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# SAVING MONEY, SAVING LIVES: AN INQUIRY INTO A MICRO-SAVINGS MATERNITY PRODUCT IN KENYA

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# ACRONYMS

- ANC** Antenatal care
- CEOC** Comprehensive emergency obstetric care
- HIDN** Health, Infectious Diseases and Nutrition
- JKS** Jipange KuSave (savings experiment in Kenya)
- PNC** Postnatal/post-partum care
- MMR** Maternal mortality rate
- SMS** Short message service (mobile phone text messages)
- RCBP** *Réseau des Caisses Populaires du Burkina*
- USAID** United States Agency for International Development

# EXECUTIVE SUMMARY

Changamka Microhealth Limited, a Kenyan for-profit micro-savings company established in 2008, has developed a private-sector solution intended to help women finance facility-based maternity care. Changamka's smartcard can be used to purchase antenatal, delivery, and/or post-partum care at participating hospitals. The card can also be used to pay for other health services, such as malaria and diarrhea treatments, at non-maternity clinics. Customers can add value to their cards using electronic kiosks at health facilities, or they can make small deposits via their mobile phones. By regularly "saving" small amounts of money on the electronic card, they can spread the cost of services over a longer period of time.

The USAID-funded Strengthening Health Outcomes through the Private Sector (SHOPS) Project performed a process evaluation of Changamka's maternity savings card. SHOPS was not an implementing partner and did not provide technical assistance to the product, but served as a third-party evaluator to retrospectively analyze the benefits, challenges, and potential opportunities associated with a stored-value savings program in the maternal health context.

The results are drawn from analysis of quantitative surveys and qualitative interviews with both card users and non-card users, living in the same catchment areas. The study team also analyzed a large database of all card transactions conducted from July 2010 to October 2011, the period when the card was piloted at Pumwani Maternity Hospital.

The study noted several health finance-related benefits associated with the program. The interviews indicated demand for a health-dedicated micro-savings vehicle, and an appreciation for certain features of the card. The money on the card can only be used for medical purposes, and many women reported that the card helped them save money by not letting them or their family members spend it on other things. Many interviewed women also noted that having an electronic card instead of cash was safer and allowed them to access care faster and more easily.

The study also found that among women who visited Pumwani during the period in which the card was offered, those who obtained the card were concentrated at higher levels of education and household expenditure, indicating that the card had higher uptake among women of higher socioeconomic status compared to their peers at the same hospital.

The distance from respondents' homes to Pumwani also varied greatly between those who obtained the card and those who did not, with card holders living much closer to the hospital. This appears consistent with the finding that many women discontinued use of the card due to uncertainty about whether they would use Pumwani for delivery, as the only maternal care facility where the card was accepted, or another facility.

Given that the card was offered to patients already at Pumwani Hospital, and nearly all women who visited Pumwani prior to delivery went on to deliver there (or at another hospital), we would not expect the card to affect the percentage of facility-based deliveries—a key goal in maternal health. In other words, the women who could have obtained the card were already almost



certain to deliver in a hospital, while women who never visited Pumwani would not have been exposed to the card.

The study identified some challenges, as one might expect in early phases of implementation and scale-up of a locally owned, private-for-profit business. Specific challenges were: high discontinuation of card use; the small portion of card users who made savings deposits on the card; and the high number of card users who did not understand how to use the card. Most card users also obtained the card too late in their pregnancy to allow sufficient time to save for delivery.

Overall, this evaluation showcases an intervention that appears to be a promising approach that could offer a beneficial health finance tool to “bottom-of-the-pyramid” consumers. However, given the obstacles highlighted in this report, such benefits are contingent upon improvements in the design and implementation of such interventions. While this study focused upon a single maternal health micro-savings program, the findings suggest many generalizable lessons for other small, self-funded, private sector health finance ventures in developing country settings.

# 1. INTRODUCTION

Kenya continues to struggle with a problem common in many developing countries: a large proportion of pregnant women do not have sufficient access to antenatal care and/or delivery with skilled birth attendants, contributing to the country's high maternal mortality ratio (MMR), 488 per 100,000 live births. Antenatal consultations are vital for counseling about healthy pregnancy behavior and nutrition, for identifying complications and high-risk pregnancies, and for advising patients about what to do if complications arise (World Health Organization, 2006). Similarly, facility-based deliveries offer improved safety, as most maternal deaths occur during labor, delivery, and the first 24 hours after delivery, and many delivery-related complications require facility-based care (Campbell and Graham, 2006). However, less than half of all pregnant women in Kenya receive the WHO-recommended minimum of four antenatal consultations, and only 43 percent of Kenyan births occur in health facilities. Thus, limited access to these vital maternal health services is a major public health issue in Kenya.

The costs of these vital services, especially facility-based deliveries, appear to present a substantial barrier to their use. Only 7 percent of Kenyan women ages 15-49 have health insurance according to the latest Kenya Demographic and Health Survey (KDHS, 2009), and options for free maternal care do not appear widely available, even in the public sector.<sup>1</sup> As a result, most health services must be paid for out-of-pocket, thereby decreasing the likelihood of obtaining appropriate maternal health services. In parallel, the inability of many patients to pay for the full cost of relatively expensive delivery services can strain the budgets of maternal health facilities that depend on patient payments to supplement their other funding sources.<sup>2</sup> Strategies to reduce or spread out-of-pocket maternity care expenses over time have the potential to help overcome these issues.

One potential strategy to help families spread these expenses over time is a commitment savings program focused on maternal health services. This approach has the potential to allow poor families to save for deliveries over a longer period of time, while allowing maternal health facilities to receive full payment for their services. To explore the potential of this approach to increase access to maternal health services in developing countries, the Strengthening Health Outcomes through the Private Sector (SHOPS) Project, with funding from USAID's Health, Infection Diseases and Nutrition (HIDN) Office, conducted a process evaluation of the Changamka Microhealth Ltd. stored-value maternal health savings card program that was used in a Nairobi maternity hospital during 15 months in 2010-2011. SHOPS selected Kenya-based Changamka for this study because of the innovative nature of their model, the international recognition it enjoyed, and their already established relationship with SHOPS partners in Kenya. The authors are unaware of other maternity savings cards elsewhere in the world, as most of the medical savings products are designed for outpatient services. Thus, this program appears to be the first of its kind.

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<sup>1</sup> We asked the 50 women (all residents of Nairobi) who agreed to participate in qualitative interviews whether they knew of a place where free maternal care was available; while some noted sources of free pediatric care, none knew of any such services for maternity. However, the Kenyan government recently announced that it intends to make healthcare completely free for pregnant women and children under the age of five.

<sup>2</sup> Delivery and a one night stay at Pumwani Hospital costs KSh 3400 (approximately \$40.80).

The purpose of the evaluation described in this report was to determine whether the Changamka maternal health saving card is a promising approach to reducing financial barriers to facility-based maternity care among low-income families in Nairobi, and to issue recommendations based on these observations. The authors of this report hope that the findings and recommendations presented in these pages will be useful to a range of policymakers and public health practitioners as they undertake future initiatives to help women save for and access appropriate maternal healthcare services. We believe that the challenges and opportunities identified here are likely to be relevant for many similar interventions, and that implementers and evaluators will benefit from awareness of these issues.

# 2. BACKGROUND: COMMITMENT MEDICAL SAVINGS ACCOUNTS AS A POTENTIAL INSTRUMENT TO FINANCE HEALTH AND MATERNITY CARE

Health expenditures, including those encountered during pregnancy, have the potential to exacerbate the vulnerability of low-income households—whether through a single large outlay or through smaller but repeated expenses. In an ideal world, low-income pregnant women would be able to access high-quality pregnancy care at little or no cost. Unfortunately, in many developing countries, fiscal constraints limit the public sector’s ability to provide access to high-quality healthcare for many segments of the population. For many financially vulnerable families, pregnancy can be a time of increased anxiety about the need to identify the additional resources that will help ensure continuous proper care over a period of several months. Many families forgo quality maternity care altogether because they simply cannot afford it. Innovative mechanisms to help low-income households save for maternity may therefore offer a promising approach to overcoming financial barriers.

## 2.1 THE POOR SAVE

Microsavings represent a relatively new class of financial instruments that can help low-income families accumulate funds to pay for a variety of services, including healthcare. As the book *Portfolios of the Poor* convincingly shows, poor families—with the exception of the most destitute—do save regularly (Collins et al., 2009). However, most households lack safe, accessible, and affordable options to accumulate and safeguard their savings. In Kenya, according to the World Bank, savings accounts are out of reach for 81 percent of the population, due to the costs involved in opening and maintaining these accounts (Beck, Fuchs, and Uy, 2009).

The availability of savings instruments would help low-income families meet regular and/or large health expenses, such as the cost of outpatient and some inpatient care. The unpredictable nature of informal sector incomes makes such payments particularly challenging; living on \$2 a day does not mean earning \$2 every single day. Tools that allow regular savings are in high demand by vulnerable households (Collins et al., 2009). Recent randomized trials in Kenya by Dupas and Robinson (2009) and in Nepal by Prima (2013) suggest that, when women are given access to a secure savings account, most of them use it to their advantage, resulting in

significant positive impacts on income and investment (Dupas and Robinson, 2009; Prina, 2013).

