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Removal of User Fees in Public Health Facilities in Kenya: The Inequality Effect on Health Care Utilisation between the Poor and the Non-Poor.

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List of Acronyms

CBS	Central Bureau of Statistics
ERS	Economic Recovery Strategy for Wealth and Employment Creation
IMF	International Monetary Fund
KDHS	Kenya Demographic and Health Survey
KNBS	Kenya National Bureau of Statistics
MNL	Multinomial Logistic
OR	Odds Ratio
WB	World Bank
MDGs	Millennium Development Goals
MOMS	Ministry of Medical Services
MOPHS	Ministry of Public Health and Sanitation
OOP	Out-of-Pocket
PHC	Public Health Care
NPEP	National Poverty Eradication Paper
HSDP	Health Sector Development Plan
WHO	World Health Organisation
NHIF	National Hospital Insurance Fund

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Abstract

This study investigated the effect of the reducing user fees in public health care facilities on utilization in Kenya between 1998 and 2009. User fees were introduced in Kenya in 1989 and substantially waived for children below five years and special cases for adult in 2004 in all public facilities. Utilization of public facilities fell after the introduction, while the use of private went up in the period after introduction. Removing the user fees was found to increase the user of public facilities for both the poor and the non-poor, but the poor in urban areas were not equally likely use public facilities as their counterparts in rural areas.

The poor in the urban though less vulnerable than had been during the user fees period, they were less likely seek health care attention after ill-health was reported compare to the poor in the rural areas. The analysis of the urban versus rural may fail to highlight this problem since the non-poor compensate for the poor not seeking health care services.

Relevance to Development Studies

A well functioning health care system is essential for development of any nation. Every state strives to provide the best affordable health services to her citizens to ensure their productivity. The debate on how well to provide health care to citizens for both developing nations as well as the developed nations has dominated global health agendas for years. The debate on user fees introduction, provision of free drugs to HIV/AIDS victims to abolishing of user fees altogether has spanned decades on top of global agenda. Inequality in health care access has caught the attention of this debate, reinforcing the call for abolition of fees for equitable health care provision.

Key word: user fees, utilization, poor, non-poor, health care.

Chapter I
Introduction

Provision of health care services in most of Africa and developing world in general has been on global health agenda for decades. First, it was the proposal to introduce user fees in public health facilities by the World Bank (WB) and other international institutions to bridge a financing that gap as resources to health sector decline at the backdrop of rising demand (Akin et al. 1987). Second, came the call to abolish these fees from public health facilities on grounds that they were regressive, and excluded the poor from receiving health care (Gilson 1997). The fees were also expected to reduce unnecessary health care demand that exerted pressure on available resources. However, user fees may have served to erect just another barrier to health care access for the poor, since they never had any frivolous demand anyway. Though the two sides of the debate have been generated by different scenarios; one by inadequate funding and the other by deterioration of health outcomes, it would seem that policymakers and politician alike have realised the leverage power of the 'user fees disguised policies' to manage health care demand and sway it as required. The bulging health care demand that contrasted with fast shrinking government revenues called for solution to reorganise the health care financing. The crisis in the developed countries at the time made it difficult donor funding to plug in the budget deficit in the developing countries.

The introduction of fees was found to disfavour the poor, associated with fall in health care outcome indicators and generally described as discriminative. The call to abolish them has, unlike its introduction has been prompted by worries of rising inequity and inequality in health care access across socioeconomic groups. The fears of falling share of the poor using health care (indicated by worsening health outcomes) despite their ill-health raised concern that user fees could be mounting another form of barrier to access services for the poor. Just as user fees were used to tame the rising demand (regardless of whether the poor really had this frivolous demand), they have once again been eliminated from the equation to balance the scales. The call to drop the fees has come from the big players in the global health care policy players such as the WHO, UNICEF and even the WB itself.

It has been estimated that abolition of user fees could lead to improvement in health outcome indicators as well as saving thousands of lives annually (James et al. 2005). However, the working of health policies like the exemption or abolition of the user fees depends mainly on the design of the policy and the context within which it is applied. Removing user fees may encourage more patients to seek health care but kill the morale of the health professional, especially if user fees were collected and used at the facility and no supplementary funds are availed to cater for the revenue lost. Introducing either user fees or removing them requires careful analysis of the environment within which they are supposed to work and their design is also critical (Gilson and Mills 1995). The possibilities of a policy having unintended results, given the complexity of macro-level nature of social policies cannot be ruled out. Providing free health care does not guarantee reaching the poor, and such services have been found to benefit non-poor. Waiving user fees in public health facilities intended to remove barriers to health care

for the poor could result in the non-poor switching non-poor from use of private facilities to public facilities, and little or no improvement in health care access.

After charging user fees in public health facilities for about fifteen years in Kenya, fees for children below five years of age were waived in 2004. This was heralded by call for the abolishment of fees in public facilities by global health leaders and researchers on grounds that charging fees in public health facilities was erecting extra barriers to the poor seeking health care attention. Reducing or removing the user fees for the poor would increase utilisation and improve deteriorating health outcomes, it was argued. Increased utilisation after the removal of the fees in health care facilities are average indicators and could be decomposed into socioeconomic groupings and rural – urban divide to explain the main sources of improvement.

The research problem, objective and the questions

The government had offered free health care from independence in 1963 to 1989, when patients were required to pay charges for health care provision in all government facilities. This was followed by a decline in health care utilisation and persistent deterioration of health outcomes from 1990s into 2000 that caused a serious concern for the health policy makers within the government and even at global level. The rollback of health indicators such as Maternal Mortality Rates (MMR), Child Mortality Rates (CMR) and Infant Mortality Rates (IMR) threatened to bring down decades of health achievements and presented a real challenge for the Millennium Development Goals (MDGs). It was observed that the poor were disproportionately burdened by the user fees and hence barred from accessing health care.

To address the plight of the poor and roll back the rising mortality rates, the government reviewed its cost sharing program in 2004 and waived user fees in health care facilities for all children below five years as well as special cases like malaria and tuberculosis for adults. However, given the current demographic patterns and the health care distribution inequality in the country, the policy designed to address the problems of the poor is likely to discriminate against the target population in terms of health care utilisation. With over 75% of the population still living in the rural areas where the infrastructure is poor and distance to the nearest health facility is larger compared to urban centres, the policy may fail to achieve its social objective of equity and may lead to a widening inequality in health care access between the rich and poor. Though the policy target may be the poor, the structural inequities inherent in the health care system may perpetuate inequalities beyond the existing levels if the design of the policy fails to recognise these imbalances.

The main objective of this study was to determine if waiving or reducing the user fees had an effect on the vertical[1] and horizontal[2] health care utilisation inequalities for children below five years, as measured by the increase or decrease in health care utilisation during the user fees and after they were waived. It is imperative for any

[1] Vertical inequality refers to differences across the various income groups
[2] Horizontal inequality refers to differentials within the same income group

government designing social policies to cushion its citizen on the effects on user fees to assess carefully the efficiency of the policy in meeting its target. Waiver policies in health care generally target the poor who are unable to raise the required out-of-pocket (OOP) charges for outpatient health services. User fees waivers are meant to increase utilisation mainly for the poor, since the health care demand for non-poor are not constrained by OOP charged at these facilities. Such policies are therefore meant to protect the poor form further falling into poor health for non use of health care services due to inability to meet the health bill, either outpatient or inpatient. Looking at the utilisation of the facilities for different socioeconomic groups enable us to understand better the overall outcome indicators, usually reported in demographic and health surveys explain the source (group) of improvement or decline in the indicator.

This research sought to address the following questions*: Did the policy on reduction or waiver of user fees reduce health care utilisation inequalities in Kenya? Did the policy intervention reduce inequality in utilisation rates between the urban and rural poor?*

The study analyses the utilisation of health facilities based on three categories: public, private and other facilities to trace the trend of facilities utilisation during and after the user fees period. The method of analysis was multinomial logistic regression (MNL) combined with difference –in-difference (DID) estimation technique. The results indicate that whereas the introduction of fees did not lead to a general decline in health utilisation for either poor or non-poor, it did lead to a fall in utilisation for the poor in urban areas. It also slowed down the utilisation rate for the poor subgroup of the population. The poor had a higher rate of increase in health care utilisation when fees were waived. The poor in the rural used more health care after waiver than their counterpart in urban areas. These results are confounding given the facility differences between the urban and rural areas.

Chapter II
Context

2.1 How did we find ourselves in user fees?

Kenya's position at independence was ranked above average Sub-Saharan Africa, her GDP growth as well as the human development indices such as school enrolment and health indicators were well on their way to improvement (Swamy 1994). This was attributed to stable macroeconomic environment, that was supported by favourable export markets for agricultural products like coffee tea and horticulture which the country could produce abundantly (WB 1989). However, depreciation of the currency in the 1980s and the increase in import prices (such as oil), led to souring of the debt value, declining value of exports and worsening trade balance and weakening revenue base, with the resulting balance of payments deficit piling pressure on financing gap for health and all other social sectors (WB 1988). This resource gap resulted in declining investment in social sectors including health that was exacerbated by the drought that followed the oil crisis in 1980s in the sub Saharan Africa, calling for alternative ways to finance health care. Free health care for all was not working at all and there was need to look for alternative financing to provide health care.

As many have pointed out that, crisis have always presents a golden opportunity to solve a long standing problems, the crisis of 1970s and 1980s had a message for all the nations; revise social your strategies, else you perish! With annual growth in population at its high of 3.8 (1980s) from 3.0 percent at independence (1963) and shrinking resource base from declining export value, currency depreciation that served to soar up the debt value, Kenya and many other countries in the developing world were unable to bear the crushing burden on the social sectors. The Structural Adjustment Programmes (SAPs) which were introduced by the international financial institutions (International Monetary Fund and World Bank) in 1980s sought to restructure the country's revenue sectors as well as its social sectors and reduce the its budget deficit. These SAPs, though targeting the productive sectors of the economy inadvertently affected the health sector, resulting in the introduction of user fees in all government health care facilities. The adoption of SAPs by the African economies came with strings attached; the reforms in the social sectors too. Countries had to restructure their health care financing to reduce the resource gap in health care provision. This policy therefore meant cutting back public spending on health and raising revenue from fees to bridge the resource gap, and thereby reduce the dependency on declining donor funding for social sectors. The SAPs policies, though meant to improve the revenue base for the health sector through cost sharing program, failed to appeal to the poor already hard pressed by the rising cost of living with more population falling below the poverty line every year.

