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Impacts of removing user fees for maternal health services on universal health coverage in Kenya

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Impacts of removing user fees for maternal health services on universal health coverage in Kenya

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Summary

Research in Sub-Saharan Africa has identified barriers to healthcare – particularly for disadvantaged populations – including perceived low service quality and availability, socio-cultural factors such as travel distances and related costs, and out-of-pocket costs for services. Out-of-pocket costs represent a major barrier, especially amongst the poorest. Despite these factors, significant economic constraints and increasing donor pressure resulted in user fees for primary healthcare in many African countries in the 1980s, in the belief that graduated fees would encourage use of low-cost primary healthcare services, rather than expensive referral facilities, and improve efficient use of resources by reducing unnecessary demand.

In the past decade, user fee policies have shifted and calls for user fee removals by agencies such as the World Health Organization have encouraged efforts to align user fee reforms with universal health priorities. Since 2001, at least 17 African countries have removed public sector user fees, and in the private sector in a few cases, with increasing momentum. Before 2000, only Tanzania, Malawi and South Africa offered free health services, but in 2001, Uganda abolished fees for all public services, and Zambia, Burundi, Niger, Senegal, Liberia, Kenya, Lesotho, Ghana and Sudan followed, although mostly for maternal and child health services. Pilot programmes in Kenya and Uganda removed out-of-pocket payments through vouchers for the poor seeking reproductive health services, extending financial protection to the private sector. A similar effort in Tanzania utilises subsidised insurance.

This study addresses two important evidence gaps. A long timeframe (18 years) and segmented linear regression models, such as interrupted time series, allow examination of both short- and long-term impacts on Kenya's maternal healthcare utilisation through its user fee removal policies. Facility-based deliveries are the tracer service in maternal and child healthcare. Outcomes on equity and private and public services also provide evidence of public and private sector impacts from fee removals, as Africa's systems are moving towards universal healthcare coverage.

This report comprises two studies. A time series study presents three tests of 72 quarterly intervals of Kenya Demographic and Health Survey (DHS) birth history data on location (home, private or public facility). The first analyses focus on fee removal impacts on the overall population, with subgroup analyses (poorest two quintiles and by region or county):

1. Estimating observed change in delivery location after partial fee removal in 2004, compared with trends projected for 1995 to 2003;
2. Estimating observed change in delivery locations after fee removal in 2007 (10/20 fees), compared with trends projected for 1995 to 2006; and
3. Estimating observed change in delivery locations after user fee removal in 2013, compared with trends projected from historical data.

An interrupted time series analysis (or segmented linear regression) includes data from births to women ages 15–49 in the five years preceding each survey (for example, Kenya DHS 2003, 2008–2009 and 2014). Women ever having given birth were asked detailed questions about their births in the preceding five years, including date and place. A total of 5,949, 6,079 and 20,964 births were reported in the 2003, 2008–2009 and

2014 surveys, respectively. For this study, births were converted to percentages of facility-based deliveries amongst all deliveries, as Kenya DHS used a different sample size in 2014.

Analysis shows steady national increase in facility delivery proportions over time (40% in 2003 to 61% in 2014), consistent in urban and rural areas, although urban facility deliveries were substantially greater. This pattern is reflected in public facility delivery trends, yet there is no consistent pattern for private facilities. Facility deliveries were greater amongst richer women, although the increase over time was consistent amongst all subgroups.

This report's second component is a voucher study, with pairs of difference-in-differences tests of three rounds of cross-sectional household surveys determining whether exposure to a vouchers programme is associated with changes in facility-based deliveries for each survey round.

Three rounds of data collection (2010, 2012 and 2016) recorded 4,804 births, predominantly amongst rural, married mothers who were multiparous, with primary educations or less, unemployed or informally employed, and uninsured, across intervention groups and time. Women in both voucher and comparison sites reported four or more antenatal care visits for 60–65 per cent of births in periods 1 and 2. After free maternity services, this increased moderately, with a greater proportion in voucher sites receiving four or more antenatal care visits (72% versus 66%). In both groups, health facility deliveries increased from about half of all births in period 1 to approximately 85 per cent in period 3. Although there was no difference in access to facility deliveries in periods 1 and 3, a greater proportion of births in period 2 were at facilities in voucher sites (69% versus 59%).

Early attempts to introduce user fees to support facilities' operational costs did not produce intended positive effects on maternal healthcare use. Those early policies introduced distortions in service provision that were not fully addressed in subsequent user fee policies. Without adequate alternative revenue sources for facilities, improving access to critical services is difficult. Promising strategic purchasing models, such as health vouchers and social health insurance, suggest that directing payments to facilities for services based on consumer demand and utilisation can produce intended effects in improving access to health services for underserved populations.

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Abbreviations and acronyms

ANC	Antenatal care
DHS	Demographic and Health Survey
FMS	Free maternity services
HMIS	Health management information system
ITS	Interrupted time series
MOH	Ministry of Health
NHIF	National Hospital Insurance Fund
UHC	Universal health coverage

1. Introduction

Considerable efforts have been made in Sub-Saharan Africa to identify barriers to seeking healthcare, with the aim of increasing access to services, particularly for disadvantaged populations. Potential barriers include perceived low quality of services, socio-cultural factors, health service availability, distance and travel cost, and out-of-pocket costs of services (McIntyre et al. 2006; Obrist et al. 2007). The out-of-pocket cost of seeking healthcare is a major barrier, especially amongst the poorest (Ansah et al. 2009; McKinnon et al. 2015; Bright et al. 2017).

Despite these observations, significant economic constraints and increasing donor pressure resulted in many African countries introducing user fees in the 1980s at the primary healthcare level (Chuma et al. 2009). User fees are intended to generate revenue, in addition to that raised from taxation and donor contributions, which could be pooled and used to purchase services or service inputs that improve equity and efficiency in the health sector. It was believed that graduated fees would encourage use of low-cost primary healthcare services, rather than expensive referral facilities, and that they would improve efficient use of resources by reducing unnecessary demand (Akin et al. 1987; James et al. 2005).

At a time of dynamic change in global health, many low- and middle-income countries are exploring ways of financing their health systems. Appropriate mechanisms for mobilising financial resources for healthcare remain high on the policy agenda for most of these countries (McIntyre 2007; Kutzin 2013; Global Burden of Disease Health Financing Collaborator Network 2017). Chronic underfunding, weakly regulated health systems and poor economic performance have necessitated alternative healthcare financing mechanisms (James et al. 2005; Katz et al. 2014).

Additionally, health systems in Sub-Saharan Africa have largely been funded through out-of-pocket payments (McIntyre 2007), which constitute a barrier to utilisation of healthcare services for the poor and disadvantaged and inhibit adherence to long-term treatment amongst vulnerable groups (Chuma and Maina 2012; Mbugua et al. 1995). Out-of-pocket payments also contribute to household poverty and generate little revenue for the health system (Chuma et al. 2006, 2007; Meessen et al. 2006; Moses et al. 1992; Mwabu 1995; McIntyre et al. 2006; Gilson 1997). These concerns have led to a shift in policy debates away from user fees as a way to finance healthcare and towards development of pre-payment and risk-pooling schemes (Spaan et al. 2012), which have gained momentum under universal health coverage (UHC) initiatives (WHO 2010).

Several studies have assessed the effect of user fees on various indicators of access, utilisation and health impact. Existing evidence shows that user fees have a negative impact on the demand for healthcare, contribute towards household poverty, promote inequities, generate little revenue and may be responsible for excess mortality (McIntyre et al. 2006; Obrist et al. 2007; Ansah et al. 2009). User fees also result in delayed care seeking, incomplete or inadequate care, compromised food security and worsened household financial security. The effects of user fees are amplified by poverty on the demand side and negatively affect quality of care on the supply side (McIntyre et al. 2006). Proponents of user fees have argued that user charges can generate vital

resources at the local level and help provide good-quality services (Ellis 1987; Litvack and Bodart 1993). Although facilities may benefit from the income generated by user fees, evidence shows that user fees only raise an average of 5–7 per cent of health sector recurrent expenditures at the national level (Gilson 1997).

In the past decade, there has been a policy shift towards the removal of user fees at the point of service. Recent policy positions calling for user fees removal by various agencies – such as the World Health Organization through resolutions 58.31¹ and 58.33² – give momentum to efforts to align user fee reforms with global health priorities. Removing user fees is perceived as a quick win in the effort to gain momentum for UHC (Sachs and McArthur 2005).

Since 2001, at least 17 African countries have removed user fees in the public sector and, in a few cases, the private sector, and momentum seems to be accelerating (Hercot et al. 2011). Before 2000, only Tanzania, Malawi and South Africa offered free health services at the point of care. In 2001, Uganda abolished fees for all publicly provided healthcare services. Zambia, Burundi, Niger, Senegal, Liberia, Kenya, Lesotho, Ghana and Sudan have since followed, abolishing fees from public facilities, although these reforms were mostly confined to maternal and child health services (McPake et al. 2011). In Kenya and Uganda, pilot programmes have also removed out-of-pocket payment through vouchers for the poor seeking reproductive health services and extending financial protection to the private sector (Kanya et al. 2014; Obare et al. 2014; Amendah et al. 2013). In Tanzania, a similar effort using subsidised health insurance was attempted (Kuwawenaruwa et al. 2016).

Overall, previous studies indicate that user fee removals result in short-term utilisation gains for health service (Ridde and Morestin 2011). These gains risk being eroded over time, particularly if no alternative funding replaces the lost user fee revenue to facilities (Ridde and Diarra 2009). Several studies have noted the importance of thorough administrative preparation and political consensus to ensure that the removal of user fees is sustained over the long term. Thus, removing fees requires supportive actions, as incomplete removal or uncertain implementation can add to the performance problems of health systems (Gilson and McIntyre 2005; Meessen et al. 2011). The evidence also suggests that replacing revenue lost to facilities will improve the likelihood of successful user fee removal (Ridde and Diarra 2009; Opwora et al. 2010).

This study addresses two important gaps in the evidence base. First, by taking a long timeframe (18 years and approximately 72 quarterly intervals, 1995–2014) and modelling as segmented linear regressions, such as interrupted time series (ITS), the study examines both the short- and long-term impacts in Kenya on maternal healthcare

¹ The resolution called for working towards universal coverage of maternal, newborn and child health interventions.

² This resolution recognised a need for health financing systems to guarantee access to necessary services while providing protection against financial risk, prepayment and pooling of resources and risks. The resolution called for consideration of the particular context of each country; health-financing reforms may involve a mix of public and private approaches, including the introduction of social health insurance.

utilisation from the different attempts to remove user fees. Second, by including outcomes on equity and private and public services, the study provides evidence on the impact of removing user fees on both public and private sectors, which could help inform policymakers at a time when other health systems in Africa are moving towards UHC. The tracer service is facility-based deliveries within the broader maternal and child health services. The following section provides an overview of the changing healthcare financing landscape in Kenya and situates the study in context.

1.1 Overview of healthcare financing policies and interventions evaluated in Kenya

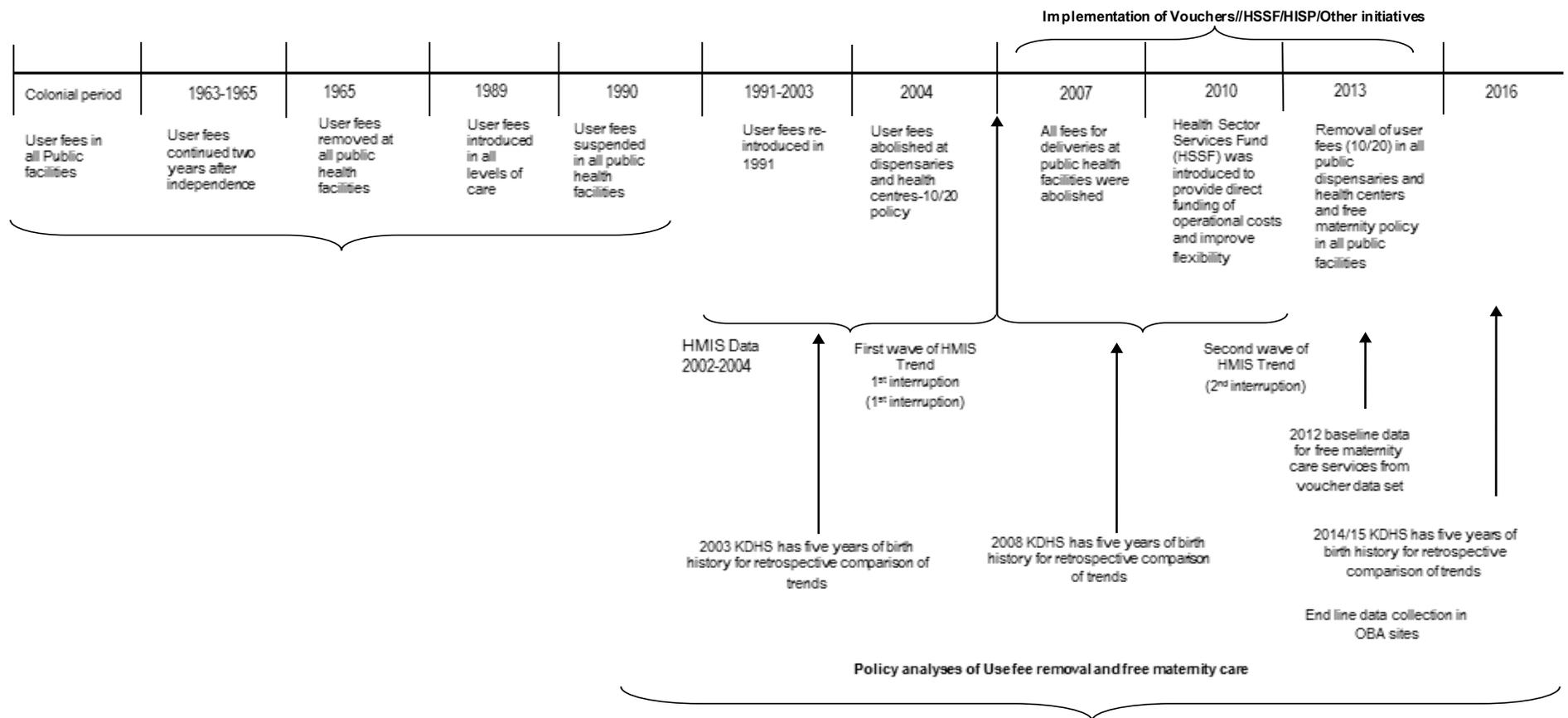
This section traces the history of healthcare financing policies in Kenya, with a focus on interventions examined for this evaluation. We provide an overview of each policy intervention, the target group, period implemented and broad policy objective associated with each policy initiative.

In Kenya, several healthcare financing reforms have been implemented since independence. In 1965, the government made universal healthcare a major policy goal by abolishing user fees. The National Hospital Insurance Fund (NHIF) was established in 1966 to provide health insurance for formal employees with mandatory payroll deductions. This continued until 1998, when the NHIF Act was amended to allow all formally employed Kenyans above the age of 18 years to contribute to the fund, in addition to voluntary contributions from Kenyans in the informal sector. Meanwhile, free public sector services continued up to 1988, when the government introduced user fees due to poor economic performance, inadequate financial resources and declining budget (Mwabu 1995; Mwabu et al. 1995). The user fees were suspended in 1990 and later re-introduced in phases in 1991 (Mwabu et al. 1995; Mwabu 1995; Collins et al. 1996). Following the re-introduction in 1991, fees were charged only for individual services such as drugs, injections and laboratory services, but not for consultation. A fee-waiving policy to protect the poor was put in place and children under five years received free services.

There is a distinction between exemptions and waivers: characteristic targeting exempts certain groups of individuals based on characteristics such as age, disease or employment, while individual targeting takes into account each individual's ability to pay (Tien and Chee 2002). In Kenya, characteristic targeting was implemented on the basis of age and disease – such as child with malaria, adult with tuberculosis, antenatal care (ANC) client (first visit), child with pneumonia, adult with malaria, adult with gonorrhoea and delivery services – with limited adherence to the policies (Opwora et al. 2015).

In cases where individual targeting was done, the waiver mechanism targeted poor people using Ministry of Health (MOH) poverty scores administered by either a social worker at the hospital or providers. However, its implementation proved difficult, with challenges of identification and inconsistent application of the criteria (Chuma et al. 2009). User fees continued to be implemented until a new policy was designed in 2004 for certain segments of the population, including women seeking maternal health services (Figure 1).