## 2.2 COMMITMENT SAVINGS

Under traditional economic assumptions—and with access to safe and flexible savings instruments—individuals would design their savings plans with disciplined budgeting and sufficient contingency planning for unexpected expenses (Mullainathan, 2005). In reality, however, people frequently deviate from this model, as they find that their self-control and budgeting skills are limited, and the need for immediate expenses often trumps their commitment to long-term savings (Mullainathan, 2005). Individuals who recognize these limitations may welcome or actively seek out mechanisms to increase their savings rates (Schelling, 1984). Such mechanisms sometimes take the form of commitment savings devices, such as the Changamka health savings card examined in this report (Mullainathan, 2005).

There is evidence that many individuals want to save money for anticipated expenses such as healthcare and education, but they need the assistance of a commitment device to do so successfully. A review of commitment savings products in developing countries by Ashraf et al. (2003) found that “to the extent that individuals want to save for particular purposes but have difficulty doing so with their normal savings account, a specially labeled account for that purpose in fact has the necessary influence to inspire increased savings toward that purpose.” A study in the Philippines used a commitment device that created a binding savings deposit, in which savings were not accessible until a goal date or amount was reached. Potential clients who took part in the experiment exhibited an 81 percentage-point increase in their savings in one year (Ashraf, Karlan, and Yin, 2006). In Kenya, the Jipange KuSave (JKS) Experiment offers clients access to a “lend-to-save” product: small, interest-free loans are deposited directly into the client’s “mobile wallet” using the mobile phone money transfer system M-Pesa. Part of the loan is automatically placed in a commitment savings account with set savings targets. Users of the program indicated that the most important feature of JKS is that it helped them save and prevented them from using the savings before they reached their target (Rotman, Rasmussen, and Ferrand, 2012).

## 2.3 SAVING FOR HEALTH AND MATERNITY

Although some individuals succeed in saving enough to address occasional relatively minor health events, many low-income families in developing countries are unable to save adequately for chronic or larger healthcare expenses. Commitment savings accounts have the potential to provide an easily accessible repository of funds to cover certain categories of health-related expenses. In particular, medical savings accounts may be used to cover outpatient care, preventive services, or limited cases of inpatient care, or to pay premiums or co-pays for private health insurance.

Several recent studies highlight the positive effects of commitment health savings accounts on healthcare outcomes. Reinsch and Ramirez (2010) report that individuals who actively use the health savings accounts developed by the *Réseau des Caisses Populaires du Burkina* (RCBP) in Burkina Faso were better positioned to access timely healthcare and may be less vulnerable to the financial stresses associated with ill health. In India, Durairaj et al. (2010) found that members of a Karnataka-based NGO who had health savings accounts for outpatient care (combined with an insurance component for inpatient expenses) enjoyed improved access to

drugs and primary care, and even to more advanced hospital care. In another randomized experiment in Kenya, Dupas and Robinson (2013) show that providing low-income individuals with commitment health savings technologies can significantly increase preventive healthcare behavior and increase financial resilience to health shocks.

Overall, a growing body of evidence indicates that medical savings accounts may help low-income families smooth their consumption in ways that increase their access to healthcare. This instrument is not necessarily well designed for all types of medical expenses, however. Emergency and inpatient expenses are cannot easily be met with savings alone, because the timing of these expenses is generally unpredictable and/or the amounts involved are too large. Non-emergency maternity care, because it is predictable both in terms of timing and expense, appears to be an appropriate target for commitment medical savings approaches such as that developed by Changamka.

# 3. WHAT IS THE CHANGAMKA MATERNITY CARD?

Changamka Microhealth Limited is a Kenya-registered for-profit company established in 2008 to develop innovative, technology-based solutions to paying for healthcare. The company offers “smart cards” that can be used for health savings to purchase a variety of outpatient and inpatient services, through a network of roughly 30 providers around the country. The card contains a radio frequency identification chip, allowing it to store basic information about its registered user and allowing the user to make debit (payments) and credit (deposits) transactions.<sup>3</sup> Customers can add value to their card at kiosks located in Changamka partner facilities, and can also make deposits via their mobile phones through M-Pesa, the electronic money transfer system that serves more than 17 million subscribers in Kenya. All Changamka cards, regardless of where they are distributed, are identical in function and can be used at any affiliate facility.

In 2010, Changamka entered into a partnership with Pumwani Maternity Hospital in Nairobi, a public facility owned by the Nairobi City Council. Pumwani is the largest maternity hospital in sub-Saharan Africa, accounting for around 27,000 deliveries per year. Pumwani appeared to be a logical setting to pilot a maternity savings intervention. It had large client flows, was well-known, and charged fees for services. It also appeared to serve the demographic group that Changamka intended to target—women who were not so poor that they had little chance of paying for services, but not sufficiently wealthy to have a bank account or to seek care from more expensive private facilities. Under the Changamka-Pumwani agreement, the card could be used by pregnant women (or their families) to pay for maternal health services at the hospital. The Changamka kiosk was located inside the antenatal care (ANC) pavilion of the hospital, and was staffed by a Changamka clerk who was tasked with explaining the program to visitors, enrolling participants into the program, and processing credits and debits.<sup>4</sup>

The cost of the physical card itself—about \$2—was fully covered by Changamka, and the card was provided for free with the first transaction. Use of the card did not entail any discount on the cost of services, so the acquisition and use of the card was cost-neutral for the users. Changamka received a service fee of 15 percent of the price of each service purchased with the card, retained by Changamka from the funds it transferred to Pumwani Hospital to pay for services. Pumwani (and its owner, the Nairobi City Council) thus received only 85 percent of the total fee for each service. The partnership was originally based upon the expectation that the card would offer benefits to Pumwani as well: increased client flow, streamlined patient intake and discharge, reduced “side payments” that may be associated with cash payments, and a decrease in non-payment for services. Non-payment had been a significant issue at the

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<sup>3</sup> As of November 2012, Changamka has moved to a virtual card that uses mobile phone-based systems. In the period analyzed for this study, only smart cards were used.

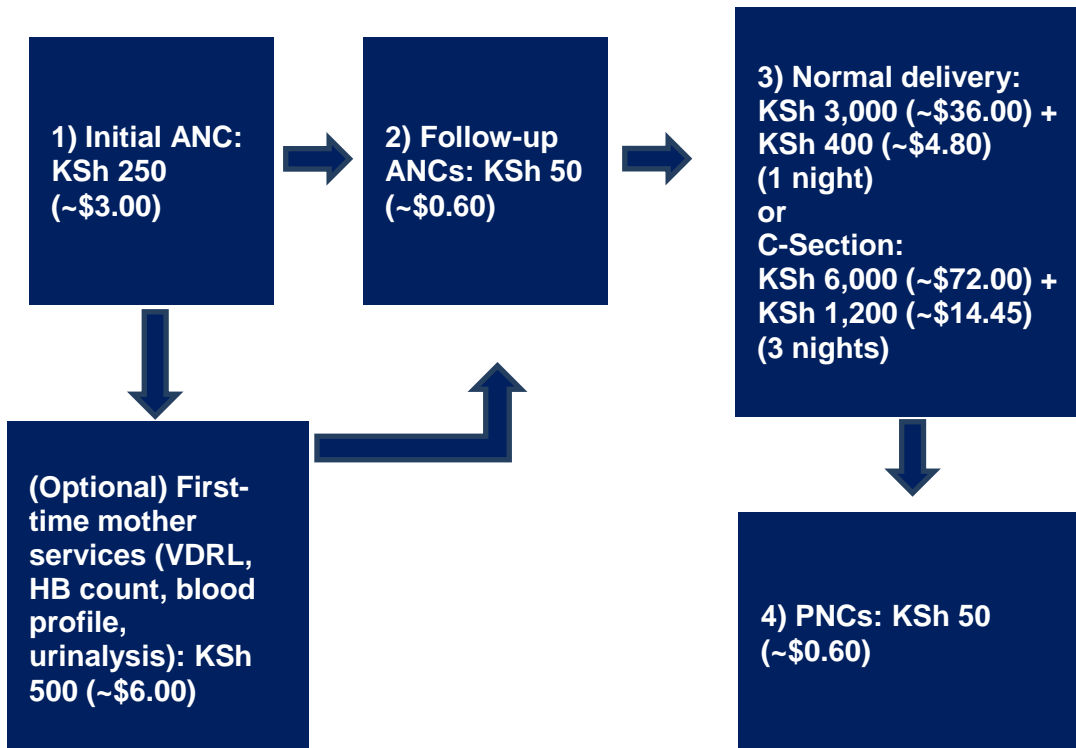
<sup>4</sup> According to Changamka officials, the clerk was aware that processing card transactions was the source of revenue for Changamka under the agreement with Pumwani, and was encouraged to promote the card as much as possible.

hospital; officials from Pumwani and Changamka concurred in their assessment that about 50 percent of services at the hospital went unpaid.

Disagreements between the two parties over the realization of these expectations were among the main reasons why the agreement between Pumwani and Changamka was discontinued in October 2011. Maternity cards issued before that date continued to be honored until the client gave birth.

Figure 1 illustrates the typical sequence and prices of maternity services offered at Pumwani Hospital during the period that the Changamka card was honored there. The process starts with an initial ANC visit, and can be accompanied by first-time mother services. The women can then obtain follow-up ANC services which are less costly than the initial ANC, as well as delivery services. Following delivery, post-natal/post-partum care services are also available. However, it is important to note that women were not specifically required to follow this order; they could, for example, obtain delivery services without having ANC visits.