The government of Kenya moved to introduce user fees in 1989 following the Bamako Initiative of 1987 and recommendations of WB, IMF and others, multilateral donor countries and organisations like WHO. The Bamako Initiative came to the consensus that with declining resources to provide adequate health care, all the achievements of past decades were at risk and with donor funding shrinking, alternative

funding was inevitable if the continent had to avoid a looming roll back of disease burden. The WB backed SAPs too had a similar argument that providing these services at a fees would reduce the frivolous demand, foster efficiency in health care delivery and provide the much needed funding to bridge the financing gap in health (Akin et al. 1987). This argument was not however embraced by all and some authors chose to be pessimistic about the ability of the user fees to raise the required resources, given that the poor are more price sensitive and being the main user of primary health care, may result in decline in utilisation and inequality in health care access (Gertler et al. 1987, Mwabu and Mwangi 1986).

In Kenya, and most of the developing countries, the introduction of user fees was associated with a drop in health care utilisation immediately after the introduction of the user fees (Mwabu et al. 1995, Andrews and Mohan 2002). This was also associated with consistent decline in health outcome indicators. In Kenya for example, health outcome indicators such as Infant Mortality Rates (IMR), Under five Mortality Rates (U5MR), Maternal Mortality Rates (MMR) and immunisation coverage between 1989 and 2003 deteriorated; (IMR; 19.2%), (U5MR; 28.3%) immunisation coverage (29.2%) according to Kenya Demographic and Health Surveys (CBS,1993,1998 and 2003). In 2004, user fees were waived for all children below five years in all primary health care facilities to encourage health care utilisation and roll back the rising mortality rate, improve immunisation and reduce general health care deprivation for children. Maternal charges were later waived in 2007 to increase antenatal service uptake and health care deliveries.

Table 1: *Selected health outcome indicators for 1989-2009*

Indicator	**Year**				
	1989	1993	1998	2003	2009
Immunisation coverage	73	79	65	59	77
Infant Mortality Rate	60	62	74	77	52
Under-5 Mortality Rate	89	105	110	115	74
Maternal Mortality Rate	-	-	590	414	488

Source: CBS 1989 1993 1998 2003 & KNBS 2010

The ability of the user fees popularly known as the cost sharing program in most developing countries to raise the additional financing required to plug in the budget deficit was largely anchored on the price elasticity of demand for health services for the general population (McPake 1993, Smith 2005). With economic conditions moving from bad to worse for Kenya and most of the Sub-Saharan countries, the proportion of the population falling poor was rising (from 42% in 1992 to 50% in 2000; Kenya), any direct cost for treatment was likely to erect a barrier and discourage people from making use of that service. Given the context of high levels of poverty at the time of introducing the user fees in public health facilities (42% in 1992), the responsiveness to user charge is likely high for the general population, could lead to a large drop in facility utilisation (Wilkinson et al. 2001). This drop in utilisation adversely affected the revenue generation intended to bolster the health sector budget to improve service delivery, as

well as the health outcome indicators that plummeted further. The squeeze in resources allocated to health sector may also have led to lack of drugs in the primary health care facilities, causing more people to abandon the public health facilities and seek health care either from private sector or resort to self-care.

The failure or of the cost sharing programme in Kenya could be placed on institutional as well as structural factors. It's has been observed that the policy may have been introduced in a hurry that no detailed guidelines were available to assist the health care personnel to implement the policy, and hence the poor rarely benefited from the exemption provided for by the policy to protect the vulnerable (Huber 1993, Collins et al. 1996). Administrative costs for implementing the policy were also high in Kenya, making it literally ineffective in bridging the much needed revenue gap (Randall 1987). On the other part, given that most of the social policies seek to address the problems of inequity and inequality, poverty level at the time of introducing the user fees may have been difficult task without proper targeting to ensure that the proportion of the poor excluded for service utilisation does no increase. Institutional weaknesses like inadequate guidelines on implementation to the health officials operating the program and hurried implementation were likely to increase exclusion of the poor, triggering search for policy alternative.

The objectives of the policy were facing serious challenges, reducing the exclusion of the poor in health care access and increasing the revenue from a population continently falling poor each year. While addressing the concerns of ill-health and health status of both society and individuals, tackling inequality and equity is a daunting task, given that it's not a balancing act and policies only aim at improving the health status of all without affecting adversely affecting the well-being of the well-off (Wagstaff 2002). Addressing health inequity and inequality, we only move to improve the well-being of the disadvantaged to catch up with the well-up. Equity in this case means fairness in opportunities to access and utilise these facilities regardless of the social group in which one belongs to or the health status of the individual.

In 2003, a new government that had taken power drafted the country's strategy papers to return to economic growth; Economic Recovery Strategy for Wealth and Employment Creation (ERS 2003-07) and later in 2008, the Kenya Vision 2030 (2008-2030), all outlining the steps necessary for fight against poverty and disease and giving priority to investment in health as the vehicle for achieving these targets. To achieve high level of human development, two sectors were given high priority by these strategy papers; education and health. Free primary was launched in February, 2003 while free health care was first introduced for children below five years in July, 2004. The provision of free primary education attracted large number of children who had dropped out to return to class. Free health care too, reported increase in utilisation of public facilities, though given the structure and distribution of health care system in Kenya, the poor could still be left out. Given that over 75% of the population live in the rural areas and majority of the poor do not live in urban centres, access to health care services is not likely to rise significantly for the rural population. Improvement in health care outcomes is likely to be driven by that of non-poor rather than the general population (Gwatkin 2003)

Population distribution based on the 1999 and 2009 census reports indicate that a larger proportion of the population (over 75%) still live in the rural areas, where

distance to the nearest health facility is larger compared to urban centres, transport systems are not well developed and concentration of health care professionals is low (Luoma et al 2010). The health care facilities found in the rural areas are mainly the dispensaries and the health centres, the first level facilities for health care system which are run by clinical officers and nurses. Poverty levels are high with inequalities across constituencies (parliamentary representation regions) being huge; with poorest constituency being 84% and the richest at 16% (KNBS et al. 2005). With most of the people living in the rural areas, the highest proportion of the rural residents is the poor. Any policy targeting to address the needs of the poor should be structured to address the demographic distribution of the people as well as it means and instruments of operation.

In 2004, the government of Kenya announced a waiver policy that would grant free access to health care in public facilities for children below five years and other specified conditions for adults. Maternity charges in public health care facilities were also waived in 2007. This policy, though a positive gesture for fighting the health inequality and inequity, could face similar challenges that stifled user fees implementation such as inadequate communication on the guidelines (Chuma et al. 2009). The poor having more demand for health care are ironically disadvantaged since the distribution as well as the other access costs are in favour of the non-poor; the user fees charged at these facilities and the travel costs put the poor off, while untargeted waiver places more opportunities to the non-poor given the country's residence distribution.

Abolishing of user fees has been associated with an increase in health care utilisation in Kenya and many other countries in Sub-Saharan Africa, particularly the public health facilities (Chuma *et al*. 2009; Nabyonga et al. 2005, Xu et al.). The call to waive fees has gained currency with world leaders and organisations such as WHO and UK's DfID calling for abolition of fees, and arrangements be put in place to protect the poor. Health care utilisation and outcomes were found to improve following the waiver policy in Kenya (KNBS 2010). This evidence suggests that user fees really constitute a barrier for the sick people not to visit health care facilities for medical attention when ill-health is reported. Despite this general improvement in the health outcomes after fees were waived, there is no published study to establish the health outcomes disaggregated for the poor and the rich, rural and urban to determine if the policy intervention may have perpetuated inequality level beyond the pre-intervention levels in Kenya.

2.2 Health Services in Kenya

Health care services in Kenya are provided by a mix of public, private for profit and private not for profit providers. The public health care system is structured in a five tier system with dispensaries and clinics forming the basic level tier, the health centres ranks in the second tier, district hospitals the third tier, while provincial and national hospitals form the fourth and fifth tiers respectively. There is a district hospital in every district, which supports all the referral cases from sub-district hospitals and health centres within the district. At the provincial headquarters are the provincial general hospitals that buffer referral cases from the district hospitals within the particular region. There are only two national referral hospitals in the country; Kenyatta National Hospital in Nairobi, and Moi Teaching and Referral Hospital in Eldoret. The two facilities form the peak of the pyramid and the top of the five tier system.

Basic primary health care in Kenya is provided at healthcare centres and dispensaries. The dispensaries are run and managed by enrolled and registered nurses under the supervision of the nursing officer at the respective health centre. The outpatient services offered at these facilities are for simple ailments such as the common cold and flu, uncomplicated malaria and skin conditions. There is a referral system for patients who cannot be treated at these facilities to the health centres, from where they can be taken for inpatient or outpatient. The secondary health care is provided by sub-district and all other high level hospitals, with both human and financial resources increasing as the level goes up. Sub-district hospitals are usually similar to the health centres but have extra capacity to perform minor surgeries and caesarean section procedures. They are therefore run by doctors and are better staffed to handle an intermediate role of buffer between the health centres and the district hospitals.

Figure 1: Levels of care defined in the Kenya Essential package of health

Source: MOH 2007

Till 2008, the overall responsibility of running the health care system in Kenya rested with the Ministry of Health, guiding all the policy formulation and implementation. Thereafter, the Ministry was split into two: Ministry of Medical Services (MOMS) and the Ministry of Public Health and Sanitation (MOPHS). All districts, provincial and the two referral hospitals fall under the custody of the MOMS while all the health centres and dispensaries are managed by the public health officials in the Ministry of Public Health and Sanitation. Nevertheless, the provision of the health care was not affected in any way to differ from the previous period since the two ministry work in harmoniously with each other and presents no visible difference to health care seekers.

The distribution of the health professionals and the facilities favours people in major towns compared to those in small towns and rural areas. The distribution of health personnel is concentrated around the major towns and their surrounding, with the

capital city Nairobi having the largest pool of doctor per 100,000 people followed by Mombasa and Kisumu (MOH and WHO 2007). The distribution of the professionals is even worse going down the facilities hierarchy where, it is difficult if not impossible to find doctors at the health centre level, albeit being the easily accessible service point. The dispensaries and the health centres are manned by nurses and clinical officers, and usually understaffed especially in rural setups where infrastructure is poor.