Figure 1: Timeline of healthcare financing strategies in Kenya and data sources for the assessment



The first policy intervention examined in this evaluation is the user fee removal of 2004. The MOH implemented the '10/20 policy' for maternal health services in public facilities, which established a fee of 10 shillings at dispensaries and 20 shillings at health centres to register clients with a maternity card. This policy was intended to remove all other user fees in dispensaries and health centres in place since 1991. The intervention was implemented only in public health facilities and focused on all women who visited public facilities for maternal health services.

The 10/20 policy did not identify replacement funding for these public facilities. In response, Direct Facility Funding, a pilot project supported by the Danish International Development Agency, was introduced in the Coast region in 2005 as a means for the government to provide funds to supplement operating budgets at public dispensaries and health centres and enable facilities to adhere to the 10/20 policy (Opwora et al. 2010). Facilities receiving Direct Facility Funding were required to open a bank account into which funds were transferred directly from the national level. Decisions on how to spend Direct Facility Funding were made by the facility management team, in compliance with national guidelines (Chuma et al. 2009). An assessment of the pilot scheme indicated that the approach could increase financial resources for primary care facilities (Opwora et al. 2010).

During the same period, a health financing strategy was proposed through the creation of the national social health insurance scheme for all Kenyans (GOK 2010). Under that arrangement, NHIF was to be reformed and linked to the comprehensive health insurance for all Kenyans. The 2004/2005 National Social Health Insurance Bill was debated in Parliament, but met with resistance from various stakeholders. Although contested, the Bill passed in Parliament, but the president declined to sign it into law for technical and political reasons (Abuya et al. 2015).

The second policy intervention was introduced in 2007. Kenya's MOH rededicated itself to expanding free maternal health services in public facilities. The 10/20 policy was removed, and a policy of no user fees was declared; however, no alternative source of funding was offered, and informal fees remained in place. Although in principle, user fees were removed in 2007, most facilities continued to charge other costs associated with care.

Meanwhile, following the failure of the 2005/2006 National Social Health Insurance Bill, two years later Kenya embarked on a process to develop a healthcare financing strategy. A draft healthcare financing strategy was started in 2009 but was not finalised due to lack of effective links with social security sectors, limited involvement and coordination of key government departments, lack of explicit and systematic stakeholder analysis, poor communication and limited public debate (MOH 2015). The 2009 healthcare financing strategy proposed four central pillars:

- Kenya moves towards UHC through social health protection;
- All Kenyans must belong to a health plan;
- The health needs of poor and vulnerable Kenyans are to be catered for through direct government support and subsidy; and
- A health benefits regulatory authority for the sector is to be established.

In 2011, the government developed a session paper towards UHC that sought to transform the NHIF into a social health insurance fund in accordance with Kenya's Vision 2030 (MOH 2012).

Later in 2012, the MOH commissioned a review of healthcare financing options, with support from the Partners for Health consortium. The review identified strengths and challenges to be addressed in the finalisation of the strategy. Key areas of consensus included the need to:

- Improve social health protection, by enrolling all Kenyans in a health financing plan;
- Move towards a pre-payment system, which can either be financed through tax and/or health insurance;
- Improve the effectiveness, quality and efficiency of the health financing system and NHIF and public budget execution mechanisms;
- Develop a uniform basic benefit package;
- Develop purchasing capacity and sustainable instruments for third-party payers; and
- Retain pluralistic services delivery and autonomy of public hospitals (MOH 2015).

Following the recommendations, the MOH put in place the Healthcare Financing Inter-Agency Coordinating Committee and established a UHC steering committee.

The third policy intervention evaluated in this report is the effect of implementing a reproductive health voucher programme on maternal health services in the context of user fee removals. In addition to the removal of user fees, the Kenyan government launched an initiative to subsidise maternal and reproductive health services for the poor, through the use of a targeted voucher to the beneficiary and results-based reimbursements to contracted public and private facilities (Abuya et al. 2012). The results of this initiative indicated promising opportunities for improving access, coverage and quality for targeted low-income beneficiaries (Obare et al. 2015; Obare et al. 2014; Njuki et al. 2015; Njuki et al. 2013; Njuki et al. 2012).

Amidst all the initiatives to reform the sector, the 2013 general elections led to a change in government and subsequent shift in policy, with the new government announcing that maternity care and primary care would be free in public health facilities. Under this system, the government directs output-based payments to public facilities that report quarterly numbers of maternal deliveries. In the past four years, a few studies have been conducted to assess the implementation and experiences of free maternity services (FMS), with varying results (Chuma and Maina 2013; Bourbonnais 2013; Njuguna et al. 2017).

This study evaluates the impact of four main policy changes to user fees on the use of maternity services (Figure 1):

- The 2004 10/20 policy implementation reducing user fees;
- The 2007 removal of the 10/20 policy and implementation of no user fees in all public facilities;
- Exposure to vouchers on utilisation of maternal health services in the context of user fee removals; and
- Implementation of FMS from July 2013.

The study takes account of the potential impact of other alternative financing strategies, such as vouchers and results-based financing for the public sector, and subsidised health insurance for public and private sector initiatives from 1995 to 2014. The influence of the local context on operationalisation of the policy changes is also investigated. The expected trend is an initial surge in use of facility-based deliveries, followed by a significant decrease in utilisation as poorer quality of care at facilities (due to reduced revenue) deters demand over the long run (beyond a year). Assessing whether this trend holds for various policy actions will be important for policy dialogue. We assess whether the combination of subsidies to poor women to enable them to access care in a range of facilities, coupled with user fee removal and alternative revenue for public facilities, would produce a sustained increase in demand for maternal healthcare across public and private facilities combined.

The overall objective of the study is to assess the effect of changes in user fee policies on maternal healthcare utilisation from 1995 to 2014 in Kenya. The specific objectives of the study and the components are presented in Table 1.

This report summarises results of the evaluation of the impact of changes to user fees on utilisation of maternal health services in Kenya, using the three components listed. This report features four main sections. The first section summarises literature on the user fee removal policy including the rationale for the study. The second section summarises the study design and the methods, while the third section provides key findings. Insights on implications of the findings and recommendations as part of the discussion is presented in the fourth and last section.

Table 1: Study objectives, components and variations from original design

Objectives	Study components	Variations from original study design
1. Estimate, in the three years following partial user fee removal in 2004, the observed change in public, private and home-based deliveries amongst: (a) all respondents; (b) poorest two quintiles; and (c) between regions (former provinces), compared with their predicted trends projected forward from historical data (pre-intervention period, 1995–2003).	Component 1: Analysis of existing Kenya Demographic and Health Survey data.	For this component, the only variations in the analyses is the comparison by regions that was not conducted, given the fact that the variables for regions were unavailable for the 2014 data sets when the country changed from provinces to counties, a new devolved government structure.
2. Estimate, in the period following user fee (10/20 fees) removal in 2007, the observed change in public, private and home-based deliveries amongst: (a) all respondents; (b) poorest two quintiles; and (c) between regions (former provinces), compared with their predicted trends projected forward from historical data (pre-intervention period 1995–2006).	Component 2: Analysis of existing health management information system (HMIS) data. This component contributes to the understanding of trends in facility deliveries.	The HMIS component was dropped, since there were serious doubts about the quality of data, given that the shift in deliveries from one year to the next were so huge that they could not be explained by free maternity services alone.
3. Estimate, in the period following user fee removal in 2013, the observed change in public, private and home-based deliveries amongst: (a) all respondents; (b) poorest two quintiles; and (c) between counties, compared with their predicted trends projected forward from historical data (pre-intervention period 1995–2012).		
4. Examine whether devolution of responsibility for maternity care to counties affected facility-based deliveries. 5. Examine whether the replacement of user fees with cost-reimbursement funding for public facilities, when combined with or without a voucher strategy for the poor, have an impact on the use of facility-based maternity care.	Component 3: Quantitative interviews with women in voucher evaluation sites (compares data collected from previous rounds of surveys for assessing the voucher project with the post-2013 period of policy shifts); in-depth interviews with key informants and facility managers – this is the qualitative dimension together with policy analysis.	The initial analysis was to compare 2012 data collected under the voucher project and 2016 data collected under this project; however, we took advantage of the 2010 data set available to consider the trends over time. This component also factored in a scoping review of literature on the effect of user fee removals on maternity services. A summary of these results is used in the literature review and the results section for this component.

2. Intervention, theory of change and research hypotheses

2.1 Theory of change

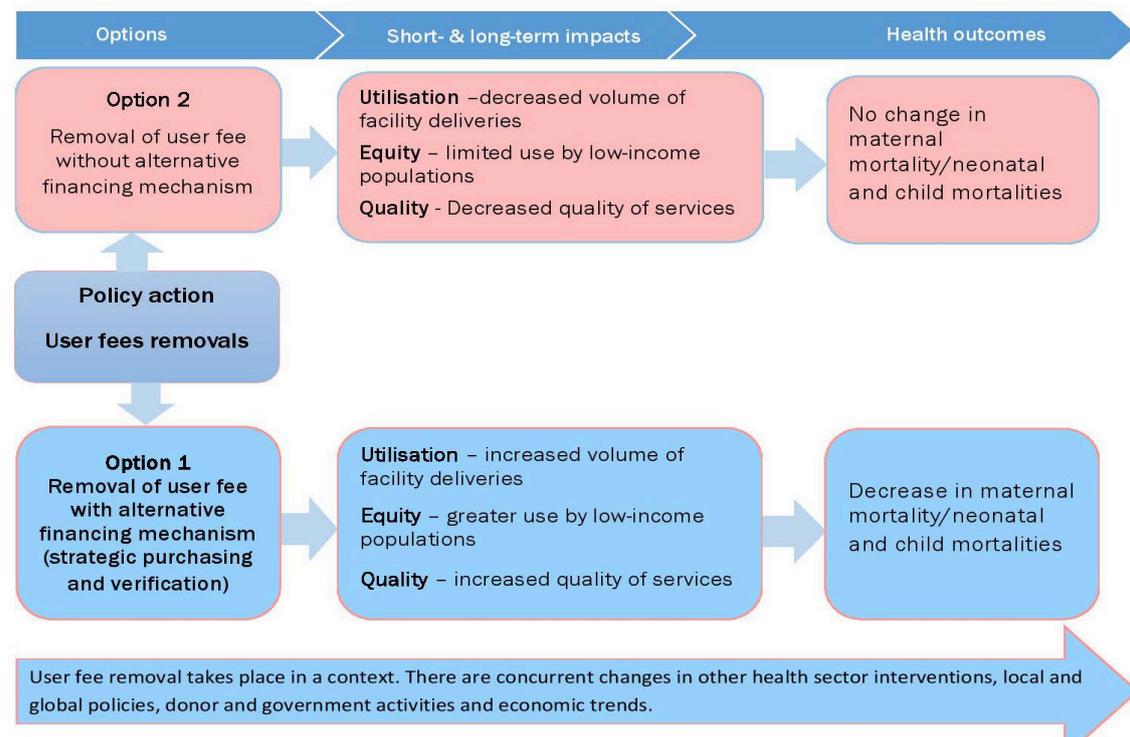
Figure 2 describes a theory of change that guides the evaluation. It depicts the potential strategies and the processes and impact when user fees are removed, with different outcomes conditional upon whether lost user fee revenue is replaced by an alternative revenue source (Option 1) or not (Option 2). This theory of change was informed by a review of the published evidence on experiences with user fee removals. There are two strategies, both of which have been implemented at different times in Kenya.

The first strategy (Option 1) involves removal of user fees with an alternative financing mechanism introduced by the government to replace the facilities' lost income stream. In 2013, the government removed user fees for maternal health services and offset the lost revenue with reimbursements to public facilities that report the number of maternal deliveries. Sub-county hospitals are paid USD25 per delivery. County referral hospitals receive USD50 and national referral hospitals receive USD200, on the assumption that they see the most difficult referral cases. Currently, the government is implementing an FMS policy. Dispensaries and health centres continued to raise a significant amount of revenue from user fees in the 12 months before the June 2013 policy. The compensation planned by the government under the FMS policy should thus exceed the amount raised to ensure services are not interrupted and gains from the user fee removal are realised.

In the second strategy (Option 2), user fee removal is not replaced by an alternative financing mechanism, which was the situation in 2004 and 2007. Evidence from the literature suggests that gains in increased utilisation and equity are often short-lived and if sufficient funds are not available to supplement the lost income, the gains may be eroded as problems with ensuring sufficient staffing and quality emerge, especially if free services generate significantly increased demand. Facilities may resort to charging user fees again, formally or informally. In summary, studies have concluded that user fee removal ought to be accompanied by a replacement of user fee revenue through alternative financing mechanisms to achieve long-term success (McPake et al. 2011)

Through these two pathways, the removal of user fees will lead to different changes in service use, quality of care and equitable uptake of services amongst the poor. To anticipate the magnitude of effect, additional components to consider in the theory of change are the policy and regulatory context, as well as the clients' experiences under various levels of fidelity to implementation of the policy in facilities. The theory of change hypothesises that in the absence of alternative revenue mechanisms, there will be an erosion of the initial gains in service utilisation and equity over time; moreover, the loss of fidelity to a 'no user fee' model will vary with the context. We theorise that user fee removal, accompanied by the introduction of adequate alternative financing mechanisms, can generate sustainable improvements in utilisation and other measures.

Figure 2: Theory of change



2.2 Context

For all the components described, secondary data analysis is based on publicly available data sets that provide the national estimate for various key health indices (for components 1 and 2, see Table 1). The second component is intended to augment objectives 1 and 2, and attempts to use publicly available data sets for analyses of trends of facility deliveries. This was dropped, however, due to issues with the quality of the data set. Primary data collection implemented as part of component 3 is based on a third round of data from the same sites that had been used as voucher evaluation sites. The voucher evaluation project had collected two rounds of data (2010–2011 and 2012) in four voucher sites (Kilifi, Kiambu, Kisumu and Kitui counties) and compared with non-voucher sites (Uasin Gishu, Nyandarua and Makueni counties). To facilitate comparisons over time, data from one intervention county (Kilifi) were excluded from this analysis, as it was not surveyed in 2016.

3. Evaluation design, methods and implementation

3.1 Analysis of existing Demographic and Health Survey data

The interrupted time series analysis (or segmented linear regression) includes data from births occurring in the five years preceding the survey amongst women ages 15–49 years who were interviewed in the 2003, 2008–2009, and 2014 Kenya Demographic and Health Survey (DHS), a nationally representative survey of women of reproductive age. In all surveys, women who had ever given birth were asked detailed questions about each of the births occurring in the five years preceding the survey, including date and place of birth of the child. A total of 5,949, 6,079 and 20,964 births were reported in the 2003, 2008–2009, and 2014 surveys, respectively. Detailed descriptions of the

methodology used in each survey are available in the survey reports. The data sets are publicly available to users from the MEASURE DHS Program at ICF Macro (NCPD et al. 1999; KNBS 2010; KNBS et al. 2015).

The outcome of interest was quarterly trends in the proportions of births occurring at home and at public and private health facilities. Using information on month and year of birth of the child, we computed the total number of births occurring in each quarter of a calendar year and determined the proportion that occurred at home or at public and private health facilities. We conducted ITS analysis, predicting the quarterly proportions of births occurring at home and at public and private health facilities before and after 2004, 2007 and 2013 policy shifts for four subgroups of women: all women ages 15–49; women from the bottom two quintiles; and rural and urban women. Researchers assumed a simple cut-off for intervention outset in the second quarter of each intervention year (for example, the model assumes each intervention began Q2 2004, Q2 2007, Q2 2013). The basic model is of the following form (Linden and Adams 2011):

$$Y_t = \beta_0 + \beta_1 T_t + \beta_2 X_t + \beta_3 X_t T_t + \varepsilon_t \quad (1)$$

where: Y_t is the outcome of interest; β_0 is the baseline level of the outcome at the beginning of the period; β_1 captures the trajectory of the outcome until the implementation of the policy shift; β_2 is the change in the level of the outcome immediately after the policy shift (immediate effect of the intervention); and β_3 is the difference in the slopes of the outcome between pre- and post-shifts in policy (effect of the intervention over time).

The covariates are defined as follows: T_t is the time from the start to the end of the period; X_t is a dummy variable coded 0 and 1 for periods before and after policy shifts, respectively; $X_t T_t$ is an interaction term between time and intervention dummy; and ε_t is the error term (Linden and Adams 2011; Lagarde 2012). We further obtained the predicted post-intervention linear trends in deliveries after model estimation. Results are presented in tabular and graphical forms (Lagarde 2012).

3.2 Quantitative interviews with women in voucher evaluation sites

A separate analysis of a quasi-experimental study with repeated cross-sectional surveys was administered in six largely rural counties in Kenya in 2010–2011 (May 2010–July 2011), 2012 (July–October) and 2016 (July–August). Data were collected in three intervention counties (Kiambu, Kisumu and Kitui) and three comparison counties (Makueni, Nyandarua and Uasin Gishu).