**FIGURE 1. TYPICAL ORDER AND COST OF MATERNAL HEALTH SERVICES AT PUMWANI HOSPITAL**





# 4. RESEARCH DESIGN AND QUESTIONS

## 4.1 RESEARCH DESIGN

This process evaluation focuses on the group that received the intervention, as well as their non-recipient peers, in order to document what the intervention provided, the characteristics of the respective groups, and their experiences with and without the intervention. The availability of card use data, as described below, also allowed an examination of the inner-workings of the program to observe phenomena that were unknown to program staff and clients.

While a process evaluation is not designed to measure the impact of an intervention, it can provide valuable insights into the successes and shortcomings of the intervention, as well as generate lessons for improving similar interventions.

## 4.2 RESEARCH QUESTIONS

This study aimed to answer a number of questions about a novel private sector approach to health financing. SHOPS was neither a funder nor an implementing partner in the Changamka program; SHOPS's involvement with the study began after the pilot partnership between Pumwani and Changamka had ended. The SHOPS Project was not in a position to assist in the design or implementation of the intervention.

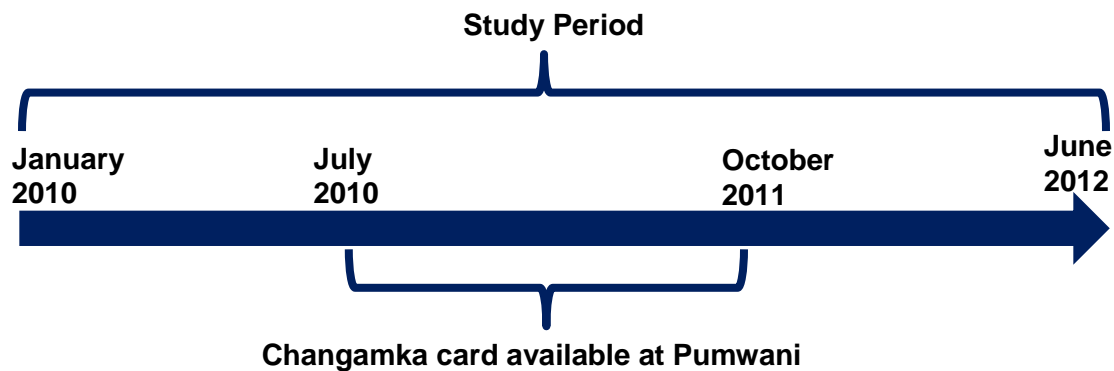
This process evaluation addresses the following research questions:

	Research Question	Data Source
1	What are the experiences and perceptions of women in the catchment area communities with regard to maternal health services and financing?	Community survey and qualitative interviews
2	How many people were willing to try the card?	Transaction database
3	What type of people chose to accept the card? How did they differ from those who did not?	Card user survey and community survey
4	How did users actually use the card?	Transaction database
5	What were card users' experiences and perceptions regarding the card?	Card user survey and card user qualitative interviews
6	Did card ownership appear to facilitate obtaining maternal health services?	Card user survey and community survey

# 5. DATA AND METHODS

The period for this study is January 2010 to June 2012. All women interviewed for this study delivered a baby during this time period. The research timeframe was designed to include the periods both before and after the Changamka card was available at Pumwani Hospital (July 2010 to October 2011) (Figure 2). Data collection was conducted from June to July 2012.

**FIGURE 2. STUDY TIMELINE**



The data used in this study came from the following five sources:<sup>5</sup>

### **Card user database**

1. A card transaction database that recorded every transaction made, on 2,883 Changamka cards used at Pumwani from July 2010 to October 2011.

### **Card user sample**

2. A quantitative survey of 190 women who used the Changamka card for a variety of services at Pumwani, purposely sampled in order to include women with varying profiles of card-user behavior.
3. A qualitative, open-ended survey of 30 card users: 15 women who paid for delivery with their cards, and 15 users who only accessed non-delivery services with their cards.

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<sup>5</sup> The study was reviewed by Abt Associates' Institutional Review Board, and a de-identification and security plan was provided wherein personal information and identifiers were removed, and data was transmitted only via secure portals. Informed consent was obtained from all interviewees, and all were given contact information for the local data collection firm and Abt Associate's staff in case they had questions or concerns. Multiple inquiries were made to investigate options for local Kenyan IRB review, but no entity was located for a non-experimental, non-clinical study, with data collection by a market research firm. All records were de-identified when archived, and all other datasets were destroyed.

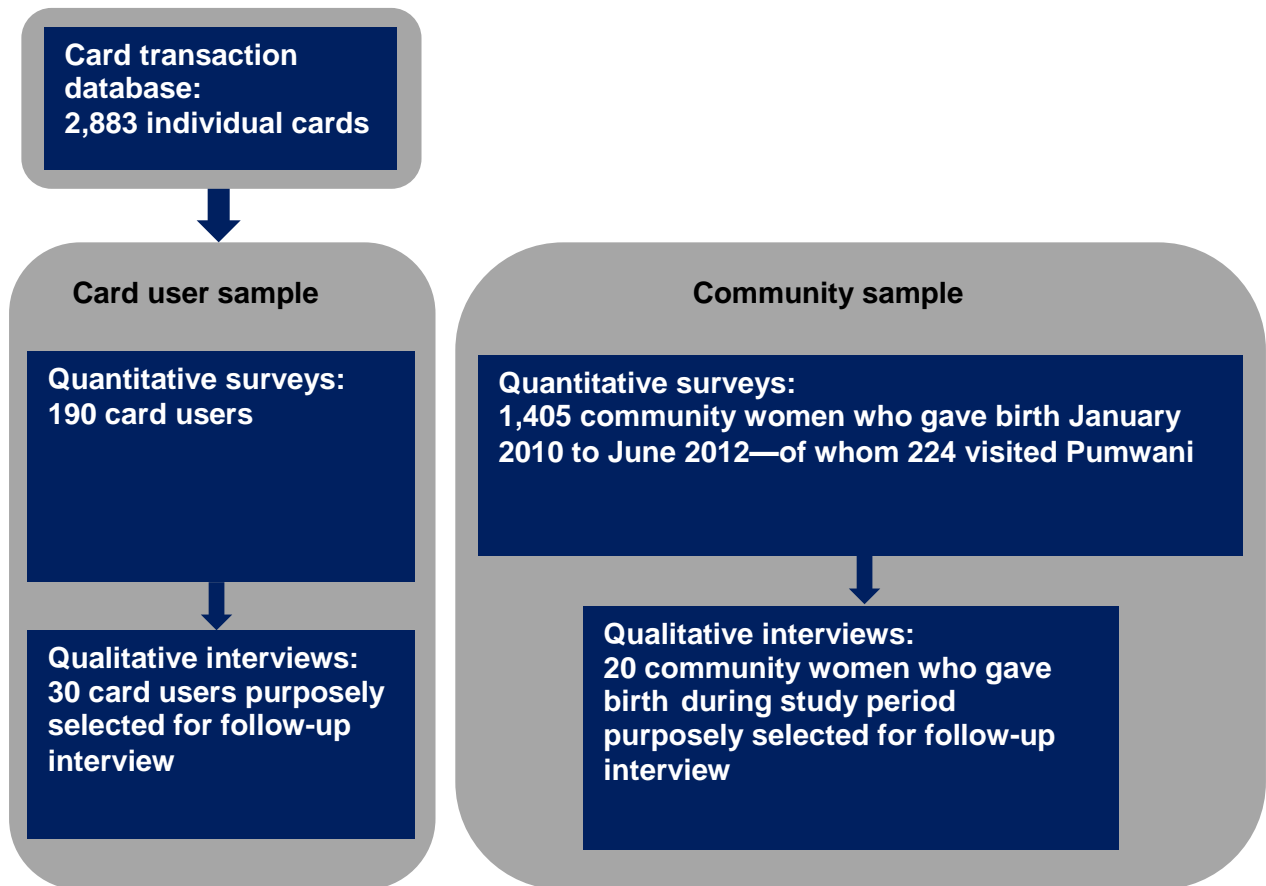
These 30 women were recruited by the local data collection firm from among the 190 quantitative survey respondents who met these criteria.

**Community sample**

4. A quantitative survey of 1405 non-card users in the same community as card users and who gave birth during the study period of January 2010 to June 2012 (224 of these women went to Pumwani to obtain some type of maternal health service or information during that time.)<sup>6</sup>
  
5. A qualitative, open-ended survey of 20 non-card users in the same community as card users and who delivered during the study period of January 2010 to June 2012, including 10 women who were offered but declined the card at Pumwani, and 10 respondents who used other nearby facilities for delivery. These 20 women were recruited by the local data collection firm from among the 1405 survey respondents who met these criteria.

These five sources are illustrated in Figure 3 and described in greater detail below.

**FIGURE 3. DATA SOURCES DIAGRAM**



<sup>6</sup> The survey instrument explored whether respondents' visits to Pumwani during the relevant periods were to receive services or to obtain information.

## 5.1 CARD TRANSACTIONS DATABASE AND METHODS

In January 2012, Changamka provided SHOPS researchers with their computerized database. This included all 6,759 card transactions logged on the **2,883 cards** that were acquired at Pumwani and used during July 2010–October 2011 (the period when the card was accepted at Pumwani). The database was organized by individual transaction and provided details of time, amount, user ID number, and service purchased.