Kenya adopted the Primary Health Care (PHC) Strategy in 1970s which encompasses disease prevention (immunisation), management of common diseases, health education and promotion. The government has over the years formulated various policies and strategies and adopted international treaties and agreements to improve health care provision; The Millennium Development Goals (MDGs), Bamako Initiative (1987) Abuja Declaration (2001), National Poverty Eradication Policy (NPEP), The Kenya Vision 2030, Health Sector Development Plans I-III (HSDPs); all targeting investment in health to bring down the disease prevalence and the burden on the poor. The Kenya Vision 2030, the current national development strategy that seeks to deliver the country into middle income country, identifies health improvement as the key to addressing the people's productivity. Health is identified as one of the priority sectors in the Kenya Vision 2030 social pillar and its predecessor Economic Recovery Strategy for Wealth and Employment Creation (ERS) that could deliver the country to the middle income level if well addressed. It recognises the role of the private sectors and the donor community in health care provision health care services while the government provides the policy framework to enhance access to health for the poor and the non-poor alike. It sets out agenda for dealing with the exclusion problems based on financial inability through infrastructure expansion and decentralised national health care system.

Investment in health by private companies and individuals almost equals that of the government (about 49%), with few key investors controlling large chunk of private-for-profit health facilities, most of them faith based. These faith based health care facilities, especially the hospitals are not accessible to the poor; even the middle income as they do not have any difference with private health facilities run by profit motivated entities and have joined hands to form a club for elites. The Aga Khan Foundation and the Catholic Church are examples of such organisations running large number of hospitals in every major town in Kenya. However, the clinics and health centres operated by the faith based organisations are friendly to the poor and contrast the hospitals. The presence of the private sector in health care provision is highly limited to the urban centres and major towns. Health care investment in the rural areas is mainly by the government and not-for-profit organisations.

The government through the ERS had identified improving health outcomes as one of its key priority outputs in reducing the inequalities between the poor and the non poor. The ERS recommended measures that target to improve access to health care by the poor and hence reduce the gap between the poor and the well-off. These measures mainly addressed the administrative efficiency as well as increasing the coverage of National Hospital Insurance Fund (NHIF) and expanding its abilities through restructuring of its operations and funding. To achieve its overall objective of revitalising the economy and returning to the path of economic growth, the funding for

social sectors like water, education and health were improved significantly and reforms targeting efficiency were initiated in these sectors.

The provision of the free health care for the children led to a high demand for health care, overwhelming of the service providers especially the health centres and the dispensaries, being the interface points for the community with the health care system. Drugs were reported to fall short of supply in many facilities, though the government had increase funding to the health sector and the government drug distribution parastatal Kenya Medical Supplies Agency. These initial challenges provided basic lessons of the possible limitation of providing free health care without allocating adequate resources to support the expected rise in demand.

Chapter III

3.1 Literature Review

The debate behind the of use fees to finance public health care provision has been on global agenda for decades now. User fees were introduced in health care facilities to finance budget deficit in health sector, mainly through World Bank and IMF Structural Adjustment Programs (SAPs), and reform health sector financing. This call was also hailed by Council of Ministers for Health in Africa in meeting held in Bamako in 1987, Bamako Initiative and organised the WHO and UNICEF. This policy revolves around the debt crisis and policies adopted by these international financial institutions to contain fiscal shortfalls in developing countries in 1980s (Randall 1987, Najmi et al. 1991). However, reservations about the policy were raised over its ability to raise the required revenues without impeding the attainment of equity in health care access and utilisation, excluding the poor and being regressive (Gertler et al. 1987, Bonu et al 2003, Stanton and Clement 1989). The international financial institutions have now joined the opponents in calling for the removal of user fees in health care facilities.

The proponents of user charges introduction in public health care facilities in 1980s argued that, resources available to the government for health provision were inadequate, and the health care demand ballooning. Tax-funded health care was therefore not going to be sustainable, at least during the crisis time. Introduction of fees, it was argued would increase revenue available for health care, improve efficiency in health care delivery by making people more rational in their decision; curb frivolous health care demand. (Litvack and Bodart 1993). The revenue generation for the budgetary support was however low in most countries that implemented the policy in 1990s, below 5% of the health sector budget, except Ghana in Sub-Saharan region which was able to attain a high of 12% cost recovery level (Andrews and Mohan 2002). Cambodia too was able to implement user fees successfully, and managed to improve the morale of the health care professionals and reduce the reliance on donor support (Akashi et al. 2004). Experience on the implementation of user fees indicates that the level of success was anchored on the country context and the level of retention held at the facilities. In countries where the policy allowed the facilities to retain and spend the funds generated, there was motivation to achieve recovery targets (Nyonator and Kutzin 1999).

However, implementation of user fees policies was associated with decline in health care utilisation in most of the countries, Kenya (Mwabu et al. 1995, Moses et al. 1992;), Kenya, Ghana, Zimbabwe (Andrews and Mohan 2002). This had been foreseen by some authors who had analysed the possible effects was after realisation that user fees were a barriers to health care mainly for the poor, who could not afford to pay the charges levied at the health facilities, and placed caveats on it implementation (Gilson 1997, Gertler et al. 1987). Those opposed to the policy have always argued that it is likely to worsen the inequality in health care access and utilisation, and hence should be evaluated carefully, taking context into consideration. Introducing user fees, was neither likely to raise the required revenues nor tackle the problem of inequality in health care, if anything it could only make the situation worse (McPake 1993). The argument that user fees will raise the much needed health budgetary support failed to appeal to the

poor, mainly because of their high responsiveness to price changes and is likely to have made the non-poor to switch to private facilities. McPake (1993) also came to the conclusion that despite the fact that the policy may fail to achieve its revenue purpose, its implications may not reversed by exemption policies, and that user fees policy could only introduce inequity in search of welfare gains. The introduction of user fees was found to increase the total cost of health the poor who tend to live away from health care facilities; erecting additional barrier to other indirect costs like travel costs (Hjortsberg and Mwakisa 2002).

The call for abolition and exemption from user fee policies for those who cannot afford to pay received a new boost from the Millennium Declaration on Millennium Development Goals (MDGs). It was argued that achieving the MDGs would be a serious challenge without removal of user fees in public health facilities. Research findings had indicated that relying on the user fees to finance health had led to drop in utilisation and an eventual exclusion of the poor from health care facility use (Bonu et al. 2003). Others while acknowledging that waiving fees is necessary have called for caution when abolishing the user fees to take note of the context, rather than go for a blanket policy (Gilson and McIntyre 2005, James et al. 2006). This, they argued could result in poor service delivery if the facilities were not allowed to used part or all the revenue generated to improve service provision, and such an equivalent resource is not availed once the charges are abolished. Removing user fees could trigger of an upsurge in health care demand and resources need to be set aside to increase the drug supplies and recruit more personnel. Reducing or removing user fees charged in public health care facilities has been associated with increase in facility utilisation in many Sub-Saharan countries (Chuma et al. 2009, Masiye et al. 2010, Ridde and Morestin 2011). This could mean that the decades of user fees was a period of exclusion for the poor; worsening of the inequality in health care access between the poor and the non-poor. The view that user fees adds on to the cost barriers means that other costs such as travel may also improve the utilisation costs if policies are devised to improve them. The abolition of user fees has been viewed as a strategy to increase utilisation of services and protecting the poor and vulnerable groups in the society and a move towards equity and equality (James et al. 2005).

In Kenya, user fees paid by children below five years were abolished in 2004 and replaced with a flat fee – *registration fee,* (about $0.1 for dispensaries and $0.2 at hospitals). Maternity charges were later waived in 2007 to improve health care deliveries and antenatal services. Following this reduction, health care utilisation was found to increase significantly (Chuma et al. 2009), despite the limited scope in coverage of the study (only two facilities in different provinces were used).Indirect indicators of health utilisation such child mortality, infant mortality and immunisation coverage have since improve (KNBS and ICF Macro 2010). These results are consistent with other research in Sub-Saharan Africa, that user fees have been a barrier to health care access, particularly for the poor. Despite these findings, Chuma et al. concluded that user fees policy waiver was only a policy in paper and not a policy in practice. Their caveat was that even though reducing user charges may increase health care facility utilisation, careful planning is necessary before complete abolition. Even though this study finds compelling that implementation of the waiver policy resulted in increased facility utilisation, their study is only based on only two facilities.

Removing user fees in health care facilities resulted in increase in health care utilisation in most of the countries in sub Saharan Africa. In Uganda, where fees were waived in 2001, utilisation went significantly though, the incidence of catastrophic expenditures among the poor did not fall (Xu et al 2006). Niger, which also waived user fees in 2006 recorded impressive increase in health care utilisation, but the question of sustainability raised a serious challenge (Ridde and Diarra 2009). Abolition of fees in public health care facilities in African countries resulted in increased utilisation, calling for adequate provision of resources to cater for increased demand for supplies before the user fees are removed.

Using out-of-pocket in public health facilities without adequate targeting system to protect the poor could go against the objective of social policies as it discriminates against the poor, and increase utilisation inequality. The poor are less likely to use private-for-profit health care facilities than their well-off counterparts and charging fees in public health facilities increases their non use of health services. However, introducing free health care without adequate safeguards to target the poor is also likely to benefit the well-off more, as Victora et al (2000) found in the inverse equity health care hypothesis; that interventions first reach the non-poor then the poor later after the non-poor reach a new stable level. This view is corroborated by Gwatkin et al. (2004), that free services that are universally offered tend to trickle more to the well-off than the targeted poor. This puts to question the policies of blanket user fees waiver without the targeting of the poor to increase the rate of benefit transfer to the poor. The main concern of health and social policies is to address the inequality between the poor and the well-off. Equity in social policies is of essence and policy makers are concerned that general improvement should not be achieved at the cost of equity.

