	18.5	73.9	42.0	48.7	9.2	50.4	32.8	16.8
	Both	**252**	**21**	**62**	**169**	**112**	**110**	**30**	**119**	**80**	**53**
	%	**100**	8.3	24.6	67.1	44.4	43.7	11.9	47.2	31.7	21.0
Married	Yes	**190**	12	53	125	73	82	35	105	55	30
	%	**57.1**	6.3	27.9	65.8	38.4	43.2	18.4	55.3	28.9	15.8
	No	**143**	15	33	95	44	80	19	84	30	29
	%	**42.9**	10.5	23.1	66.4	30.8	55.9	13.3	58.7	21.0	20.3
	Both	**333**	**27**	**86**	**220**	**117**	**162**	**54**	**189**	**85**	**59**
	%	**100**	8.1	25.8	66.1	35.1	48.6	16.2	56.8	25.5	17.7
Divorced	Yes	**5**	1	2	2	1	1	3	3	2	0
	%	**45.5**	20.0	40.0	40.0	20.0	20.0	60.0	60.0	40.0	0.0
	No	**6**	1	0	5	4	2	0	1	4	1
	%	**54.5**	16.7	0.0	83.3	66.7	33.3	0.0	16.7	66.7	16.7
	Both	**11**	**2**	**2**	**7**	**5**	**3**	**3**	**4**	**6**	**1**
	%	**100**	18.2	18.2	63.6	45.5	27.3	27.3	36.4	54.5	9.1
Widowed	Yes	**4**	1	1	2	3	0	1	0	3	1
	%	**100**	25.0	25.0	50.0	75.0	0.0	25.0	0.0	75.0	25.0
	No	**0**	0	0	0	0	0	0	0	0	0
	%	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Both	**4**	**1**	**1**	**2**	**3**	**0**	**1**	**0**	**3**	**1**
	%	**100**	25.0	25.0	50.0	75.0	0.0	25.0	0.0	75.0	25.0
All Marital Status	Yes	**332**	**26**	**96**	**210**	**139**	**135**	**58**	**167**	**101**	**64**
	%	**55.3**	7.8	28.9	63.3	41.9	40.7	17.5	50.3	30.4	19.3
	No	**268**	**25**	**55**	**188**	**98**	**140**	**30**	**145**	**73**	**50**
	%	**44.7**	9.3	20.5	70.1	36.6	52.2	11.2	54.1	27.2	18.7
	Both	**600**	**51**	**151**	**398**	**237**	**275**	**88**	**312**	**174**	**114**
	%	**100**	8.5	25.2	66.3	39.5	45.8	14.7	52.0	29.0	19.0

Table 33 Participants' ranking of three Healthcare Funding Mechanisms according to Chronic Illness

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
With	Yes	**33**	2	8	23	13	13	7	18	12	3
	%	**61.1**	6.1	24.2	69.7	39.4	39.4	21.2	54.5	36.4	9.1
	No	**21**	4	3	14	7	10	4	10	8	3
	%	**38.9**	19.0	14.3	66.7	33.3	47.6	19.0	47.6	38.1	14.3
	Both	**54**	**6**	**11**	**37**	**20**	**23**	**11**	**28**	**20**	**6**
	%	**100**	11.1	20.4	68.5	37.0	42.6	20.4	51.9	37.0	11.1
Without	Yes	**299**	24	88	187	126	122	51	149	89	61
	%	**54.8**	8.0	29.4	62.5	42.1	40.8	17.1	49.8	29.8	20.4
	No	**247**	21	52	174	91	130	26	135	65	47
	%	**45.2**	8.5	21.1	70.4	36.8	52.6	10.5	54.7	26.3	19.0
	Both	**546**	**45**	**140**	**361**	**217**	**252**	**77**	**284**	**154**	**108**
	%	**100**	8.2	25.6	66.1	39.7	46.2	14.1	52.0	28.2	19.8
With & Without	Yes	**332**	**26**	**96**	**210**	**139**	**135**	**58**	**167**	**101**	**64**
	%	**55.3**	7.8	28.9	63.3	41.9	40.7	17.5	50.3	30.4	19.3
	No	**268**	**25**	**55**	**188**	**98**	**140**	**30**	**145**	**73**	**50**
	%	**44.7**	9.3	20.5	70.1	36.6	52.2	11.2	54.1	27.2	18.7
	Both	**600**	**51**	**151**	**398**	**237**	**275**	**88**	**312**	**174**	**114**
	%	**100**	8.5	25.2	66.3	39.5	45.8	14.7	52.0	29.0	19.0

Table 34 Participants' ranking of three Healthcare Funding Mechanisms according to Health Status

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Excellent	Yes	**202**	13	52	137	90	81	31	99	69	34
	%	**56.1**	6.4	25.7	67.8	44.6	40.1	15.3	49.0	34.2	16.8
	No	**158**	16	31	111	60	80	18	82	47	29
	%	**43.9**	10.1	19.6	70.3	38.0	50.6	11.4	51.9	29.7	18.4
	Both	**360**	**29**	**83**	**248**	**150**	**161**	**49**	**181**	**116**	**63**
	%	**100**	8.1	23.1	68.9	41.7	44.7	13.6	50.3	32.2	17.5
Very Good	Yes	**105**	9	37	59	40	43	22	56	25	24
	%	**54.4**	8.6	35.2	56.2	38.1	41.0	21.0	53.3	23.8	22.9
	No	**88**	6	20	62	33	47	8	49	21	18
	%	**45.6**	6.8	22.7	70.5	37.5	53.4	9.1	55.7	23.9	20.5
	Both	**193**	**15**	**57**	**121**	**73**	**90**	**30**	**105**	**46**	**42**
	%	**100**	7.8	29.5	62.7	37.8	46.6	15.5	54.4	23.8	21.8
Good	Yes	**20**	3	5	12	7	10	3	10	5	5
	%	**51.3**	15.0	25.0	60.0	35.0	50.0	15.0	50.0	25.0	25.0
	No	**19**	2	4	13	4	12	3	13	3	3
	%	**48.7**	10.5	21.1	68.4	21.1	63.2	15.8	68.4	15.8	15.8
	Both	**39**	**5**	**9**	**25**	**11**	**22**	**6**	**23**	**8**	**8**
	%	**100**	12.8	23.1	64.1	28.2	56.4	15.4	59.0	20.5	20.5
Fair	Yes	**4**	1	1	2	2	1	1	1	2	1
	%	**57.1**	25.0	25.0	50.0	50.0	25.0	25.0	25.0	50.0	25.0
	No	**3**	1	0	2	1	1	1	1	2	0
	%	**0.5**	33.3	0.0	66.7	33.3	33.3	33.3	33.3	66.7	0.0
	Both	**7**	**2**	**1**	**4**	**3**	**2**	**2**	**2**	**4**	**1**
	%	**100**	28.6	14.3	57.1	42.9	28.6	28.6	28.6	57.1	14.3
Poor	Yes	**1**	0	1	0	0	0	1	1	0	0
	%	**100**	0.0	100	0.0	0.0	0.0	100	100	0.0	0.0
	No	**0**	0	0	0	0	0	0	0	0	0
	%	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Both	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**
	%	**100**	0.0	100	0.0	0.0	0.0	100	100	0.0	0.0
All Health Status	Yes	**332**	**26**	**96**	**210**	**139**	**135**	**58**	**167**	**101**	**64**
	%	**55.3**	7.8	28.9	63.3	41.9	40.7	17.5	50.3	30.4	19.3
	No	**268**	**25**	**55**	**188**	**98**	**140**	**30**	**145**	**73**	**50**
	%	**44.7**	9.3	20.5	70.1	36.6	52.2	11.2	54.1	27.2	18.7
	Both	**600**	**51**	**151**	**398**	**237**	**275**	**88**	**312**	**174**	**114**
	%	**100**	8.5	25.2	66.3	39.5	45.8	14.7	52.0	29.0	19.0

Table 35 Participants' ranking of three Healthcare Funding Mechanisms according to the First Level of Education

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Primary	Yes	6	0	2	4	6	0	0	0	4	2
	%	**54.5**	0.0	33.3	66.7	100	0.0	0.0	0.0	66.7	33.3
	No	5	0	0	5	4	0	0	0	4	2
	%	**45.5**	0.0	0.0	100	80.0	0.0	0.0	0.0	80.0	40.0
	Both	11	0	2	9	10	0	0	0	8	4
	%	**100**	0.0	18.2	81.8	90.9	0.0	0.0	0.0	72.7	36.4
Secondary	Yes	12	3	6	3	6	3	3	3	3	6
	%	**85.7**	25.0	50.0	25.0	50.0	25.0	25.0	25.0	25.0	50
	No	2	1	0	1	0	2	0	1	0	1
	%	**14.3**	50.0	0.0	50.0	0.0	100	0.0	50.0	0.0	50.0
	Both	**14**	**4**	**6**	**4**	**6**	**5**	**3**	**4**	**3**	**7**
	%	**100**	28.6	42.9	28.6	42.9	35.7	21.4	28.6	21.4	50.0
High School	Yes	56	3	15	38	34	16	6	19	25	12
	%	**53.8**	5.4	26.8	67.9	60.7	28.6	10.7	33.9	44.6	21.4
	No	48	5	8	35	29	16	3	14	24	10
	%	**46.2**	10.4	16.7	72.9	60.4	33.3	6.3	29.2	50.0	20.8
	Both	**104**	**8**	**23**	**73**	**63**	**32**	**9**	**33**	**49**	**22**
	%	**100**	7.7	22.1	70.2	60.6	30.8	8.7	31.7	47.1	21.2
Total of First Level	**Yes**	**74**	**6**	**23**	**45**	**46**	**19**	**9**	**22**	**32**	**20**
	%	**57.4**	8.1	31.1	60.8	62.2	25.7	12.2	29.7	43.2	27.0
	No	**55**	**6**	**8**	**41**	**33**	**18**	**3**	**15**	**28**	**13**
	%	**42.6**	10.9	14.5	74.5	60.0	32.7	5.5	27.3	50.9	23.6
	Both	**129**	**12**	**31**	**86**	**79**	**37**	**12**	**37**	**60**	**33**
	%	**100**	9.3	24.0	66.7	61.2	28.7	9.3	28.7	46.5	25.6

Table 36 Participants' ranking of three Healthcare Funding Mechanisms according to the Second Level of Education

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Diploma	Yes	54	8	14	32	17	26	11	29	14	11
	%	**51.9**	14.8	25.9	59.3	31.5	48.1	20.4	53.7	25.9	20.4
	No	50	5	8	37	15	31	4	30	11	9
	%	**48.1**	10.0	16.0	74.0	30.0	62.0	8.0	60.0	22.0	18.0
	Both	**104**	**13**	**22**	**69**	**32**	**57**	**15**	**59**	**25**	**20**
	%	**100**	12.5	21.2	66.3	30.8	54.8	14.4	56.7	24	19.2
Bachelor	Yes	174	7	54	113	72	74	28	95	46	33
	%	**55.9**	4.0	31.0	64.9	41.4	42.5	16.1	54.6	26.4	19.0
	No	137	12	33	92	46	71	20	79	33	25
	%	**44.1**	8.8	24.1	67.2	33.6	51.8	14.6	57.7	24.1	18.2
	Both	**311**	**19**	**87**	**205**	**118**	**145**	**48**	**174**	**79**	**58**
	%	**100**	6.1	28.0	65.9	37.9	46.6	15.4	55.9	25.4	18.6
Total of Second Level	**Yes**	**228**	**15**	**68**	**145**	**89**	**100**	**39**	**124**	**60**	**44**
	%	**54.9**	6.6	29.8	63.6	39.0	43.9	17.1	54.4	26.3	19.3
	No	**187**	**17**	**41**	**129**	**61**	**102**	**24**	**109**	**44**	**34**
	%	**45.1**	9.1	21.9	69.0	32.6	54.5	12.8	58.3	23.5	18.2
	Both	**415**	**32**	**109**	**274**	**150**	**202**	**63**	**233**	**104**	**78**
	%	**100**	7.7	26.3	66.0	36.1	48.7	15.2	56.1	25.1	18.8

Table 37 Participants' ranking of three Healthcare Funding Mechanisms according to the Third Level of Education