The transaction database was cleaned, reorganized, and analyzed using Excel 2010 and Stata version 12. The data were analyzed for overall utilization rates of the services available for payment with Changamka (initial and follow-up ANC visits, first-time mother services, delivery, post-partum care) both in the aggregate and by sub-group (e.g., users who used card multiple times or users who saved using card). Individual transactions were analyzed at the user level and the sub-group level, to display timelines and trends of savings, services, and discontinuation.

## 5.2 QUANTITATIVE DATA AND METHODS (AMONG CARD USER SAMPLE AND COMMUNITY SAMPLE)

Quantitative surveys were administered in June 2012 by TNS Global, a data collection firm registered in Kenya. The surveys interviewed **190 card users** (“card user sample”) and **1,405 women** (non-card users) who lived near the card users (“community sample”). The community sample was limited to women who were at least 18 years of age and had given birth during the study period (between January 2010 and June 2012). The survey contained 75 questions, 15 of which were related to the card user experience and were asked only of card users.

The survey of 190 card users began with calling the women (using the phone number on file with Changamka), requesting their informed consent to participate in the study, and scheduling an interview. This card-user sample was designed to reflect the experiences and perspectives of three groups of women: those who used the card for delivery (n=26); those who used the card for multiple services, excluding delivery (n=97); and those who used the card only once, for a non-delivery service, and then discontinued its use (n=67).<sup>7</sup> The assumption behind this sample selection was that those card users who paid for multiple services and/or delivery with the card had different experiences with the card than those who only used it once, and this would help highlight the pros and cons of the card program.

The sample of **1,405** community members included only women who gave birth during the study period of January 2010 to June 2012 (including **224 women** who visited Pumwani for services or information). The sample was created using a random walk method in the catchment area—

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<sup>7</sup> These represent the respondents whom the local data collection firm was able to locate and obtain consent from, based on a total sampling frame given to the firm by SHOPS researchers. The sampling frame included: all 181 women who used the card for delivery; 178 women who used it for multiple services (selected randomly from among the total of 294 individuals who used the card multiple times); and 100 single-time users (selected randomly from among the 2589 such users). The sampling frame proportions were designed to yield a sufficient range of experiences with the card: 100 percent of delivery users, 65 percent of multiple-time users, and approximately 4 percent of all single-time users.

the same Nairobi neighborhoods where the card users lived.<sup>8</sup> In order to construct a community sample that was relatively similar to the card users' profile, interviewers began by finding card users at their homes and then carrying out the specified random walk method to locate other women in the nearby areas. This method was conducted in the 39 areas where the card users lived. The purpose of this methodology was to identify women with similar characteristics to the card users, in terms of residence location and distance to health facilities.

Data from both card users and community sample women were analyzed, separately, using bivariate analyses in Stata version 12.

### 5.3 QUALITATIVE INTERVIEWS (AMONG CARD USER SAMPLE AND COMMUNITY SAMPLE)

The qualitative interviews were designed to gain additional insights into respondents' perspectives and experiences regarding their healthcare choices and finances, and to add richness to the findings developed in the quantitative survey. The qualitative interview guides contained 25 questions with follow-up probes. All **50 participants (30 card users plus 20 women from the community sample)** had also participated in the quantitative survey, and had been asked, based on their responses, to participate in the additional qualitative interview. Among the 30 card users, we selected **15 card users** who paid for delivery using the Changamka card and **15 card users** who paid for other, non-delivery maternity services with the card.

The 20 women selected for qualitative interviews from the community sample included **10 women** who were offered the card at Pumwani but chose not to accept it, and **10 women** who used other nearby health facilities and not Pumwani. This purposive sample was designed to provide a range of perspectives and yield insights into why some women used the card for more or different services than other card users, why some women rejected the offer of the card, and how experiences at other health facilities differed from those at Pumwani.

The qualitative interviews were conducted individually, transcribed, and analyzed by TNS Global. The analysis of the transcripts was conducted by the interviewers themselves, to ensure that the transcripts from the interviews were interpreted accurately as they conducted their thematic analysis and highlighted key perspectives. TNS then produced an analytical report on the basis of their findings. The qualitative findings were discussed with SHOPS researchers, who also read all raw transcripts to look for insights or trends that the local firm might not have highlighted in their report.

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<sup>8</sup> The random walk methodology involved starting at a the home of a sample interview participant and using the selection procedure outlined in UNICEF's Multiple Indicator Cluster Survey to sample in the nearby area (available at <http://www.childinfo.org/files/chap06.pdf>). The sample size of 1405 was selected by SHOPS researchers as sufficiently large to yield high numbers of women who visited Pumwani during the study period, possibly including some women who used the card. The sample size proved to be adequate to locate randomly 224 women who visited Pumwani visitors during the study period, who were then interviewed. However, only 19 randomly located respondents had used a Changamka card, and 17 of these women appeared to have obtained it at a different Changamka network facility (not Pumwani), for outpatient non-maternal services. Thus, given the uncertainty of how they obtained the card and the differences in how they were identified as compared to the purposive sample of card users, these women were not included among the card users, and are only used in the overall summary statistics.

# 6. ACCESSING AND FINANCING MATERNITY CARE IN THE COMMUNITY SAMPLE: FINDINGS AND DISCUSSION

This section describes some characteristics and reported experiences of 1,405 community women (the “community sample”) who live in the same area as card users and who gave birth during the study period. These findings give insights regarding the context of the Changamka program and the issues and obstacles faced by pregnant women in Nairobi.

## 6.1 COMMUNITY SAMPLE DESCRIPTION: BACKGROUND CHARACTERISTICS

To develop proxy measures for household wealth and to obtain benchmarks for the relative costs of Pumwani’s maternal health services, we asked respondents about their general and health-related expenditures over the previous month (Table 1).<sup>9</sup> As Table 1 also indicates, most women had at least a secondary education, and just over half spoke more than one language. Women in the community sample had an average of 1.81 children ever born (parity). Data about the timing of their last birth was collected to develop findings regarding the delivery experience of mothers and to determine whether their visits to Pumwani Hospital would have likely occurred during the period in which the card was offered (July 2010 to October 2011).

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<sup>9</sup> 1 US Dollar = approximately 83.3 Kenyan Shillings (KSh), as of April 2013.

**TABLE 1. BACKGROUND CHARACTERISTICS OF COMMUNITY SAMPLE**

Average number of people (adults and children) in household	4.0
Monthly household expenditures less than KSh 9,999	30.4%
Monthly household expenditures between KSh 10,000 and 19,999	42.8%
Monthly household expenditures above KSh 20,000	26.6%
Monthly household healthcare expenditures less than KSh 999	56.3%
Monthly household healthcare expenditures between KSh 1,000 and 1,999	17.9%
Monthly household healthcare expenditures above KSh 2,000	25.6%
Education level of respondent: Primary (attended)	36%
Education level of respondent: Secondary (attended)	48%
Education level of respondent: Post-secondary (attended)	16%
Speaks English	56.3%
Speaks Swahili	89.9%
Speaks Somali	5.9%
Average number of children at time of interview (parity)	1.81
Months since last birth	12.3 months
Total observations (n)	1,405

Note: Totals for languages exceed 100 percent, as respondents were allowed to select multiple response options.

## 6.2 COST, TRANSPORTATION, AND PERCEIVED LACK OF RESPECT ARE MAIN REASONS FOR NOT USING HOSPITALS FOR DELIVERY

To inform recommendations for how a financial mechanism such as the Changamka card could potentially help increase facility-based births (if offered outside of facilities), respondents were asked to agree or disagree with a list of reasons that women might not choose to use a hospital—regardless of whether the respondent herself used a hospital for delivery (as the vast majority of respondents did). As Table 2 indicates, cost was the most frequently cited reason, followed by transportation concerns—elements that point to the need for maternity financing instruments that can be used at a variety of facilities across a wide geographic area.

**TABLE 2. REASONS MOST COMMONLY NOTED FOR NOT USING A HOSPITAL FOR DELIVERY**

Hospitals are too expensive	45%
Too difficult to travel to a hospital at the time of delivery	31%
Hospitals treat women disrespectfully	28%
Hospitals ask for extra money for supplies	13%
Hospitals ask for bribes/unofficial payments for better care	4%
Prefer to deliver at home	3.5%
Total observations (n)	809*

Note: Totals exceed 100%, as respondents were allowed to select multiple response options.

\* This sample is constituted of community sample respondents who suggested reasons why their peers might not use a hospital (or skilled care facility) for delivery. It is unclear whether the 596 women who did not provide any reasons were simply cases of missing data or if they felt that there was no reason for them to use a hospital.

To gauge the proportion of women paying for delivery out-of-pocket and to assess the potential demand for a health financing mechanism such as the Changamka card, we asked about health insurance coverage among the women in the community. In the community sample, 17 percent of respondents (237 out of 1,405) held health insurance at the time of their last delivery. Among these 237 insured women, nearly all (91.8 percent) were covered by Kenya’s National Hospital Insurance Fund. Among those in the community sample who noted that they paid for their maternity care using insurance, 60 percent reported that insurance covered all their costs, while 40 percent reported that they paid out-of-pocket for a portion of the costs not covered by insurance.