3.2 Theoretical Framework

The study of health care utilisation hinges on the utility theory- individuals will only use facility if they are able to derive some utility higher than their marginal cost, which was first put forward by Grossman (1972). This utility theory links health service demand to cost as though it were a normal good that buyers consume and postulates that individuals will only consume health care services if they continue deriving utility. Put differently, individuals always seek to maximise their utility subject to their budget constraints. The individual seeking health care therefore treats it were an item in the consumer basket that together with other commodities constitutes his/her total utility that is evaluated on based on the marginal cost of each item (commodities as well as health care). The consumers (patients) are assumed to possess adequate knowledge of the health care market as to make informed decision while choosing between alternatives. This information regards the available health care providers as well s their service levies, which then dictates the choices the health care consumers make. The patients also have adequate knowledge on the other access costs that they have to meet before they can get health care services, and that health care improves their health status. The health care consumers therefore face a discrete choice decision; to choose from various alternatives including self-care.

The total cost of treatment is split between payments made at the user fees and other out-of-pocket costs that individuals reporting ill-health will have to incur which directly related to health seeking such as travel and waiting costs. The structure of the

two components of cost depend on a number of factors such as the type of facility chosen, the facility distribution within one's locality, infrastructural endowment and government policies on health care provision. Travel and waiting costs are usually higher in the rural areas than are in the urban areas due to distribution facilities, infrastructural development and human resource bias that tend to favour urban areas. Better infrastructure in urban centres and availability of means of transport makes it relatively easier to access health care facilities and less costly. This means that the cost of health care directly related to health seeking that is not paid at the health care facilities is usually higher for rural population than it is for the urban residents. This is even compounded by the fact that more poor people in developing countries still live in the rural than in urban centres.

Individual reporting ill-health make their choice whether to visit health care facility or not based on the perceived benefit from such cure i.e. seeking healthcare will improve their health status and hence maximise their utility. The choice to use a facility after reporting ill-health depends on individual's evaluation of the perceived benefit. Patients will only choose to visit health care facility if they expect their health status to improve, and the cost of such a visit is reasonable to them i.e. they will derive a benefit from seeking health care. Where the cost of accessing the health care not related to facility charges constitutes a major cost of barriers to health access, individuals may choose not to seek health care since the cost of accessing and utilising the services outweighs his/her evaluated benefit (Hjorsterb 2003). The seriousness of illness may however dictate that the patient seeks health care, forcing them into catastrophic health care expenditures.

The cost-demand relationship is therefore important in analysis of the effect of waiving user fees, holding other factor constant. Everything else being equal, though things rarely remain constant, the waiving user fees policy works to increase demand for the healthcare, particularly for the poor whose demand is constrained by costs. If we retain our argument of lower indirect cost of treatment for the urban population in comparison to the rural populace, people in the same income subgroup living in the two setting will experience different income effect of the waiver policy. This stems from the fact that the out-of-pocket costs were already biased against the rural poor and policy is likely to result in unequal situations for the two individuals, even though they belong to the same income group. This introduces a horizontal inequity in health care access as the two groups face different burden of health care barriers perpetuated by their geographical locations irrespective of their equal needs (Oliver and Mossialos 2004).

Health care inequality measured by outcome indicators like immunisation, child mortalities and maternal deaths show the differential in health status across or within income groups or countries can sometimes be huge (Hart 1971). We hypothesise that a waiver of user fees lower the cost of treatment and increase the demand for health care, the income effect being higher for the poor than the rich, other things equal. The poor are also perceived to experience ill-health more than the well-off and would therefore be expected to respond more to lower health care cost compared to the non-poor, whose income elasticity is lower and are ordinarily not equally constrained as the poor.

We also expect that if the user fees were really a major barrier, people not seeking health care after reporting ill-health will decline once user fees are waived. This proportion expected to constitute mainly the poor will result in decrease in inequality

between the poor and the non-poor, both in the rural and the urban areas. The within-income-group inequality between the rural and the urban is expected to converge if the user fees were the main barrier rather than indirect treatment costs. Since the user fees were only removed in public health care facilities alone, we expect the large transition to these facilities especially if the new increase comes from the low income group. However, the removal of user fees in public health facilities may result in a shift from public health facilities by the non-poor to the private health facilities due to perceived influx of patients in these public facilities that is likely to lower to quality of service offered and result in drug shortage at the extreme.

Inequality will then be increased if the non-poor benefit more from this reduced cost by increasing their service utilisation more than the poor. Service utilisation may increase after the policy intervention but the real beneficiaries may turn out to be the well-off. This increase though positive could perpetuate a new round of inequality and inequity as policy biases not initially conceptualised in the policy design. However, inequality is reduced if more poor use the services after the waiver than before, and not just a switch from the private facilities to public facilities without reduction in the number of people not seeking health care after reporting ill-health.

Chapter IV
Empirical strategies

4.1 Design

This main objective of the study was to investigate the effect of reducing user fees in public health facilities on health care utilisation inequality among the poor and the non-poor in rural and urban areas. This is because introduction of the out-of-pocket charges had led to fall in utilisation of health facilities (Collins et al. 1996, Creese 1991), mainly by the poor who could not afford the charges in addition to other expenses they have had incur to access the health care facilities (Bonu et al. 2003, Gertler et al. 1987). Reducing these charges at public health care facilities was meant to increase health care utilisation, particularly by the poor who had been viewed as excluded from health care by the introduction of the user fees. Increase in health care utilisation and general improvement in health outcome indicators were observed after removal of user fees in public health facilities (KNBS and ICF Macro 2010, Chuma et al. 2009). Even though the general trend of health outcome indicators point to improvement, there need to explain the increase in health care in terms of the proportions of the poor and the non-poor who are now seeking health care. In fact, the problem of exclusion being the target of the policy, it is surprising that studies that have been published yet do not focus on how the inequalities or the exclusions have changed following the reduction in user fees, but rather the general indicators. General trends that produce the overall indicators such as mortality rates, malnutrition, immunisation coverage or even poverty rates have been found to hide huge inequalities behind them (Ravallion 2001, Fosto 2006). This is unlike the case of the introduction where many studies were carried out to show how user fees were being unfair to the poor by creating layers of barriers to health care

We first explore the impact of reducing the user fees in health care facilities initially by comparing the proportions of the samples seeking medical attention from the various health care providers once ill-health has been reported. We apply a *before* user fees and *after* user fees design to capture the trend in utilisation of health care facilities. We categorise the health care providers into three: *public*, *private* and *other*. There is also the other category of patients reporting being sick and not seeking any medical attention, categorised as *none*. We also categorise the respondents into either poor or non-poor based on the wealth index quintiles, with the poorest and the poorer constituting the poor while the middle, richer and richest fall into non-poor class. We therefore analyse the trends on the basis of place of residence (rural/ urban) and the socioeconomic status (SES) of each group to determine if trends in health care utilisation increase are class and place of residence biased. Comparison between pre-intervention and post-intervention utilisation levels should be point to direction user fees impact for both the poor and non-poor in urban and rural areas.

The rural – urban analysis is helpful in this research given that majority of Kenyan population, actually 42 out of 47 counties will remain predominantly rural despite projected rapid urbanisation (World Bank 2011), where the infrastructural development is low, travel costs high and the health care professionals to population ratios are still

low compared to urban residence (Luoma et al. 2010). With more than 75% of the population living in the rural areas, any difference between the rural and urban, however small it may look could mean a large population being at risk of not utilising the service, especially if the rural lag behind the urban. Disaggregating the population into poor and non-poor, urban and rural helped in decomposing the gains and losses in health care utilisation that explained the overall improvement in health care outcomes.

Challenge of the research

One of the main challenges to this study is the fact the health care reforms are complex in nature and the policy designs may, and do introduce bias to effectiveness of other policies and interventions within health care sector. An example of this could be provision of free health care to a selected population segment that is associated with increased funding to health facilities. Increased resources may result in drug availability that could be associated with a rise in health utilisation. Any intervention in the health sector operates in web of other polices that either enhance or militate against its impact. A positive bias, for example could be the case of reported increase in the number of children completing immunisation after the intervention, even though immunisation did not attract any user fees before. Another challenge arises from the indirect manner in which the impact of user fees on health care utilisation is assessed. This limitation placed on us by the data sets we used could make it difficult, if not impossible to conclude that the impact is due to reduction in user fees. However, to counter these challenges, we employ two strategies that combined should give realistic estimates for the impact of the policy intervention.

Strategies

i. Trends in health care utilisation

We estimate the health care utilisation by pooling the data samples and creating year dummies to capture the trends over time. We then run a multinomial logistic regression for the pooled data sets and compare the parameters of the year/time dummies. We start by estimating a regression for use and the year/time dummy variables, then gradually include the control variables that may contribute to the observed trend. This is expected to reduce the coefficients of the year/time dummies as they explain part of the increase in utilisation.

ii. Difference In Difference (D-I-D)

D-I-D is a method used to estimate the impact of an intervention when there exists a treated group and another group that do not participate in the program. To apply this technique, we estimated the trend for other services that were not affected by the user fees reduction policy and compute the difference in their difference with that of health care utilisation. Use of this method ensured that all the other effects that affect health care utilisation are have been differenced and the remaining effects can be attributed to user fees reduction.

4.2 Empirical Model

We analyse the utilisation of health care facilities by comparing trends in facilities use by individuals during and after user fees were reduced. Individuals reporting ill-health are initially faced with two choices; to seek or not to seek health care. Individuals who

choose to use health care facilities have alternatives from which they can seek medical attention; public health facilities, private for-profit health facilities and private not-for-profit health facilities. Thus, given that households reporting ill-health have several options to choose from, we can compute the probability of making use of any one particular option as:

$$P_{ij} = Prob[z_{i=j}] = exp(\alpha_j' x_i)/[1 + \sum_{j=1}^{J} exp(\alpha_j' x_i)] \quad (1)$$

z takes the values 0, 1,..J. *i* is the observation and *j* is the choice of health care facility. α_j' and x_i are vectors of unknown parameters and explanatory variables respectively

The data sets were pooled and a categorical variable *use* (dependent variable) was generated, comprising *public*, *private*, *other* and *none* categories. Times dummies for each time period were also generated and then multinomial logistic regression was applied to the data, since the choices the patients are subjected to do not fall in any order. The coefficient of these time dummies gives the change in health care utilisation due to introduction or abolition of the user fees. We first run a regression for the dependent variable (*use*) and the time dummies, without any covariates. This regression should produce the average changes (dummy coefficients) in health care utilisation that are not confounded by other factors. We therefore estimate the following model:-

$$y_{ij} = \sigma + \rho T_{ij} + \varepsilon_{ij} \quad (2)$$

y_{ij} represent the use of health care both in period of user fees and after for individual *i* reporting ill-health, while ρT_{ij} is a time dummy variable that takes value zero for the base period and one for the period after user fees were introduced,ε_{ij} captures all the effects of unobserved characteristics.