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
Higher Diploma	Yes	9	3	0	6	0	6	3	6	3	0
	%	**60.0**	33.3	0.0	66.7	0.0	66.7	33.3	66.7	33.3	0.0
	No	6	1	2	3	2	4	0	3	0	3
	%	**40.0**	16.7	33.3	50.0	33.3	66.7	0.0	50.0	0.0	50.0
	Both	**15**	**4**	**2**	**9**	**2**	**10**	**3**	**9**	**3**	**3**
	%	**11.6**	26.7	13.3	60.0	13.3	66.7	20.0	60.0	20.0	20.0
Master's	Yes	14	2	1	11	3	8	3	9	5	0
	%	**46.7**	14.3	7.1	78.6	21.4	57.1	21.4	64.3	35.7	0.0
	No	16	1	3	12	2	12	2	13	1	2
	%	**53.3**	6.3	18.8	75.0	12.5	75.0	12.5	81.3	6.3	12.5
	Both	**30**	**3**	**4**	**23**	**5**	**20**	**5**	**22**	**6**	**2**
	%	**100**	10.0	13.3	76.7	16.7	66.7	16.7	73.3	20.0	6.7
PhD	Yes	7	0	4	3	1	2	4	6	1	0
	%	**63.6**	0.0	57.1	42.9	14.3	28.6	57.1	85.7	14.3	0.0
	No	4	0	1	3	0	3	1	4	0	0
	%	**36.4**	0.0	25.0	75.0	0.0	75.0	25.0	100	0.0	0.0
	Both	**11**	**0**	**5**	**6**	**1**	**5**	**5**	**10**	**1**	**0**
	%	**100**	0.0	45.5	54.5	9.1	45.5	45.5	90.9	9.1	0.0
Total of Third	**Yes**	**30**	**5**	**5**	**20**	**4**	**16**	**10**	**21**	**9**	**0**
Level	%	**53.6**	16.7	16.7	66.7	13.3	53.3	33.3	70.0	30.0	0.0
	No	**26**	**2**	**6**	**18**	**4**	**19**	**3**	**20**	**1**	**5**
	%	**46.4**	7.7	23.1	69.2	15.4	73.1	11.5	76.9	3.8	19.2
	Both	**56**	**7**	**11**	**38**	**8**	**35**	**13**	**41**	**10**	**5**
	%	**100**	12.5	19.6	67.9	14.3	62.5	23.2	73.2	17.9	8.9
Total of All Levels	**Yes**	**332**	**26**	**96**	**210**	**139**	**135**	**58**	**167**	**101**	**64**
	%	**55.3**	7.8	28.9	63.3	41.9	40.7	17.5	50.3	30.4	19.3
	No	**268**	**25**	**55**	**188**	**98**	**139**	**30**	**144**	**73**	**52**
	%	**44.7**	9.3	20.5	70.1	36.6	51.9	11.2	53.7	27.2	19.4
	Both	**600**	**51**	**151**	**398**	**237**	**274**	**88**	**311**	**174**	**116**
	%	**100**	8.5	25.2	66.3	39.5	45.7	14.7	51.8	29.0	19.3

Table 38 Participants' ranking of three Healthcare Funding Mechanisms according to Income

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
< 3,000	Yes	**58**	4	18	36	33	19	6	21	21	16
	%	**50.9**	6.9	31.0	62.1	56.9	32.8	10.3	36.2	36.2	27.6
	No	**56**	6	8	42	27	23	6	23	25	8
	%	**49.1**	10.7	14.3	75.0	48.2	41.1	10.7	41.1	44.6	14.3
	Both	**114**	**10**	**26**	**78**	**60**	**42**	**12**	**44**	**46**	**24**
	%	**100**	8.8	22.8	68.4	52.6	36.8	10.5	38.6	40.4	21.1
3,000 - 5,999	Yes	**48**	7	21	20	24	13	11	17	14	17
	%	**53.3**	14.6	43.8	41.7	50.0	27.1	22.9	35.4	29.2	35.4
	No	**42**	5	9	28	13	22	7	24	11	7
	%	**46.7**	11.9	21.4	66.7	31.0	52.4	16.7	57.1	26.2	16.7
	Both	**90**	**12**	**30**	**48**	**37**	**35**	**18**	**41**	**25**	**24**
	%	**100**	13.3	33.3	53.3	41.1	38.9	20.0	45.6	27.8	26.7
Lower than Average	**Yes**	**106**	**11**	**39**	**56**	**57**	**32**	**17**	**38**	**35**	**33**
	%	**52.0**	10.4	36.8	52.8	53.8	30.2	16.0	35.8	33.0	31.1
	No	**98**	**11**	**17**	**70**	**40**	**45**	**13**	**47**	**36**	**15**
	%	**48.0**	11.2	17.3	71.4	40.8	45.9	13.3	48.0	36.7	15.3
	Both	**204**	**22**	**56**	**126**	**97**	**77**	**30**	**85**	**71**	**48**
	%	**100**	10.8	27.5	61.8	47.5	37.7	14.7	41.7	34.8	23.5
6,000 - 8,999	Yes	**83**	5	15	63	30	42	11	48	26	9
	%	**61.0**	6.0	18.0	75.9	36.1	50.6	13.3	57.8	31.3	10.8
	No	**53**	5	10	38	21	29	3	27	14	12
	%	**39.0**	9.4	18.9	71.7	39.6	54.7	5.7	50.9	26.4	22.6
	Both	**136**	**10**	**25**	**101**	**51**	**71**	**14**	**75**	**40**	**21**
	%	**100**	7.4	18.4	74.3	37.5	52.2	10.3	55.1	29.4	15.4
9,000 - 11,999	Yes	**67**	5	18	44	29	26	12	33	23	11
	%	**57.8**	7.5	26.9	65.7	43.3	38.8	17.9	49.3	34.3	16.4
	No	**49**	4	7	38	11	30	8	34	12	3
	%	**42.2**	8.2	14.3	77.6	22.4	61.2	16.3	69.4	24.5	6.1
	Both	**116**	**9**	**25**	**82**	**40**	**56**	**20**	**67**	**35**	**14**
	%	**100**	7.8	21.6	70.7	34.5	48.3	17.2	57.8	30.2	12.1
12,000 - 14,999	Yes	**35**	1	12	22	12	16	7	22	7	6
	%	**53**	2.9	34.3	62.9	34.3	45.7	20.0	62.9	20.0	17.1
	No	**31**	1	12	18	14	14	3	16	5	10
	%	**47.0**	3.2	38.7	58.1	45.2	45.2	9.7	51.6	16.1	32.3
	Both	**66**	**2**	**24**	**40**	**26**	**30**	**10**	**38**	**12**	**16**
	%	**100**	3.0	36.4	60.6	39.4	45.5	15.2	57.6	18.2	24.2
15,000 <	Yes	**41**	4	12	25	11	19	11	26	10	5
	%	**52.6**	9.8	29.3	61.0	26.8	46.3	26.8	63.4	24.4	12.2
	No	**37**	4	9	24	12	22	3	21	6	10
	%	**47.4**	10.8	24.3	64.9	32.4	59.5	8.1	56.8	16.2	27.0
	Both	**78**	**8**	**21**	**49**	**23**	**41**	**14**	**47**	**16**	**15**
	%	**100**	10.3	26.9	62.8	29.5	52.6	17.9	60.3	20.5	19.2
Higher than Average	**Yes**	**226**	**15**	**57**	**154**	**82**	**103**	**41**	**129**	**66**	**31**
	%	**57.1**	6.6	25.2	68.1	36.3	45.6	18.1	57.1	29.2	13.7
	No	**170**	**14**	**38**	**118**	**58**	**95**	**17**	**98**	**37**	**35**
	%	**42.9**	8.2	22.4	69.4	34.1	55.9	10.0	57.6	21.8	20.6
	Both	**396**	**29**	**95**	**272**	**140**	**198**	**58**	**227**	**103**	**66**
	%	**100**	7.3	24.0	68.7	35.4	50.0	14.6	57.3	26.0	16.7
Total of All Levels	**Yes**	**332**	**26**	**96**	**210**	**139**	**135**	**58**	**167**	**101**	**64**
	%	**55.3**	7.8	28.9	63.3	41.9	40.7	17.5	50.3	30.4	19.3
	No	**268**	**25**	**55**	**188**	**98**	**140**	**30**	**145**	**73**	**50**
	%	**44.7**	9.3	20.5	70.1	36.6	52.2	11.2	54.1	27.2	18.7
	Both	**600**	**51**	**151**	**398**	**237**	**275**	**88**	**312**	**174**	**114**
	%	**100**	8.5	25.2	66.3	39.5	45.8	14.7	52.0	29.0	19.0

Table 39 Participants' ranking of three Healthcare Funding Mechanisms according to Possession of Private Health Insurance

			Taxation			M S Accounts			P H Insurance		
	W2P	**Total**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**	**M P**	**S P**	**L P**
With	Yes	**171**	14	55	102	72	66	33	85	50	36
	%	**58.4**	8.2	32.2	59.6	42.1	38.6	19.3	49.7	29.2	21.1
	No	**122**	10	24	88	33	78	11	79	20	23
	%	**41.6**	8.2	19.7	72.1	27.0	63.9	9.0	64.8	16.4	18.9
	Both	**293**	**24**	**79**	**190**	**105**	**144**	**44**	**164**	**70**	**59**
	%	**100**	8.2	27.0	64.8	35.8	49.1	15.0	56.0	23.9	20.1
Without	Yes	**161**	12	41	108	67	69	25	82	51	28
	%	**52.4**	7.5	25.5	67.1	41.6	42.9	15.5	50.9	31.7	17.4
	No	**146**	15	31	100	65	62	19	66	53	27
	%	**47.6**	10.3	21.2	68.5	44.5	42.5	13.0	45.2	36.3	18.5
	Both	**307**	**27**	**72**	**208**	**132**	**131**	**44**	**148**	**104**	**55**
	%	**100**	8.8	23.5	67.8	43.0	42.7	14.3	48.2	33.9	17.9
With & Without	**Yes**	**332**	**26**	**96**	**210**	**139**	**135**	**58**	**167**	**101**	**64**
	%	**55.3**	7.8	28.9	63.3	41.9	40.7	17.5	50.3	30.4	19.3
	No	**268**	**25**	**55**	**188**	**98**	**140**	**30**	**145**	**73**	**50**
	%	**44.7**	9.3	20.5	70.1	36.6	52.2	11.2	54.1	27.2	18.7
	Both	**600**	**51**	**151**	**398**	**237**	**275**	**88**	**312**	**174**	**114**
	%	**100**	8.5	25.2	66.3	39.5	45.8	14.7	52.0	29.0	19.0

Table 40 Summary of Chi 2 and Fisher Exact Tests

Independent Variable		W2P	unW2P	Overall	P-value	Chi2 Statistic
Gender*					0.766	-
	Male	**257**	**211**	**468**		
	Female	**75**	**57**	**132**		
Total		**332**	**268**	**600**		
Age					0.505	4.31
	18 - 25	**85**	**77**	**162**		
	26 - 35	**154**	**131**	**285**		
	36 - 45	**61**	**41**	**102**		
	46 - 55	**25**	**14**	**39**		
	56 - 65	**7**	**4**	**11**		
	65 <	**0**	**1**	**1**		
Nationality*					0.603	-
	Saudi	**271**	**214**	**485**		
	Non-Saudi	**61**	**54**	**115**		
Marital Status*					0.211	-
	Single	**133**	**119**	**252**		
	Married	**190**	**143**	**333**		
	Divorced	**5**	**6**	**11**		
	Widowed	**4**	**0**	**4**		
Education					0.407	7.21
	Primary	**6**	**5**	**11**		
	Secondary	**12**	**2**	**14**		
	High School	**56**	**48**	**104**		
	Diploma	**54**	**50**	**104**		
	Bachelor	**174**	**137**	**311**		
	Higher Diploma	**9**	**6**	**15**		
	Master's	**14**	**16**	**30**		
	PhD	**7**	**4**	**11**		
Employment*					0.464	-
	Employed	**273**	**214**	**487**		
	Unemployed	**59**	**54**	**113**		
Employed*					0.051	-
	Public Sector	**98**	**76**	**174**		
	Private Sector	**138**	**92**	**230**		
	SDU	**37**	**46**	**83**		
Total		**273**	**214**	**487**		
Unemployed					0.466	3.57
	Self-Employed	**2**	**0**	**2**		
	Public Pensioner	**2**	**1**	**3**		
	Private Pensioner	**1**	**0**	**1**		
	Student	**33**	**29**	**62**		
	Unemployed	**21**	**24**	**45**		
Total		**59**	**54**	**113**		