While the Changamka card can be used by anyone, Changamka’s maternal savings program specifically marketed the card to pregnant women by distributing it at the ANC pavilion of Pumwani Hospital. In this regard, it is noteworthy that nearly two-thirds of respondents in the community sample (i.e., non-card users) indicated that they financed their maternity care themselves, as reflected in Table 3.

**TABLE 3. HOW DID COMMUNITY SAMPLE RESPONDENTS OBTAIN FUNDS FOR MATERNITY CARE?**

Obtained the money themselves	63.7%
Obtained money from friends or relatives	36.3%
	100%
Total observations (n)	1,099*

\*Women in the community sample who noted that they used cash to pay for some or all of their maternity care.

In order to determine the respondents’ proximity to the facility at which they sought delivery care, and given the inherent difficulties for respondents in accurately estimating physical distances, we asked respondents how long it takes them to reach the facility on foot and by automobile. Median times, reported in Table 4, are used to compensate for outlying observations. The relatively long walking times appear consistent with the qualitative interview finding that transportation is one of the major challenges for pregnant women in Nairobi (discussed in the following sections).

**TABLE 4. DISTANCE TO DELIVERY FACILITY (COMMUNITY SAMPLE)**

Median walking time from home to facility	60 minutes
Median automobile driving time from home to facility	30 minutes
Total observations (n)	1,082*

\*Women in the community sample who had facility-based births and who did not select “don’t know” as their response to questions about their travel time to their facility.



## 6.3 WOMEN FEEL UNSAFE CARRYING CASH TO HOSPITALS

The Changamka card offers an alternative to carrying cash to the hospital, and thus it was informative to understand the community sample’s perspectives regarding carrying cash. As Table 5 indicates, the majority of respondents indicated that carrying cash to a hospital is not safe. Although 35 percent of respondents indicated that someone bringing cash to a hospital is more likely to be asked to pay “additional payments or bribes,” very few respondents (4 percent) indicated that the payment of bribes might be a reason that women would choose not to go to a hospital.<sup>10</sup>

**TABLE 5. PERCEPTIONS ABOUT USING CASH TO PAY FOR MATERNITY SERVICES**

It is not safe to carry cash to a hospital	68%
Hospital is more likely to ask cash-carrying patients for additional payments or bribes	35%
Total observations (n)	1,405

Note: Totals exceed 100 percent, as respondents were allowed to select multiple response options.

The issue of requests for bribes was included for discussion in the qualitative interviews because of the potential for misunderstanding the difference between payments for supplies versus a true bribe. The qualitative interviews provided very limited indication that bribery is a problem. It is commonplace for health facilities to charge for disposable items (gloves, gauze, etc.) and it appears this may have been what respondents were citing when asked in the quantitative survey if carrying cash to a hospital increased the likelihood of being asked for “additional payments or bribes.” Below are some of the responses from qualitative interviews that reflect the general consensus that bribery is not common at Pumwani.

**Interviewer:** *“Did they ask you for any bribes so that they could give you good services in return?”*

**Respondent (#1),** who paid for delivery at Pumwani with the Changamka card: *“There is none of that there.”*

**Interviewer:** *“You don’t have to bribe someone in order to get a clean bed or to give you a special diet?”*

**Respondent (#2),** who paid for delivery at Pumwani with the Changamka card: *“The nurses are so unfriendly they can’t give you that (give good services).”*

**Interviewer:** *“And do they tell you at times there is no medicine and when you give them money they give you the medicine?”*

**Respondent (#7),** who paid for delivery at Pumwani with the Changamka card: *“For me I was told to pay 50 bob (KSh) so that I can get the medicine.”*

**Interviewer:** *“And was it genuine or it was a bribe?”*

**Respondent (#7):** *“I was given a receipt so I don’t think it was a bribe.”*

<sup>10</sup> The question asked in the quantitative survey was “If you have cash, is the hospital more likely to ask you to pay additional payments or bribes?”

## 6.4 FACILITY CHOICE: SWITCHING BETWEEN FACILITIES AND USE OF COMPREHENSIVE EMERGENCY OBSTETRICS CARE FACILITIES

The process of participating in the Changamka card program at Pumwani generally began when a woman arrived at Pumwani’s ANC pavilion (where the card was offered) for antenatal services. It was therefore important to analyze the profiles of those who obtained antenatal services at Pumwani but did not return to the hospital for delivery.

Among the 1,405 women in the community sample, 224 (16 percent) visited Pumwani (see Table 6). Notably, 20 percent of the respondents who visited Pumwani had their deliveries in a different location. While most of these women delivered in a facility, a very small fraction of women (1.7 percent) who visited Pumwani had their delivery in a home setting. From this information, we infer that most women in this community who seek ANC services at a hospital ultimately deliver in a facility—although not necessarily the same one. Therefore, we would not expect a maternal finance mechanism that was only marketed and distributed inside a hospital (such as the Changamka card) to have an impact on the likelihood of facility-based deliveries. The fact that many women who visited Pumwani did not deliver there underscores the variability in the choice of facility among the local community, and may also reflect difficulties with transportation while in labor.

**TABLE 6. DELIVERY LOCATIONS OF COMMUNITY SAMPLE RESPONDENTS WHO VISITED PUMWANI**

Visited Pumwani but delivered at another facility	18%
Visited Pumwani but delivered at their home or another person’s home	2%
Visited Pumwani and delivered there (whether single or multiple visits)	80%
	100%
Total observations (n)	224

As Table 7 indicates, the vast majority (92 percent) of respondents had their most recent delivery in a facility (as opposed to at home). The names of the delivery facilities given by the survey respondents were coded by SHOPS researchers and merged with data from Kenyan Ministry of Health, in order to determine whether the facilities used offered comprehensive emergency obstetric care (CEOC).<sup>11</sup> Among the women in the community sample, slightly less than one-fourth had delivered their most recent child at a facility offering CEOC. (Facilities that do not offer CEOC that were used by respondents were typically smaller local health centers and nursing homes with less than 30 beds, although a few hospitals also lack CEOC.)

<sup>11</sup> This data analysis used the “e-Health Kenya” database, developed jointly by the Kenyan Ministry of Health and Abt Associates Inc. Accessed July 9, 2012, at <http://www.ehealth.or.ke>.

**TABLE 7. DELIVERY LOCATIONS OF COMMUNITY SAMPLE RESPONDENTS**

Delivered their most recent child at a facility that offers comprehensive emergency obstetric care (Pumwani and other facilities)	24%
Delivered their most recent child at a non-CEOC facility	68%
Delivered their most recent child at their home or another person's home	8%
	100%
Total observations (n)	1,405

# 7. CARD UPTAKE, AND USER EXPERIENCES AND USE: FINDINGS AND DISCUSSION

This section presents the main findings of the analysis from the five data sources described in section 6. It gives an overview of the perceptions regarding the card and the rationale for its use as reported by card users, as well as analyses of card use and user characteristics.

## 7.1 CARD USERS DIFFER FROM NON-USERS IN SEVERAL NOTEWORTHY WAYS

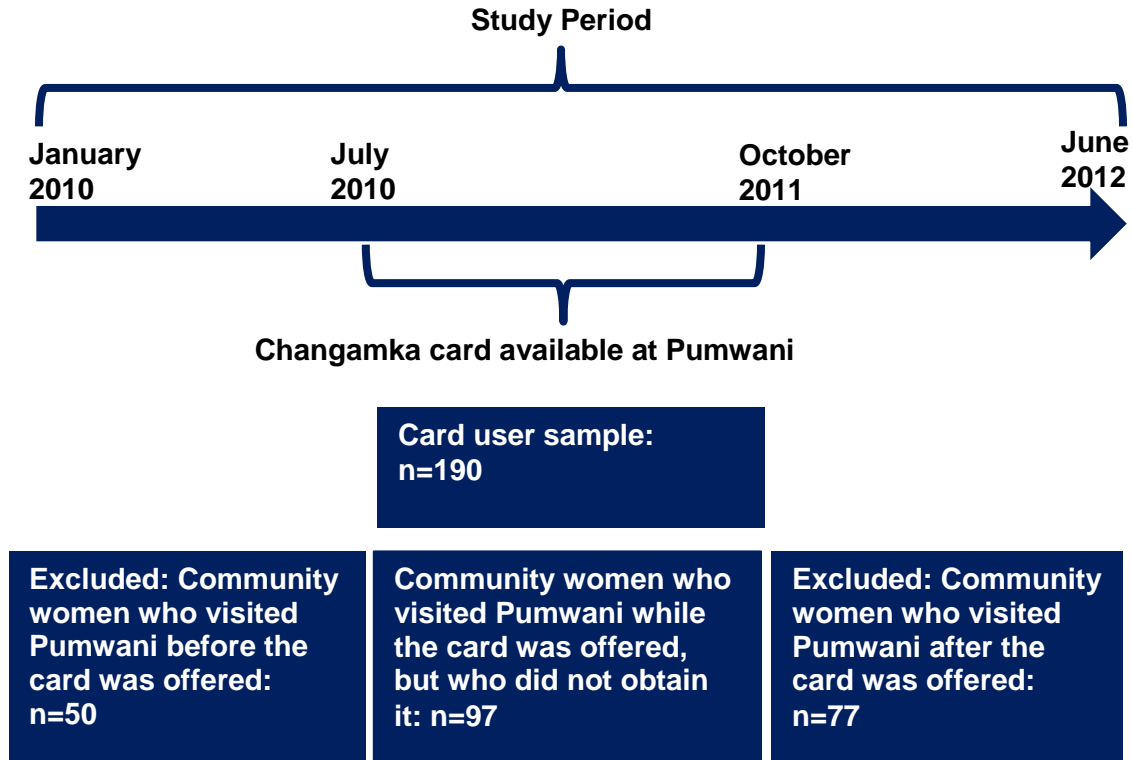
An important goal in all programmatic evaluations is understanding who actually participated in the program and who did not—and why. Thus, this study aimed to identify the factors that distinguish the women who obtained the card from those who did not.<sup>12</sup> To this end, we compared the background characteristics of the 190 card users in the sample with those of 97 community women who visited Pumwani at the time the card was offered; we hypothesize that those 97 women were most likely offered the card at Pumwani, but for various reasons did not obtain it.<sup>13</sup> Women who visited Pumwani outside of the timespan in which the card was offered are excluded from these comparisons, because they did not have the same opportunity to obtain the card. Figure 4 illustrates these two groups and how they relate to the other samples used in the analysis.