We then introduce the covariates; a vector of other socioeconomic and demographic characteristics of individuals, households and communities. Household characteristic here include the education of the child's parents, age, socioeconomic status (SES) poor or non-poor, household size, number of children under five years. Community characteristics include place of residence (rural/urban), region. We thus estimate a full our model as:-

$$y_{ij} = \sigma + \rho T_{ij} + \lambda x_{ij} + \varepsilon_{ij} \quad (3)$$

These socioeconomic covariates change over time and partly explain the trend in health care utilisation over time, and are expected to reduce the coefficient of time dummies estimated in model (2) above. However, they may not explain all the observed trends in utilisation, which may be then attributed to user fees policy. Other factors that may affect the uptake of health care are disease outbreaks like cholera, which may lead to reported utilisation rising.

To investigate the influence of poverty and place of residence on health care utilisation, an estimation of a conditional regression for equation (3) was done. For this analysis, population was categorised as poor and non-poor; residing in urban or rural areas and separate equations were estimated conditional on any of these subgroups to obtain the results. These analyses were useful in assessing the urban/rural and poor/non-poor reaction to user fees introduction and waiver on health care utilisation.

We compute the Odds Ratios (ORs) for both the poor and the non-poor living in the rural and urban areas. ORs are the ratios of probabilities of the comparison group/category relative to a base/referent category. In this case, our base category was

non use of health facility (none). Multinomial logit regression assumes independence from irrelevant alternative (IIA) such that the ORs remain constant regardless of the researcher's choice of base category (Hjortsberg 2003, Xu *et al.*2006). This ratio of probabilities is sometimes referred to as the relative risk. A relative risk of less than one (OR<1) implies that the risk of falling in the comparison group relative to the referent group decreases as the variable of interest increases, while a relative risk greater than one (OR>1 implies that the relative risk of falling in the comparison group relative to the referent group increases as the variable under consideration increases (Long 1997). These ratios are compared with the base period to see if the households were more like to use the various types before or after the reduction of the user fees. Since all the data on health care utilisation concerns those who reported being sick during the two weeks preceding survey, the OR is also conditional on reporting ill-health. This is captured by using the year dummies to indicate the effect before and after. In this case, we hold all other variables constant and examine the trends in utilisation of facilities in public, private and other types of health facilities. We also carry out similar analysis for the other variable in the model such as region rural/urban, poor/non-poor and education levels.

D-I-D estimation

To compensate for the weakness of the above model that was highlighted in the design section, we compare trends for health care utilisation with other services that attracted user were not waived in 2004 when that of the preventive health care for the children below five years was removed. We compare for the example the trends for maternity service, whose charges were later dropped in 2007 just a year before the data for the survey was collected. We compute the mean utilisation rates for the maternity services determine the difference in difference from the means of maternity services and the health care utilisation to estimate the impact of reducing user fees on health care utilisation. This estimate is likely to underestimate the impact of user fees since maternity charges were also waived also within the time under consideration.

To make the D-I-D estimates comparable, we standardise the change over time by dividing the increase or decrease facility use by the base period utilisation. We thus compute DID estimates as follows:-

$$\hat{\partial} = (\bar{X}, A2 - \bar{X}, A1) - (\bar{X}, B2 - \bar{X}, B1)$$

Where, A and B are the services whose trends is under consideration (child health care and maternity), while 1 and 2 are the time periods, $\bar{X}$s are the mean rates of utilisation for each subgroup and the total population. Therefore, for each DID estimate, we need to compute four mean values, the mean values before and after the intervention.

Caveats and limitations

The data used for the study being cross sectional, rather than panel, could reduce the reliability of the results. This is because the data does not track changes individual characteristics over time. Also, the use of different population subgroups could undermine the effectiveness of the strategy since the health care utilisation varies the choice of population and the nature of service under consideration. Trends for the services used to compute DID could have different responses and even different response rates to introduction or removal of user fees.

4.3 Data

The data for this research were obtained from three national surveys, Kenya Demographic and Health Surveys contacted in 1998, 2003 and 2008 by Kenya National Bureau of Statistics (KNBS), Ministry of Health (MOH) and National Coordinating Agency on Population and Development (NCAPD) in collaboration Measure DHS (ORC Macro Inc). This data is collected using international standard questionnaire across all participating countries (with country specific extra variables included) for the analysis of demographic and health outcome indicators for children below five years of age, maternal health and fertility preferences. The sample selection follows a two stage sampling design where the clusters are identified and then the primary sampling units. The sample sizes used to collect in all three surveys were representative and the data quality standards were observed during the surveys. These samples can be analysed as follows:-

Table 2: *Data samples*

Year	1998	2003	2008
Sample size	3275	5949	6079
Urban proportion	15%	24.5%	20.7%
Rural proportion	85%	75.5%	79.3%

Source: Author's own tabulation

The data collected information in all surveys contains information on the reported health status for all children below five years of age for the two weeks preceding the surveys. Respondents replied to questions whether the child had been ill in the two weeks preceding the survey and if yes, whether healthcare services were sought. Health care provider were categorised as either government, private, mission or NGO run health facilities. Respondents could also report having purchased the drugs from shops and pharmacies, seeking the help of traditional healers or doing entirely nothing about the illness.

The variables used in the analysis are those that are available from the surveys and others that were generated from the data to enable quantitative analysis. Health care utilisation, a categorical variable was generated from the data to reflect how the respondents answered the question on visiting or seeking health care once illness had been reported. Analysis of health care facility utilisation was based on use of the service by each individual reporting ill-health in the two weeks preceding the surveys. Facilities are categorised as public, private, other (NGO, faith-based, or traditional) or none.

Chapter V
Results

5.1 Descriptive Statistics

We present the summary statistics of the variables used in the analysis for this study in table 3 below.

Table 3*: Variables used in the model*

			Mean		
Variable	Variable label	Note	1998	2003	2009
Use of health care					
	public		0.149	0.263	0.420
	private		0.126	0.292	0.133
	other		0.089	0.035	0.007
	none		0.635	0.410	0.440
Sick	Child is reported sick	binary	0.230	0.566	0.404
Nairobi	regions with above nat. Average coverage	binary	0.419	0.481	0.455
Poor	household classified as poorest or poorer	binary	0.356	0.435	0.469
Urban	household resides in urban area	binary	0.150	0.259	0.243
Male	household head is male	binary	0.734	0.750	0.708
Edu1	Household head has no education	binary	0.115	0.200	0.214
Edu2	household head has primary edu	binary	0.638	0.578	0.562
Edu3	household head has secondary edu	binary	0.231	0.178	0.169
Edu4	household head has higher education	binary	0.017	0.044	0.055
Under5	No. of children under5 in a household	continuous	0.662	0.633	0.661
Age1	age of the household head in years	continuous	39.673	38.219	37.972
Married	mother of child is married	binary	0.854	0.860	0.854
Delivered	child was delivered in health care facility	binary	0.870	0.411	1.363
Age2	age of the child in months	continuous	17.211	27.689	28.455
Hhsize	size of the household	continuous	0.455	0.363	0.349

Note: poor comprises the poorest and poorer quintiles while non-poor comprise the middle, richer and richest quintiles.

Table 4*: Health care utilisation for Children below five years*

	1998			2003			2009			% change 1998-03			% change 2003-09		
	poor	non-poor	total	poor	non-poor	total	poor	non-poor	total	poor	non-poor	total	poor	non-poor	total
Public	15.06	14.87	14.94	19.96	22.64	21.44	36.27	33.84	35.03	4.90	7.77	6.50	16.31	11.20	13.59
Private	12.77	12.48	12.59	19.45	30.44	25.53	9.24	20.19	14.84	6.68	17.96	12.94	-10.21	-10.25	-10.69
Other	9.18	8.80	8.94	10.45	7.21	8.66	9.69	4.92	7.25	1.27	- 1.59	- 0.28	- 0.76	- 2.29	- 1.41
None	62.98	63.85	63.52	50.15	39.71	44.37	44.80	41.05	42.88	-12.83	-24.14	-19.15	- 5.35	1.34	- 1.49
	rural	urban	total	rural	urban	total	rural	urban	total	rural	urban	total	rural	urban	total
Public	14.29	18.82	14.94	21.62	20.87	21.44	35.42	33.66	35.03	7.33	2.05	6.50	13.80	12.79	13.59
Private	11.15	21.03	12.59	22.13	36.31	25.53	13.04	21.08	14.84	10.98	15.28	12.94	- 9.09	-15.23	-10.69
Other	9.71	4.43	8.94	9.94	4.61	8.66	8.39	3.29	7.25	0.23	0.18	- 0.28	- 1.55	- 1.32	- 1.41
None	64.85	55.72	63.52	46.31	38.21	44.37	43.14	41.97	42.88	-18.54	-17.51	-19.15	- 3.17	3.76	- 1.49
	Poor														
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Public	4.64	11.44	5.62	11.22	1.63	8.92	22.49	1.16	17.71	6.58	- 9.81	3.30	11.27	- 0.47	8.79
Private	3.45	12.55	4.77	10.96	1.49	8.69	5.71	0.37	4.51	7.51	-11.06	3.92	- 5.25	- 1.12	- 4.18
Other	3.51	2.95	3.43	6.10	0.14	4.71	6.04	0.19	4.73	2.59	- 2.81	1.28	- 0.06	0.05	0.02
None	21.74	33.95	23.51	28.15	4.20	22.41	27.64	1.93	21.88	6.41	-29.75	- 1.10	- 0.51	- 2.27	- 0.54
	Non-poor														
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Public	9.65	7.38	9.32	10.41	19.24	12.52	12.93	32.50	17.32	0.76	11.86	3.20	2.52	13.26	4.80
Private	7.71	8.49	7.82	11.17	34.82	16.83	7.33	20.70	10.33	3.46	26.33	9.01	-3.84	-14.12	- 6.51
Other	6.20	1.48	5.52	3.84	4.47	3.99	2.35	3.09	2.52	- 2.36	2.99	- 1.53	- 1.49	- 1.38	- 1.47
None	43.11	21.77	40.01	18.17	34.01	21.96	15.50	40.03	21.01	-24.94	12.24	-18.05	-2.67	6.02	- 0.95

Table 4 above shows the descriptive analysis of the health care utilisation for the sample periods 1998, 2003 and 2009. The proportions of sampled population seeking health care from public, private and other health care providers as well as those who did not seek medical attention (none) are tabulated. The classification of public, private and other health care facilities have been described at the design section, while those not seeking health care from any of the facilities were also categorised as none.