Cont'd Table 40

Independent Variable		W2P	unW2P	Overall	P-value	Chi2 Statistic
Income					0.622	3.5
	< 3,000	**58**	**56**	**114**		
	3,000 - 5,999	**48**	**42**	**90**		
	6,000 - 8,999	**83**	**53**	**136**		
	9,000 - 11,999	**67**	**49**	**116**		
	12,000 - 14,999	**35**	**31**	**66**		
	15,000 <	**41**	**37**	**78**		
PHI*					0.163	-
	With	**171**	**122**	**293**		
	Without	**161**	**146**	**307**		
Level of PHI*					0.163	-
	VIP	**28**	**19**	**47**		
	A	**57**	**55**	**112**		
	B	**49**	**31**	**80**		
	C	**37**	**17**	**54**		
Total		**171**	**122**	**293**		
PHI Provider*					0.485	-
	Employer	**146**	**109**	**255**		
	Family	**20**	**12**	**32**		
	OOP	**5**	**1**	**6**		
Total		**171**	**122**	**293**		
Chronic Disease*					0.393	-
	With	**33**	**21**	**54**		
	Without	**299**	**247**	**546**		
Health Status					0.873	1.23
	Excellent	**202**	**158**	**360**		
	Very Good	**105**	**88**	**193**		
	Good	**20**	**19**	**39**		
	Fair	**4**	**3**	**7**		
	Poor	**1**	**0**	**1**		
Increase*					0.384	-
	Increase	**82**	**58**	**140**		
	Otherwise	**250**	**210**	**460**		
Maintain*					0.179	-
	Maintain	**195**	**172**	**367**		
	Otherwise	**137**	**96**	**233**		
Obtain*					0.430	-
	Obtain	**55**	**38**	**93**		
	Otherwise	**277**	**230**	**507**		
Slice 1*					0.384	-
	MOH	**82**	**58**	**140**		
	Other Provisions	**250**	**210**	**460**		
Slice 2*					0.364	-
	Private Sector Only	**55**	**37**	**92**		
	Other Provisions	**277**	**231**	**508**		

Cont'd Table 40

Independent Variable		W2P	unW2P	Overall	P-value	Chi2 Statistic
Slice 3*					0.447	-
	SDU Only	**0**	**1**	**1**		
	Other Provisions	**332**	**267**	**599**		
Slice 4*					0.918	-
	MOH & Private Sector	**65**	**54**	**119**		
	Other Provisions	**267**	**214**	**481**		
Slice 5*					0.022	-
	MOH & SDU	**79**	**87**	**166**		
	Other Provisions	**253**	**181**	**434**		
Slice 6*					0.190	-
	All Three Provisions	**51**	**31**	**82**		
	Other Provisions	**281**	**237**	**518**		

*The dependent variable that violated the assumptions of Chi2, which requires minimum of five observations in each cell. Therefore, Fisher exact test was performed.

Note: if the variable does not show Total, this means that the total of those who are willing is 332, unwilling 268, and overall 600.

Table 41 Variance Inflation Factor before Merging Categories

Independent Variable	Observation	VIF	1/VIF
Gender	**Base Category (Female)**		
	Male	1.26	0.79
Age	**Base Category (18 - 25)**		
	26 - 35	2.40	0.41
	36 - 45	2.43	0.41
	46 - 55	2.07	0.48
	56 - 65	1.42	0.70
	65 <	1.15	0.87
Nationality	**Base Category (Non-Saudis)**		
	Saudis	6.52	0.15
Marital Status	**Base Category (Single)**		
	Married	1.56	0.64
	Divorced	1.19	0.84
	Widowed	1.22	0.81
Education	**Base Category (Primary)**		
	Secondary	2.63	0.38
	High School	11.78	0.08
	Diploma	12.11	0.08
	Bachelor	20.39	0.04
	Higher Diploma	3.05	0.32
	Master	4.97	0.20
	PhD	2.76	0.36
Employment	**Base Category (Unemployed)**		
	Employed	5.0	0.20
Income	**Base Category (< 3,000)**		
	3,000 - 5,999	4.42	0.22
	6,000 - 8,999	5.98	0.16
	9,000 - 11,999	5.51	0.18
	12,000 - 14,999	4.29	0.23
	15,000 <	4.78	0.20
PHI	**Base Category (Without PHI)**		
	With PHI	3.67	0.27
Chronic Disease	**Base Category (Without)**		
	With	1.17	0.85
Health Status	**Base Category (Poor)**		
	Fair	8.28	0.12
	Good	39.45	0.02
	Very Good	138.62	0.00
	Excellent	152.63	0.00
Access	**Base Category (Slice 1)**		
	Slice 2	7.32	0.13
	Slice 3	1.15	0.86
	Slice 4	2.10	0.47
	Slice 5	2.03	0.49
	Slice 6	omitted	-
Access of Three	**Base Category (Increase)**		
	Maintain	omitted	-
	Obtain	omitted	-
Mean VIF		14.10	

Table 42 Variance Inflation Factor after Merging Categories

Independent Variable	Observation	VIF[1]	1/VIF	VIF[2]	1/VIF
Gender	**Base Category (Female)**				
	Male	1.18	0.85	1.17	0.85
Age	**Base Category (18 - 25)**				
	26 - 35	2.22	0.45	2.19	0.45
	36 - 45	2.25	0.44	2.23	0.44
	46 - 55	1.78	0.56	1.78	0.56
	56 <	1.27	0.79	1.27	0.79
Nationality	**Base Category (Non-Saudis)**				
	Saudis	6.07	0.16	6.06	0.16
Marital Status	**Base Category (Single)**				
	Married	1.55	0.64	1.55	0.64
	Divorced & Widowed	1.18	0.84	1.18	0.84
Education	**Base Category (First Level)**				
	Undergraduate	1.53	0.65	1.53	0.65
	Postgraduate	1.59	0.63	1.57	0.63
Employment	**Base Category (Unemployed)**				
	Employed	2.11	0.47	2.09	0.47
Income	**Base Category (< Average)**				
	6,000 <	2.11	0.47	2.10	0.47
PHI	**Base Category (Without PHI)**				
	With PHI	3.54	0.28	1.88	0.53
Chronic Disease	**Base Category (Without)**				
	With	1.13	0.88	1.12	0.88
Health Status	**Base Category (Fair & Poor)**				
	Good	5.70	0.17	5.70	0.17
	Very Good	17.65	0.05	17.65	0.05
	Excellent	19.05	0.05	19.36	0.05
Access	**Base Category (Slice 1)**			excluded	
	Slice 2	6.91	0.14		
	Slice 3	1.07	0.93		
	Slice 4	2.06	0.48		
	Slice 5	1.90	0.52		
	Slice 6	omitted	-		
Eligibility	**Base Category (Increase)**				
	Maintain	omitted	-	2.25	0.44
	Obtain	omitted	-	6.23	0.16
Mean VIF		4.01		4.15	

Abbreviations: [1]VIF including the *Access* and *Access of Three* variables. [2]VIF when *Access* variable was excluded.

Table 43 Summary of Chi 2 and Fisher Exact Tests for the Healthcare Funding Options

Independent Variable		Taxation						Medical Savings Accounts						Private Health Insurance					
		1st[1]	2nd[2]	3rd[3]	Total	P-V[4]	Chi2[5]	1st	2nd	3rd	Total	P-V	Chi2	1st	2nd	3rd	Total	P-V	Chi2
Gender*						0.21	-					0.59	-					0.52	-
	Male	44	121	303	468			181	215	72	468			243	132	93	468		
	Female	7	30	95	132			56	60	16	132			69	42	21	132		
	Total	51	151	398	600			237	275	88	600			312	174	114	600		
Age						0.26	12.27					0.23	12.8					0.37	10.8
	18 - 25	16	40	106	162			73	72	17	162			73	50	39	162		
	26 - 35	23	67	195	285			100	143	42	285			162	75	48	285		
	36 - 45	6	31	65	102			43	40	19	102			53	31	18	102		
	46 - 55	3	13	23	39			16	14	9	39			20	12	7	39		
	56 - 65	3	0	8	11			4	6	1	11			4	5	2	11		
	65 <	0	0	1	1			1	0	0	1			0	1	0	1		
Nationality*						0.46	-					**0.01**	-					**0.00**	-
	Saudi	42	127	316	485			205	213	67	485			238	145	102	485		
	Non-Saudi	9	24	82	115			32	62	21	115			74	29	12	115		
Marital Sta[6]*						0.61	-					**0.03**	-					**0.01**	-
	Single	21	62	169	252			112	110	30	252			119	80	53	252		
	Married	27	86	220	333			117	162	54	333			189	85	59	333		
	Divorced	2	2	7	11			5	3	3	11			4	6	1	11		
	Widowed	1	1	2	4			3	0	1	4			0	3	1	4		
Education						**0.00**	31.27					**0.00**	57.48					**0.00**	57.1
	Primary	0	2	9	11			10	1	0	11			1	8	2	11		
	Secondary	4	6	4	14			6	5	3	14			4	3	7	14		
	High School	8	23	73	104			63	32	9	104			33	49	22	104		
	Diploma	13	22	69	104			32	57	15	104			59	25	20	104		
	Bachelor	19	87	205	311			118	145	48	311			174	79	58	311		
	Higher D	4	2	9	15			2	10	3	15			9	3	3	15		
	Master's	3	4	23	30			5	20	5	30			22	6	2	30		
	PhD	0	5	6	11			1	5	5	11			10	1	0	11		
Employment*						0.67	-					**0.00**	-					**0.00**	-
	Employed	40	126	321	487			177	237	73	487			270	124	93	487		
	Unemployed	11	25	77	113			60	38	15	113			42	50	21	113		

Cont'd Table 43

Independent Variable		Taxation						Medical Savings Accounts						Private Health Insurance					
		1st[1]	2nd[2]	3rd[3]	Total	P-V[4]	Chi2[5]	1st	2nd	3rd	Total	P-V	Chi2	1st	2nd	3rd	Total	P-V	Chi2
Employed*						0.68	-					0.93	-					0.31	-
	Public S[7]	13	44	117	174			60	85	29	174			101	45	28	174		
	Private S	20	65	145	230			85	112	33	230			125	53	52	230		
	SDU	7	17	59	83			32	40	11	83			44	26	13	83		
	Total	40	126	321	487			177	237	73	487			270	124	93	487		
Unemployed						0.31	9.35					0.22	10.57					0.60	6.39
	Self-Emp[8]	0	1	1	2			2	0	0	2			0	1	1	2		
	Public Pen[9]	0	1	2	3			2	1	0	3			1	1	1	3		
	Private Pen	0	1	0	1			0	0	1	1			1	0	0	1		
	Student	8	16	38	62			33	19	10	62			21	27	14	62		
	Unemployed	3	6	36	45			23	18	4	45			19	21	5	45		
	Total	11	25	77	113			60	38	15	113			42	50	21	113		
Income						**0.04**	18.94					**0.04**	18.93					**0.00**	24.68
	< 3[10]	10	26	78	114			60	42	12	114			44	46	24	114		
	3 - 5,9[11]	12	30	48	90			37	35	18	90			41	25	24	90		
	6 - 8,9[12]	10	25	101	136			51	71	14	136			75	40	21	136		
	9 - 11,9[13]	9	25	82	116			40	56	20	116			67	35	14	116		
	12 - 14,9[14]	2	24	40	66			26	30	10	66			38	12	16	66		
	15 - <[15]	8	21	49	78			23	41	14	78			47	16	15	78		
PHI*						0.59	-					0.18	-					**0.02**	-
	With	24	79	190	293			105	144	44	293			164	70	59	293		
	Without	27	72	208	307			132	131	44	307			148	104	55	307		
Level of PHI*						**0.03**	-					0.10	-					**0.00**	-
	VIP	4	12	31	47			17	22	8	47			26	13	8	47		
	A	3	26	83	112			31	67	14	112			78	19	15	112		
	B	9	23	48	80			35	30	15	80			36	27	17	80		
	C	8	18	28	54			22	25	7	54			24	11	19	54		
	Total	24	79	190	293			105	144	44	293			164	70	59	293		