The comparison sites were identified by the researchers who implemented the voucher evaluation project, in collaboration with the MOH, based on geographic location, population characteristics and availability of health facilities similar to those in voucher sites, in terms of level (hospital, nursing home, health centre, dispensary) and type of ownership (public, private-for-profit, private-not-for-profit). To account for imbalance in characteristics, we controlled for these attributes in regression analysis and further considered clustering of individuals from the same locality (sub-location). Data from one intervention county (Kilifi) were excluded from this analysis, as it was not surveyed in 2016.

We used a multi-stage sampling design. In the first stage, a random sample of 14 sub-locations were selected in each intervention county amongst those located within a 5-kilometre radius of a facility accredited in the voucher programme. In comparison sites, 14 sub-locations were selected amongst those within a 5-kilometre radius of a facility that were comparable to the intervention facilities in terms of type and ownership, to ensure that all surveyed women had similar theoretical physical access to the maternal health services offered under the voucher programme.

At the second sampling stage, three villages were randomly selected within each sub-location. Given that the voucher programme was only available to poor women, the poorest households in each village were identified by local officials and purposively selected for inclusion. A poverty grading tool to identify voucher beneficiaries was administered to identified households, with a target of recruiting 75 per cent poor and 25 per cent non-poor households into the study. Within each household, women aged 15–49 years with at least one birth in the past 12 months, or pregnant at the time of the interview, were targeted for participation. In households with more than one woman meeting the target characteristics, the youngest woman was selected into the study, because they were more likely to face additional barriers to seeking care than their older counterparts.

Face-to-face interviews were conducted in each survey round with a tablet-based, structured questionnaire covering a range of topics, including women's socio-demographic characteristics, reproductive history, and maternal health service utilisation and expenditures. Each participant provided written informed consent to participate in the study. Box 1 outlines the key indicators examined in this study related to maternal health service utilisation.

Box 1: Key outcome indicators used for the assessment

4+ ANC visits – Births for which a woman attended four or more ANC visits were categorised as having received 4+ ANC visits. Births with missing information on the number of ANC visits were considered not to have received 4+ ANC visits.

Facility delivery – All births that occurred in a health facility, regardless of birth attendant or sector of care, were categorised as facility deliveries. Births with missing information on delivery location were considered not to have occurred in a health facility.

Respondents were asked to report on all their births within the five years prior to the survey; we categorised these births into three periods, according to when they occurred. Period 1 (May 2005–Dec 2009) refers to the pre-intervention and rollout phase of the reproductive voucher programme; period 2 (January 2010–May 2013) refers to the post-rollout phase, when the programme was implemented at full intensity; and period 3 (June 2013–August 2016) refers to the period during which the voucher programme and the FMS policy for all government facilities were being implemented simultaneously. We performed Wald tests, adjusted for the multi-stage sampling design, to assess cross-sectional differences in background socio-demographic characteristics between women in voucher and comparison sites in each period.

We used a difference-in-differences approach with multi-level fixed effects models to approximate the impact of the voucher programme and introduction of FMS on maternal health service utilisation. We accounted for clustering at the sub-location, village levels and birth levels, as some women reported multiple births within a given survey recall period.

To assess the impact of the voucher programme, we estimated the difference in the change over time in outcomes between voucher and comparison sites before (period 1) and after (period 2) the voucher programme was fully implemented. We further assessed whether any benefits of the voucher programme persisted after the introduction of FMS by estimating the difference in the change in outcomes between voucher and comparison sites before (period 2) and after (period 3) the removal of user fees. We present programme impact results controlled for key potential confounders, including location (urban/rural), wealth quintile, child's year of birth, insurance enrolment, and mother's parity, education, marital status and employment status.

3.3 In-depth interviews with key informants and facility managers

The qualitative component aimed to identify the process and complexities of implementing various policy options, including FMS, to understand factors that influence women to seek facility-based deliveries with and without user fees, and to examine stakeholders' views regarding the transitioning of FMS to NHIF. At the facility level, in-depth interviews were conducted with two categories of purposively identified key informants, namely, facility managers and providers (n = 14) from primary health facilities with high-volume deliveries and one referral hospital; and county policymakers (n = 11).

At the community level, focus group discussions were conducted with purposively identified women aged 18 years and older who gave birth before and after the introduction of FMS (Table 1). Twelve focus group discussions were conducted in the former voucher sites – three each with women who gave birth before and after the policy shift and used a voucher, and another set of three each with women who gave birth before and after the policy shift but did not use a voucher. Eleven focus group discussions were conducted in non-voucher sites – two with women who gave birth in facilities before the policy shift, three with women who gave birth in facilities after the policy shift, and three each with women who delivered at home before and after the policy shift (Table 2).

Trained research assistants, who had experience in qualitative studies and had undergone training in research ethics, collected the data. Interviews were conducted in English or Kiswahili, depending on the preference of informants, and were audio-recorded with the consent of participants.

Table 2: Type, category and number of participants for the qualitative component

Category of study participant	Non-voucher sites	Former voucher sites
In-depth interviews, facilities		
Maternity in-charge	1	2
Facility in-charge	2	0
Nursing officer in-charge	2	2
Medical superintendent	3	2
In-depth policy interviews, county		
Chief executive for health	2	2
County director of health	1	2
Deputy director of medical services	1	0
Health administrative officer	0	1
Reproductive health coordinator	0	1
NGO stakeholder	1	0
Focus group discussions		
Women delivered in facility before policy shift	3	Not targeted
Women delivered in facility after policy shift	2	Not targeted
Women delivered at home before policy shift	3	Not targeted
Women delivered at home after policy shift	3	Not targeted
Non-voucher users after policy shift	Not targeted	3
Non-voucher users before policy shift	Not targeted	3
Voucher users after policy shift	Not applicable	3
Voucher users before policy shift	Not applicable	3

The data were transcribed, translated into English where applicable and exported to NVivo (version 11) for analysis. Concurrent data collection and document review facilitated the interpretation of results and allowed refocusing of issues to be explored further during interviews. We analysed the data in an iterative process by describing the nature of the FMS policy implementation at facility and county levels and examining respondents' views regarding transitioning FMS to NHIF. Analysis was based on inductively derived themes from the transcripts.

Broad issues identified during the analysis were validated through a consultative process amongst the research team and the MOH in dissemination meetings and other forums. This discursive, team-based approach to analysis corroborated information from multiple data sources, along thematically organised ideas that shaped inferences made. Data were then organised in analysis charts within and across sites, and by type of participant, to provide in-depth understanding of issues.

4. Impact analysis and results of the key evaluation questions

Nationally, there was a steady increase in the proportion of births in facilities over time (from 40% in 2003 to 61% in 2014), with the increase consistent in urban and rural areas (Table 3). This pattern was reflected in trends in public facility deliveries, while there was no consistent pattern in private facility deliveries. However, facility deliveries were substantially higher in urban than rural areas and amongst women from the richest households than those from the poorest households, although the increase over time was consistent across these subgroups.

Table 3: Distribution of births by place of occurrence, 1998–2014

Characteristics	Any facility delivery		
Type of place of residence	2003 (%)	2008–2009 (%)	2014 (%)
Urban	70.2	74.7	82.8
Rural	33.2	35.4	49.5
Household wealth quintile			
Lowest quintile	16.0	18.0	30.1
Second quintile	31.4	30.4	49.1
Middle quintile	36.5	41.6	62.3
Fourth quintile	53.2	51.4	79.9
Highest quintile	73.8	80.9	92.7
All deliveries	40.1	42.6	61.2
	Public facility delivery		
Type of place of residence			
Urban	44.9	51.6	54.8
Rural	21.8	28.0	41.1
Household wealth quintile			
Lowest quintile	9.2	16.0	27.3
Second quintile	19.1	23.1	42.0
Middle quintile	27.8	36.2	50.8
Fourth quintile	38.8	39.9	60.6
Highest quintile	43.5	52.9	55.1
All deliveries	26.1	32.4	46.0
	Private facility delivery		
Type of place of residence			
Urban	25.3	23.1	27.2
Rural	11.4	7.4	8.4
Household wealth quintile			
Lowest quintile	6.8	2.1	2.9
Second quintile	12.3	7.3	7.1
Middle quintile	8.7	5.4	11.5
Fourth quintile	14.7	11.6	19.3
Highest quintile	30.3	28.0	37.6
All deliveries	14.0	10.3	15.2
	Home delivery		
Type of place of residence			
Urban	29.2	24.5	16.7
Rural	65.5	63.3	48.9
Household wealth quintile			
Lowest quintile	82.9	80.9	68.2
Second quintile	66.7	68.3	49.1
Middle quintile	62.3	56.7	36.1
Fourth quintile	45.8	47.2	19.0
Highest quintile	25.8	18.4	6.2
All deliveries	58.7	56.2	37.4

There was a statistically significant decrease in home-based deliveries amongst all women ($p < 0.05$), and amongst women from the bottom two quintiles ($p < 0.01$), immediately following the 2004 10/20 policy (Table 4). In contrast, the 2007 and 2013

policy shifts did not have significant immediate effect on home-based deliveries amongst all groups of women considered. In addition, the difference between pre- and post-policy shift trends in home-based deliveries was not statistically significant amongst all subgroups of women and across time.

Results in Table 4 further show a non-significant trend towards a decrease in home deliveries before the 2004 policy shift, amongst all subgroups of women considered. In addition, the predicted linear trends in home deliveries following the various policy shifts were negative amongst all subgroups of women. These patterns are also consistent with the trends shown in Figures 3a–d. However, the predicted decreasing trends were only statistically significant for all women, those from the bottom two quintiles, and rural women following the 2007 policy shift ($p < 0.01$ in all cases). These patterns are also consistent with the trends shown in Figures 3a–d.

Figure 3: Actual and predicted trends in home-based deliveries following 2004, 2007 and 2013 user fee policy shifts

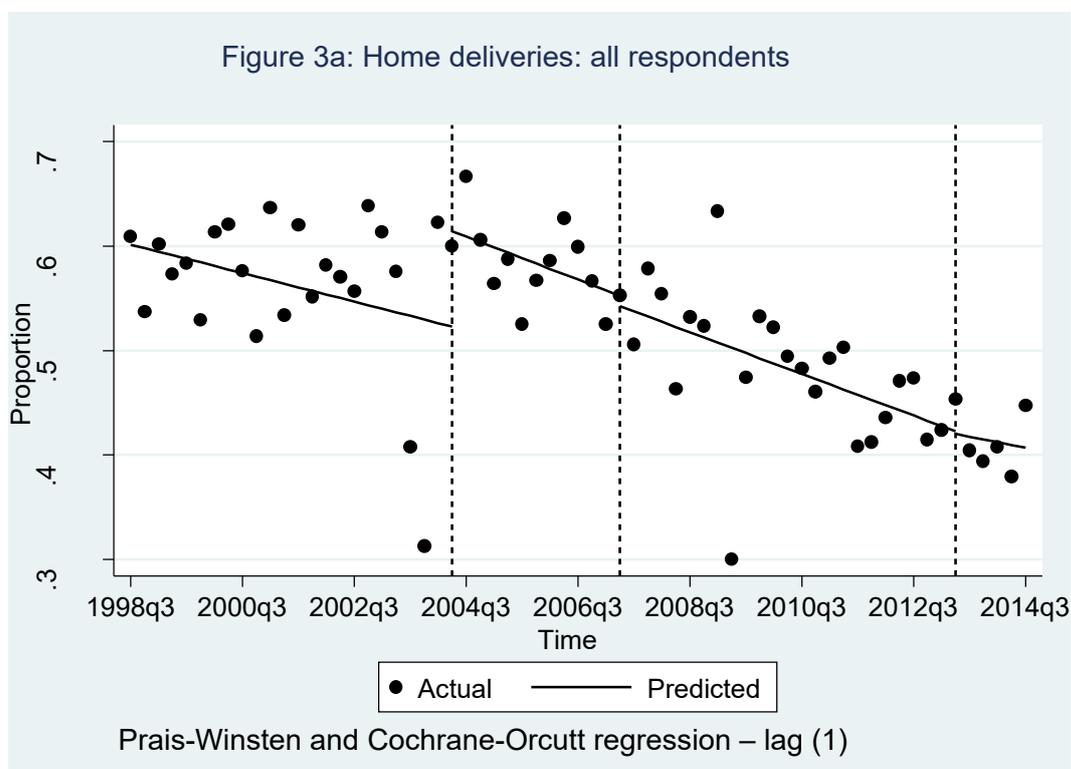


Figure 3b: Home deliveries – bottom 2 quintiles

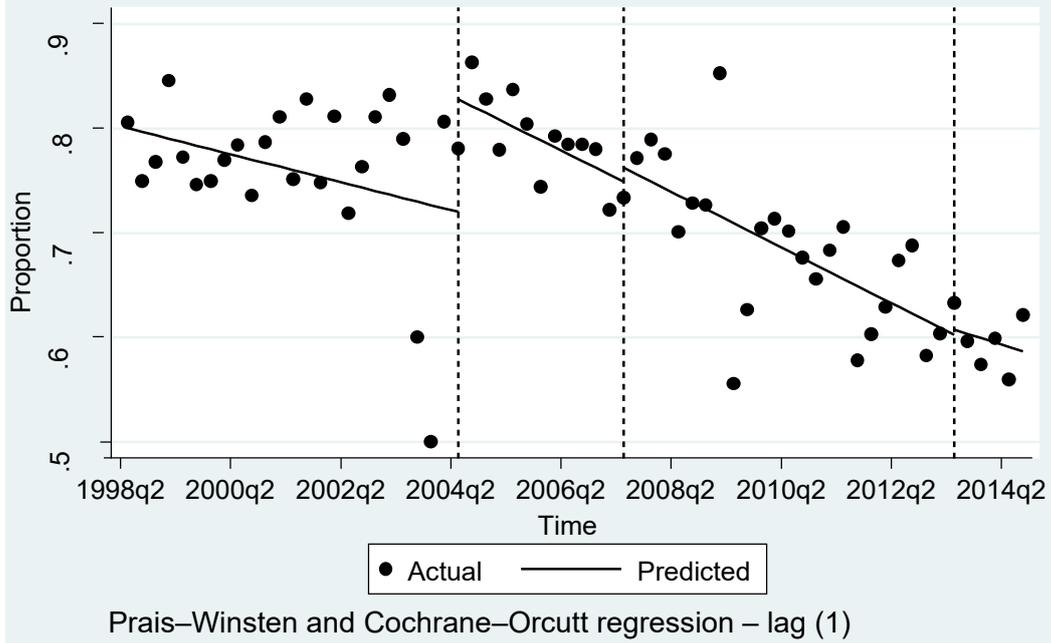
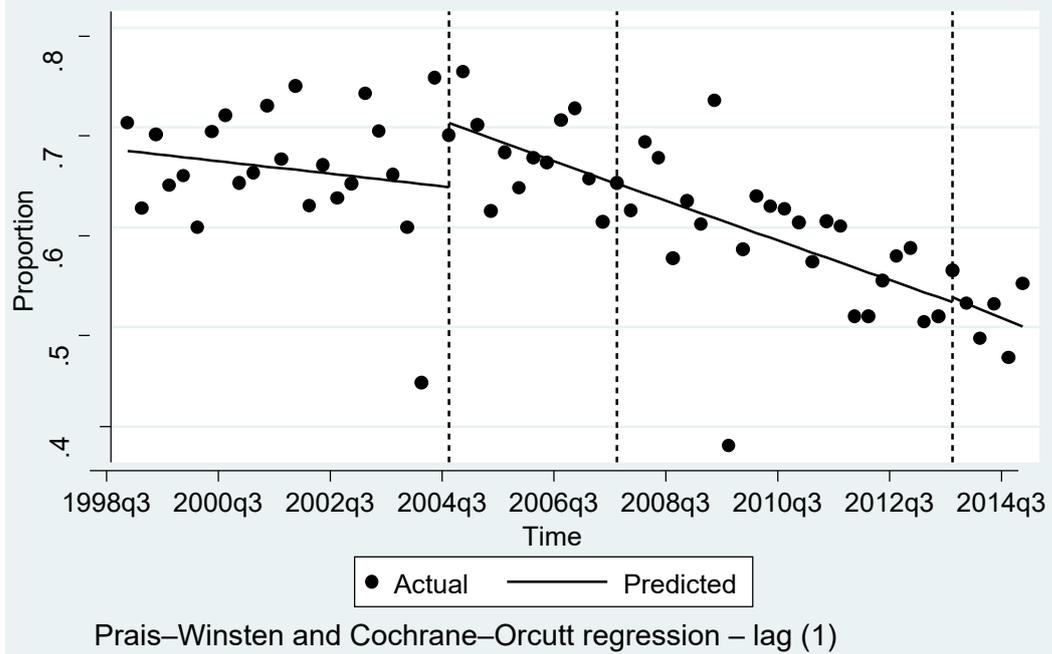
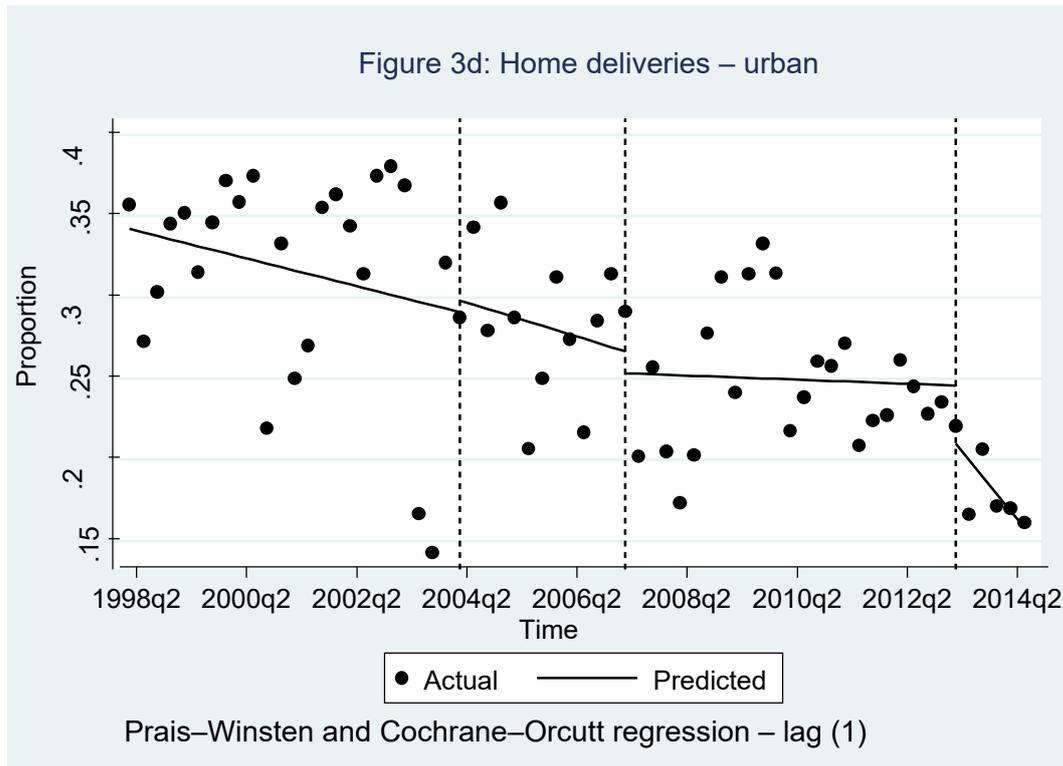