From table 4, it is clear that both the poor and the non-poor used public and private health facilities more in 2003 than they had in 1998, with the increase in use of private health care facilities being higher for the non-poor. Whereas the poor had used more public facilities and private in 1998 than the non-poor, utilisation of the public and private facilities by the non-poor rose fast over the period to 2003 to overtake that of the poor. Use of other type of facilities improved marginally albeit only for the poor over the same period, decreasing for the non-poor. Increase in health care utilisation was higher for the non-poor in both private and public facilities. Comparatively, more poor than non-poor people reporting being ill were not seeking health care in 2003, despite this proportion being almost equal in 1998.

For the period from 2003 to 2009, when the user fees were waived, use of public health care facilities by both the poor and non-poor recorded an impressive increase. Based on utilisation levels of 2003, the increase in utilisation of public health facilities by the poor went up 82% while that of non-poor was 49% up. The fall in private facility use based on 2003 levels was also high at 52% for the poor and 34% for the non-poor. More non-poor reporting ill-health were not using any health facility in 2009 than had been in 2003, while the proportion of the poor not using any service fell over the period to 2009 (by about 11% over the period). This could be explained by probably the switch to self-medication by non-poor. This view is also supported by the proportion that pulled out of private services to government facilities after reducing the charges. The proportion of the poor using other facilities went down for the period to 2009, while non-poor poor using other facilities went up slightly.

The rural and urban health care utilisation was also explored to give the picture of how the increase or decrease in health care may have played out in the two types of residential areas. Use of public facilities in both rural and urban rose over the period to 2003, with the increase for the rural population being higher than for the urban. There was increase in the use of private facilities over the same period, with the increase being larger for urban than the rural. One explanation for this is that while the rural population lacked option after user fees were introduced due limited number of private facilities available, the urban residents could easily switch to private facilities. Use of other facilities rarely changed for any population over the period. Non-use of any type of facility was lower in 2003 than had been in 1998 for both urban and rural, with the urban population having a lower proportion not seeking health.

After the reduction of the user fees, the increase in public health care utilisation was relatively uniform across the rural urban divide, (13.80% rural; 12.79% urban). More urban residents switched away from private facilities than did the rural residents, 9.1% rural and 15.2% urban. The use of the other type of facilities also recorded a decline over the period in which fees were removed for public facilities. While the proportion of ill not seeking health care for the rural population continued to fall throughout the entire sample period, that of the urban population rose for the period 2003-2009.

The trends for the poor and non-poor in both rural and urban were also considered to analyse the effects on the same and different socioeconomic groups in different areas of resident. Whereas the poor in urban centres utilised both private and public facilities in 1998, their use of both public and private facilities fell significantly in 2003. The rural poor used more of public and private services in 2003 than had used in 1998. For the period to 2009, the poor in the rural saw the use of public facilities increase while that the urban poor went down. Use of private health care facilities for both residents declined, but that for the rural was high. Overall, there were few people in 2009 reporting ill-health not seeking medical attention than had been in 2003.

The analysis of the non-poor is interesting to look at. The use of public facilities was higher in 2003 than had been in 1998, but the increase for the urban residents was higher over the period to 2003. Similarly, the private facility use was higher for 2003, with the increase for the urban residents being more than three times the level of 1998. Whereas the use of other services declined for the rural non-poor, it rose for the urban residents over the period to 2003. The proportion not seeking health after reporting ill-health went up for the rural non-poor; that of the urban residents went down. Over the period to 2009, the use of public facilities went up for both urban and rural non-poor. The increase in public facility use was higher for the urban residents than for the rural. Private facility use fell for both the urban and rural, decline in urban being higher than in rural. The use of other facility dropped, almost at the same rates for both residential areas. More people in urban areas opted not to seek health care in 2009 than had been in 2003, while those in rural were less than had been found in 2003.

Though the use of public facilities was went up for urban residents after the user fees were reduced, it would seem the increase benefited the non-poor in urban substantially and the poor marginally. The share of the poor in the proportion using public facilities in the urban was very small, about 1.2% compared to 32.5% of the non-poor. These results could be confounded by other changes that occurred over the same period as the reduction or waiver of the user fees, we therefore control for the other possible determinants of health care utilisation.

5.2 DID results

We reproduce the first section of table 2 above together with the analysis for the utilisation table for maternity services. Maternity services, like the health care for child was offered in public, private and other type of facilities. We compute the increase or decrease in health care utilisation for maternity services just as in the case of child health care utilisation and determined the DID as described above.

Maternity services were also subject to user fees like any other service in public health facility before the user waiver policy was introduce for children and later in 2007 for maternity services. Unlike child health, facility utilisation for maternity services went down significantly for the poor but use by the non-poor went up both in public and private facilities. The use of private by the poor also went up, though by a 1%. The change in the proportions of the poor and the non-poor not using health care facilities for maternity services in 2003 was almost equal but oppose in sign (almost 19% drop for the poor and about 16% increase for non-poor). Average change in health care utilisation for maternity services was negative for the period to 2003.

The analysis facility use for the period covering user fees show that both the poor and non-poor utilised more public health care facilities than 2003, the poor used less of private facilities while the non-poor's use of private facilities went up by 2.7%. Both subgroups used less of private and other facilities on average and more of public facilities.

Table 5 below shows the trends in maternity services utilisation for 1998, 2003 and 2008. The table for utilisation of child health care services is also reproduced. To compare the trends and compute the DID, we standardised all the changes based on 2003 utilisation rates. DID was then computed as the difference between the increase in child health care utilisation and maternity services utilisation. Results indicate that the increase in child health care utilisation (public) in 2009 due to user fees waiver was an increase of (0.42 for the poor and 0.28 for the non-poor) times from 2003 level. Overall impact in public health care utilisation was 0.41 times increase over the previous period. Whereas the non-poor's use of private and other facilities went down, the poor's use for private and other did not decline, actually the switch to other was large (0.64) compared to 2003 level.

The increase of 0.41 in utilisation of public facilities is compared with 0.63 before the DID, a decline of about 0.22 which is explained by other factors other than user fees. The overall drop in private facilities utilisation was also adjusted downwards when DID was computed. This reduced from 0.42 to 0.11, meaning other factors not related to user fees were affecting the transition from private facilities. However, given that the fees for maternity services used to compute DID were also waived about one year before the final data was collected could mean that we have underestimated the real impact of the user fees.

Table 5: *Health care utilisation for Maternity and Children and DID results*

	1998			2003			2009			% change in 98-03			% change in 03-09		
	Maternity services														
	poor	n-poor	total	poor	n-poor	total	poor	n-poor	total	poor	n-poor	total	poor	n-poor	total
Public	29.55	29.16	29.30	12.9	36.32	26.12	18.06	44.27	31.98	- 16.65	7.16	- 3.18	5.16	7.95	5.86
Private	2.84	2.80	2.81	3.88	13.63	9.38	1.5	10.89	6.48	1.04	10.83	6.57	-2.38	- 2.74	- 2.90
Other	8.76	8.96	8.89	5.48	7.12	6.41	1.57	6.27	4.07	- 3.28	- 1.84	- 2.48	-3.91	- 0.85	- 2.34
None	58.85	59.08	59.00	77.74	42.93	58.09	78.88	38.57	57.47	18.89	- 16.15	- 0.91	1.14	- 4.36	- 0.62
	Child health														
Public	15.1	14.9	14.9	20.0	22.6	21.4	36.3	33.8	35.0	4.9	7.8	6.5	16.3	11.2	13.6
Private	12.8	12.5	12.6	19.5	30.4	25.5	9.2	20.2	14.8	6.7	18.0	12.9	- 10.2	- 10.3	- 10.7
Other	9.2	8.8	8.9	10.5	7.2	8.7	9.7	4.9	7.3	1.3	- 1.6	- 0.3	- 0.8	- 2.3	- 1.4
None	63.0	63.9	63.5	50.2	39.7	44.4	44.8	41.1	42.9	- 12.8	- 24.1	- 19.2	- 5.4	1.3	- 1.5

Standardised increase/decrease in facility utilisation for each service

Maternity						Child health					
- 1.29	0.20	- 0.12	0.40	0.22	0.22	0.25	0.34	0.30	0.82	0.49	0.63
0.27	0.79	0.70	- 0.61	- 0.20	- 0.31	0.34	0.59	0.51	- 0.52	- 0.34	- 0.42
- 0.60	- 0.26	- 0.39	- 0.71	- 0.12	- 0.37	0.12	- 0.22	- 0.03	- 0.07	- 0.32	- 0.16
0.24	- 0.38	- 0.02	0.01	- 0.10	- 0.01	- 0.26	- 0.61	- 0.43	- 0.11	0.03	- 0.03

DID

Before			After		
1998-2003			2003-2009		
1.54	0.15	0.42	0.42	0.28	0.41
0.08	- 0.20	- 0.19	0.09	- 0.14	- 0.11
0.72	0.04	0.35	0.64	- 0.20	0.20
- 0.50	- 0.23	- 0.42	- 0.12	0.14	- 0.02

5.3 Determinants health care utilisation

Table 6: *Regression results for health care utilisation for different subgroups*

	1		2		3		4		5	
	Odds	Coeff	Odds	Coeff	Odds	Coeff	Odds	Coeff	Odds	Coeff
Public										
year1	0.4869	-0.720***	0.5436	-0.610***	0.3884	-0.946***	0.4400	-0.821***	0.6177	-0.482**
		[0.082]		[0.143]		[0.114]		[0.096]		[0.236]
year3	1.6904	0.525***	2.0611	0.723***	1.4201	0.351***	1.7888	0.582***	1.3586	0.306**
		[0.067]		[0.099]		[0.094]		[0.077]		[0.146]
Private										
year1	0.3444	-1.066***	0.4012	-0.913***	0.3322	-1.102***	0.3412	-1.075***	0.5943	-0.520**
		[0.084]		[0.153]		[0.117]		[0.103]		[0.218]
year3	0.6017	-0.508***	0.6029	-0.506***	0.6347	-0.455***	0.6784	-0.388***	0.5086	-0.676***
		[0.077]		[0.133]		[0.101]		[0.094]		[0.150]
Other										
year1	0.7215	-0.326***	0.8842	-0.1230	0.7007	-0.356**	0.8019	-0.221*	0.7384	-0.3030
		[0.106]		[0.172]		[0.158]		[0.121]		[0.415]
year3	0.8660	-0.1440	1.0409	0.0401	0.6530	-0.426**	0.9011	-0.1040	0.5724	-0.558*
		[0.107]		[0.142]		[0.175]		[0.116]		[0.333]
No. Of Observ.		= 7254		= 3177		= 4000		= 5686		= 1491
LR χ^2 (30)		= 420.77		= 328.21		= 419.46		= 525.10		= 32818
Log Likelihood		= -8589.7		= -3628.8		= -4632.2		= -6567.2		= -1693.9
Prob > χ^2		= 0.0000		= 0.0000		= 0.0000		= 0.0000		= 0.0000

The base categories are*: None* (not use) for utilisation and *year2 (2003)* for the year dummies. Also to be noted is that model 1 has LR $\chi^2(6)$ and not as indicated.