Cont'd Table 43

Independent Variable		Taxation						Medical Savings Accounts						Private Health Insurance					
		1st[1]	2nd[2]	3rd[3]	Total	P-V[4]	Chi2[5]	1st	2nd	3rd	Total	P-V	Chi2	1st	2nd	3rd	Total	P-V	Chi2
PHI Provd[16]*						0.13	-					**0.04**	-					**0.02**	-
	Employer	23	72	160	255			88	127	40	255			144	56	55	255		
	Family	0	6	26	32			13	17	2	32			19	9	4	32		
	OOP	1	1	4	6			4	0	2	6			1	5	0	6		
	Total	24	79	190	293			105	144	44	293			164	70	59	293		
Chronic D[17]*						0.56	-					0.46	-					0.2	-
	With	6	11	37	54			20	23	11	54			28	20	6	54		
	Without	45	140	361	546			217	252	77	546			284	154	108	546		
Health Sta						0.21	10.7					0.23	10.5					0.28	9.72
	Excellent	29	83	248	360			150	161	49	360			181	116	63	360		
	Very Good	15	57	121	193			73	90	30	193			105	46	42	193		
	Good	5	9	25	39			11	22	6	39			23	8	8	39		
	Fair	2	1	4	7			3	2	2	7			2	4	1	7		
	Poor	0	1	0	1			0	0	1	1			1	0	0	1		
Increase*						0.90	-					0.77	-					0.87	-
	Increase	13	35	92	140			55	62	23	140			72	43	25	140		
	Otherwise	38	116	306	460			182	213	65	460			240	131	89	460		
Maintain*						0.62	-					**0.03**	-					**0.01**	-
	Maintain	32	97	238	367			160	158	49	367			175	112	80	367		
	Otherwise	19	54	160	233			77	117	39	233			137	62	34	233		
Obtain*						0.36	-					**0.00**	-					**0.00**	-
	Obtain	6	19	68	93			22	55	16	93			65	19	9	93		
	Otherwise	45	132	330	507			215	220	72	507			247	155	105	507		
Slice 1*						0.90	-					0.77	-					0.87	-
	MOH	13	35	92	140			55	62	23	140			72	43	25	140		
	Other Prov[18]	38	116	306	460			182	213	65	460			240	131	89	460		
Slice 2*						0.37	-					**0.00**	-					**0.00**	-
	Private S	6	19	67	92			22	54	16	92			64	19	9	92		
	Other Prov	45	132	331	508			215	221	72	508			248	155	105	508		

Cont'd Table 43

Independent Variable		Taxation						Medical Savings Accounts						Private Health Insurance					
		1st[1]	2nd[2]	3rd[3]	Total	P-V[4]	Chi2[5]	1st	2nd	3rd	Total	P-V	Chi2	1st	2nd	3rd	Total	P-V	Chi2
Slice 3*						1.00	-					1.00	-					1.00	-
	SDU	0	0	1	1			0	1	0	1			1	0	0	1		
	Other Prov	51	151	397	599			237	274	88	599			311	174	114	599		
Slice 4*						**0.00**	-					0.85	-					**0.00**	-
	MOH & P-S[19]	10	43	66	119			45	55	19	119			64	21	34	119		
	Other Prov	41	108	332	481			192	220	69	481			248	153	80	481		
Slice 5*						0.60	-					0.10	-					**0.03**	-
	MOH & S[20]	14	37	115	166			77	68	21	166			75	61	30	166		
	Other Prov	37	114	283	434			160	207	67	434			237	113	84	434		
Slice 6*						0.58	-					0.34	-					0.20	-
	All Prov	8	17	57	82			38	35	9	82			36	30	16	82		
	Other Prov	43	134	341	518			199	240	79	518			276	144	98	518		

Abbreviations: [1]Most preferred. [2]Second Preferred. [3]Third preferred. [4]P-Value. [5]Chi2 statistics. [6]Marital Status. [7]Sector. [8]Self-employed. [9]Public pensioner. [10] < SR 3,000. [11]SR 3,000 - 5,999. [12]SR 6,000 - 8,999. [13]SR 9,000 - 11,999. [14]SR 12,000 - 14,999. [15]SR 15,000 <. [16]PHI provider. [17]Chronic diseases. [18]Other provisions. [19]MOH & private sector. [20]MOH & SDU.

*The dependent variable that violated the assumptions of Chi2, which requires minimum of five observations in each cell. Therefore, Fisher exact test was performed.
Note: if the variable does not show Total, this means that the total of those who are willing is 332, unwilling 268, and overall 600

Table 44 Participants' Willingness to Pay Based on the Classification of the Six Slices

Eligibility	W2P[1]		%
MOH			
Saudis employed in public	Yes	**76**	74.5[4]
	No	**26**	25.5
Non-Saudis employed in public	Yes	**13**	35.1
	No	**24**	64.9
Unemployed Saudis WI[2]	Yes	**7**	63.6
	No	**4**	36.4
Unemployed Saudis WOI[3]	Yes	**4**	36.4
	No	**7**	63.6
Unemployed Non-Saudis	Yes	**0**	0.0
	No	**1**	100
	Total	**162**	**27.0[5]**
Private Sector			
Non-Saudis employed in private	Yes	**82**	65.6
	No	**43**	34.4
Dependent on Non-Saudis employed in private	Yes	**0**	0.0
	No	**1**	100
	Total	**126**	**21.0**
SDU			
Non-Saudis employed in SDU	Yes	**1**	50.0
	No	**1**	50.0
	Total	**2**	**0.3**
MOH & Private Sector			
Saudis employed in public with HI	Yes	**7**	87.5
	No	**1**	12.5
Saudis employed in private	Yes	**59**	72.0
	No	**23**	28.0
Dependent on Saudis employed in private WOI	Yes	**0**	0.0
	No	**1**	100
	Total	**91**	**15.2**
MOH & SDU			
Saudis employed in public eligible to SDU	Yes	**19**	82.6
	No	**4**	17.4
Saudis employed in SDU	Yes	**44**	78.6
	No	**12**	21.4
Dependent on Saudis employed in SDU WI	Yes	**33**	94.3
	No	**2**	5.7
Dependent on Saudis employed in SDU WOI	Yes	**4**	57.1
	No	**3**	42.9
	Total	**121**	**20.2**
MOH, Private, & SDU			
Saudis employed in public eligible to all	Yes	**6**	100
	No	**0**	0.0
Saudis employed in private eligible to all	Yes	**70**	87.5
	No	**10**	12.5
Saudis employed in SDU eligible to all	Yes	**4**	66.7
	No	**2**	33.3
Unemployed Saudi WI eligible to all	Yes	**6**	100
	No	**0**	0.0
	Total	**98**	**16.3**

Abbreviations: [1]Willingness to Pay. [2]With income. [3]Without income. [4]The percentage of Saudis employed in public who reported yes to the total Saudis employed in public. [5]The percentage of those eligible to healthcare only in MOH to the total participants.

Table 45 Participants' Willingness to Pay Based on Demographic Characteristics

			W2P	%
Gender				
	Male	Yes	**329**	74.3
		No	**114**	25.7
	Female	Yes	**106**	67.5
		No	**51**	32.5
		Total	**600**	**100**
Age				
	18 - 25	Yes	**101**	80.2
		No	**25**	19.8
	26 - 35	Yes	**182**	66.7
		No	**91**	33.3
	36 - 45	Yes	**96**	73.3
		No	**35**	26.7
	46 - 55	Yes	**43**	79.6
		No	**11**	20.4
	56 - 65	Yes	**8**	72.7
		No	**3**	27.3
	65 <	Yes	**5**	100
		No	**0**	0.0
		Total	**600**	**100**
Nationality				
	Saudi	Yes	**339**	78.1
		No	**95**	21.9
	Non-Saudi	Yes	**96**	57.8
		No	**70**	42.2
		Total	**600**	**100**
Marital Status				
	Single	Yes	**171**	71.8
		No	**67**	28.2
	Married	Yes	**245**	72.7
		No	**92**	27.3
	Divorced	Yes	**10**	76.9
		No	**3**	23.1
	Widowed	Yes	**9**	75.0
		No	**3**	25.0
		Total	**600**	**100**
Chronic Illness				
	With	Yes	**43**	89.6
		No	**5**	10.4
	Without	Yes	**392**	71.0
		No	**160**	29.0
		Total	**600**	**100**
Health Status				
	Excellent	Yes	**238**	68.8
		No	**108**	31.2
	Very Good	Yes	**148**	79.6
		No	**38**	20.4
	Good	Yes	**42**	72.4
		No	**16**	27.6
	Fair	Yes	**6**	75.0
		No	**2**	25.0
	Poor	Yes	**1**	50.0
		No	**1**	50.0
		Total	**600**	**100**

Table 46 Participants' Willingness to Pay Based on Socio-Economic Characteristics

				W2P	%
Education					
	Primary		Yes	**10**	66.7
			No	**5**	33.3
	Secondary		Yes	**8**	61.5
			No	**5**	38.5
	High School		Yes	**55**	67.9
			No	**26**	32.1
	Diploma		Yes	**80**	80.0
			No	**20**	20.0
	Bachelor		Yes	**236**	70.9
			No	**97**	29.1
	Higher Diploma		Yes	**11**	91.7
			No	**1**	8.3
	Master's		Yes	**30**	73.2
			No	**11**	26.8
	PhD		Yes	**5**	100
			No	**0**	0.0
			Total	**600**	**100**
Income					
	< 3,000		Yes	**70**	64.8
			No	**38**	35.2
	3,000 - 5,999		Yes	**63**	68.5
			No	**29**	31.5
	6,000 - 8,999		Yes	**98**	76.0
			No	**31**	24.0
	9,000 - 11,999		Yes	**63**	70.8
			No	**26**	29.2
	12,000 - 14,999		Yes	**61**	74.4
			No	**21**	25.6
	15,000 <		Yes	**80**	80.0
			No	**20**	20.0
			Total	**600**	**100**
Insurance					
	With		Yes	**234**	74.3
			No	**81**	25.7
		PHI Level			
		VIP	Yes	**32**	86.5
			No	**5**	13.5
		A	Yes	**91**	76.5
			No	**28**	23.5
		B	Yes	**56**	76.7
			No	**17**	23.3
		C	Yes	**55**	64.0
			No	**31**	36.0
	Without		Yes	**201**	70.5
			No	**84**	29.5
			Total	**600**	**100**

Table 47 Slice 1 Levels of Willingness to Pay

	Total	Zero	>0&<1	>1&<2	>2&<3	>3&<4	>4&<5	≥5
Saudis employed in public	**102**	**26**	**19**	**17**	**11**	**8**	**11**	**10**
	%	25.5	18.6	16.7	10.8	7.8	10.8	9.8
Non-Saudis publicly employed	**37**	**24**	**11**	**1**	**0**	**0**	**1**	**0**
	%	64.9	29.7	2.7	0.0	0.0	2.7	0.0
Unemployed Saudis WI	**11**	**4**	**3**	**2**	**0**	**0**	**1**	**1**
	%	36.4	27.3	18.2	0.0	0.0	9.1	9.1
Unemployed Saudis WOI	**11**	**7**	**3**	**0**	**0**	**0**	**1**	**0**
	%	63.6	27.3	0.0	0.0	0.0	9.1	0.0
Unemployed Non-Saudis	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
	%	100	0.0	0.0	0.0	0.0	0.0	0.0
Total	**162**	**62**	**36**	**20**	**11**	**8**	**14**	**11**
	%	38.3	22.2	12.3	6.8	4.9	8.6	6.8

Table 48 Slice 2 and 3 Levels of Willingness to Pay

	Total	Zero	>0&<1	>1&<2	>2&<3	>3&<4	>4&<5	≥5
Non-Saudis privately employed	**125**	**43**	**6**	**21**	**19**	**15**	**8**	**13**
	%	34.4	4.8	16.8	15.2	12.0	6.4	10.4
Dependent on Non-Saudi privately employed	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
	%	100	0.0	0.0	0.0	0.0	0.0	0.0
Total	**126**	**44**	**6**	**21**	**19**	**15**	**8**	**13**
	%	34.9	4.8	16.7	15.1	11.9	6.3	10.3
Non-Saudis SDU employed	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**1**
	%	50.0	0.0	0.0	0.0	0.0	0.0	50.0
Total	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**1**
	%	50.0	0.0	0.0	0.0	0.0	0.0	50.0

Table 49 Slice 4 Levels of Willingness to Pay

	Total	Zero	>0&<1	>1&<2	>2&<3	>3&<4	>4&<5	≥5
Saudis publicly employed with PHI	**8**	**1**	**3**	**1**	**1**	**2**	**0**	**0**
	%	12.5	37.5	12.5	12.5	25.0	0.0	0.0
Saudis privately employed	**82**	**23**	**10**	**21**	**10**	**2**	**4**	**12**
	%	28.0	12.2	25.6	12.2	2.4	4.9	14.6
Dependent on Saudis privately employed WOI	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
	%	100	0.0	0.0	0.0	0.0	0.0	0.0
Total	**91**	**25**	**13**	**22**	**11**	**4**	**4**	**12**
	%	27.5	14.3	24.2	12.1	4.4	4.4	13.2