Figure 3c: Home deliveries – rural





4.1.1 Trends in public facility deliveries

For most subgroups (all women, those from the bottom two quintiles and urban women), the change was negative but not statistically significant. In addition, the differences between pre- and post-policy trends in public facility deliveries were not statistically significant for all subgroups for all policy shifts. However, there was a statistically significant positive trend in public facility deliveries amongst all women before the 2004 10/20 policy ($p < 0.05$; Table 5). There was also a non-significant increase in public facility deliveries amongst rural women immediately after the 2004 10/20 policy (Table 5).

The predicted linear trends in public facility deliveries following the 2004 policy shift were also positive for all sub-groups of women across the various policy shifts, except for urban women, for whom the trend was negative. However, the predicted positive trends were only statistically significant for all women ($p < 0.05$), those from the bottom two quintiles ($p < 0.01$), and rural women ($p < 0.01$) following the 2007 policy shift. These patterns are also consistent with the trends shown in Figures 4a–d.

Table 4: Results of ITS analysis predicting trends in home deliveries after 2004, 2007 and 2013 user fee policy shifts

Indicator	All women (15–49) who delivered within 5 years of survey period		Bottom two wealth quintiles		Rural women		Urban women	
	β	<i>p</i> -value	β	<i>p</i> -value	β	<i>p</i> -value	β	<i>p</i> -value
Pre-policy trend (β_1)	-0.003 (-0.006; 0.000)	0.06	-0.003 (-0.007; 0.000)	0.06	-0.002 (-0.004; 0.002)	0.32	-0.002 (-0.006; 0.002)	0.25
2004 policy								
Change in level (β_2)	0.091 (0.013; 0.170)	0.02	0.108 (0.028; 0.188)	0.009	0.064 (-0.006; 0.135)	0.07	0.007 (-0.074; 0.089)	0.86
Change in trend (β_3)	-0.002 (-0.012; 0.008)	0.73	-0.003 (-0.014; 0.007)	0.53	-0.004 (-0.013; 0.005)	0.43	-0.000 (-0.011; 0.010)	0.93
Predicted trend	-0.005 (-0.015; 0.004)	0.28	-0.007 (-0.016; 0.003)	0.18	-0.005 (-0.014; 0.003)	0.23	-0.003 (-0.013; 0.007)	0.60
2007 policy								
Change in level (β_2)	-0.010 (-0.093; 0.073)	0.81	0.014 (-0.072; 0.099)	0.75	0.000 (0.074; 0.075)	0.99	-0.014 (0.100; 0.073)	0.76
Change in trend (β_3)	0.000 (-0.010; 0.010)	0.98	-0.000 (-0.010; 0.010)	0.98	0.000 (-0.009; 0.009)	0.97	0.002 (-0.009; 0.013)	0.67
Predicted trend	-0.005 (-0.008; -0.002)	< 0.01	-0.007 (-0.010; -0.003)	0.003	-0.500 (-0.008; -0.002)	0.001	-0.000 (-0.004; 0.003)	0.86
2013 policy								
Change in level (β_2)	-0.003 (-0.099; 0.094)	0.96	0.005 (-0.093; 0.103)	0.93	0.005 (-0.083; 0.093)	0.91	-0.036 (-0.130; 0.059)	0.45
Change in trend (β_3)	0.002 (-0.025; 0.030)	0.87	0.003 (-0.025; 0.031)	0.86	-0.001 (-0.026; 0.025)	0.95	-0.010 (-0.037; 0.017)	0.47
Predicted trend	-0.003 (-0.030; 0.025)	0.85	-0.004 (-0.032; 0.023)	0.77	-0.006 (-0.031; 0.020)	0.65	-0.010 (-0.037; 0.017)	0.44
Constant (β_0)	0.604 (0.556; 0.653)	0.000	0.804 (0.754; 0.853)	0.000	0.678 (0.635; 0.721)	0.000	0.344 (0.291; 0.397)	0.000
Number of cases	65		66		65		66	

Note: 95% confidence intervals are in parentheses.

Figure 4: Actual and predicted trends in public facility deliveries following 2004, 2007 and 2013 user fee policy shifts

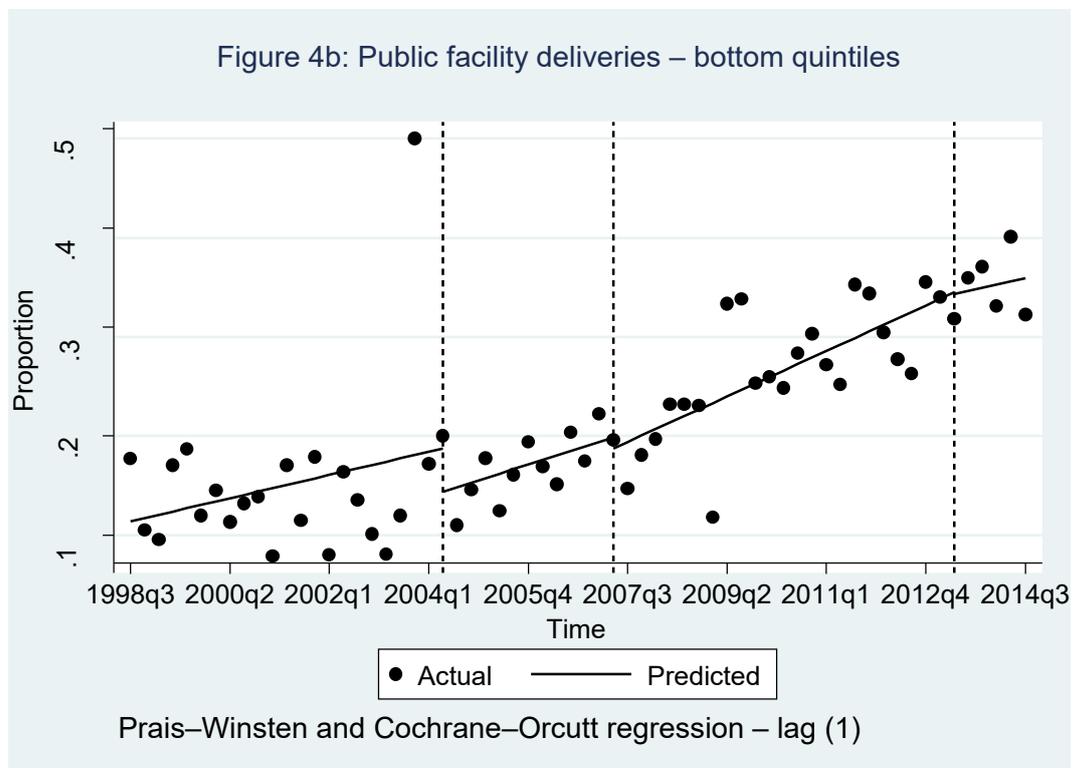
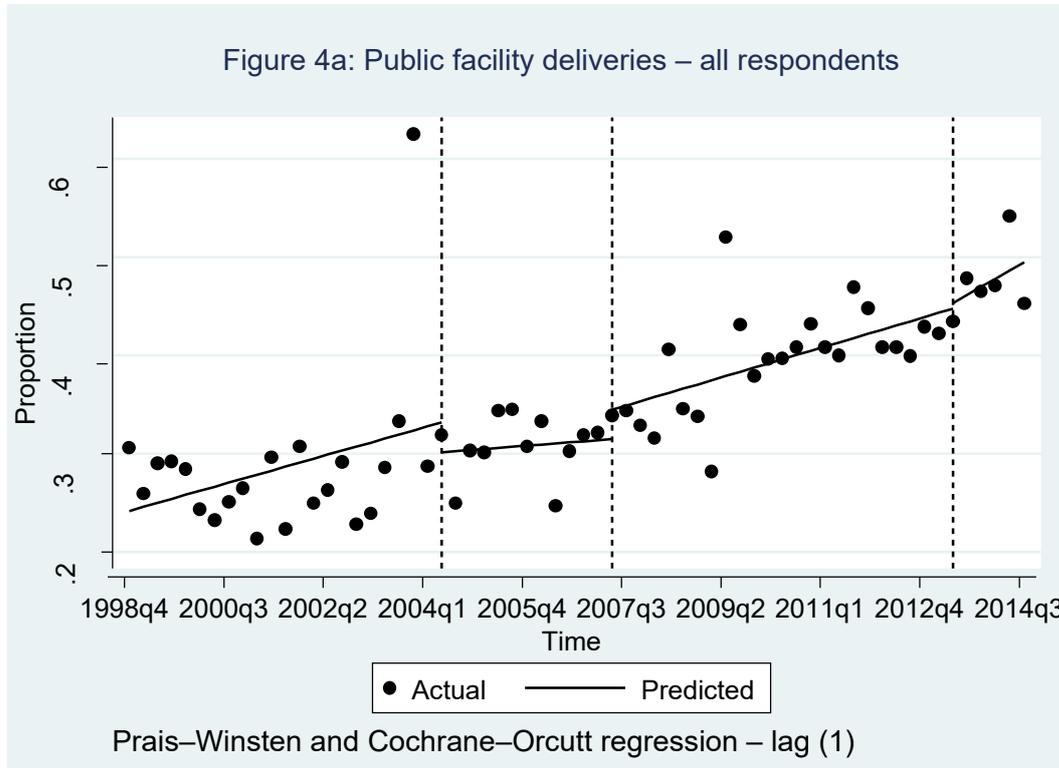
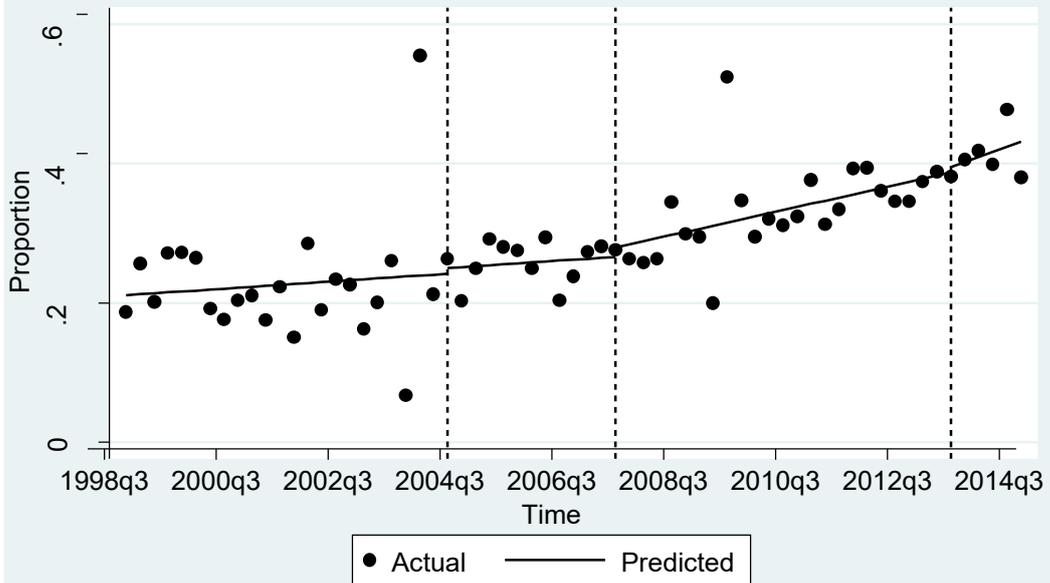
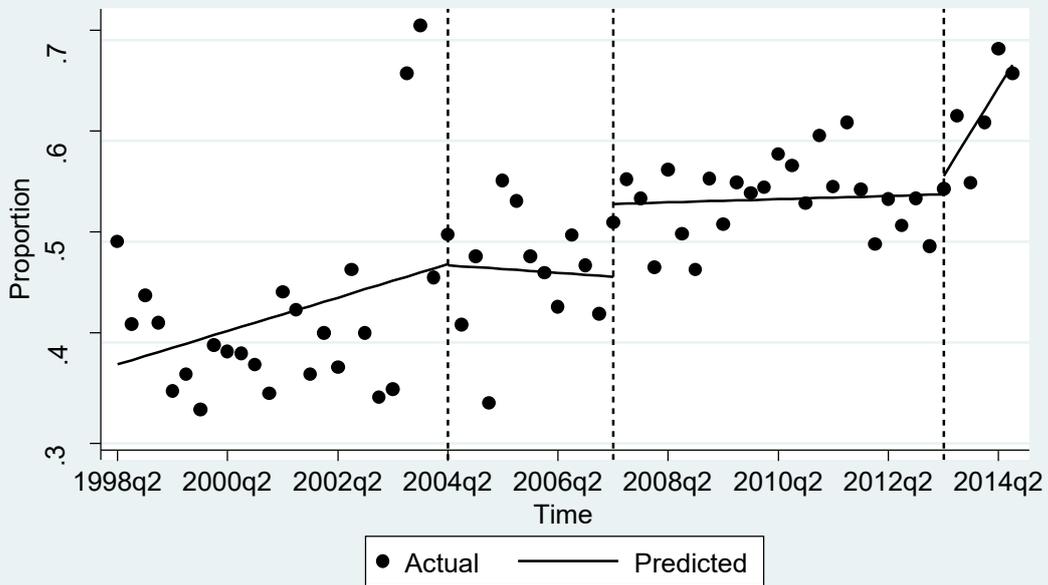


Figure 4c: Public facility deliveries – rural



Prais–Winsten and Cochrane–Orcutt regression – lag (1)

Figure 4d: Public facility deliveries – urban



Prais–Winsten and Cochrane–Orcutt regression – lag (1)

Table 5: ITS analysis predicting trends in public facility deliveries after 2004, 2007 and 2013 policy shifts

Indicator	All women		Bottom two quintiles		Rural women		Urban women	
	β	p-value	β	p-value	β	p-value	β	p-value
Pre-policy trend (β_1)	0.004 (0.000; 0.008)	0.04	0.003 (-0.000; 0.007)	0.08	0.001 (-0.002; 0.004)	0.37	0.004 (-0.000; 0.009)	0.07
2004 policy								
Change in level (β_2)	-0.030 (-0.111; 0.050)	0.45	-0.044 (-0.123; 0.036)	0.27	0.008 (-0.059; 0.075)	0.81	-0.001 (-0.103; 0.101)	0.98
Change in trend (β_3)	-0.003 (-0.013; 0.007)	0.57	0.001 (-0.009; 0.011)	0.81	-0.000 (-0.009; 0.009)	0.10	-0.005 (-0.019; 0.008)	0.45
Predicted trend	0.001 (-0.009; 0.011)	0.82	0.005 (-0.005; 0.014)	0.34	0.001 (-0.007; 0.010)	0.74	-0.001 (-0.013; 0.012)	0.88
2007 policy								
Change in level (β_2)	0.030 (-0.054; 0.114)	0.48	-0.011 (-0.094; 0.072)	0.79	0.013 (-0.058; 0.084)	0.71	0.072 (-0.036; 0.180)	0.19
Change in trend (β_3)	0.030 (-0.007; 0.013)	0.48	0.002 (-0.008; 0.012)	0.69	0.003 (-0.006; 0.012)	0.46	0.001 (-0.012; 0.015)	0.85
Predicted trend	0.004 (0.001; 0.008)	0.01	0.007 (0.003; 0.010)	0.01	0.005 (0.002; 0.007)	0.01	0.000 (-0.004; 0.005)	0.86
2013 policy								
Change in level (β_2)	0.006 (-0.091; 0.102)	0.90	-0.002 (-0.098; 0.094)	0.97	0.008 (-0.077; 0.093)	0.85	0.018 (-0.101; 0.138)	0.76
Change in trend (β_3)	0.004 (-0.024; 0.032)	0.77	-0.003 (-0.031; 0.024)	0.81	0.003 (-0.022; 0.028)	0.83	0.022 (-0.013; 0.056)	0.21
Predicted trend	0.008 (-0.019; 0.036)	0.55	0.003 (-0.024; 0.031)	0.82	0.007 (-0.018; 0.032)	0.56	0.022 (-0.012; 0.056)	0.20
Constant (β_0)	0.238 (0.187; 0.288)	< 0.01	0.111 (0.061; 0.160)	< 0.01	0.209 (0.169; 0.250)	< 0.01	0.374 (0.309; 0.439)	< 0.01
Number of cases	64		64		65		66	

Note: 95% confidence intervals are in parentheses.