Note:

1: No covariates

2: Conditional on the patient being poor

3: Conditional on the patient being non poor

4: conditional on the patient being in rural area

5: conditional on the patient being in an urban residence

In table 6 above, we report the results of MNL regression (time trends only), controlling for the influence of the other factors. We set year 2003 as the base period for which increase or decrease (trends) in health care utilisation is compared for the periods 1998 to 2003 and 2003 to 2009. This is because 2003 is the year just before the user fees were waived in 2004, and it represents a clear boundary to compare the two trends with minimum overlap.

We examine the trends in the utilisation of health care facilities during the user fees and the fees were abolished for the poor and non-poor as well as the rural and urban population. Across the models (subgroups) 1-5, the rate of health care utilisation seems to have increase over the period to 2003 for both the public and private facilities (coefficients for year1, which are negative because we set year2 to base category). Model 1 represents the general rate of health care utilisation when no confounders are

included in the model (no covariates). Compared to the base year 2003, both poor and non-poor in urban and rural areas used more public and private health care facilities in 2003 than had been in 1998, with the increase reaching statistical significance at 1% for all coefficients except urban residents (5%). The non-poor recorded a higher rate of increase in public health facilities during the user fees period than the poor, and poor switched

Across the same subgroups, use of public facilities for the same groups went up for the period to 2009, all coefficients statistically significant at 1%, while the proportion of the sick utilising private health care facilities went down significantly, all coefficients reaching 1% statistical significance. There was higher the increase for use of public facilities by the poor than the non-poor in 2009 after the fees were waiver (we compare the absolute values of coefficients). Interestingly, the non-poor significantly cut down their use of private facilities when the fees were waived just the poor. The fall in use of other facilities was only significant for the non-poor population.

The increase in use of other type of facilities was only significant at 1% for the unconfounded model, 5% for the non-poor and only at 10% for the rural population. The decrease in use of other facilities after fees were waived was only significant for the non-poor (5%) and the urban residents (10%).

Generally (model 1), patients were 1.6904 likely to use public facilities and 0.6017 times unlikely to use private facilities compared to the base category after fees were waived. In other words as utilisation of health care facilities increase, people are more likely to use public health care facilities and less likely to use private facilities, all other variables in the model held constant. The poor (Model 2) were 2.0611 times likely to use public health care facilities and 0.6029 unlikely to use private facilities when services were made free (relative risk of any patient seeking health going to public increases by 2.0611 and that of private decreases by 0.6029). All the other models (subgroups) can be interpreted similarly.

To examine the effects of community and household characteristics used to confound the trends and compare then across the subgroups, we use the results of MNL regression results in table 7 and 8 (Appendices). Being in an urban area was not correlated to use of public facilities for both the poor and the non-poor, though living in region where health care coverage above national average was found to be highly correlated with use of public health facility for both and private facility for the poor. Education was only correlated with use of public health care facilities for the poor, but people living in households where the household head had higher education were likely to use private facility, both poor and non-poor.

The number of children below five years in a household were found to correlated with use of private facilities, but not public. It was also correlated with use of other types of facilities for the poor, though did not reach significant at 1%. Age of the child was tested and found to be statistically significant for use of private facilities by the non-poor, though not for the poor. It was also correlated with the use of other facilities for both the poor and non-poor (significant at 1% and 10% respectively).

Being poor in either rural or urban area were not correlated with the use of public facilities, but it was highly correlated with use of private facilities both in the rural and the urban areas (statistically significant at 1% and 10% respectively). However, the region one lived in was highly correlated with the use of public facilities for both rural and urban, and use of private facilities for the rural and other facilities for the urban

residents. Education was correlated with use of public facilities for the rural residents, but not for the urban. However, attaining all the levels of education were highly correlated with the use of private in rural areas while only having the highest level correlated with the use of both the private and other facilities. Use of public facilities was not correlated with male headed households in both areas, though they were found to correlate with private facility use for the rural residents.

Whereas the number of children in household determined if that household use of public and private health care facilities in rural areas, it was only correlated with private facility use for urban residents. The age of the under five also determined the use of other facilities in both the urban and rural, but only correlated with private facility use in urban areas. The poor were more likely to use the public facilities compared to the non-poor both before and after the waiver policy was introduced. They were however less likely to use the private facilities compared to the non-poor after the user fees were reduced.

The rural residents used less of public facilities in 1998 than they were using in 2003, with the coefficient highly statistically significant at 1%. Their use of public facilities was also higher in 2009 than in 2003 and highly significant. The use of public facilities by the urban residents went up in the period to 2003, though did not statistical significance at 1%. The increase in use of public facilities in 2009 by the urban residents too failed to reach 1% significance level.

Chapter VI
Discussions and Conclusion

6.1 Discussions

We consider the implication of reducing user fees children in public health facilities in Kenya, then place the debate of user fees on the wider context. This waiver policy applied extensively to children below five years and particular cases such as tuberculosis and malaria identified by the policy as needy and likely to reduce the burden on the poor. The target of the policy was to stem the worsening of health outcome indicators by increasing health care utilisation for preventive as well as basic curative health care services.

We have demonstrated that introducing user fees had a larger impact on the utilisation of health care facilities for the poor than for the non-poor; the poor had a lower increase in utilisation over the user fees period and used less of health care facilities than the non-poor. In 1998, utilisation of health care facilities by the poor and non-poor was almost similar for both public and private health care facilities, more poor people using both public and private facilities than non-poor. Over the period to 2003 when the fees were implemented in public health care facilities, more non-poor used both the private and public facilities. The proportion of the poor and non-poor using private facilities did increase over the period to 2003, when the fees were enforced in public health care facilities. Only the poor in the urban were found to reduce their use of public and private facilities during the user fees period. This is interesting given the context of facility distribution that favours urban residents.

Removing the fees had the effect of increased utilisation for both the poor and the non-poor, with the increase for the poor being higher than for the non-poor. Both the poor and non-poor used more public health care services after the fees were waived. Utilisation of public facilities for both the poor and the non-poor is of key interest here, given that fees were only introduced and waived for public health care services. Whereas the non-poor increased their use of public facilities following the introduction of the fees, the poor responded better to removal of the fees. Imposing the fees on the public facilities also had the effect of expanding the options for the poor, as they used more private and other facilities during the fee period. This is very clear too when the fees were dropped in 2004, the poor simply returned to the public facilities in larger numbers.

The rural-urban utilisation during the user fees and after abolition shows that public health care utilisation by the urban poor actually decline over the period to 2003. This contrasted with an increase in the rural areas and contradicts our earlier hypothesis that the poor in the urban are likely to benefit more from the policy than their rural counterpart. The poor in the urban used less of both public and private facilities even after fees were waived in 2004. Use of public health facilities was not correlated with the poor in both the rural and urban, but highly correlated with use of private facilities. However, being in a region with health care coverage was above the national average (Nairobi) was highly correlated with the use of both public and private facilities in rural

and urban areas except for the urban private facilities. Use of other type of facilities was only correlated with being in the urban area.

Other things being equal, we expect the use of the health care facilities should decrease if the costs go up and vice versa. Introducing fees in public facilities had the effect of reducing the marginal utility the patients were gaining before user fees and gave them an opportunity to expand their options within the limited budget; use private facilities too. Given that the users of health care are subjected to various options, introducing fees in public had the effect of encouraging the use of private and other facilities that were not affected by the fees, since they were already charging for their services before. This is what is observed as the poor as well as the non-poor switched to private facilities more during this user fees period. The removal of the fees in public facilities is therefore expected to increase utilisation especially by the poor both in rural and urban areas given that they would experience an income effect that lowers their other indirect costs involved in health care seeking such as transport.

Higher rate of utilisation of public health facilities by the poor compared to the non poor seem to suggest that reducing user fees could have a positive effect in reducing inequality in utilisation. This is expected since the poor are more price sensitive than the non-poor, but the decline in use of public facilities for the urban poor after fees were removed raises new questions. The increase in use of the public facilities by the non-poor after the fees were introduced could be interpreted in the context of expected improved service delivery in these facilities. It also gives the impression that unlike poor people, who are constrained by cost, the non-poor are not and only other factors would deter them from using public facilities.

We also discuss some limitations and caveats that one needs to understand while interpreting the results of this study. First, the data used to analyse the impact of user fees in health care utilisation was cross sectional; meaning changes in personal traits could not be captured to explain well the trends observed over time. Availability of panel data would have mitigated against this problem, since the effects of individual characteristics could be controlled. Another valuable aspect of data that may have improved the results was availability of a control group that was excluded from the free health care for comparison purposes.

Second, the macro level changes such as health financing policies, private health care investments, spanning the period of this study may too impede straight forward conclusions that the observed changes were all due to the policy effects. Improved health sector financing from the government, the donor community and the private sector after 2003 cannot be ignored while interpreting the results. Drug availability in public health care facilities served to build confidence on the government that took over from 2003 and imbued people with the impression that health systems would work differently.