Table 50 Slice 5 Levels of Willingness to Pay

	Total	Zero	>0&<1	>1&<2	>2&<3	>3&<4	>4&<5	≥5
Saudis publicly employed eligible to SDU	**23**	**4**	**1**	**6**	**3**	**2**	**2**	**5**
	%	17.4	4.3	26.1	13.0	8.7	8.7	21.7
Saudis employed in SDU	**56**	**12**	**4**	**16**	**5**	**2**	**2**	**15**
	%	21.4	7.1	28.6	8.9	3.6	3.6	26.8
Dependent on Saudis SDU employed WI	**35**	**2**	**7**	**8**	**9**	**1**	**2**	**6**
	%	5.7	20.0	22.9	25.7	2.9	5.7	17.1
Dependent on Saudis SDU employed WOI	**7**	**3**	**1**	**2**	**0**	**0**	**0**	**1**
	%	42.9	14.3	28.6	0.0	0.0	0.0	14.3
Total	**121**	**21**	**13**	**32**	**17**	**5**	**6**	**27**
	%	17.4	10.7	26.4	14.0	4.1	5.0	22.3

Table 51 Slice 6 Levels of Willingness to Pay

	Total	Zero	>0&<1	>1&<2	>2&<3	>3&<4	>4&<5	≥5
Saudis publicly employed eligible to all	**6**	**0**	**1**	**2**	**1**	**0**	**0**	**2**
	%	0.0	16.7	33.3	16.7	0.0	0.0	33.3
Saudis privately employed eligible to all	**80**	**10**	**10**	**20**	**13**	**4**	**7**	**16**
	%	12.5	12.5	25.0	16.3	5.0	8.8	20.0
Saudis SDU employed eligible to all	**6**	2	2	1	0	0	1	0
	%	33.3	33.3	16.7	0.0	0.0	16.7	0.0
Unemployed Saudi WI eligible to all	**6**	**0**	**0**	**2**	**3**	**0**	**1**	**0**
	%	0.0	0.0	33.3	50.0	0.0	16.7	0.0
Total	**98**	**12**	**13**	**25**	**17**	**4**	**9**	**18**
	%	12.2	13.3	25.5	17.3	4.1	9.2	18.4

Table 52 Willingness to Pay Levels Based on the Demographic Characteristics

		Total	Zero	>0&<1	>1&<2	>2&<3	>3&<4	>4&<5	≥5
Gender									
	Male	**443**	**114**	**53**	**87**	**55**	**32**	**35**	**67**
		%	25.7	12.0	19.6	12.4	7.2	7.9	15.1
	Female								
		157	**51**	**28**	**33**	**20**	**4**	**6**	**15**
		%	32.5	17.8	21.0	12.7	2.5	3.8	9.6
Age									
	18 - 25	**126**	**25**	**17**	**33**	**16**	**3**	**10**	**22**
		%	19.8	13.5	26.2	12.7	2.4	7.9	17.5
	26 - 35	**273**	**91**	**33**	**52**	**36**	**15**	**13**	**33**
		%	33.3	12.1	19.0	13.2	5.5	4.8	12.1
	36 - 45	**131**	**35**	**18**	**19**	**17**	**11**	**13**	**18**
		%	26.7	13.7	14.5	13.0	8.4	9.9	13.7
	46 - 55	**54**	**11**	**10**	**14**	**3**	**5**	**3**	**8**
		%	20.4	18.5	25.9	5.6	9.3	5.6	14.8
	56 - 65	**11**	**3**	**2**	**0**	**3**	**1**	**1**	**1**
		%	27.3	18.2	0.0	27.3	9.1	9.1	9.1
	65 <	**5**	**0**	**1**	**2**	**0**	**1**	**1**	**0**
		%	0.0	20.0	40.0	0.0	20.0	20.0	0.0
Nationality									
	Saudi	**434**	**95**	**64**	**98**	**56**	**21**	**32**	**68**
		%	21.9	14.7	22.6	12.9	4.8	7.4	15.7
	Non-Saudi	**166**	**70**	**17**	**22**	**19**	**15**	**9**	**14**
		%	42.2	10.2	13.3	11.4	9.0	5.4	8.4
Marital Status	**Single**	**238**	**67**	**34**	**51**	**33**	**11**	**15**	**27**
		%	28.2	14.3	21.4	13.9	4.6	6.3	11.3
	Married	**337**	**92**	**43**	**63**	**40**	**23**	**21**	**55**
		%	27.3	12.8	18.7	11.9	6.8	6.2	16.3
	Divorced	**13**	**3**	**2**	**4**	**0**	**1**	**3**	**0**
		%	23.1	15.4	30.8	0.0	7.7	23.1	0.0
	Widowed	**12**	**3**	**2**	**2**	**2**	**1**	**2**	**0**
		%	25.0	16.7	16.7	16.7	8.3	16.7	0.0
Chronic Disease	**With**	**48**	**5**	**8**	**12**	**5**	**4**	**6**	**8**
		%	10.4	16.7	25.0	10.4	8.3	12.5	16.7
	Without	**552**	**160**	**73**	**108**	**70**	**32**	**35**	**74**
		%	29.0	13.2	19.6	12.7	5.8	6.3	13.4
Health Status	**Excellent**	**346**	**108**	**42**	**77**	**37**	**13**	**22**	**47**
		%	31.2	12.1	22.3	10.7	3.8	6.4	13.6
	Very Good	**186**	**38**	**30**	**30**	**31**	**14**	**16**	**27**
		%	20.4	16.1	16.1	16.7	7.5	8.6	14.5
	Good	**58**	**16**	**9**	**10**	**6**	**8**	**3**	**6**
		%	27.6	15.5	17.2	10.3	13.8	5.2	10.3
	Fair	**8**	**2**	**0**	**2**	**1**	**1**	**0**	**2**
		%	25.0	0.0	25.0	12.5	12.5	0.0	25.0
	Poor	**2**	**1**	**0**	**1**	**0**	**0**	**0**	**0**
		%	50.0	0.0	50.0	0.0	0.0	0.0	0.0

Table 53 Willingness to Pay Levels Based on the Socio-Economic Characteristics

		Total	Zero	>0&<1	>1&<2	>2&<3	>3&<4	>4&<5	≥5
Education									
First Level									
	Primary	**15**	**5**	**0**	**4**	**2**	**1**	**3**	**0**
		%	33.3	0.0	26.7	13.3	6.7	20.0	0.0
	Secondary	**13**	**5**	**2**	**2**	**1**	**2**	**1**	**0**
		%	38.5	15.4	15.4	7.7	15.4	7.7	0.0
	High School	**81**	**26**	**16**	**10**	**14**	**1**	**6**	**8**
		%	32.1	19.8	12.3	17.3	1.2	7.4	9.9
	Total	**109**	**36**	**18**	**16**	**17**	**4**	**10**	**8**
		%	33.0	16.5	14.7	15.6	3.7	9.2	7.3
Second Level									
	Diploma	**100**	**20**	**15**	**33**	**12**	**2**	**4**	**14**
		%	20.0	15.0	33.0	12.0	2.0	4.0	14.0
	Bachelor	**333**	**97**	**40**	**61**	**40**	**27**	**22**	**46**
		%	29.1	12.0	18.3	12.0	8.1	6.6	13.8
	Total	**433**	**117**	**55**	**94**	**52**	**29**	**26**	**60**
		%	27.0	12.7	21.7	12.0	6.7	6.0	13.9
Third Level									
	Higher Diploma	**12**	**1**	**2**	**4**	**2**	**2**	**0**	**1**
		%	8.3	16.7	33.3	16.7	16.7	0.0	8.3
	Master's	**41**	**11**	**6**	**6**	**4**	**1**	**4**	**9**
		%	26.8	14.6	14.6	9.8	2.4	9.8	22.0
	PhD	**5**	**0**	**0**	**0**	**0**	**0**	**1**	**4**
		%	0.0	0.0	0.0	0.0	0.0	20.0	80.0
	Total	**58**	**12**	**8**	**10**	**6**	**3**	**5**	**14**
		%	20.7	13.8	17.2	10.3	5.2	8.6	24.1
Income									
< Average									
	< 3,000	**108**	**38**	**13**	**17**	**17**	**4**	**9**	**10**
		%	35.2	12.0	15.7	15.7	3.7	8.3	9.3
	3,000 - 5,999	**92**	**29**	**9**	**20**	**17**	**6**	**4**	**7**
		%	31.5	9.8	21.7	18.5	6.5	4.3	7.6
	Total	**200**	**67**	**22**	**37**	**34**	**10**	**13**	**17**
		%	33.5	11.0	18.5	17.0	5.0	6.5	8.5
> Average									
	6,000 - 8,999	**129**	**31**	**19**	**28**	**16**	**9**	**10**	**16**
		%	24.0	14.7	21.7	12.4	7.0	7.8	12.4
	9,000 - 11,999	**89**	**26**	**12**	**14**	**9**	**4**	**6**	**18**
		%	29.2	13.5	15.7	10.1	4.5	6.7	20.2
	12,000 - 14,999	**82**	**21**	**17**	**17**	**5**	**5**	**6**	**11**
		%	25.6	20.7	20.7	6.1	6.1	7.3	13.4
	15,000 <	**100**	**20**	**11**	**24**	**11**	**8**	**6**	**20**
		%	20.0	11.0	24.0	11.0	8.0	6.0	20.0
	Total	**400**	**98**	**59**	**83**	**41**	**26**	**28**	**65**
		%	24.5	14.8	20.8	10.3	6.5	7.0	16.3

Table 54 Willingness to Pay Based on the Possession of Private Health Insurance

			Total	Zero	>0&<1	>1&<2	>2&<3	>3&<4	>4&<5	≥5
PHI										
	With		**315**	**81**	**32**	**68**	**47**	**23**	**21**	**43**
			%	25.7	10.2	21.6	14.9	7.3	6.7	13.7
		PHI Level								
		VIP	**37**	**5**	**4**	**3**	**7**	**3**	**3**	**12**
			%	13.5	10.8	8.1	18.9	8.1	8.1	32.4
		A	**119**	**28**	**19**	**31**	**17**	**4**	**8**	**12**
			%	23.5	16.0	26.1	14.3	3.4	6.7	10.1
		B	**73**	**17**	**8**	**23**	**9**	**4**	**5**	**7**
			%	23.3	11.0	31.5	12.3	5.5	6.8	9.6
		C	**86**	**31**	**1**	**11**	**14**	**12**	**5**	**12**
			%	36.0	1.2	12.8	16.3	14.0	5.8	14.0
	Without		**285**	**84**	**49**	**52**	**28**	**13**	**20**	**39**
			%	29.5	17.2	18.2	9.8	4.6	7.0	13.7

Table 55 Eligibilities, Demographic, and Socio-Economics' Average Willingness to Pay

		Average[1]	Average[2]	Average[3]
Provisions				
	Willing to Increase	2.27	2.38	2.77
	Willing to Maintain	2.75	2.98	3.26
	Willing to Obtain	2.98	3.15	3.48
	Overall	2.68	2.87	3.19
Slices				
Slice 1				
	Saudis employed in public	2.56	2.69	3.07
	Non-Saudis publicly employed	0.88	0.88	1.38
	Unemployed Saudis WI	2.07	2.21	2.57
	Unemployed Saudis WOI	1.50	1.50	2
	Unemployed Non-Saudis	0.0	0.0	0.0
	Overall	2.27	2.38	2.77
Slice 2				
	Non-Saudis privately employed	2.95	3.11	3.45
	Dependent on Non-Saudi privately employed	0.0	0.0	0.0
	Overall	2.95	3.11	3.45
Slice 3				
	Non-Saudis SDU employed	5.50	6.50	6
Slice 4				
	Saudis publicly employed with PHI	1.78	1.78	2.29
	Saudis privately employed	2.58	2.79	3.08
	Dependent on Saudis privately employed WOI	0.0	0.0	0.0
	Overall	2.50	2.68	3
Slice 5				
	Saudis publicly employed eligible to SDU	3.18	3.44	3.68
	Saudis employed in SDU	3.11	3.45	3.61
	Dependent on Saudis SDU employed WI	2.53	2.71	3.03
	Dependent on Saudis SDU employed WOI	2.25	2.50	2.75
	Overall	2.90	3.17	3.40
Slice 6				
	Saudis publicly employed eligible to all	2.83	3.16	3.33
	Saudis privately employed eligible to all	2.87	3.10	3.37
	Saudis S,D,U employed eligible to all	1.75	1.75	2.25
	Unemployed Saudi WI eligible to all	2.50	2.50	3
	Overall	2.79	3.00	3.29
Gender				
	Male	2.83	3.03	3.33
	Female	2.23	2.37	2.74
Age				
	18 - 25	2.71	2.93	3.22
	26 - 35	2.62	2.80	3.12
	36 - 45	2.87	3.06	3.38
	46 - 55	2.52	2.71	3.02
	56 - 65	2.75	2.87	3.25
	65 <	2.30	2.30	2.80