4.1.2 Trends in private facility deliveries

There were statistically significant reductions in private facility deliveries immediately following the 2004 10/20 policy amongst all women, those from the bottom two quintiles, and rural women ($p < 0.01$ in each case; Table 6). There were, however, no statistically significant differences in trends in private facility deliveries before and after the policy shifts (2004, 2007 and 2013) amongst all sub-groups.

The pre-2004 policy trends in private facility deliveries amongst women from the bottom two quintiles and rural and urban areas were positive and statistically significant ($p < 0.05$ in all cases). The directions of the predicted trends in private facilities deferred by sub-groups of women and policy shift, although in all cases, trends were not statistically significant (Table 6). These patterns are also reflected in the trends shown in Figures 5a–d.

Table 6: Results from ITS analysis predicting trends in private facility deliveries following 2004, 2007 and 2013 user fee policy shifts

Indicator	All women		Bottom two quintiles		Rural women		Urban women	
	β	p-value	β	p-value	β	p-value	β	p-value
Pre-policy trend (β_1)	-0.001 (-0.002; 0.001)	0.53	0.003 (0.001; 0.005)	0.01	0.002 (0.000; 0.003)	0.02	-0.004 (-0.008; -0.000)	0.04
2004 policy								
Change in level (β_2)	-0.058 (-0.096; -0.020)	< 0.01	-0.108 (-0.157; -0.059)	< 0.00	-0.097 (-0.132; 0.062)	< 0.01	0.009 (-0.070; 0.087)	0.83
Change in trend (β_3)	0.004 (-0.001; 0.009)	0.13	-0.001 (-0.008; 0.005)	0.64	0.001 (-0.003; 0.006)	0.56	0.008 (-0.003; 0.018)	0.15
Predicted trend	0.003 (-0.001; 0.008)	0.17	0.002 (-0.004; 0.008)	0.58	0.003 (-0.001; 0.007)	0.13	0.004 (-0.006; 0.013)	0.43
2007 policy								
Change in level (β_2)	-0.016 (-0.056; 0.024)	0.44	0.001 (-0.050; 0.053)	0.96	-0.010 (-0.047; 0.027)	0.59	-0.060 (-0.142; 0.023)	0.16
Change in trend (β_3)	-0.003 (-0.007; 0.002)	0.30	-0.001 (-0.008; 0.005)	0.63	-0.003 (-0.007; 0.002)	0.23	-0.004 (-0.015; 0.006)	0.40
Predicted trend	0.001 (-0.001; 0.002)	0.83	0.000 (-0.002; 0.002)	0.88	0.001 (-0.001; 0.002)	0.46	-0.001 (-0.004; 0.003)	0.75
2013 policy								
Change in level (β_2)	0.003 (-0.044; 0.059)	0.90	-0.001 (-0.062; 0.059)	0.97	-0.009 (-0.054; 0.035)	0.68	0.026 (-0.066; 0.117)	0.57
Change in trend (β_3)	-0.009 (-0.023; 0.005)	0.19	0.001 (-0.019; 0.017)	0.89	-0.003 (-0.016; 0.010)	0.60	-0.013 (-0.040; 0.013)	0.31
Predicted trend	-0.008 (-0.022; 0.005)	0.22	-0.001 (-0.019; 0.017)	0.90	-0.003 (-0.016; 0.010)	0.66	-0.014 (-0.040; 0.012)	0.29
Constant (β_0)	0.153 (0.130; 0.176)	< 0.01	0.057 (0.027; 0.088)	< 0.01	0.088 (0.067; 0.110)	< 0.01	0.306 (0.255; 0.357)	< 0.01
Number of cases	65		64		65		65	

Note: 95% confidence intervals are in parentheses.

Figure 5: Actual and predicted trends in private facility deliveries following 2004, 2007 and 2013 user fee policy shifts

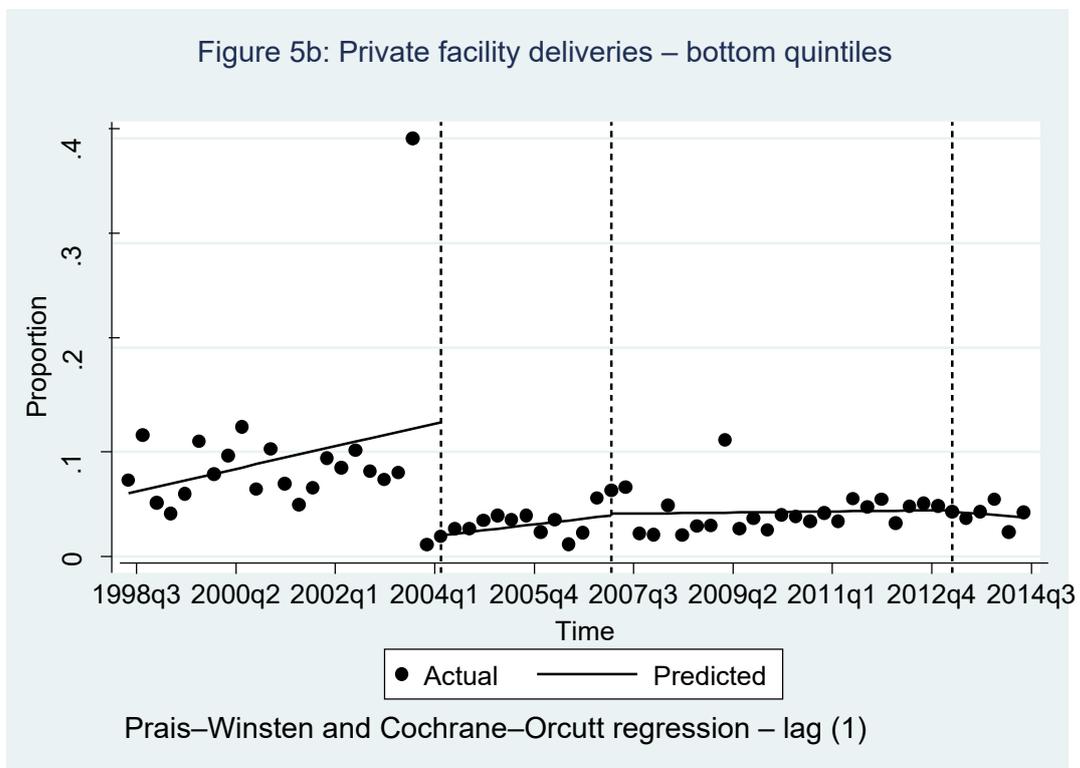
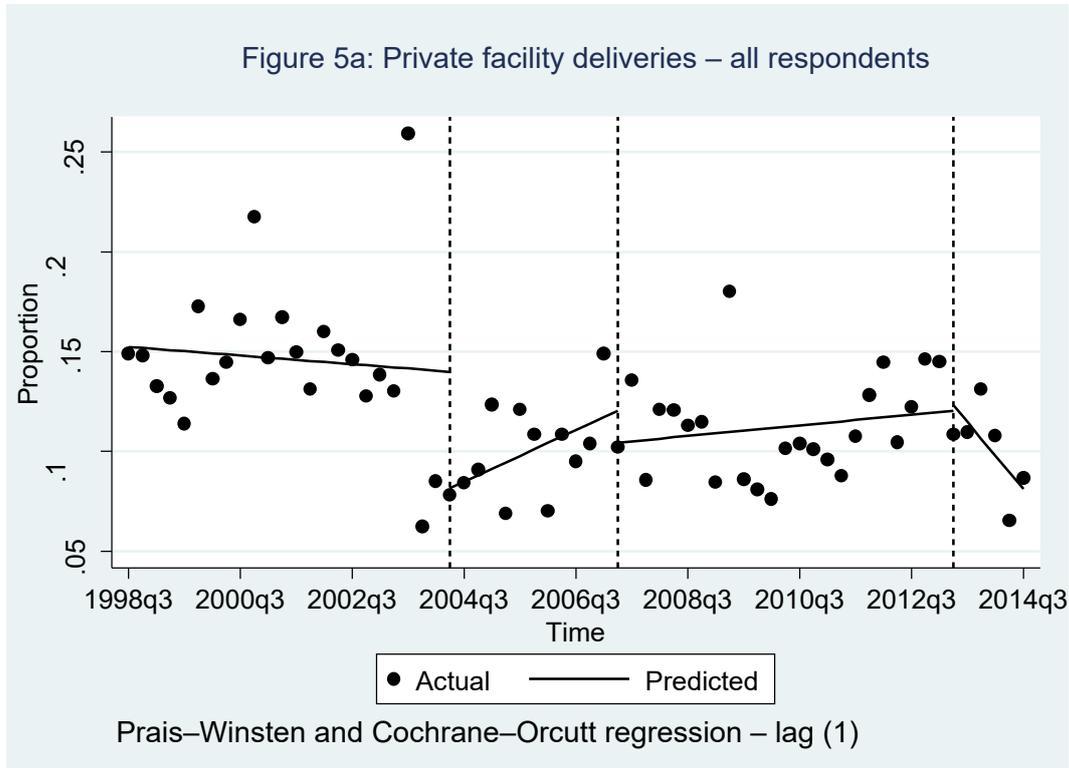


Figure 5c: Private facility deliveries – rural

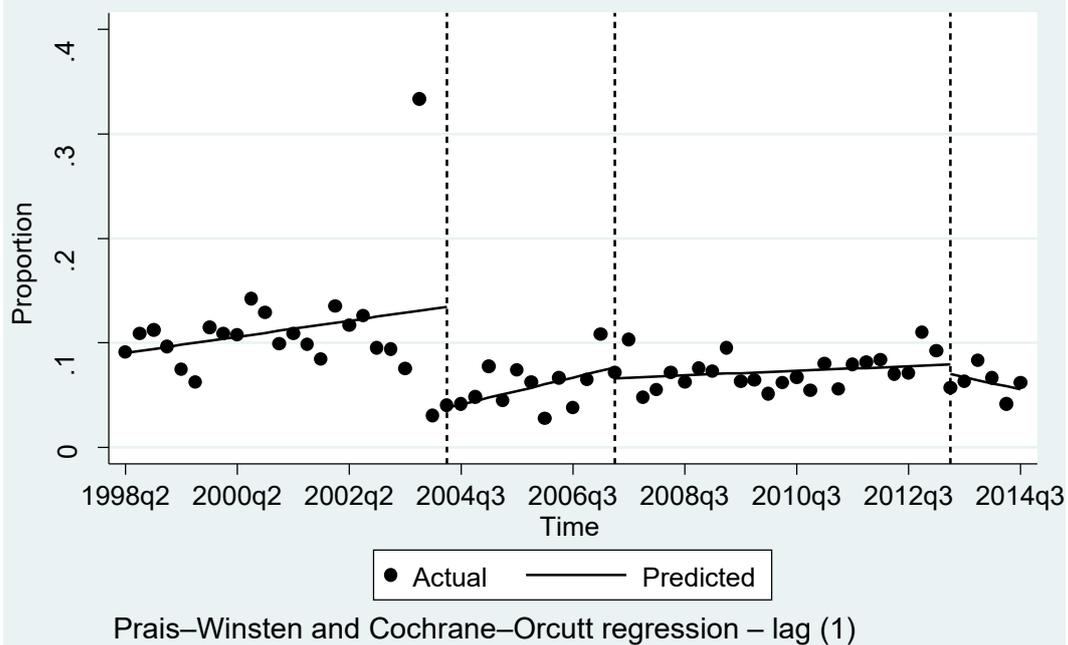
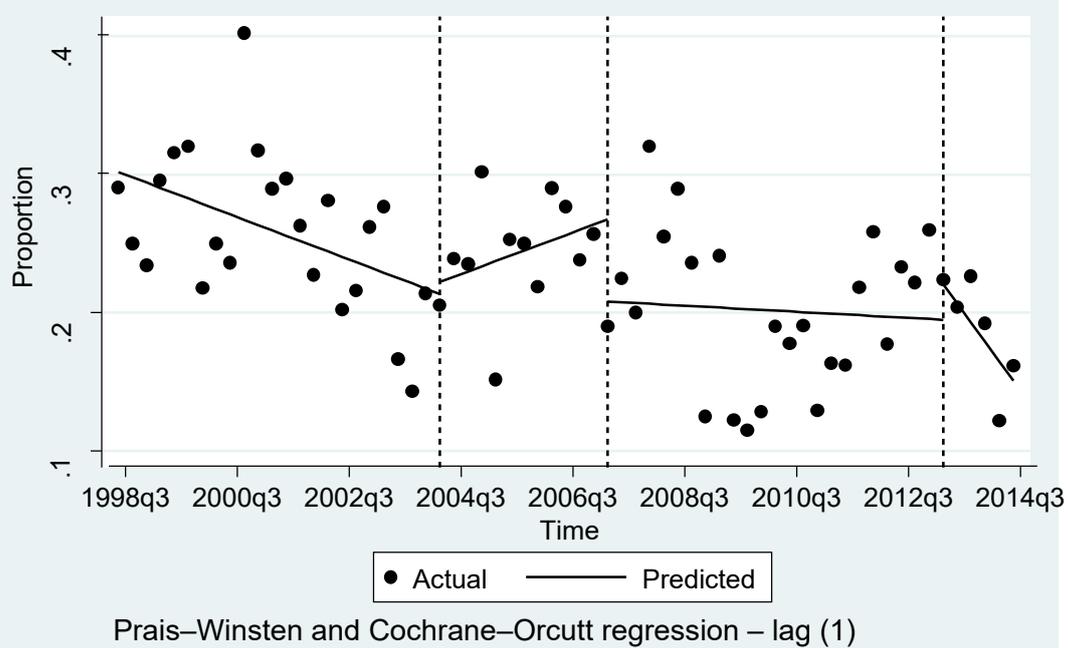


Figure 5d: Private facility deliveries – urban



5. Quantitative analysis of data with women in voucher evaluation sites

A total of 4,804 births to 3,582 mothers were included in this study. Across intervention groups and time, the births in our sample were predominantly to mothers living in rural areas who were married, multiparous, educated to primary school level or below, unemployed or informally employed, and uninsured (Table 7). In each period, the samples from the voucher and comparison sites were similar with regard to many background characteristics; however, the women sampled from voucher sites appear to have been slightly more vulnerable in periods 1 and 2. In period 1, mothers from voucher sites were more likely to be uninsured and less likely to have attained secondary or higher education. In period 2, mothers from voucher sites were more likely to be younger and uninsured.