Thirdly, trend for the economic growth over the period of consideration is also important here. If we consider for example the per capita GDP, it was high in the later period than had been in 1998 to 2003. The proportion of people living below the poverty line also went down after 2003, but was increasing before. This had the effect of declining burden for the social sector and enhanced donor support for health care services. The effect of this on other health and general economic policies cannot be down played effectively. The overall country policies after 2003 that had their targeted

poverty such as ERS also contributed to the improved health care utilisation over the period.

Lastly, the fact that control group was not available to compare the results of both also weight down our findings. Impact evaluation analyses have of late focused on the controlled experiment type of research where the presence of a comparison group gives the impression of how the situation would have been without this intervention. This tool has proved to be useful in estimating the real impact of the intervention/program. However, it is difficult to implement in public service delivery, given that one cannot discriminate in the provision of public services, without raising public outcry.

6.2 Conclusion

Generally, removing user fees can have positive impact on the utilisation of the health care facilities, especially by the poor who face different barriers to access health care services even without imposition of such fees as has been show in many other countries in Africa (Ridde and Morestin 2011). The poor are known to suffer ill-health more but use health care less, living a vicious kind of life; ill-health leading to the poverty and poverty barring them from seeking health care.

Removing user fees on averages reduces the inequality in health care utilisation between the poor and the non-poor, but this may occur in the background of increasing the inequality within the poor. The overall increase in health care utilisation after fees are waived may be driven by population within 'near non-poor'; those who are close to the boundary making more use of the services than before, rather than the very poor. It is also possible that the poor in the urban areas though nearer to the facilities than the rural poor, may be more vulnerable than the poor in the rural areas. This could explain why their use of facilities went down significantly after fees were introduced, given that they still had to pay registration fees to be attended. There is need for further evaluation of the impact of the policy to reveal if targeting mechanisms included in the policy are effective enough to protect the most vulnerable.

Though introducing fees was viewed negatively from the stand point of equity proponents, utilisation of private facilities did increase, a sign that introducing the appropriate level of user fees together with efficient targeting to protect the most vulnerable could sent the right signal for the health care user. The increase in private health care facilities use, though under worsening health outcome indicators indicates there is potential for user fees in public health facilities. User fees too could give the patients the right to demand better services and keep the government and the health providers on check

The results of the removing user fees are sometimes unintended, and at worst may transfer benefit to the population segments not targeted, if not well designed to protect the target population. Higher uptake of the public facilities after the fees waiver by the non-poor more than the poor in urban is confounding, given that the non-poor are not likely to be constrained by the user fees charged in these facilities. This could probably be explained by the inverse equity hypothesis that was postulated by Victora et al. (2000) in their study on inequity trends. The poor being badly off to afford the charges levied at the health care facilities were expected to show higher facility use than their non-poor urban dwellers. This only happened for the rural population where the poor

used more health care services in public facilities after fees were waived, but not in urban areas.

The results of abolishing the fees have shown that the poor in the urban could turn out to be more vulnerable than the poor in rural, introducing another layer for research. The urban population having relatively endowed with the resources for health care provision was expected to respond better and faster than the rural areas.

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Appendix

Table 7: *Coefficients of MNL regression for utilisation (base category = none)*

	Poor				Non-poor			
	OR	Coef	std err	P>|z|	OR	Coef	std err	P>|z|
Public Facilities								
Year1	0.544	-0.610	0.078	0.000	0.388	-0.946	0.044	0.000
Year3	2.061	0.723	0.204	0.000	1.420	0.351	0.134	0.000
Urban	1.219	0.198	0.236	0.306	1.042	0.041	0.097	0.661
Nairobi	0.593	-0.522	0.061	0.000	0.785	-0.242	0.067	0.005
Edu2	1.469	0.384	0.160	0.000	0.920	-0.083	0.132	0.562
Edu3	1.386	0.326	0.250	0.071	1.029	0.028	0.163	0.858
Edu4	2.930	1.075	1.508	0.037	0.993	-0.007	0.241	0.978
Malehead	0.923	-0.080	0.091	0.418	1.138	0.129	0.107	0.171
Under5	0.882	-0.125	0.090	0.220	0.944	-0.058	0.080	0.493
Age2	0.999	-0.001	0.003	0.814	0.998	-0.002	0.003	0.403
Con		-0.842	0.164	0.000		-0.408	0.182	0.000
Private Facilities								
Year1	0.401	-0.913	0.061	0.000	0.332	-1.102	0.039	0.000
Year3	0.603	-0.506	0.080	0.000	0.635	-0.455	0.064	0.000
Urban	1.577	0.456	0.316	0.023	1.317	0.275	0.124	0.003
Nairobi	1.527	0.423	0.182	0.000	1.147	0.137	0.101	0.120
Edu2	1.405	0.340	0.212	0.024	1.098	0.093	0.187	0.584
Edu3	2.431	0.888	0.488	0.000	1.571	0.452	0.285	0.013
Edu4	2.051	0.718	1.351	0.276	2.464	0.902	0.574	0.000
Malehead	1.389	0.328	0.181	0.012	1.156	0.145	0.115	0.147
Under5	0.696	-0.363	0.081	0.002	0.779	-0.250	0.067	0.004
Age2	1.003	0.003	0.003	0.329	1.006	0.006	0.003	0.035
Con		-1.596	0.198	0.000		-0.846	0.205	0.000
Other Facilities								
Year1	0.884	-0.123	0.152	0.475	0.701	-0.356	0.111	0.024
Year3	1.041	0.040	0.148	0.778	0.653	-0.426	0.114	0.015
Urban	0.470	-0.755	0.161	0.028	0.585	-0.536	0.105	0.003
Nairobi	0.945	-0.057	0.129	0.678	0.886	-0.121	0.126	0.397
Edu2	1.557	0.443	0.252	0.006	0.969	-0.031	0.214	0.887
Edu3	0.812	-0.209	0.245	0.490	0.644	-0.439	0.171	0.097
Edu4	0.710	-0.343	0.757	0.748	0.416	-0.876	0.234	0.118
Malehead	0.920	-0.084	0.128	0.549	0.840	-0.175	0.119	0.218
Under5	1.379	0.321	0.213	0.037	1.010	0.010	0.137	0.944
Age2	1.011	0.011	0.004	0.005	1.009	0.009	0.004	0.052
Con		-2.305	0.234	0.000		-1.472	0.290	0.000
	Number of obs =3177				Number of obs = 4000			
	LR $\chi^2(30)$ =328.21				LR $\chi^2(30)$ = 419.46			
	Log Likelihood = -3628.79				Log Likelihood = 4632.23			
	Prob > χ^2 = 0.0000				Prob > χ^2 = 0.0000			

Table 8: *Coefficients of MNL regression for utilisation (base category = no use)*

	Rural				Urban			
	Odds	Coef	std err	P>|z|	Odds	Coef	std err	P>|z|
Public Facilities								
Year1	0.440	-0.821	0.096	0.000	0.618	-0.482	0.236	0.041
Year3	1.789	0.582	0.077	0.000	1.359	0.306	0.146	0.036
Poor	0.889	-0.117	0.073	0.110	0.807	-0.214	0.231	0.355
Nairobi	0.712	-0.340	0.074	0.000	0.688	-0.373	0.143	0.009
Edu2	1.234	0.210	0.092	0.022	1.088	0.085	0.235	0.718
Edu3	1.164	0.152	0.126	0.229	1.476	0.389	0.256	0.128
Edu4	1.747	0.558	0.289	0.054	1.123	0.116	0.342	0.735
Malehead	1.032	0.031	0.075	0.680	1.005	0.005	0.161	0.973
Under5	0.848	-0.165	0.074	0.025	1.214	0.194	0.135	0.149
Age2	0.998	-0.002	0.002	0.345	1.001	0.001	0.004	0.783
Cons		-0.581	0.138	0.000		-0.646	0.292	0.027
Private Facilities								
Year1	0.341	-1.075	0.103	0.000	0.594	-0.520	0.218	0.017
Year3	0.678	-0.388	0.094	0.000	0.509	-0.676	0.150	0.000
Poor	0.743	-0.296	0.083	0.000	0.668	-0.403	0.226	0.074
Nairobi	1.346	0.297	0.082	0.000	1.085	0.081	0.144	0.572
Edu2	1.477	0.390	0.125	0.002	0.932	-0.070	0.250	0.779
Edu3	2.249	0.810	0.149	0.000	1.361	0.308	0.265	0.244
Edu4	3.078	1.124	0.285	0.000	2.236	0.805	0.315	0.011
Malehead	1.214	0.194	0.089	0.030	1.256	0.228	0.166	0.169
Under5	0.756	-0.280	0.082	0.001	0.735	-0.308	0.131	0.018
Age2	1.003	0.003	0.002	0.234	1.011	0.011	0.004	0.010
Cons		-1.199	0.165	0.000		-0.545	0.299	0.069
Oher Facilities								
Year1	0.802	-0.221	0.121	0.069	0.738	-0.303	0.415	0.465
Year3	0.901	-0.104	0.116	0.370	0.572	-0.558	0.333	0.094
Poor	1.127	0.119	0.101	0.235	0.723	-0.325	0.414	0.433
Nairobi	1.013	0.013	0.104	0.901	0.441	-0.820	0.302	0.007
Edu2	1.242	0.217	0.136	0.112	2.981	1.092	0.552	0.048
Edu3	0.803	-0.219	0.197	0.267	1.203	0.185	0.649	0.776
Edu4	0.942	-0.060	0.496	0.904	0.000	-29.907	0.574	0.000
Malehead	0.897	-0.109	0.104	0.295	0.712	-0.340	0.329	0.302
Under5	1.106	0.100	0.107	0.346	1.702	0.532	0.293	0.070
Age2	1.009	0.009	0.003	0.003	1.016	0.016	0.009	0.074
Cons		-1.995	0.204	0.000		-2.879	0.635	0.000
	Number of obs = 5686				Number of obs = 1491			
	LR χ^2 (30) = 525.09				LR χ^2 (30) = 32818.76			
	Log Likelihood = - 6567.15				Log Likelihood = -1693.98			
	Prob > χ^2 = 0.0000				Prob > χ^2 = 0.0000			