Cont'd Table 55

		Average[1]	Average[2]	Average[3]
Nationality				
	Saudi	2.68	2.88	3.19
	Non-Saudi	2.69	2.84	3.20
Marital Status				
	Single	2.51	2.67	3.02
	Married	2.83	3.05	3.33
	Divorced	2.40	2.40	2.90
	Widowed	2.39	2.39	2.89
Chronic Disease				
	With	2.78	2.96	3.28
	Without	2.67	2.86	3.18
Health Status				
	Excellent	2.65	2.85	3.16
	Very Good	2.75	2.93	3.25
	Good	2.59	2.73	3.10
	Fair	3.33	3.66	3.83
	Poor	1.50	1.50	2
Education				
First Level				
	Primary	2.80	2.80	3.30
	Secondary	2.25	2.25	2.75
	High School	2.41	2.55	2.91
	Overall	2.44	2.55	2.95
Second Level				
	Diploma	2.36	2.53	2.86
	Bachelor	2.78	2.98	3.29
	Overall	2.68	2.87	3.18
Third Level				
	Higher Diploma	2.22	2.31	2.73
	Master's	3.10	3.40	3.60
	PhD	5.30	6.10	5.80
	Overall	3.13	3.43	3.63
Income				
< Average				
	< 3,000	2.62	2.77	3.13
	3,000 - 5,999	2.45	2.56	2.95
	Overall	2.54	2.67	3.05
> Average				
	6,000 - 8,999	2.61	2.77	3.11
	9,000 - 11,999	3.00	3.29	3.51
	12,000 - 14,999	2.48	2.66	2.98
	15,000 <	2.92	3.17	3.43
	Overall	2.75	2.96	3.25

Cont'd Table 55

		Average[1]	Average[2]	Average[3]
PHI				
With		2.76	2.95	3.26
Level of PHI				
	VIP	3.56	3.94	4.06
	A	2.35	2.49	2.86
	B	2.42	2.55	2.93
	C	3.31	3.53	3.82
Without		2.60	2.79	3.1

Abbreviations: [1]The last option in the payment scale is based on adding the width of the option before it to 5%. [2]The last option was set based on the maximum percentage that other counties with long established healthcare systems use (8%). [3]All the options were based on the order of the options.

Table 56 Summary of Chi 2 and Fisher Exact Tests (Last Study)

Independent Variable		W2P	unW2P	Overall	P-value	Chi2 Statistic
Gender*					0.11	-
	Male	**329**	**114**	**443**		
	Female	**106**	**51**	**157**		
Total		**435**	**165**	**600**		
Age					**0.03**	11.68
	18 - 25	**101**	**25**	**126**		
	26 - 35	**182**	**91**	**273**		
	36 - 45	**96**	**35**	**131**		
	46 - 55	**43**	**11**	**54**		
	56 - 65	**8**	**3**	**11**		
	65 <	**5**	**0**	**5**		
Nationality*					**0.00**	-
	Saudi	**339**	**95**	**434**		
	Non-Saudi	**96**	**70**	**166**		
Marital Status*					0.99	-
	Single	**171**	**67**	**238**		
	Married	**245**	**92**	**337**		
	Divorced	**10**	**3**	**13**		
	Widowed	**9**	**3**	**12**		
Education					0.23	9.28
	Primary	**10**	**5**	**15**		
	Secondary	**8**	**5**	**13**		
	High School	**55**	**26**	**81**		
	Diploma	**80**	**20**	**100**		
	Bachelor	**236**	**97**	**333**		
	Higher Diploma	**11**	**1**	**12**		
	Master's	**30**	**11**	**41**		
	PhD	**5**	**0**	**5**		
Employment*					0.88	-
	Employed	**381**	**146**	**527**		
	Unemployed	**54**	**19**	**73**		
Employed*					0.4	-
	Public Sector	**121**	**55**	**176**		
	Private Sector	**211**	**76**	**287**		
	SDU	**49**	**15**	**64**		
Total		**381**	**146**	**527**		
Unemployed					0.67	2.34
	Self-Employed	**2**	**1**	**3**		
	Public Pensioner	**5**	**0**	**5**		
	Private Pensioner	**1**	**0**	**1**		
	Student	**20**	**8**	**28**		
	Unemployed	**26**	**10**	**36**		
Total		**54**	**19**	**73**		

Cont'd Table 56

Independent Variable		W2P	unW2P	Overall	P-value	Chi2 Statistic
Income					0.16	7.82
	< 3,000	**70**	**38**	**108**		
	3,000 - 5,999	**63**	**29**	**92**		
	6,000 - 8,999	**98**	**31**	**129**		
	9,000 - 11,999	**63**	**26**	**89**		
	12,000 - 14,999	**61**	**21**	**82**		
	15,000 <	**80**	**20**	**100**		
PHI*					0.31	-
	With	**234**	**81**	**315**		
	Without	**201**	**84**	**285**		
Level of PHI*					**0.04**	-
	VIP	**32**	**5**	**37**		
	A	**91**	**28**	**119**		
	B	**56**	**17**	**73**		
	C	**55**	**31**	**86**		
Total		**234**	**81**	**315**		
PHI Provider*					0.76	-
	Employer	**222**	**78**	**300**		
	Family	**12**	**3**	**15**		
	OOP	**0**	**0**	**0**		
Total		**234**	**81**	**315**		
Chronic Disease*					**0.00**	-
	With	**43**	**5**	**48**		
	Without	**392**	**160**	**552**		
Health Status					0.1	7.58
	Excellent	**238**	**108**	**346**		
	Very Good	**148**	**38**	**186**		
	Good	**42**	**16**	**58**		
	Fair	**6**	**2**	**8**		
	Poor	**1**	**1**	**2**		
Increase*					**0.00**	-
	Increase	**100**	**62**	**162**		
	Otherwise	**335**	**103**	**438**		
Maintain*					**0.00**	-
	Maintain	**252**	**58**	**310**		
	Otherwise	**183**	**107**	**290**		
Obtain*					**0.03**	-
	Obtain	**83**	**45**	**128**		
	Otherwise	**352**	**120**	**472**		
Slice 1*					**0.00**	-
	MOH	**100**	**62**	**162**		
	Other Provisions	**335**	**103**	**438**		
Slice 2*					**0.04**	-
	Private Sector Only	**82**	**44**	**126**		
	Other Provisions	**353**	**121**	**474**		

Cont'd Table 56

Independent Variable		W2P	unW2P	Overall	P-value	Chi2 Statistic
Slice 3*					0.47	-
	SDU Only	**1**	**1**	**2**		
	Other Provisions	**434**	**164**	**598**		
Slice 4*					1.0	-
	MOH & Private Sector	**66**	**25**	**91**		
	Other Provisions	**369**	**140**	**509**		
Slice 5*					**0.00**	-
	MOH & SDU	**100**	**21**	**121**		
	Other Provisions	**335**	**144**	**479**		
Slice 6*					**0.00**	-
	All Three Provisions	**86**	**12**	**98**		
	Other Provisions	**349**	**153**	**502**		

*The dependent variable that violated the assumptions of Chi2, which requires minimum of five observations in each cell. Therefore, Fisher exact test was performed.

Note: if the variable does not show Total, this means that the total of those who are willing is 435, unwilling 165, and overall 600.

Table 57 Mann Whitney Test

Variable	Category	Observation	Rank Sum	Expected	Z statistic	*P*-value
Gender					-3.099	**0.00**
	Male	329	75139	71722		
	Female	106	19691	23108		
	Total	**435**	**94830**	**94830**		
Nationality					0.338	0.73
	Saudi	339	73541.5	73902		
	Non-Saudi	96	21288.5	20928		
Employment					-1.457	0.14
	Employed	381	84291.5	83058		
	Unemployed	54	10538.5	11772		
PHI					-1.472	0.14
	With	234	52897	51012		
	Without	201	41933	43818		
Chronic Disease					-0.234	0.81
	With	43	9553	9374		
	Without	392	85277	85456		
Increase					3.246	**0.00**
	Increase	100	18292.5	21800		
	Other groups	335	76537.5	73030		
Maintain					-0.997	0.32
	Maintain	252	56174.5	54936		
	Other groups	183	38655.5	39894		
Obtain					-2.248	**0.02**
	Obtain	83	20363	18094		
	Other groups	252	74467	76736		
Slice 1					3.246	**0.00**
	MOH	100	18292.5	21800		
	Other Prov[1]	335	76537.5	73030		
Slice 2					-2.083	**0.03**
	Private S[2]	82	19968.5	17876		
	Other Prov	353	74861.5	76954		
Slice 3					-1.435	0.15
	SDU	1	394.5	218		
	Other Prov	434	94435.5	94612		
Slice 4					0.943	0.34
	MOH & P-S[3]	66	13519	14388		
	Other Prov	369	81311	80442		
Slice 5					-1.33	0.18
	MOH & S[4]	100	23246	21800		
	Other Prov	335	71584	73030		
Slice 6					-0.647	0.51
	All Prov[5]	86	19409.5	18748		
	Other Prov	349	75420.5	76082		

Abbreviations: [1]Other provision.[2]Sector. [3]MOH & private sector. [4]MOH & SDU. [5]All provisions.

Note: if the variable does not show Total, this means that the total observation is 435, rank sum 94830, and expected 94830.

Table 58 Kruskal-Wallis Test Results

Variable	Category	Observation	Rank Sum	Chi 2	*P*-value
Age				2.01	0.84
	18 - 25	101	22083		
	26 - 35	182	39080		
	36 - 45	96	22159		
	46 - 55	43	8735.5		
	56 - 65	8	1821		
	65 <	5	951.5		
Marital Status				3.22	0.35
	Single	171	35383.5		
	Married	245	55701.5		
	Divorced	10	1941.5		
	Widowed	9	1803.5		
Education				15.55	**0.02**
	Primary	10	2337.5		
	Secondary	8	1526		
	High School	55	10865.5		
	Diploma	80	15596.5		
	Bachelor	236	53256		
	Higher Diploma	11	2109.5		
	Master's	30	7228		
	PhD	5	1911		
Employed				6.14	**0.04**
	Public Sector	121	20681		
	Private Sector	211	41924		
	SDU	49	10166		
Un-Employed				13.62	**0.00**
	Self-employed	2	94.5		
	Public Pensioner	5	65.5		
	Private Pensioner	1	7.5		
	Unemployed	26	856		
	Student	20	461		
Income				4.69	0.45
	< 3,000	70	15121.5		
	3,000 - 5,999	63	13122.5		
	6,000 - 8,999	98	20857.5		
	9,000 - 11,999	63	14901		
	12,000 - 14,999	61	12107.5		
	15,000 <	80	18720		
Level pf PHI				22.04	**0.00**
	VIP	32	4709.5		
	A	91	9123		
	B	56	5809.5		
	C	55	7853		
PHI Provider				0.07	0.77
	Employer	222	26021		
	OOP	0	0		
	From Family	12	1474		

Cont'd Table 58

Variable	Category	Observation	Rank Sum	Chi 2	*P*-value
Health Status				1.73	0.78
	Excellent	238	51156.5		
	Very Good	148	32986.5		
	Good	42	8940		
	Fair	6	1605.5		
	Poor	1	141.5		
Access Three				12.09	**0.00**
	Increase	100	18292.5		
	Maintain	252	56174.5		
	Obtain	83	20363		
Access Six				15.5	**0.00**
	Slice 1	100	18292.5		
	Slice 2	82	19968.5		
	Slice 3	1	394.5		
	Slice 4	66	13519		
	Slice 5	100	23246		
	Slice 6	86	19409.5		

Table 59 Variance Inflation Factor before Merging Categories

Independent Variable	Observation	VIF	1/VIF
Gender	**Base Category (Female)**		
	Male	1.55	0.64
Age	**Base Category (18 - 25)**		
	26 - 35	2.50	0.40
	36 - 45	3.10	0.32
	46 - 55	2.50	0.40
	56 - 65	1.40	0.71
	65 <	1.71	0.58
Nationality	**Base Category (Non-Saudis)**		
	Saudis	5.73	0.17
Marital Status	**Base Category (Single)**		
	Married	1.64	0.61
	Divorced	1.18	0.84
	Widowed	1.45	0.68
Education	**Base Category (Primary)**		
	Secondary	2.02	0.49
	High School	7.10	0.14
	Diploma	8.86	0.11
	Bachelor	14.86	0.06
	Higher Diploma	2.12	0.47
	Master	4.95	0.20
	PhD	1.56	0.64
Employment	**Base Category (Unemployed)**		
	Employed	2.87	0.34
Income	**Base Category (< 3,000)**		
	3,000 - 5,999	2.72	0.36
	6,000 - 8,999	3.58	0.27
	9,000 - 11,999	3.38	0.29
	12,000 - 14,999	3.56	0.28
	15,000 <	4.62	0.21
PHI	**Base Category (Without PHI)**		
	With PHI	3.74	0.26
Chronic Disease	**Base Category (Without)**		
	With	1.35	0.74
Health Status	**Base Category (Poor)**		
	Fair	5.16	0.19
	Good	28.04	0.03
	Very Good	66.46	0.01
	Excellent	75.42	0.01
Access	**Base Category (Slice 1)**		
	Slice 2	7.25	0.13
	Slice 3	1.09	0.91
	Slice 4	1.82	0.54
	Slice 5	1.81	0.55
	Slice 6	omitted	-
Access of Three	**Base Category (Increase)**		
	Maintain	omitted	-
	Obtain	omitted	-
Mean VIF		8.40	