5.1 Service utilisation

Women in both voucher and comparison sites reported receiving four or more ANC visits for nearly 60–65 per cent of the births that occurred during periods 1 and 2 (Figure 6). After the introduction of FMS, this increased moderately, and a greater proportion of births in voucher sites received four or more ANC visits than in comparison sites (72% versus 66%; $p = 0.025$).

Delivery in health facilities increased from about half of all births in period 1 to approximately 85 per cent of births in period 3 in both groups (Figure 7). Although there was no difference in access to facility delivery between voucher and comparison sites in periods 1 and 3, a greater proportion of births in period 2 were delivered in health facilities in voucher sites than in comparison sites (69% versus 59%; $p = 0.022$).

Figure 6: Maternal health service utilisation over time – ANC visits

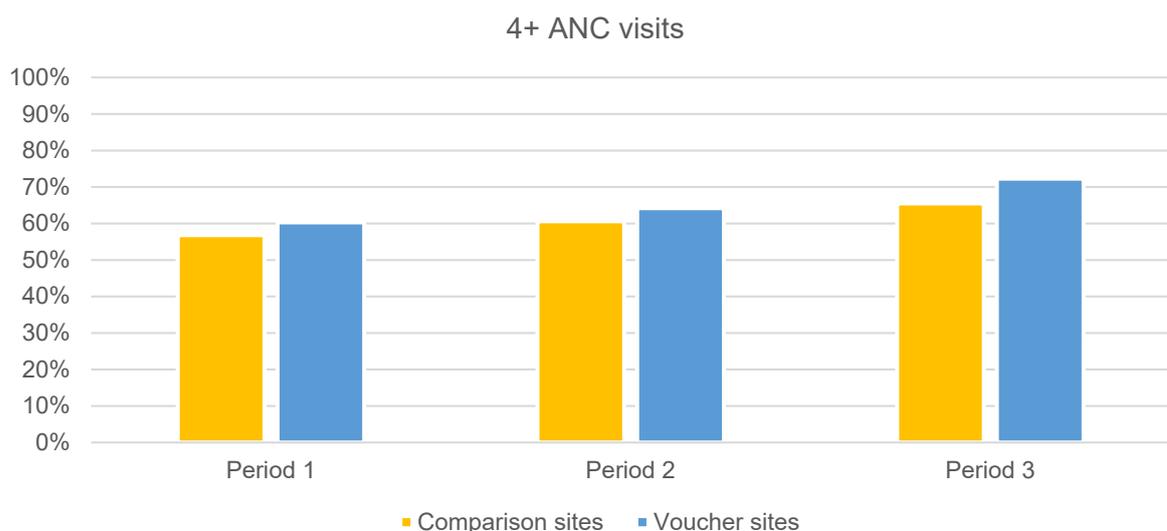
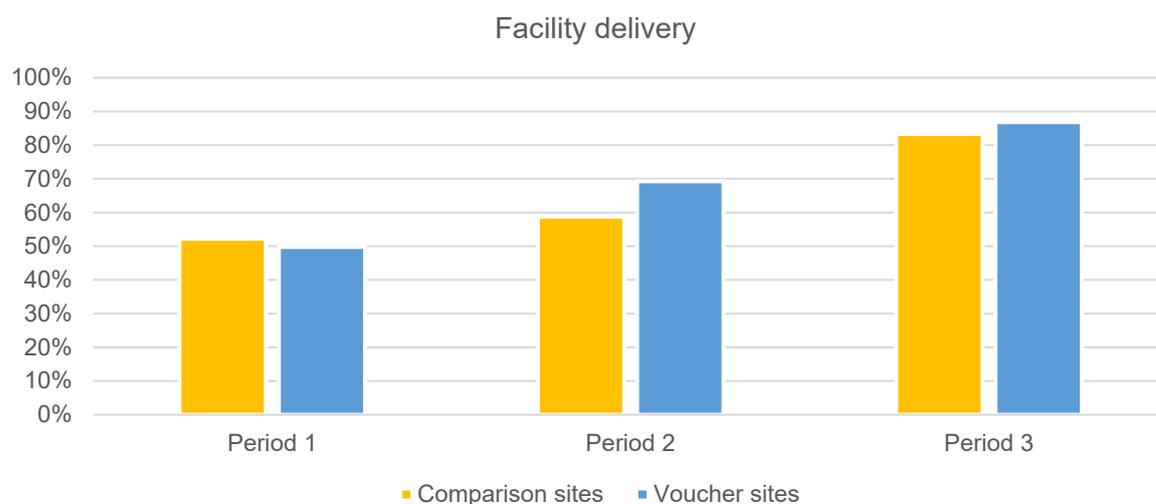


Table 7: Sample background characteristics of female respondents by study periods (n = 3,582)

	Period 1 (May 2005 – Dec 2009) N = 526			Period 2 (Jan 2010 – May 2013) N = 1,819			Period 3 (June 2013 – Aug 2016) N = 1,236		
	Comparison sites	Voucher sites	p-value	Comparison sites	Voucher sites	p-value	Comparison sites	Voucher sites	p-value
Age group (years) (%)			p = 0.12			p = 0.04			p = 0.18
15–24	13.0%	20.8%		30.3%	37.3%		32.8%	39.5%	
25–34	51.3%	51.7%		50.2%	46.8%		50.1%	45.1%	
35+	35.7%	27.4%		19.6%	15.9%		17.1%	15.4%	
Educational attainment (%)			p < 0.01			p = 0.27			p = 0.38
None/Some secondary	24.4%	36.5%		27.8%	31.9%		24.3%	27.6%	
Completed primary	52.1%	51.4%		53.2%	52.4%		51.5%	47.4%	
Completed secondary	23.5%	12.2%		19.0%	15.7%		24.2%	25.0%	
Wealth quintile (%)			p = 0.32			p = 0.70			p = 0.51
Poorest	15.1%	21.9%		21.5%	19.6%		17.7%	22.3%	
Poorer	18.9%	20.5%		22.6%	20.8%		22.8%	20.0%	
Middle	26.1%	21.5%		19.7%	18.5%		19.1%	19.2%	
Richer	22.7%	17.4%		17.7%	21.9%		22.1%	19.7%	
Richest	17.2%	18.8%		18.5%	19.2%		18.2%	18.8%	
Residence			p = 0.63			p = 0.41			p = 0.59
Rural	89.1%	85.8%		87.3%	80.7%		90.2%	85.9%	
Urban	10.9%	14.2%		12.7%	19.3%		9.8%	14.1%	
Current marital status (%)			p = 0.62			p = 0.05			p = 0.96
Unmarried	17.3%	19.4%		16.9%	21.0%		22.4%	22.3%	
Married/Cohabiting	82.7%	80.6%		83.1%	79.0%		77.5%	77.7%	
Woman's employment (%)			p = 0.99			p = 0.07			p = 0.14
Unemployed	29.4%	30.2%		39.7%	48.3%		45.4%	51.3%	
Informally employed	52.9%	52.1%		49.7%	42.1%		48.1%	39.8%	
Formally employed	17.7%	17.7%		10.6%	9.6%		6.4%	8.8%	
Parity (%)			p = 0.62			p = 0.69			p = 0.98
1	12.6%	15.6%		21.0%	22.8%		27.9%	27.3%	
2–3	44.5%	43.4%		43.2%	42.7%		44.6%	45.0%	
4+	42.9%	41.0%		35.8%	34.4%		27.5%	27.8%	
Health insurance enrolment (%)			p < 0.01			p = 0.02			p = 0.28
Uninsured	78.2%	92.0%		85.4%	90.7%		79.7%	82.8%	
Insured	21.8%	8.0%		14.6%	9.2%		20.3%	17.2%	
Total no. births	238	288		869	950		591	645	

Figure 7: Maternal service utilisation – facility delivery



5.2 Impact of voucher programme and FMS policy

We found no effect of the voucher programme or FMS policy on use of four or more ANC visits (Table 8). The increase in the proportion of births delivered in a health facility was 8.4 percentage points greater in voucher sites than non-voucher sites ($p = 0.003$) between the pre-intervention and rollout phase (period 1) and the post-rollout phase (period 2). However, the results suggest that the FMS policy helped decrease the disparities in access to facility deliveries between voucher and comparison sites, such that births in comparison sites experienced a 6 percentage point greater increase in facility deliveries than those in voucher sites following the introduction of the FMS policy in June 2013 (period 3) ($p = 0.025$).

Table 8: Impact of voucher programme and FMS on service utilisation

	Period 1 to period 2		Period 2 to period 3	
	Difference-in-difference estimator	p-value	Difference-in-difference estimator	p-value
Service utilisation				
4+ ANC visits	-0.002	$p = 0.942$	0.041	$p = 0.178$
Facility delivery	0.084	$p = 0.003$	-0.060	$p = 0.025$

5.3 Implementation experiences of user fee policy changes in Kenya

Results of this component are divided into two main sections: the perception of actors on the implementation experiences of FMS and their views in transferring the current FMS to be part of NHIF as a process of consolidating healthcare financing policies in Kenya. Evidence from qualitative interviews highlights respondents' experiences with the health system during FMS implementation.

As presented in this section, there are noted divergent opinions between healthcare workers, who generally view FMS reforms as a benefit to low-income patients, and

patients themselves, who noted significant gaps in how FMS was implemented and the impact additional patient volumes had on facilities' readiness and service quality.

5.3.1 Implementation experiences of FMS

Discussions on the effects of implementation of FMS focused on the past experiences and future benefits if the programme is continued and implemented well. At the community level, women from all sites reported that FMS encourages mothers to deliver in facilities, thereby reducing unskilled deliveries and possible reductions of HIV transmission during delivery. All participants concurred that FMS has brought in new users by increasing the number of poor women delivering in facilities who had previously used traditional birth attendants, those who delivered at home, adolescents who could not afford facility deliveries and women who were using private facilities. It has also contributed to reduction in inequities in accessing services:

It is good, because I will only pay for bus fare to go and deliver; yet I have bought clothes for the baby with the money I would have paid at the hospital.

— Focus group discussion, voucher user after policy shift, site 1

It benefits the less fortunate women. Not all people are the same financially, so even the less financially stable benefit from free maternity services, since all they need is transport fee and she'll be able to deliver safely and go back home with her baby. — Focus group discussion, home delivery before policy shift, site 2

Providers and county managers reported that the benefits of FMS were greater at the community level, with potential contributions to the reduction of maternal morbidities and mortalities. However, some participants noted that, although FMS has increased the number of deliveries, this may have reached a plateau. Others argued that the benefits may be augmented by devolution or cessation of other initiatives, such as the voucher project:

We've seen improvement in delivery in every county. However, you know it's very difficult to assign the impact and say this was due to free maternity. Free maternity came at a point when the devolution was also happening. Sometimes we are unable to say that it is the devolution or free maternity; it would be both, but we have also seen improvements in antenatal care coverage and family planning commodities. — County manager, site 3

At the facility level, providers and managers noted that, despite the challenges of delay in receiving reimbursements from FMS, the policy has been instrumental in improving infrastructure and provision of services such as food and incentives for patients:

The positive influence to the facility is that we are able to improve our infrastructure, because if we have the funds, we are able to buy new things, carry out maintenance of the facility and improve the other departments.

— Facility manager, site 3

Facility and county managers alike noted that, despite the inefficiencies observed, FMS will continue to improve skilled deliveries and increased access to services for poor women. Use of facilities for ANC and deliveries has contributed to increased health education for mothers, generating positive results. Examples included improved facility

deliveries, leading to a healthy population that will produce economically if morbidity and mortality decline over time.

Funds reimbursed have helped facilities improve infrastructure that benefits other services. The multiple effects include: availability of funds to re-stock supplies, thereby improving quality of services; increased child survival; reduced maternal deaths; and creation of a culture of delivering in facilities, which will wean people from use of traditional birth attendants over time. These future effects are anticipated if the government maintains FMS.

Despite the reported positive effects, there were concerns about quality. Deterioration of quality was described in a variety of ways. Increased workload has led to constraints in human resources and limited equipment, insufficient drugs and poor diagnostics. Women reported cases of providers being slow in service provision, resulting in long waiting times when providers take tea breaks or during shift changes. Congested facilities sometimes result in women delivering on the floor. In other cases, women share beds, which often leads to quicker discharges to create room for more women, thereby compromising client safety, induction of first-time mothers on baby care and breastfeeding, and general health education of the mother after birth:

By the way, I delivered here and after I delivered that day, I was sent home the next day to create space for others, yet if you had the funds to afford another facility, you could stay there for at least two days after delivering, but under free maternity services, you are told to leave to create room for others.

— Focus group discussion, voucher users after policy shift, site 4

In some cases, women – especially younger women – complained of the food rations or of being mistreated by providers during delivery. Examples cited were perception of abandonment, neglect, poor hygiene experienced in the use of unclean linen, sharing of beds, perceived nepotism in service delivery and non-adherence to protocol (delivery without asking the woman her HIV status or for her ANC card):

Eee ... You give birth and you are told to go home almost immediately, and the food that is brought to you is like one spoon ... you don't get enough.

— Focus group discussion, non-voucher users, site 5

5.3.2 Implementation challenges of FMS

Despite the positive effects of FMS, providers, community members and managers noted several challenges in implementation of the policy, which appear to be at three levels: policy, facility and clients.

At the policy level, participants reported that the design did not effectively capture reimbursement in cases of referral. Second, county managers mentioned the challenge of bureaucracy in the financial arrangements. The current structures require that, once facilities report the number of deliveries through the online Health Management Information System platform, the national government reimburses the money via the County Revenue Fund. The counties notify the facilities of the amount disbursed to the facilities' accounts and they seek authority to incur expenditure through a budget submitted to the respective facility committees. This process delays facilities' access to funds and creates a financial gap that is expensive to recover from, with facilities

incurring debts. County managers recommended that the national government publish the number of deliveries against the amount disbursed for transparency.

Third, county managers discussed the lack of consultative implementation processes and unclear communication with front-line staff regarding the implementation requirements, which create suspicion and perceived lack of transparency in the process, which one respondent described as 'opaque':

The biggest challenge is there is somebody who sits in Nairobi and decides what to give you, and then there is very little discussion on these issues ... this is what I deserve to be given and to that end the county thinks that it is an opaque system. There have been delays in disbursement of funds ... Of course, all these affect the facilities negatively, poor staff morale, inadequate supplies and, in some cases, people may practise under-the-table charges. — County manager, site 3

At the facility level, the amount disbursed is often not predictable, making it hard for facilities to plan or know the amount received. Additionally, providers described cases of delay in issuances of authority to incur expenditures – a requisite for accessing funds.

That was once in December and we just got a call that 'we have disbursed 3 million into your account for free maternity from the county government' ... that's what they tell you; you don't know the 3 million is for what, the 2 million is for what, or the 6 million is for how many deliveries; there is nothing; it's quite different from OBA. — Facility in-charge, site 3

Additionally, the amount reimbursed was not sufficient to cover all delivery services, such as caesarean deliveries, complications for the baby or mother, infant sickness and laboratory services. Some noted that the graduated payment by level of care did not reflect true costs. In addition, late reimbursement affects access to services and compromises potential improvement of quality. Participants reported the need for discussion between the stakeholders to avoid a 'top-down push' of policies to the counties. Engaging national, county and facility stakeholders may be crucial. County managers noted that when they have engaged facility in-charges:

They seemed like they are on a chess board. You know they are waiting for the money; they don't know how these things were discussed. They have very good ideas on how it can be improved. But they have not been involved in those discussions. The county treasury and Ministry of Health must discuss and put into use the findings at the national levels, so that we have a seamless mechanism for reimbursements. — Key informant interview, county manager, site 1

There are also challenges around accountability processes, in terms of numbers and amount owed by national government to counties:

At the moment there are delays, arguing about numbers, national government saying, 'No, you have delivered this much, so we're reimbursing you for this much', facilities saying, 'No we have delivered this much'. — County manager, site 6

Lack of clarity on the modalities of using the funds and the lump-sum payment per delivery has not helped disaggregate services that require specialised attention, such as caesarean sections, pre-term babies and other complications. Facility managers did not have clear understanding of how to use the funds:

Actually, that is why I say; there are no clear guidelines that stipulate or tell us, 'This free maternity is supposed to go for this use!' You are just told that this money is supposed to budget for FMS. For us down here as the user, we do not have any guidelines on how these FMS funds are to be utilised.