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<sup>12</sup> As previously noted, the card was obtained at the time of its first use to pay for services. Therefore, all who obtained the card used it at least once.

<sup>13</sup> According to Changamka management, the Changamka desk at Pumwani was staffed during most of the hours when the ANC pavilion was operating, and the Changamka clerk was encouraged to enroll as many women as possible. We assume that if a woman did not obtain the card, it was likely as a result of her own decision rather than because of any barrier to obtaining the card when she visited the ANC pavilion, including any form of selection or discrimination by the clerk.

**FIGURE 4. TIMELINE AND QUANTITATIVE SAMPLES USED FOR ANALYSIS**



## **7.2 CARD USERS REPORTED RELATIVELY HIGHER MONTHLY HOUSEHOLD EXPENDITURES AND HEALTHCARE EXPENDITURES**

Card users, when compared with women who visited Pumwani Hospital at the time of the intervention but did not obtain the card, are far more concentrated among higher levels of expenditure—one of several proxy indicators for socioeconomic status (Table 8).

**TABLE 8. HOUSEHOLD EXPENDITURES AMONG CARD USERS AND NON-CARD USERS**

Range of monthly household expenditure	Card users	Community visitors to Pumwani who did not obtain the card	p-Values
<b>Total household expenditure (monthly)</b>			
Less than KSh 9,999	16.1%	30.2%	0.020**
Between KSh 10,000 and 19,999	40.0%	36.4%	
Above KSh 20,000	43.8%	33.3%	
	100%	100%	
<b>Healthcare expenditure (monthly)</b>			
Less than KSh 999	2.4%	5.3%	0.0144
Between KSh 1,000 and 1,999	42.4%	51.0%	
Above KSh 2,000	55.4%	43.7%	
	100%	100%	
Total observations (n)	190	97	

\* statistically significant at the  $p \leq 0.10$  level

\*\* statistically significant at the  $p \leq 0.05$  level

\*\*\* statistically significant at the  $p \leq 0.01$  level

### 7.3 CARD USERS WERE CLUSTERED AMONG THE HIGHER EDUCATION LEVELS

A far larger proportion of card user respondents had some post-secondary education as compared to their peers (Table 9). This result is not surprising, given the established association between income and education levels.<sup>14</sup>

**TABLE 9. EDUCATION (HIGHEST ATTENDED) AMONG CARD USERS AND NON-CARD USERS**

Education level of respondent	Card users	Community visitors to Pumwani who did not obtain the card	p-Values
Primary	19.4%	32.2%	0.000 ***
Secondary	48.9%	56.2%	
Post-secondary	31.5%	11.4%	
Total observations (n)	190	97	

\* statistically significant at the  $p \leq 0.10$  level

\*\* statistically significant at the  $p \leq 0.05$  level

\*\*\* statistically significant at the  $p \leq 0.01$  level

<sup>14</sup> A simple cross tabulation with chi-squared test for education level and household expenditure level shows a clear and expected concentration of low household expenditure among lower-educated respondents and higher household expenditure among higher-educated respondents. Fifty-three percent of the respondents in the highest education tercile are also found in the highest expenditure tercile, as compared to 19 percent of those in the lowest education tercile (p-value=0.000).

These differences in indicators of socioeconomic status and educational level between the card users and their community peers could be attributable to several factors. Women may be more likely to accept the card if they are more familiar and comfortable with relatively high-tech innovations, which we would expect to be true of wealthier and more educated individuals. Similarly, wealthier women are likely to be less risk-averse than less well-off women, when considering a financial innovation. Both explanations appear consistent with literature regarding the relationship of wealth and education to the uptake of newly introduced products or services (Rogers, 2005).

Given that the card was new, unfamiliar, and not promoted or advertised outside of partner facilities, it is likely that some women were not confident that they could trust their savings to the Changamka system. Some responses given in the qualitative interviews echoed this uncertainty:

**Interviewer:** *“Did you feel that Changamka was a safe place to store funds over time?”*

**Respondent (#2)**, who paid for delivery at Pumwani with the Changamka card: *“Okay, I was afraid because I had never heard of it, I thought it could be a lie but when it paid that day I saw it was fine.”*

**Interviewer:** *“How much money had you saved with the card?”*

**Respondent (#34)**, who obtained the card but did not use it for delivery: *“I hadn’t saved anything because I was not sure it would be of use. My husband thought that the doctors may refuse the card and the money would go to waste.”*

**Interviewer:** *“We notice a lot of women who put money on their Changamka card only on the day it is used. In other words, these women kept their money as cash until they got to the hospital and then put the money on the card and use the card to pay for their services instead of cash. Why do you think they did this?”*

**Respondent (#8)**, who paid for delivery at Pumwani with the Changamka card: *“They were risking, maybe they thought it is not a good thing to have or did not trust it, or maybe they didn’t have money then, or they are sure they can keep cash and will still have it when they come to deliver.”*

Relatively wealthier and more educated women may also have more control over their personal finances than their peers, and thus are more likely to want a savings vehicle. In addition, women with greater earning power may be more likely to feel empowered to use a micro-savings program such as Changamka. Because the card was generally obtained at an ANC visit, rather than at delivery, it is likely that many women were visiting the hospital without their husbands and were in a position to make an important financial decision without a husband’s input.

## **7.4 CARD USERS WERE MORE LIKELY TO SPEAK ENGLISH THAN THEIR PEERS**

As Table 10 shows, card users spoke English in higher proportions than community respondents. This appears consistent with the higher expenditure and education rates among users, since learning English in addition to Swahili is probably more common among relatively wealthier and more educated women.

**TABLE 10. LANGUAGE AMONG CARD USERS AND NON-CARD USERS**

Language spoken	Card users	Community visitors to Pumwani who did not obtain the card	p-Values
English	88.9%	58.7%	0.000***
Swahili	100%	98.9%	0.161
Somali	0.05%	0.0%	0.474
Total observations (n)	190	97	

\* statistically significant at the  $p \leq 0.10$  level

\*\* statistically significant at the  $p \leq 0.05$  level

\*\*\* statistically significant at the  $p \leq 0.01$  level

Note: Totals exceed 100 percent, as respondents were allowed to select multiple response options.

## 7.5 CARD USERS WERE SLIGHTLY MORE LIKELY TO HOLD HEALTH INSURANCE

As Table 11 shows, card users included a slightly higher proportion of women with health insurance. Additionally, visitors to Pumwani (both card users and non-card users) held health insurance policies in higher proportions than community sample respondents in general.

**TABLE 11. HEALTH INSURANCE AMONG CARD USERS AND NON-CARD USERS**

	Card users	Community visitors to Pumwani who did not obtain the card	p-Values
Had health insurance at last birth	30.0%	26.8%	0.456
Total observations (n)	190	97	

\* statistically significant at the  $p \leq 0.10$  level

\*\* statistically significant at the  $p \leq 0.05$  level

\*\*\* statistically significant at the  $p \leq 0.01$  level

A priori, it is unclear why women who hold health insurance would accept the Changamka card if they understood that their insurance would cover their maternal healthcare costs. It is likely that these women saw the card as a financial mechanism complementary to insurance: NHIF insurance (by far the most common form of insurance among the samples) covers delivery but it does not cover the cost of ANC visits or any other expected cost of care.



## 7.6 CARD USERS REPORTED FAR SHORTER TIMES FOR TRAVELING TO PUMWANI

Table 12 indicates that, whether by foot or automobile, Changamka card users lived closer to Pumwani Hospital than respondents who visited Pumwani but did not obtain the card. This observation is consistent with the finding that women frequently cited both lack of facility choices and uncertainty about whether they would use Pumwani for delivery as reasons to discontinue use of the card.