Table 60 Variance Inflation Factor after Merging Categories

Independent Variable	Observation	VIF[1]	1/VIF	VIF[2]	1/VIF
Gender	**Base Category (Female)**				
	Male	1.50	0.66	1.46	0.68
Age	**Base Category (18 - 25)**				
	26 - 35	2.37	0.42	2.31	0.43
	36 - 45	2.90	0.34	2.84	0.35
	46 - 55	2.19	0.45	2.18	0.45
	56 <	1.49	0.67	1.49	0.67
Nationality	**Base Category (Non-Saudis)**				
	Saudis	5.47	0.18	5.46	0.18
Marital Status	**Base Category (Single)**				
	Married	1.60	0.62	1.60	0.62
	Divorced & Widowed	1.36	0.73	1.36	0.73
Education	**Base Category (First Level)**				
	Undergraduate	1.71	0.58	1.70	0.58
	Postgraduate	1.68	0.59	1.67	0.59
Employment	**Base Category (Unemployed)**				
	Employed	2.07	0.48	2.06	0.48
Income	**Base Category (< Average)**				
	6,000 <	1.96	0.51	1.93	0.51
PHI	**Base Category (Without PHI)**				
	With PHI	3.39	0.29	2.50	0.40
Chronic Disease	**Base Category (Without)**				
	With	1.31	0.76	1.30	0.76
Health Status	**Base Category (Fair & Poor)**				
	Good	6.33	0.15	6.33	0.15
	Very Good	14.32	0.06	14.32	0.06
	Excellent	16.30	0.06	16.28	0.06
Access	**Base Category (Slice 1)**			excluded	
	Slice 2	6.70	0.14		
	Slice 3	1.08	0.93		
	Slice 4	1.75	0.57		
	Slice 5	1.73	0.57		
	Slice 6	omitted	-		
Eligibility	**Base Category (Increase)**				
	Maintain	omitted	-	2.67	0.37
	Obtain	omitted	-	5.94	0.16
Mean VIF		3.77		3.97	

Abbreviations: [1]VIF including the *Access* and *Access of Three* variables. [2]VIF when *Access* variable was excluded.

Chapter 8: Samples

Sample 1 Study Information Sheet

INFORMATION SHEET

Purpose of the Study. As a part of my PhD, I have to carry out a research study. This study is about examining the various methods to fund healthcare services provided in the Ministry of Health healthcare facilities. It also investigates the willingness of the Saudi population to pay to improve the level of the healthcare services that are provided to them.

What will the study involve? You will be given a questionnaire containing questions about you such as your age, gender, nationality, marital status, level of education, if you are employed or not, health status, and the healthcare cover that you have. You will also be given some details about some of the financial methods used internationally to fund healthcare services, and you will be asked to rank them in order of preference. If you have time, I need you to fill out this questionnaire now and when you have finished I will collect it from you.

Why have you been asked to take part? There is no reason for choosing you specifically, as the methodology of this research is to randomly select members of the population.

Do you have to take part? No, but if you are willing to participate in this study, there are consent forms attached which if you sign them will indicate that you have read this information sheet, that you understand it and that you are willing to participate to this study. You keep one copy of the signed consent form and I keep the other. You have the full right to withdraw before the study commences or to discontinue after the data collection starts. You can ask me to remove your questionnaire up to a month after the data is collected, and if you do so I guarantee you that your questionnaire will be destroyed.

Will your participation in the study be kept confidential? I assure you that no clues to your identity will appear in my thesis. You will be an anonymous participant.

What will happen to the information which you give? The data that you will give in the questionnaire will be kept confidential for the duration of the study, and available only to me and my research supervisors. Any extracts from what you will state in the questionnaire that are quoted in the thesis will be entirely anonymous. The questionnaire will be securely stored in a locker in my secure lab, and by the completion of the project, it will be retained for a minimum of ten years in my supervisor's secure office after which time it will be destroyed.

What will happen to the results? It is the overall results of all the questionnaires will be presented in my thesis; there will be no discussion of individual questionnaires. My thesis will be seen by my supervisors, a second marker and the external examiner. Also the thesis will be read by future students on the course, and may be published in the future in an academic research journal.

What are the possible disadvantages of taking part? Besides the time it takes to fill out the questionnaire I do not envisage any negative consequences for you in taking part. It is possible that talking about your experience in this way may cause some distress. At the end of the procedure, when I collect the questionnaire, I will discuss with you how you found the experience and how you are feeling. If you felt distressed while filling the questionnaire or after I collect it, you can contact the Physician Hossain Hotaila on 00966545856735, or you

can contact the Physician Basha Mohammad on 00966534947572, both of who have agreed to help during the period of the study. Also if you have any inquiries about the health insurance you can contact 0112021300.

Who has reviewed this study? The attached questionnaire is approved by the Social Research Ethics Committee from the University College Cork in Ireland.

Any further queries?

For more information you can contact me on:

Salem Al Mustanyir

Telephone: In Saudi Arabia 00966568688292, In Ireland 003538701047670E-mail: 114223556@umail.ucc.ie

You can also contact my supervisor for additional information on:

Dr. Mark Mulcahy

E-mail: Mark.Mulcahy@ucc.ie

If you agree to take part in the study, please sign the consent form overleaf.

Sample 2 Study Consent Form

CONSENT FORM

I……agree to participate in Salem Al Mustanyir's research study. The purpose and nature of the study has been explained to me in writing, and I am participating voluntarily. I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating. I understand that I can withdraw permission to use the data within a month of the questionnaire collection, in which case the material will be destroyed. Also I understand that anonymity will be ensured in the write-up by disguising my identity, and I understand that disguised extracts from my questionnaire may be quoted in the thesis and any subsequent publications if I give permission below:

I agree to quotation/publication of extracts from my questionnaire ☐

I do not agree to quotation/publication of extracts from my questionnaire ☐

Signed: ……..…. Date: ……..

Sample 3 Study First Data Instrument

Introduction

In Saudi Arabia oil revenues are used to fund the public budget. Oil prices decreased from $110 in 2014 to a low of $22 per barrel in 2016. As a result Saudi Arabia reported budget deficits in each of the last four years. This is unsustainable and in light of this situation, this survey was developed to investigate the sustainability of healthcare services that are provided to the population of Saudi Arabia, and the most suitable method for funding them into the future.

Participant Background

Gender?

☐ Male ☐Female

Age?

☐18-25 ☐26-35 ☐36-45 ☐46-55 ☐56-65 ☐More than 65

Nationality?

☐Saudi ☐Non-Saudi

Current Marital Status?

☐ Single ☐Married ☐ Divorced ☐ Widowed

Level of Education?

☐ Primary ☐ Secondary ☐ High School ☐ Diploma ☐Bachelor ☐Higher Diploma ☐Master ☐PhD

Are you currently employed?

☐Yes

If Yes, then what Sector do you work in?

☐ Public Sector ☐ Private Sector ☐ Security, Defence, or Public University.

☐No

If No, then are you:

☐ Self-employed ☐ Public Pensioner ☐ Private Pensioner ☐ Unemployed ☐ Student

What is your Monthly Total Income (Including any Government Compensations)

☐ Less than SR 3,000 ☐ SR 3,000 – SR 5,999 ☐ SR 6,000 – SR 8,999

☐ SR 9,000 – SR 11,999 ☐SR 12,000 – SR 14,999 ☐ SR 15,000 or more

Do you have Private Health Insurance?

☐Yes

If Yes:

What level of cover are entitled to? (Please State) _ _ _ _ _ _ _ _ _ _ _

Who provided you with this health insurance?

☐My Employer

☐Out of Pocket

☐ I am included in the eligibility of one of my family. If so, then where does the major eligible work? ☐ Public Sector ☐ Private Sector

☐No

Do you have Chronic Illnesses?

☐Yes ☐ No

How would you evaluate your Current Health Status?

☐ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor

Section A

Question 1- Are you eligible to receive healthcare outside of the Ministry of Health healthcare facilities (For example: The Security, Defense, University, Specialist, ARAMCO, and Private Sector's Healthcare Facilities are out the Ministry of Health)?

☐ Yes

If Yes, then proceed to **question 2** in **this section.**

☐ No

If No, and you are in receipt of income, proceed to **Section B** and answer **question 1 only.**

If No, and you do not receive any income, proceed to **Section B** and answer **question 4 only.**

Question 2- Are you eligible to receive healthcare services in private healthcare facilities?

☐ Yes

If Yes, and you are Saudi in receipt of income, proceed to **Section B** and answer **question 2 only.**

If Yes, and you are non-Saudi in receipt of income, proceed to **Section B** and answer **question 3 only.**

If Yes, and you are Saudi and receive no income, proceed to **Section B** and answer **question 5 only.**

If Yes, and you are non-Saudi and receive no income, proceed to **Section B** and answer **question 6 only.**

☐ No

If No, then continue to **question 3** in **this section.**

Question 3- Are you eligible to receive healthcare services in governmental healthcare facilities outside of the Ministry of Health? (Such as Security, Defence, University, Specialist, and ARAMCO)

☐ Yes

If Yes, and you are Saudi in receipt of income, proceed to **Section B** and answer **question 2 only**.

If Yes, and you are non-Saudi in receipt of income, proceed to **Section B** and answer **question 3 only**.

If Yes, and you are Saudi and receive no income, proceed to **Section B** and answer **question 5 only**.

If Yes, and you are non-Saudi and receive no income, proceed to **Section B** and answer **question 6 only**.

☐ No

Section B

Question 1-Would you be willing to pay a percentage of your total income to increase your access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ **Yes** ☐ **No**

Question 2- Would you be willing to pay a percentage of your total income to keep your access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ **Yes** ☐ **No**

Question 3- Would you be willing to pay a percentage of your total income to obtain access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ **Yes** ☐ **No**

Question 4-Would you be willing to pay a percentage of the total income of the person who you are dependent on or from any income you might receive in the future to increase your access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ **Yes** ☐ **No**

Question 5-Would you be willing to pay a percentage of the total income of the person who you are dependent on or from any income you might receive in the future to maintain access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ **Yes** ☐ **No**

Question 6-Would you be willing to pay a percentage of the total income of the person who you are dependent on or from any income you might receive in the future to obtain access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ **Yes** ☐ **No**

Section C

If you had to pay, then rank the following options based on the most appropriate for you. Indicate 1 for to choose your most preferred option, indicate 2 for your second preference and 3 for your least preferred option.

For the first and the second financing options below a percentage will be deducted from your total income. If you are employed or a pensioner, this percentage will be deducted from your salary, otherwise this percentage will be deducted from whatever income you receive (i.e. self-employment income, social welfare, citizen account, disability benefits, or studying rewards). If you are unemployed and in receipt of benefits from the human resources development fund, this percentage will be deducted from this benefit. If you are unemployed and not in receipt of benefit from the human resources development fund, then the percentage will be deducted from the total income of the person on who you are dependent.

1	**Taxation** The percentage that will be deducted from the total income will be deposited in the Ministry of Health account to cover public healthcare costs.	
2	**Medical Savings Accounts** The percentage that will be deducted from the total income will be deposited in a personal account (i.e. belonging to you) to cover your healthcare costs. The account will be controlled by the Ministry of Health, and if your account balance runs out, then the Ministry of Health will intervene to cover any further costs. In case of death, the remaining fund goes to your family.	
3	**Private Health Insurance** You will purchase health insurance directly from insurance companies, which in turn will cover your healthcare costs in the Ministry of Health healthcare facilities. The health insurance will be compliant with Sharia rules, and can be obtained by any person no matter his/her age or health status. The health insurance will be priced based on the whole community level of health. If you receive a low income the Ministry of Health will pay a part of the premiums. If you receive no income, the Ministry of Health will pay a part of the premiums and the rest will be paid by the person on who you are dependent.	