— Key informant interview, facility manager, site 2

At the client level, women discussed the possibility of being asked to buy supplies, such as cotton wool and drugs in case of complications or infection post-delivery. There was lack of clarity on what FMS covers on the part of clients, prompting clients to come to facility even without basic requirements, such as baby clothes. This was corroborated by facility managers, who reported that FMS generated higher expectations, with clients coming without the necessary requirements for delivery:

The mothers come with higher expectations, some even come without clothing for their babies; they expect that to be provided. In addition, the facility can provide pads, but when you look at a mother who has just delivered, they may require cotton wool more than pads immediately, so you find the facility is not able to provide cotton wool for every mother who has delivered, but they can provide pads ... so they come with the expectations, expecting to be provided with everything, some even without clothing. — Key informant interview, facility manager, site 3

Overall, there was perception that FMS would be likely to erode the benefits of self-responsibility, with some observing it has reduced the number who were registered with NHIF. Facilities were used to higher income from user fees, which have fallen with the current reimbursement rates, making it harder for them to plan. At the client level, the perception of free services makes women fail to plan for basic needs for the delivery, reinforcing dependency on government.

5.3.3 Social and financial costs associated with FMS

Financial and social costs of FMS have affected clients and the healthcare system. Financial costs to the client reflect those not covered under FMS during pregnancy. Women described other payments made, such as laboratory tests during ANC visits, with charges varying from KES205 (USD2) to KES820 (USD8) per visit, and KES50 (USD0.50) for the cost of a mother–baby booklet or registration cards. These costs contribute to late initiation of ANC. During delivery, costs of supplies such as cotton wool, drugs, disinfectants and personal effects were reported. Women also described informal payments to providers, disguised as tokens of appreciation, or bribes given to providers to be given preferential treatment and receive faster services:

There is no money, but the doctor will tell you that it will only be proper if you give him something according to the effort he put into helping you. And knowing how much effort he put into helping you, you are compelled to give him something. — Focus group discussion, voucher users after policy shift, site 4

Others linked informal payments to increased workload:

You give something small [a bribe] to get served quickly by a provider.
— Focus group discussion, women, voucher site delivered before policy shift

Sometimes, providers request certain supplies:

You are usually told to buy pampers, gloves; even when you escort a pregnant woman to deliver, the sister [nurse] will write a list of the items to get from the chemist before assisting her. Sometimes you don't know what they want; they just write a list for you and tell you if they are 800 shillings or 1,000 shillings. That is how it was before, maybe last year, I have not gone there recently, so I don't know if it is still the same or if things have changed.

— Focus group discussion, women who delivered at home after policy shift, site 2

Supplies were often sourced from specific suppliers, perhaps known to the providers. In other cases, women perceived the supplies provided to be of low quality, forcing them to buy for themselves:

Usually it is soap, and sometimes sanitary towels. Because when you realise the ones provided are of low quality, you'll have to buy your own if you are financially able, so it becomes part of your personal expense. — Focus group discussion, women who delivered before policy shift, site 2

Insufficient supplies and human resource constraints were described as drivers of disrespect and abuse amongst providers. Examples given include sharing of beds, quick discharge from facilities and perceived carelessness and neglect on the part of the provider:

When the service is free, the doctors become reluctant in serving you. They can even retreat to their resting room and tell you to inform them when a complication occurs, but he won't serve you like he would serve the person who paid for the service. — Focus group discussion, non-voucher users delivering after policy shift, site 3

Due to the increased number of clients, women noted, food rations in facilities caused them to incur additional costs of buying food during their hospital stay. Women reported poor diet after delivery or no food in some facilities for women who gave birth at night. Another cost of free services is erosion of clients' confidence; they reported inability to ask questions, as they are not paying anything.

Some women discussed the high costs of transport, due to dangers pregnant women pose. Hiring a car is expensive for a pregnant woman, relative to other passengers, thereby increasing the cost of accessing services. For clients and the healthcare system, free services may create a culture of dependency, a concern that could limit sustainability or affect related services, including referral.

Overall, other indirect costs such as transport, dealing with provider attitudes and limited economic opportunities for pregnant women lead to decreased income that could be used to cover delivery costs.

5.4 Perceptions of transfer of FMS to NHIF

Perceptions of stakeholders regarding the transfer of FMS to NHIF are presented under two main sets of themes. First, we present views on the transition of FMS to NHIF by illuminating support for the transfer, and the perceived benefits and challenges of the transition. The second set of themes describes the future of maternity services provision under managed care in NHIF, including processes for registration and enrolment of clients, accreditation and quality assurance, reimbursement, managing referrals and complications, and the benefit package.

5.4.1 Perceptions regarding the transition of FMS to NHIF

There were varied levels of support for the transition from an output-based reimbursement scheme under the MOH to a managed care approach under NHIF. County and facility managers reported that, in principle, the transfer would be good as it would help in achieving UHC. However, they pointed out that the process should be anchored within the law that governs financial processes under the devolved structures of government:

Let me say to begin with, the idea is well thought out, because I believe that the idea is towards having UHC, which is where the country should be moving ... But every system must work according to the law. The Public Finance Management Act states that all county money must come through the County Revenue Account. Reimbursements for maternity are meant for the county, so as much as it's a well-thought idea, it should be aligned to the law.

— County manager, site 5

Some participants viewed the transfer as an opportunity to eliminate dependency on free services, encourage people to take responsibility for their health and provide free resources for development. Managers recommended that government should support the transition before individuals begin paying. They suggested that, eventually, the approach should adopt a contributory element to reinforce a sense of responsibility. They noted that the move would increase coverage of comprehensive services and improve standardisation of services provided. However, they pointed out that support for the transfer would be realised if funds were provided in a predictable manner and if the efficiency of NHIF were improved.

Despite the common understanding of health insurance as a driver for achieving UHC, participants raised several concerns. Many pointed out that poor women would face challenges with paying the premiums. Women and providers reported that the transfer would improve insurance coverage for other illnesses and the family at large. However, they expressed fears of dropping out if the monthly premium of KES500 (USD5) was retained. Lack of flexibility in the monthly premiums for the diverse populations working in the informal sector was mentioned as a likely barrier to enrolment of clients in the scheme and effective utilisation of services:

This will be costly, because with the NHIF there are monthly payments that are required, yet you find that most women are not employed. They are housewives. So, for her to get money to pay monthly is difficult. You cannot rely on the husband with the little money he gives you for food. You save a little and go pay

at the end of the month, and doing the same the following month might be very difficult. — Focus group discussion, non-voucher user, site 4, delivered after policy shift

Other participants noted that lack of personal responsibility contributes to poverty and needs to be addressed through appropriate information, education and communication approaches:

There's a lot of education that needs to be done on the need to plan and take responsibility through financing health through insurance and not expecting the government to take the responsibility. Because the same way you don't expect the government to pay your fare from here to [xx] and that's where you go to work and come back here every day and somehow you will get the fare. A day's fare is enough to pay a whole month's insurance, but you just want free things ... I tend to think the sustainable way is people taking responsibility and owning their own health. — County manager, site 6

Participants suggested three alternatives for addressing the cost concerns. First, managers and women concurred that the system should allow women to pay through a flexible model, with less frequency to allow for unpredictable income. Second, there were suggestions to reduce the monthly premiums to the previous amount of KES160 (USD1.60), or KES200 (USD2) and subsidise the remainder. Alternatively, there was a suggestion to have a graduated payment of KES250 (USD2.50) or KES160 (USD1.60) for informal workers and KES500 (USD5) for formal employees or those with spouses in such employment. Similarly, some women recommended discount approaches.

Some participants preferred group and flexible payment schedules for logistical purposes and to reduce penalties. One manager suggested renaming the programme, as a way of alleviating discontent amongst beneficiaries:

I think we need to rename it ... it needs to be called universal healthcare rather than free. — County manager, site 5

Critics of the transfer of FMS to NHIF viewed the existing Public Finance Management Act as hindering facilities' easy access to funds:

The intention is having that money sent through NHIF, which I am yet to look at the mechanisms against the current one, where money is being sent to the County Revenue Account. Either system will work, so long as the money reaches the hospital on time. The only problem is, I do not know how well the Act will allow the money to go to facilities. I do not know whether there will be a problem there, but either way, all we are asking is that the money gets to the hospital, to the user, on time. — County manager, site 4

Scepticism about the efficiency of NHIF was linked to late payments and general distrust of public institutions. Participants cast doubts on NHIF's ability to manage the added responsibility and process claims promptly:

NHIF has a developed system and it is not as bad as the FMS fund. So perhaps the issue of delay may be addressed with the NHIF. What I do not know is

whether NHIF has grown, whether the capacity currently as enjoyed by NHIF will be able to handle this added responsibility. That is something that will need to be addressed. For example, the NHIF regional office is grossly understaffed and they will come and tell you, 'We have a problem with staff', so I'm only worried that with this added responsibility, things may not be as smooth. — County manager, site 5

There were also questions about NHIF's ability to target all pregnant women. Participants indicated that, given high levels of poverty (and low awareness of changes in health policy), the effectiveness of the transfer would be challenging without adequate sensitisation of the community. They reported that the transfer might be an easy sell in a context where voucher cards were used; however, in locations where NHIF was not visible, it would take time to get acceptance, with people adopting a wait-and-see attitude.

The history of NHIF might also affect the transition. The perceived lack of transparency, the undertaking by NHIF of all health insurance roles, low reimbursement rates for the private sector and a history of delays drew mixed reactions. A perceived mismatch of the accreditation process NHIF uses versus that of quality assurance for maternity services, and changing people's perception from free to any form of payment, could generate resistance and create mistrust.

5.4.2 Registration process and enrolment of clients

One crucial element of a managed care system is ensuring the right clients are enrolled in the system. Respondents suggested that, logistically, the registration of women could be done during ANC visits, in churches or through local chiefs' *barazas* (meetings). They noted that, although registration through chiefs' *barazas* could be expensive, it would help in effectively targeting poor women. On the other hand, they indicated that targeting women through ANC would be likely to help in early profiling of potentially complicated cases, reducing potential emergencies:

This could happen at multiple fronts ... so, if I have to make sure that this thing succeeds, I must do all I would do: the radios, the press, use the civil society on the ground; people must be taught. I always believe that NHIF may not have done much because nobody talks about it in the village and we have been doing a lot of *harambees* [fundraising] to pay medical bills. Some sell their land for the same, so if you ask me, let the government also develop a good policy to reach the community. — County manager, site 3

Women proposed that distribution points for the NHIF cover be diversified, with some suggesting that the enrolment of women could be done using organised groups. They pointed out, however, that clients must receive correct information at recruitment to avoid questions about why they should pay for delivery services under NHIF.

5.4.3 Accreditation and quality assurance

Discussion on the accreditation process focused on three main areas: the need to increase coverage of services, the need for standardisation of care, and the need for performance linked to reimbursement. Regarding coverage, some respondents noted that lack of accreditation limits coverage of public sector services, as many facilities are

not accredited under NHIF. They suggested a grace period to allow facilities to meet the standards, with funds advanced to them to improve their status, as one way of bridging the gap, as lack of funds limits facilities' ability to make improvements to meet the minimum standards:

They have been trying to insist that the hospitals do accreditation, but you will find that, as far as accreditation is concerned, there is what you can do without finances and [for some things], you must have finances. One of the biggest problems you will find in management is that finances are low. If, for example, you will look at some of the things you want to improve, but then your needs far much outstrip the amount of money you have, so quality will still be an issue. Take, for example, the lab. You know the services that should be provided by a level 5 facility and you're willing to budget for the same, but the amount that is available for you to budget [with] is not adequate. So, it means that there are some services that will not be provided to the standards. That will affect accreditation. — Provider, site 6

Accreditation was perceived as a means of ensuring standardisation of care for a minimum package of services, with extra services being charged separately, particularly in areas where private sector facilities have increased client choice and competition. Other participants noted that facilities should be accredited based on the nature of services they offer, structured by level of care and linked to reimbursement rates. Some felt that if facilities were accredited based on performance, then people would have a sufficient pool of outlets to choose from:

It is welcome, because it ensures women continue to receive quality care and it would even be better if it is standardised nationally so that there is some national accreditation process that is agreed [upon], and therefore the service provided to a woman in one part of the country is the same as in any other part of the country. And then the facilities can be accredited based on the complexity of the services they offer, and even the reimbursement can be classified based on the accredited level. — Facility manager, site 5

5.4.4 Reimbursement process

Most respondents noted that reimbursement levels are generally low and do not reflect actual costs – an indication of the need to cost services to ensure the rates fully consider the cost of consumables. In addition, there were concerns of cost escalation, with some participants suggesting the need to regulate costs of maternal health services, especially delivery and caesarean sections. They proposed that reimbursements should reflect existing NHIF rates for delivery services. Under FMS, rates were differentiated by level of care, which led to a general perception that such rates were discriminatory, particularly when considering the private sector, whose costs are higher. Some participants mentioned that NHIF's low reimbursement rates and delayed payments would negatively affect private sector participation in the scheme:

They will not participate. Private facilities depend on money; they pay their workers using money. Unlike the government, where the money comes from central government, these guys have to pay their workers. They must pay for supplies, they must provide the services, they pay in cash and there is an extent

to which they can get credit lines extended. It means within a short time, if the money is not being reimbursed, they no longer accept ... the NHIF patients or other insurance agent[s] who might be providing services.

— Provider, site 6

Participants suggested careful reconsideration of the reimbursement process to improve the predictability and consistency of payment schedules, helping managers plan appropriately. They suggested reinforcing facilities' autonomy, with direct access to funds, along with guidelines guaranteeing the funds, to ensure county governments do not use them for other purposes. Such actions, they felt, when accompanied with flexibility for facilities to use the funds without restrictions, could improve operational efficiency. One participant suggested the creation of an emergency or reserve fund that counties could use to support facilities whenever payments from NHIF were delayed.

Overall, participants were of the view that the reimbursement process would require a strong automated claims process to create credibility and efficiency and ensure that funds reach facilities without violating the Finance Act. They suggested that to improve accountability on use of funds, there is a need for the MOH to provide guidance on how the funds may be utilised to ensure structured utilisation of funds to improve maternity services. They pointed out that efficiencies could be improved by ensuring NHIF core functions (such as claims review and payment) are decentralised to ease the process of claims and transfer of funds.

5.4.5 Managing referrals and complications

There were several suggestions on how to manage referrals. First, participants noted that compensation for services provided before referral is not catered for in the current system. They suggested that facilities should be reimbursed based on the services they offer. For example, facilities that offer services prior to referral could be compensated for consumables, which would require a structured claims process, with details of service type and a well-defined cost structure:

I think referrals should be dealt with individually; a facility should be reimbursed separately for the treatment of the patient or delivery ... if mother complicates and necessitates a referral, now the facility receiving the referral will provide a different service, which should now be paid for separately. Maybe the fund should have such an allowance. — Facility manager, site 3

Participants felt that the transfer of FMS to NHIF has the potential to improve documentation, claims processing and data management. They indicated that inclusion of transport costs and private facilities in the scheme could improve referrals, but the government and communities should co-pay to ensure high enrolment and sustainability of the programme.

5.4.6 Benefit package

Women and providers preferred a basic package that could be adjusted over time. They felt the package should cover ANC consultation fees, drugs, pregnancy-related tests, treatment for newborns and the mothers up to one year post-delivery, complications, caesarean sections and treatment for children under 5 years. They also suggested that

the package could include the whole family, although some were quick to point out that cost barriers could limit sustainability beyond the pregnancy period:

I think the package ought to have antenatal care, including laboratory test during antenatal care. It needs to have the emergency transport, referral for the delivery itself, whether normal or abnormal delivery, caesarean section, because sometimes even normal delivery complicates and people end up in intensive care unit. I think those ought probably to be taken care of in the package, and probably some element of postnatal care, after deliveries, because for us, we have observed that there are a lot of mothers dying after delivery, so postnatal care would be important to include. — County manager, site 4

Suggestions to cover other elements, such as cotton wool, sanitary pads and other basic needs for delivery, came from women who had received additional incentives, such as soap or a packet of sugar:

I am talking from experience. You can get to the house, but even a piece of soap to clean the baby's stuff is not available. So, they can give us things like half kilogram of sugar and half bar of soap. — Focus group discussion, non-voucher user, delivered after policy shift, site 3

Finally, there was confusion amongst women as to what was likely to be included in the benefit package after the transfer. The process of accessing benefits was also perceived as cumbersome, due to the identification process of the user via the existing NHIF system.

6. Discussion

The study is based on the premise that user fee removal policies have different outcomes, conditional on whether lost revenue from user fees is replaced by an alternative revenue source. Two pathways were tested, both of which have been implemented at different times in Kenya.