**TABLE 12. DISTANCE FROM DELIVERY FACILITY AMONG CARD USERS AND NON-CARD USERS**

Median travel time from home to facility	Card users	Community visitors to Pumwani who did not obtain the card	p-Values
By foot	60 minutes	120 minutes	0.000***
By automobile	30 minutes	42.5 minutes	0.001***
Total observations (n)	190	97	

\* statistically significant at the  $p \leq 0.10$  level

\*\* statistically significant at the  $p \leq 0.05$  level

\*\*\* statistically significant at the  $p \leq 0.01$  level

The observation that proximity to Pumwani Hospital is correlated with card uptake appears consistent with the mention of transportation concerns, as one reason why some women may not obtain facility-based births (Table 2). The difficulties of transportation were also mentioned in the qualitative interviews:

**Interviewer:** *“Talk about transport reaching those places (health facilities), what can be done to access them easily?”*

**Respondent (#40),** who obtained a card but did not use it for delivery: *“If you can have ambulance services also and have a number you can call. At times you can call a taxi and they refuse to go certain routes late in the night like going to Pumwani most of them refuse.”*

**Interviewer:** *“Tell me about the security of the area; are the roads safe to travel at night?”*

**Respondent (#9),** who paid for delivery at Pumwani with the Changamka card: *“It’s very risky—you can’t go footing at night even if it is near, there are many street boys and they can snatch your bag or take your money. But with a taxi it is fine.”*

**Interviewer:** *“What would make the experience of having a baby better?”*

**Respondent (#4),** who paid for delivery at Pumwani with the Changamka card: *“Save in the card when you have money, save for transport too you will not have any problem.”*

## **7.7 CARD USERS EXPRESSED POSITIVE OPINIONS ABOUT THE CHANGAMKA CARD**

In the survey of card users, general perceptions of the card appear positive, as indicated in Table 13. The convenience and safety aspects of a non-cash option were indicated by users as positive features, and this appears consistent with the consensus among the community respondents that carrying cash in hospitals is generally not safe. As noted above, bribery did not appear to be an issue at Pumwani, so the 55 percent of respondents who agreed that “the card prevents hospital staff from demanding more money” likely refers to additional payments for supplies, etc.—reflecting the logic that patients who are not carrying cash are not a target for collecting side payments.

**TABLE 13. EXPERIENCES AND PERCEPTIONS OF CARD USERS ABOUT THE CHANGAMKA CARD**

The card is more convenient than carrying cash	87%
The card is safer than carrying cash	80%
The card helps pay for services and leave the hospital more easily	60%
The card prevents hospital staff from demanding more money	55%
Total observations (n)	170*

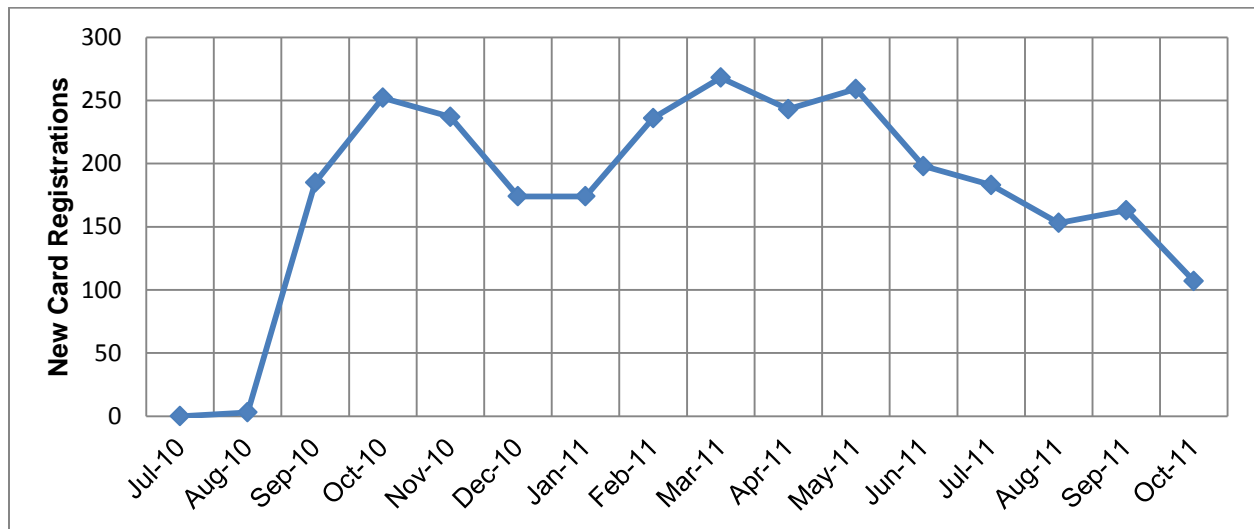
Note: Totals exceed 100 percent, as respondents were allowed to select multiple response options.

\* Due to data collection issues, 20 of the 190 in the card user sample are missing these responses.

## 7.8 LARGE UPTAKE, LARGE DISCONTINUATION

Throughout the 15 months during which the Changamka card was offered at Pumwani Hospital, 2,883 visitors accepted it—an average of 192 cards issued per month. Figure 5 shows the frequency of card uptake between July 2010 and October 2011. Approximately 27,000 obstetric deliveries take place at Pumwani annually—an average of 2,250 per month. Assuming that an equivalent number of women pass the Changamka booth in the ANC pavilion at Pumwani, we estimate that approximately 9 out of every 100 visitors accepted the card—which was typically offered at the time of first ANC, but could also have been acquired at a later time.

**FIGURE 5. NEW CARD REGISTRATIONS BY MONTH**



A clear trend seen in the card use data shown in Table 14 is that the majority of women who accepted the card and used it for their initial ANC did not use it again. Among 2,707 women who used the card for their initial ANC, only 294 (11 percent) used it for another service at Pumwani: 181 used it for follow-up ANC, 139 used it for delivery, and 26 used it for both.<sup>15</sup>

<sup>15</sup> The use of the card for postnatal (PNC) care appeared to be very limited. While the card transaction data didn't differentiate between ANC and PNC, and the fees were the same, we saw only 10 card users who had an ANC/PNC charge on their card after the time of their delivery. One explanation for this is that, according to several respondents in qualitative interviews, local facilities such as the Lion's Clinic provide free PNC.

**TABLE 14. HIGH RATE OF DISCONTINUATION AFTER FIRST USE**

Used the card <u>only</u> on the first day it was obtained	2,589 (89%)
Used the card at least one additional time after the first day it was obtained	294 (11%)
Used the card to pay for some or all of the cost of their delivery, after the first day it was obtained	139* (5%)
Total observations (n)	2,707**

\* A total of 181 deliveries were purchased with the card, but 42 of these women did not have initial ANC and so they are not included in the table on discontinuation.

\*\* All women who obtained the card used it, because it was obtained with their first transaction.

## 7.9 INSUFFICIENT INFORMATION AND PRODUCT SUPPORT

A follow-up inquiry into the reasons for the large discontinuation described above yielded the results presented in Table 15.

Did not understand how to use the card	50%
Did not have enough money to save	40%
Uncertain about future facility use	25%
Total observations (n)	76*

Note: Totals exceed 100 percent, as respondents were allowed to select multiple response options.

\* Women who responded that they had not used the card as much as they had planned to use it.

It appears that many cardholders did not understand how to use the card. This lack of understanding points to an insufficient level of initial explanation as well as inadequate product support once the card was accepted. This finding is consistent with the information provided in the qualitative interviews, during which several women indicated that they did not understand the card or receive appropriate instructions on how it should be used.

**Interviewer:** *“Why did you not use it (the card) when you were giving birth?”*

**Respondent (#26),** who obtained the card but did not use it for delivery: *“I was registered for one, but after that they never told us how it can be used or how it can help one.”*

**Respondent (#28),** who obtained the card but did not use it for delivery: *“I did not know you can use it, even my husband did not quite understand it, what I thought was it is to help when the baby is sick or something.”*

The fact that 40 percent of respondents said they did not have sufficient funds to save on the card is puzzling, if the fundamental premise of a card such as Changamka is to allow pregnant women and their families to save small amounts over the length of the pregnancy. Figures 6 and 7 indicate, however, that by the time many of the women received the card or started savings, the weekly amounts necessary to save enough for delivery probably exceeded these families' cash flow capacity.

Additionally, several women indicated during the qualitative interviews that they were uncertain as to the facility where they would give birth. (Pumwani was the only maternity facility where the card could be used to pay for services.)

**Respondent (#19)**, who declined the offer of the card: *“I was offered (the Changamka card) but did not take it because I had NHIF card and it has better offer than Changamka, the whole family can use the NHIF card and in all government hospital even some private hospital, also NHIF is cheap 160 per month and it is a government thing, not like the Changamka card is only for maternity and only used in Pumwani.”*

**Interviewer:** *“When you went to Pumwani Hospital, were you offered the Changamka card? If so, what made you not interested in using it?”*

**Respondent (#17)**, who declined the offer of the card: *“I was in Pumwani only once when I was one month pregnant and I just went to see the hospital if I could like the services and do a pregnancy test, but I did not decide if I will continue with the ANC clinic, so when my husband told me to go to South B (a nearby hospital), I never wanted to have the Changamka card it is for maternity only in Pumwani.”*

**Interviewer:** *“We notice a lot of women who put money on their Changamka card only on the day it is used.<sup>16</sup> In other words, these women kept their money as cash until they got to the hospital and then put the money on the card and use the card to pay for their services instead of cash, why do you think they did this?”*

**Respondent (#9)**, who paid for delivery at Pumwani with the Changamka card: *“They are just not sure of where they will go.”*

**Respondent (#40)**, who obtained a card but did not use it for delivery: *“Maybe they are thinking if they are in pain you go to a different hospital and maybe they do not use that card, so they want when you are really going to give birth you can pay that money through that card at that moment to avoid other hospitals rejecting the card that they do not use it.”*

**Interviewer:** *“Did you have the Changamka card?”*

**Respondent (#23)**, who obtained a card but did not deliver at Pumwani: *“Yes but Pumwani was far because I lived in Kayole (district) at that time. I had gotten the card when I attended the antenatal clinic but when it was time to deliver, I went to the nearest hospital.”*

**Respondent (#2)**, who paid for delivery at Pumwani with the Changamka card: *“Changamka has restricted the services to certain hospitals. I would have preferred if it was available in all hospitals just like with NHIF.”*

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<sup>16</sup> See following sections for more discussion of putting money on the card immediately before use.