THANK YOU

For Support services:

If you felt distressed while filling the questionnaire, you can contact the Physician Hossain on 00966545856735, or you can contact the Physician Basha on 00966534947572, those two physicians are ready to help during the period of the study.

If you have any further inquiries or need other help you can contact me

Salem Al Mustanyir

Telephone from Saudi Arabia: 00966568688292, from Ireland: 00353871047670

By e-mail 114223556@umail.ucc.ie

Also for more support you can contact my supervisor:

Dr. Mark on:Mark.Mulcahy@ucc.ie

If you have any inquiries regarding the insurance in Saudi Arabia you can call:

The Saudi Council of Cooperative Health Insurance

0112021300

Sample 4 The First Study Ethical Approval E-mail

You can go ahead and start sampling now Salem – the email I sent you below is your final approval.

Good luck with it all
Best
Liz

From: Salem Hadi S Al Mustanyir [mailto:114223556@umail.ucc.ie]
Sent: 18 December 2017 11:58

To: Ethics Committee, Social Research
Subject: Re: Log 2017-131 - Approved

Hi Liz

Thanks for your replay

Great, thanks very much for your help Liz.

So, can you send me the final approval letter to start my sampling today please?

Kind Regards
Salem

Dear Salem
I have heard back from the reviewer and he has now approved your application Log 2017-131"Healthcare Insurance Options for Saudi Arabia" no further resubmission required.

The committee wishes you every success with your research.
All the best

Sample 5 Study Second Data Instrument

Introduction

In Saudi Arabia oil revenues are used to fund the public budget. Oil prices decreased from $110 in 2014 to a low of $22 per barrel in 2016. As a result Saudi Arabia reported budget deficits in each of the last four years. This is unsustainable and in light of this situation, a study was carried out last year in Riyadh to investigate people willingness to pay to fund Saudi Ministry of Health and to improve the healthcare services that are provided to them. It was found that the majority expressed a willingness to pay; therefore, this survey was developed to investigate how much people are willing to pay to ensure the sustainability of and to improve the healthcare services that are provided to the population of Saudi Arabia.

Participant Background

Gender?

☐ Male ☐ Female

Age?

☐ 18-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ 56-65 ☐ More than 65

Nationality?

☐ Saudi ☐ Non-Saudi

Current Marital Status?

☐ Single ☐ Married ☐ Divorced ☐ Widowed

Level of Education?

☐ Primary ☐ Secondary ☐ High School ☐ Diploma ☐ Bachelor ☐ Higher Diploma ☐ Master ☐ PhD

Are you currently employed?

☐ Yes
If Yes, then what Sector do you work in?
☐ Public Sector ☐ Private Sector ☐ Security, Defence, or Public University.

☐ No
If No, then are you:
☐ Self-employed ☐ Public Pensioner ☐ Private Pensioner ☐ Unemployed ☐ Student

What is your Monthly Total Income (Including any Government Compensations)

☐ Less than SR 3,000 ☐ SR 3,000 – SR 5,999 ☐ SR 6,000 – SR 8,999

☐ SR 9,000 – SR 11,999 ☐ SR 12,000 – SR 14,999 ☐ SR 15,000 or more

Do you have Private Health Insurance?

☐ Yes

If Yes:

What level of cover are entitled to? (Please State) _ _ _ _ _ _ _ _ _ _ _

Who provided you with this health insurance?
☐ My Employer
☐ Out of Pocket
☐ I am included in the eligibility of one of my family. If so, then where does the major eligible work? ☐ Public Sector ☐ Private Sector

☐ No

Do you have Chronic Illnesses?

☐ Yes ☐ No

How would you evaluate your Current Health Status?

☐ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor

Section (A) Answer ALL the THREE Questions

Question 1: Are you eligible to receive healthcare outside of the Ministry of Health healthcare facilities (For example: The Security, Defense, University, Aramco, Specialist, and Private Sector's Healthcare Facilities are out the Ministry of Health)?

☐ Yes

If Yes, then proceed to **question 2** in **this section.**

☐ No

If No, and you are in receipt of income, then from **Section (B)** answer **only question 1.**
If No, and you do not receive any income, then from **Section (B)** answer **only question 4.**

Question 2: Are you eligible to receive healthcare services in private healthcare facilities?

☐ Yes

If Yes, and you are Saudi in receipt of income, then from **Section (B)** answer **only question 2.**
If Yes, and you are non-Saudi in receipt of income, then from **Section (B)** answer **only question 3.**
If Yes, and you are Saudi and receive no income, then from **Section (B)** answer **only question 5.**
If Yes, and you are non-Saudi and receive no income, then from **Section (B)** answer **only question 6.**

☐ No

If No, then continue to **question 3** in **this section.**

Question 3: Are you eligible to receive healthcare services in governmental healthcare facilities outside of the Ministry of Health? (Such as Security, Defence, University, Aramco, and Specialist)

☐ Yes

If Yes, and you are Saudi in receipt of income, then from **Section (B)** answer **only question 2.**
If Yes, and you are non-Saudi in receipt of income, then from **Section (B)** answer **only question 3.**
If Yes, and you are Saudi and receive no income, then from **Section (B)** answer **only question 5.**
If Yes, and you are non-Saudi and receive no income, then from **Section (B)** answer **only question 6.**

☐ No

Section (B) Please Answer ONLY ONE Question Based on the Guidance of Section (A)

Question 1: What range of percentage of your total income are you willing to pay to increase your access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ Zero ☐ more than Zero & less than 1% ☐ 1% or more & less than 2% ☐ 2% or more & less than 3%
☐ 3% or more & less than 4% ☐ 4% or more & less than 5% ☐ 5% or more

Question 2: What range of percentage of your total income are you willing to pay to maintain your access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ Zero ☐ more than Zero & less than 1% ☐ 1% or more & less than 2% ☐ 2% or more & less than 3%
☐ 3% or more & less than 4% ☐ 4% or more & less than 5% ☐ 5% or more

Question 3: What range of percentage of your total income are you willing to pay to obtain access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ Zero ☐ more than Zero & less than 1% ☐ 1% or more & less than 2% ☐ 2% or more & less than 3%
☐ 3% or more & less than 4% ☐ 4% or more & less than 5% ☐ 5% or more

Question 4: What range of percentage of the total income of the person on whom you are dependent or from any income you might receive in the future are you willing to pay to increase your access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ Zero ☐ more than Zero & less than 1% ☐ 1% or more & less than 2% ☐ 2% or more & less than 3%
☐ 3% or more & less than 4% ☐ 4% or more & less than 5% ☐ 5% or more

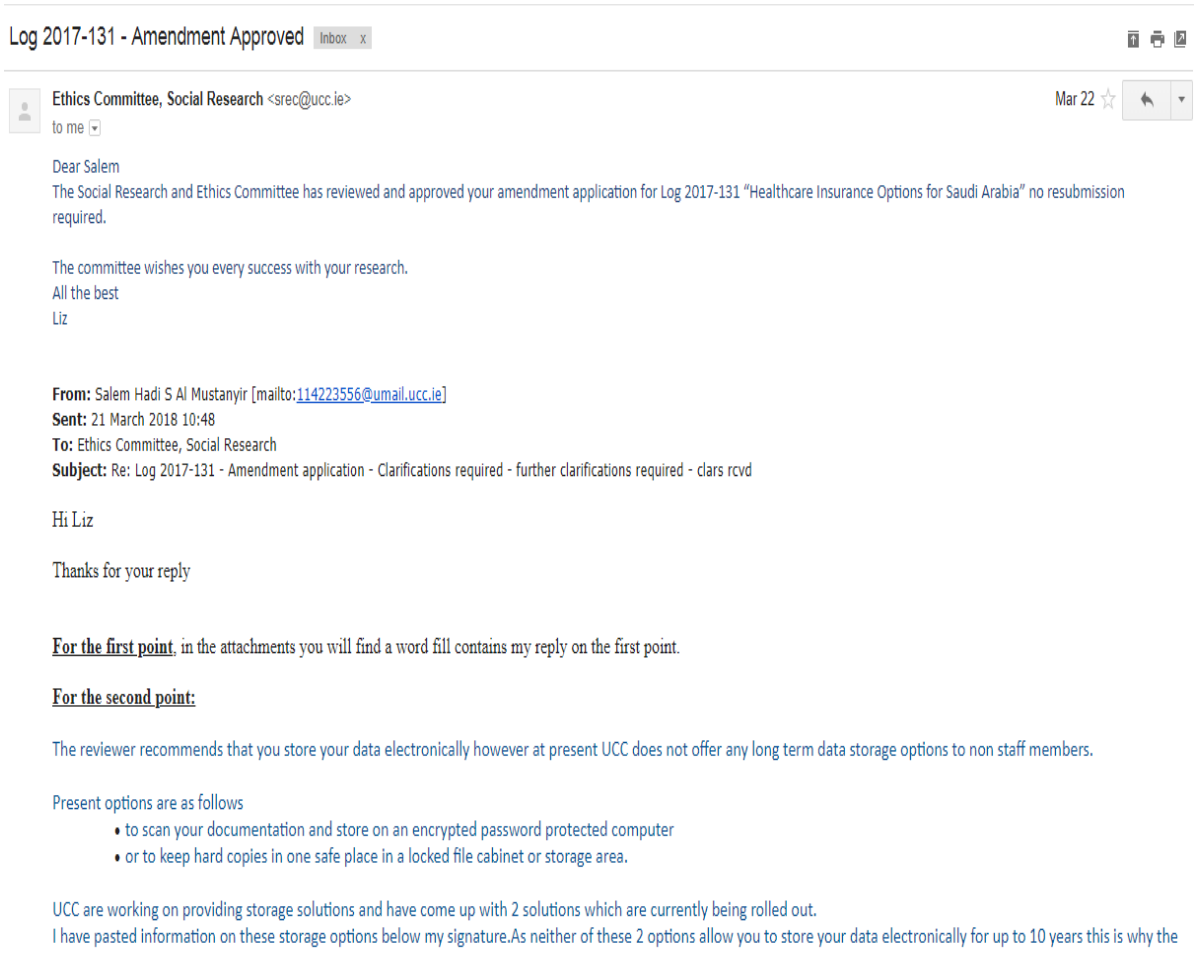
Question 5: What range of percentage of the total income of the person on whom you are dependent or from any income you might receive in the future are you willing to pay to maintain access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ Zero ☐ more than Zero & less than 1% ☐ 1% or more & less than 2% ☐ 2% or more & less than 3%
☐ 3% or more & less than 4% ☐ 4% or more & less than 5% ☐ 5% or more

Question 6: What range of percentage of the total income of the person on whom you are dependent or from any income you might receive in the future are you willing to pay to obtain access to the healthcare services that are provided by the Ministry of Health's healthcare facilities?

☐ Zero ☐ more than Zero & less than 1% ☐ 1% or more & less than 2% ☐ 2% or more & less than 3%
☐ 3% or more & less than 4% ☐ 4% or more & less than 5% ☐ 5% or more

Sample 6 The Second Study Ethical Approval E-mail



Log 2017-131 - Amendment Approved Inbox x

Ethics Committee, Social Research <srec@ucc.ie> Mar 22

to me

Dear Salem
The Social Research and Ethics Committee has reviewed and approved your amendment application for Log 2017-131 "Healthcare Insurance Options for Saudi Arabia" no resubmission required.

The committee wishes you every success with your research.
All the best
Liz

From: Salem Hadi S Al Mustanyir [mailto:114223556@umail.ucc.ie]
Sent: 21 March 2018 10:48
To: Ethics Committee, Social Research
Subject: Re: Log 2017-131 - Amendment application - Clarifications required - further clarifications required - clars rcvd

Hi Liz

Thanks for your reply

For the first point, in the attachments you will find a word fill contains my reply on the first point.

For the second point:

The reviewer recommends that you store your data electronically however at present UCC does not offer any long term data storage options to non staff members.

Present options are as follows

- to scan your documentation and store on an encrypted password protected computer
- or to keep hard copies in one safe place in a locked file cabinet or storage area.

UCC are working on providing storage solutions and have come up with 2 solutions which are currently being rolled out.
I have pasted information on these storage options below my signature.As neither of these 2 options allow you to store your data electronically for up to 10 years this is why the

Sample 7 Shapiro-Wilk Test for the Levels of Willingness to Pay (Consumption)

User: saleem

```
1 . swilk LEVELofW2P

                    Shapiro-Wilk W test for normal data

    Variable |        Obs        W         V         z       Prob>z
-------------+-------------------------------------------------------
  LEVELofW2P |        435    0.96434    10.582     5.635    0.00000
```

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