We hypothesised that removal of user fees with an alternative financing mechanism introduced by the government to replace the facilities' lost income stream could generate sustainable improvements in utilisation. The first measure considered was changes in home deliveries. The findings illustrate statistically significant positive change in home-based deliveries amongst all women ($p < 0.05$) and amongst women from the bottom two quintiles ($p < 0.01$) immediately following the 2004 10/20 policy. In contrast, the 2007 and 2013 policy shifts did not have significant immediate effects on home-based deliveries amongst all groups of women considered. There was a notable, non-significant negative trend in home deliveries in all policy shifts amongst all sub-groups of women considered. However, the predicted negative trends were only statistically significant for all women, those from the bottom two quintiles and rural women following the 2007 policy shift ($p < 0.01$ in all cases).

These data suggest that in all the policy shifts, the removal of user fees in 2004 may have increased facility deliveries amongst women who could not have otherwise used facility delivery because of short-term financial barriers. This effect was not observed

over subsequent user fee removal policies, however. These results may be consistent with studies that have shown the short-term effects of user fee removal.

For example, recent findings from a multi-county study (Leone et al. 2016), designed as a quasi-experimental regression analysis using DHS, that analysed data from consecutive surveys in five countries – two case countries that experienced reforms (Ghana and Burkina Faso) and three that did not experience reforms (Zambia, Cameroon and Nigeria) – have shown that user fee reforms are associated with a significant percentage of increased access to facility deliveries (27%) and, to a much lesser extent, to caesarean sections (0.7%). Poor (but not the poorest), non-educated women and those in rural areas benefited the most from the reforms. The study concluded that there is a significant impact of the user fee reforms on childbearing in health facilities in two countries considered, but implementation of the reforms did not have an equal impact across socio-economic groups. The differential analysis for facility deliveries shows that the non-educated and poorer groups (below average and average quintiles) were the ones to benefit the most. Furthermore, rural areas seem to have fared best because of the reforms. However, those in the poorest quintile still do not seem to have had the greatest improvement.

Our second measure relates to use of public facilities for facility deliveries, seeking to answer the question of whether removing user fees increases use of public facility deliveries over time. Our findings indicate no statistically significant changes in public facility deliveries immediately following the 2004, 2007 and 2013 policy shifts, amongst all sub-groups of women. By contrast, the period before the 2004 10/20 policy was characterised by significant positive trends in public facility deliveries amongst all women, while the trends amongst other sub-groups were positive but not statistically significant.

Predicted estimates show statistically significant changes in the rate of increase in public facility deliveries amongst all, poorest and rural women after the 2007 policy removing user fees. The predicted linear trends in public facility deliveries following the 2004 policy shift were also positive for all sub-groups of women for the various policy shifts, except for urban women, where the trend was negative. Predicted positive trends were only statistically significant for all women ($p < 0.05$), those from the bottom two quintiles ($p < 0.01$) and rural women ($p < 0.01$) after the 2007 policy shift, however. This was accompanied by statistically significant changes in the rate of reductions in home deliveries amongst these sub-groups after the policy.

These findings suggest that the 2007 policy might have accelerated, but not dramatically altered, trends in public facility deliveries amongst all, poorest and rural women, characterised by shifts from home deliveries. These patterns mean there were no effects of any of the policy shifts for use of public facilities. The assumption is that the public health system might have seen increased use if financial barriers were removed. A negative urban trend for all policy shifts could suggest an existing alternative market for urban dwellers that could provide choices for women, as well as better financial access. The effect, therefore, is likely to affect rural settings most.

Our third analysis was based on assessing whether users reduced or increased their use of the private sector. The analysis shows that there were statistically significant

reductions in private facility deliveries immediately following the 2004 10/20 policy amongst all women, those from the bottom two quintiles and rural women ($p < 0.01$ in each case). An intriguing aspect is that, in spite of these shifts from private facility deliveries immediately following the policy, there were no immediate concomitant changes in public facility deliveries amongst these sub-groups of women. Rather, there were statistically significant positive changes in home deliveries amongst all women and those from the poorest households immediately following the policy. Given that the 2004 10/20 policy did not affect private health facilities, the shift from such facilities immediately following the policy might have been influenced by other factors not captured by the data, for instance local misunderstanding of its operations.

However, our study also found no statistically significant differences in trends in private facility deliveries before and after the policy shifts (2004, 2007 and 2013) amongst all sub-groups of women. The pre-2004 policy trends in private facility deliveries amongst women from the bottom two quintiles, rural and urban areas were positive and statistically significantly ($p < 0.05$ in all cases). The directions of the predicted trends in private facilities differed by sub-groups of women and policy shift, although in all cases, the trends were not statistically significant. This immediate effect to the rural women and bottom quintiles galvanises the narrative that user fee removals were effective in reducing financial barriers in the short term, as this pushed women to use public sector services that were now relatively affordable.

The bigger question is the effect on quality of service, which could erode the gains. There is limited evidence on the effect of user fee removal on quality, as evidence was found to be relatively weak, mainly from short-term, non-controlled studies. The introduction of user fee exemptions appears to increase rates of facility-based deliveries, but was found to have negative, neutral or inconclusive effects on availability of inputs, provider motivation and quality of services. The extent to which user fee revenue lost by facilities is replaced can directly affect service provision and may have unintended consequences for provider motivation. There is mixed evidence of the effects of user fee exemptions on the quality of maternal healthcare provided (Hatt et al. 2013): in seven studies, quality was not measured; in others, the effects of exemptions were negative (five studies), neutral or having no effect (five studies), or mixed or inconclusive (two studies).

This study confirms that when user fee removal is not replaced by an alternative financing mechanism, as in 2004 and 2007, gains in increased utilisation and equity are often short-lived and, if sufficient funds are not available to supplement the lost income, the gains could be eroded as problems with ensuring sufficient staffing and quality emerge, especially if free services generate significantly increased demand. This may result in facilities' resorting to charging user fees again, formally or informally. User fee removal ought to be accompanied by a replacement of revenue through alternative financing mechanisms to achieve long-term success (McPake et al. 2011).

Our study also shows that overall, although there was a non-significant negative trend in home deliveries in the period before the 2004 policy shift amongst all groups of women, there was a statistically significant increase in home deliveries amongst all women and amongst the poorest women immediately following the 2004 10/20 policy. This finding

suggests that even modest user fee charges keep the poorest women from delivering in a health facility.

To explore this further, we examined the combined effect of user fee removals and use of alternative approaches to increase access to maternal health services for the poor. Our assessment of the effect of user fee removals in the context of vouchers shows an effect of vouchers on fourth ANC visit during the initial phases of the programme; this increased slightly during the FMS. Although the percentage of women seeking four or more ANC visits increased moderately after the introduction of FMS, we found no significant effect of the voucher programme or FMS policy on the use of four or more ANC visits.

Essentially, the evidence suggests that the voucher programme led to increased use of facility deliveries; however, once FMS was introduced, increases in facility delivery were greater in communities that did not have access to the voucher programme.

The above observations occurred in a context of devolution, as responsibility for maternity care was devolved to counties. Qualitative assessment of the context of the observed changes show that overall, the FMS policy has had an effect on poor people who would not have otherwise used the facilities. Despite the changes, participants appear to agree that the effect is likely to be short-lived if the system does not improve quality. The dynamics of the FMS implementation process are also likely to erode the gains made, as the devolved system appears to be less involved in the design. The process of implementation appeared rushed and lacked proper preparation of systems, which often leads to poor implementation of user fee removals (Meessen et al. 2011).

Previous work has also shown that the process of user fee removals requires a realistic forecast of the potential resource implications of a well-implemented user fee removal programme. Six steps for a successful policy change could include the following:

1. Analysis of a country's initial position (including user fee level, effectiveness of exemption systems and impact of fee revenues at facility level);
2. Estimation of the impact of user fee removal on service utilisation;
3. Estimation of the additional requirements for human resources, drugs and other inputs, and corresponding financial requirements;
4. Mobilisation of additional resources (domestic and external) and development of locally tailored strategies to compensate for the revenue gap and costs associated with increased utilisation;
5. Building political commitment for the policy reform; and
6. Communicating the policy change to all stakeholders (McPake et al. 2011).

These observations appear not to have been considered, as the system appears to have been based on a presidential directive, with limited input from devolved structures.

7. Limitations

This study has the advantage of using a mixed-methods approach to allow qualitative perspectives to inform quantitative findings for a fuller picture of the environment in which user fee removals were implemented. An added benefit is to generate better model specification. The ITS model has the advantages of detecting delayed or intermittent programme effects and can determine if these changes are temporary or longer term.

Despite these advantages, there are several limitations to the study. First, the study is limited to one country in Sub-Saharan Africa and thus does not inform user fee removals in other regions. Additionally, some aspects of the qualitative data may be sensitive, particularly the responses of key informants. In this sense, the focus group discussions serve as a check on the key informant interviews; however, although focus group participants' responses were confidential, their responses might not be fully candid and could be overly positive. The combination of focus group discussions and in-depth interviews can help triangulate between quantitative findings and personal experiences to better understand the impact of various user fee removal strategies.

It is important to acknowledge that the DHS birth history data set has some limitations. For example, women may include relatives' children as their own or omit children who died young. Other potential problems include displacement of birth dates, which may cause a distortion in estimating an effect attributable to changes in the policy environment.

Using the DHS data offers a unique data set over 19 years (1995–2014). DHS design limits generalisability to the provincial level, however, as the survey was not representative in smaller administrative areas. The DHS for 1998, 2003 and 2008 can be disaggregated at provincial level. The 2013 DHS is representative of the 47 counties, which can be regrouped into the old provinces to carry forward the ITS modelling. The study will conduct tests for regional variation over time, but due to challenges in sample size, analysis was restricted to urban versus rural and wealth quintile combinations.

Choice of outcome measures is limited to what is available in the DHS. For example, the DHS does not ask about patient satisfaction with ANC. In addition, ANC coverage is applied to most recent pregnancy, not all pregnancies in the birth history.

Although ITS analyses are well-suited for a retrospective analysis of policy reforms on healthcare utilisation, there are limitations to this approach. Although the ITS design can grant insight into causal effects, the design relies on statistical tests of correlation that cannot show causality. Rather, ITS allows for testing of systematic changes in the outcomes of interest that may be associated with policy reforms; it cannot claim causality in any observed change. Other health policy reforms or exogenous shocks (for example, economic growth or health system reforms beyond changes in user fees) could also influence the outcome.

Another limitation with ITS is the selection of time periods. All else being equal, smaller time periods can introduce greater levels of variance in the effect estimate. For that reason, this study has used national survey data over 19 years.

A third limitation with many ITS studies is the reliance on routine data from the health management information system. Changes in data reporting, particularly data reports that could indicate the potential for informal user fees, may be sensitive to changes in user fee policies. More generally, the quality of routine record-keeping is subject to change in Kenya.

With regard to the qualitative data, there is a limitation in the sense that views expressed in the focus group discussions and in-depth interviews do not correspond to the earlier

user fee removal attempts in 2004 and 2007. The qualitative data reflect the most recent user fee removal intervention in 2013 and subsequent user experiences.

8. Specific findings for policy and practice

This study has several implications for policymakers at local and national levels of government.

8.1 Implications for policy

For the national MOH, the analysis indicates that the removal of user fees has had modest effects on utilisation of facility deliveries over time and has not significantly increased access of services to the poor or those in rural areas. The implications are that increased access may require more than the removal of financial barriers, and should include improvements to infrastructure and quality of services. A sustainable investment strategy will be needed to ensure that effective, high-quality services are provided to clients.

The efforts needed to improve the system would require time to create adequate structures, and more attention should be paid to use, to generate evidence that will guide the needs of people managing policy change. This also means that policy changes need to consider learning from the past to avoid the failures of the past.

For county managers, user fee removals mean that additional sources need to cover lost revenue, and the need to maintain quality will strain local system and erode the gains made. Local systems should therefore plan to set aside funding for use in health facilities that can cushion them from delays in reimbursement. In other cases, they may plan up-front grants to facilities to increase quality and performance that can attract more clients and ensure continuity of services.

8.2 Implications for programme design

To address the challenges of implementation, and in recognition of the system's needs, the government is transferring FMS to NHIF as a transitional process towards introducing health insurance combined with adequate health sector development strategies. To ensure effective implementation of FMS by NHIF, four issues are pertinent:

- Adequate stakeholder consultation;
- Better fund management when FMS is transferred to NHIF;
- A well-defined, costed benefit package; and
- Activities to minimise attrition.

First, a consultative process is critical for ensuring stakeholders are informed of changes needed at both user and system levels. There appeared to be limited understanding amongst all study participants of the details of the transfer, especially for enrolment, reimbursements, the benefit package and how the transition from managed care to a pre-payment scheme would be actualised.

Lack of sufficient information was also evident from discussions with women, implying that hurried implementation of the transition could make it difficult for intended

beneficiaries to understand the dynamics and requirements – as in the case of FMS, which was implemented within 100 days following a presidential directive. Adequate communication and work with county teams to facilitate understanding of the transfer will be a critical driver of success. Lack of proper preparation often leads to poor implementation of policies as was evident from user fee removal initiative (Meessen et al. 2011; Mwabu 1995).

In addition, there has been a disconnect between knowledge of removal of user fees for healthcare on the one hand, and how that knowledge is taken into account in public policies on the other hand (Ridde 2015) – a gap that will need to be bridged when implementing UHC policies.

Second, the transfer of FMS to NHIF will need efficient fund management, including reimbursement processes. Facilities' ability to access funds on time and to align the transfer with devolution laws, such as those that govern public finance, is likely to lead to success. The reimbursement process should be accompanied by approaches that ensure facility-level autonomy, which has the potential to increase efficiency, create greater local accountability and participation of communities, improve staff motivation and performance, increase resource mobilisation, strengthen hospital management capacity and improve quality of health service delivery (Bank 2003).

Recent assessment of the effect of devolution in Kenya indicates that devolution of health services to county level has reduced health facility autonomy (Barasa et al. 2016). This has compromised health facility functioning by weakening management and leadership capacity, reducing staff motivation and limiting community participation in facility affairs. It has also created inefficiencies in service delivery, due to delays in procuring supplies and increased bureaucracy, thereby compromising quality of care.

Third, it will be critical to ensure that the benefit package under the scheme is well defined, costed and aligned with other pre-paid schemes under NHIF management. The process provides a unique opportunity to consolidate existing schemes under NHIF and build capacity of claims processing at the county level. This will create trust in future endeavours geared towards implementation of a national social health insurance fund.

Transitioning of women enrolled under the managed care programme to a pre-payment scheme within NHIF will offer an opportunity to increase the coverage of health insurance. However, there appears to be a 'black box' in the transition process that needs to be defined and communicated effectively to users. If well managed, the transfer is likely to contribute towards a culture of health insurance and UHC in general. In essence, this will increase transparency, help mitigate demand-side costs of services and provide funding that promotes transparent charging for services (Ensor and Ronoh 2005).

Finally, there were several concerns around the transition to the pre-paid scheme after delivery and the need to design innovative strategies to minimise attrition. Due to wider economic challenges, unaffordability of the requisite premium for most women could necessitate adequate targeting and use of subsidies. There may be a need to design packages that define a flexible prepayment model to fit different income groups, as a way of preparing the population for a mandatory social health insurance scheme.

Suggested strategies, such as graduated payments, subsidies and discounted approaches, can be consolidated via technology, as several mechanisms have already been tested in the market through private sector initiatives.

Transitioning FMS to NHIF provides an opportunity for the MOH to apply lessons and existing evidence to develop a comprehensive healthcare financing strategy. Our evidence suggests that health system managers, providers and beneficiaries are likely to support a pre-payment scheme that will increase health insurance coverage as part of UHC. There may be a need to harmonise this process, however, and interrogate suggestions on design, as well as practicality of the transition towards a social health insurance scheme. Suggestions to define a benefit package, cost it and develop a robust reimbursement system will help create structures towards UHC goals.

9. Conclusion

This report on two related analyses shows that user fee removals have a complex history of implementation in Kenya and that the debate has shifted from the notion of simply removing out-of-pocket costs to a more nuanced understanding that government has an obligation to ensure facilities have adequate financial support for operational costs, while ensuring consumers and health system clients are not faced with financial burdens at the point of care.

Early attempts to introduce user fees to support facilities' operational costs did not have the intended positive effects on use of maternal health services. Those early policies introduced distortions in service provision that were not fully addressed in subsequent attempts to reduce user fees. Experience from user fee removal has shown that, without an adequate alternative revenue source, it is difficult to improve access to essential services. More recently, promising models – such as maternal health vouchers and social health insurance – suggest that directing payments to facilities for service provision, based on consumer demand and utilisation of services, can produce intended effects in improving access to health services for underserved populations.

To comprehensively understand the impact of an alternative mechanism that accompanies user fee removals, future research needs to look into the longer-term effects of these initiatives on quality and continuum of care, equity in access and financial burdens for women and their households. Doing so will help identify key strategies for ensuring sustained improvements in maternal and child health outcomes in Kenya and similar contexts.

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