## 7.10 COMMITMENT SAVINGS VERSUS DIRECT PAYMENT THROUGH M-PESA

### 7.10.1 UNLIKE M-PESA, CHANGAMKA'S COMMITMENT SAVINGS CAN'T BE USED FOR NON-MEDICAL PURPOSES

In order to examine whether the Changamka card filled an unmet need or at least provided a useful and differentiable alternative to existing financial mechanisms, the study investigated whether the Changamka card was valued in a context where mobile money transfers through the M-Pesa system are already widespread. The M-Pesa system provides users with a mobile phone-based “virtual wallet,” allowing them to send and receive payments via SMS messages and to deposit or withdraw cash from their M-Pesa account at ubiquitous kiosks. M-Pesa is well known, trusted, and used by nearly all (98 percent) of the card users interviewed in the survey. Indeed, M-Pesa system is integrated into the Changamka system, so that users can make M-Pesa deposits into their Changamka accounts—although this option was not widely used among our respondents: 53 users made 84 total M-Pesa deposits.<sup>17</sup>

The first and most prominent reason for using Changamka reflects the card's role as a health-dedicated, commitment savings device (Table 16).<sup>18</sup> Because the funds placed on the card cannot be used for any purpose other than medical care, the card acts as an electronic lock-box that prevents the money from being used for other expenses, by either the card user or her family.<sup>19</sup> In contrast, M-Pesa can be used for any transaction.

**TABLE 16. REASONS FOR USING THE CHANGAMKA CARD INSTEAD OF M-PESA TO PAY FOR HEALTH EXPENSES**

The card helps me save money by preventing me from spending it on other things	25%
The card helps me save money by preventing my family from spending it on other things	5%
Total observations (n)	131*

Note: Respondents were allowed to select multiple response options.

\*Includes users who, when prompted, agreed/disagreed with reasons why they used the Changamka card instead of M-Pesa. The sample excludes 39 refusals and 20 missing data points. (The question asked, “What caused you to use the Changamka card instead of M-Pesa?” and it is likely that many respondents were confused because this question implied that to use the Changamka card, one could not also use M-Pesa, which was not the case.)

The issue of dedicated savings vehicles compared to general purpose devices such as M-Pesa was also discussed in the qualitative interviews. As described by respondents, funds in an M-Pesa account are subject to daily temptations and challenges:

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<sup>18</sup> The demand for commitment savings mechanisms was frequently noted in the qualitative interviews. Many respondents—card users and non-card users alike—describe using rotating savings and credit associations (ROSCAs) to meet their various financial needs. Since most ROSCAs stipulate pre-arranged distribution schedules, members are not always able to access necessary funds when they need them—to meet medical needs, for example. This appears consistent with the health savings mechanisms described in Dupas and Robinson (2013), discussed in section 2.

<sup>19</sup> Among the community sample, 81 percent of respondents report using M-Pesa.

**Respondent (#16)**, who paid for delivery at Pumwani with the Changamka card: *“With M-Pesa, you might be tempted to use the money for other things; if you crave meat on certain day, you can't resist using the money in the M-Pesa account [laughter]. That is why my M-Pesa account is always at zero. It is very tempting. The thing with M-Pesa is that when you run out of airtime, you tend to use the money in your account to buy airtime, but if you have the card you will only use it for medical bills. There is no other way you can access that money...I couldn't afford to save the 3,500 on a daily basis. So every time I was paid, I would go and deposit some money with Changamka.”*

**Interviewer:** *“Would you save specifically for health services . . . in M-Pesa?”*

**Respondent (#26)**, who did not visit Pumwani: *“It is hard, you cannot say it's just for the baby.”*

**Interviewer:** *“Why don't you save in M-Pesa?”*

**Respondent (#40)**, who obtained a card but did not use it for delivery: *“I can't save in M-Pesa because it's hard—you will just withdraw and spend it.”*

### **7.10.2 UNLIKE M-PESA, USE OF CHANGAMKA CARD CAN BE KEPT PRIVATE**

A second attribute of the Changamka card that differentiates it from M-Pesa, according to card users, is that it appears to offer a higher degree of protection and confidentiality than M-Pesa. Table 16 showed that only a very small portion of respondents indicated that they used the card instead of M-Pesa because it prevented their families from spending funds on non-health purchases. However, respondents in qualitative interviews emphasized the importance of the fact that a mechanism such as Changamka can be kept secret if desired, whereas the use of M-Pesa is widely known by relatives and friends. The following quotations underline the confidentiality aspect of the card, as well as giving an example of a family member misusing funds set aside for maternity care.

**Respondent (#49)**, who did not visit Pumwani: *“...I used to save in M-Pesa but when my husband gets hold of my phone he withdraws all the money and disappears...nowadays I don't save...”*

**Respondent (#8)**, who paid for delivery at Pumwani with the Changamka card: *“[The Changamka card] helped me to save; it is like your secret because no one knew I had it, when I go to clinic I save. But M-Pesa anybody can see your savings or know your pin and you lose money.”*

**Respondent (#39)**, who obtained the card but did not use it for delivery: *“My husband loves drinking and when he was given Ksh 10,000 by his boss to come and pay the bill (for the delivery), he drunk all the money in celebration of the baby boy.... I had to stay at Pumwani for three weeks not knowing what to do and with no one to come visit me.”*

### **7.10.3 M-PESA WAS NOT ACCEPTED FOR DIRECT PAYMENTS TO PUMWANI**

The third factor that appears to differentiate Changamka from M-Pesa is that M-Pesa cannot be used to make direct cashless payments at some health facilities, including Pumwani. When asked if they would want to use M-Pesa for medical payments directly to the facility without

having to withdraw cash, 88.6 percent of card users and 74.8 percent of respondents in community sample indicated that they would.<sup>20</sup> Currently, in order to use M-Pesa to pay for medical services at facilities such as Pumwani, an M-Pesa user would need to visit an M-Pesa affiliate to make a cash withdrawal and carry the cash to the hospital—largely negating the benefits of a cashless system. This concern was described specifically by this respondent in the qualitative interviews:

**Respondent (#2)**, who paid for delivery at Pumwani with the Changamka card: (When asked “What advice would you give to mothers-to-be so as to avoid unnecessary problems?”) *“They should save through Changamka as this eases the burden a lot. It is better this way because for example, you may have money in M-Pesa but whom would you trust to withdraw it for you? But with the card, you just hand it over.”*

If M-Pesa were accepted as a method of payment at facilities such as Pumwani—and indeed M-Pesa is already accepted at some medical facilities—it is likely that interventions such as Changamka may find fewer clients. However, the health-dedicated savings aspect of the Changamka concept, and the fact that women are able to keep their savings efforts private with a financial vehicle less well-known than M-Pesa, may still provide a niche for a savings vehicle such as Changamka.

## 7.11 CONVENIENCE AND SAFETY VERSUS SAVINGS

The Changamka card was envisioned and marketed as a savings vehicle through which participants would gradually deposit funds into a health-dedicated account that would also act as a commitment savings device. However, only a limited number of women in the study actually exhibited what we define as savings behavior, whereby deposits are made (via kiosk or M-Pesa) and held on the card at least 24 hours before being used to pay for maternity care.<sup>21</sup> Out of 2883 women who obtained the card during the 15 month study period, only 106 (3.7 percent) exhibited this savings behavior one or more times.

It is noteworthy that among these 106 savers, 93 (88 percent) delivered at Pumwani—adding support to the finding that these women felt the need to be relatively certain about their delivery location in order to save on a card that can only be used in a single delivery facility.

Table 17 indicates that, among the 93 savers who paid for delivery at Pumwani using the card, the average amount saved by the date of delivery was KSh 2,057 (about 60 percent of KSh 3,400, the cost of a normal delivery and the obligatory night of inpatient care). Twenty-five users (27 percent) had saved more than this amount by the delivery date.

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<sup>20</sup> While Pumwani did not and does not currently accept M-Pesa payments for services, many medical providers in Kenya currently accept M-Pesa to pay medical bills. This question did not reference Changamka because we assumed that the non-users in the community would not be familiar with the Changamka card, but would likely understand the idea of a mechanism such as M-Pesa being used to make a payment directly to a hospital. The question read: “If you could use M-Pesa to transfer payment for health services directly to a hospital, would you want to use that instead of cash?”

<sup>21</sup> The 24-hour threshold was selected as a minimal indication of trust in the solidity and solvability of the savings instrument, and of the intention to keep funds in the account for future transactions.



**TABLE 17. CARD USER SAVINGS AND PAYMENTS FOR DELIVERIES**

Saved at least KSh 3400 prior to delivery (base cost of delivery + one night of inpatient care)	20%
Paid at least KSh 3400 (through savings plus funds added to card on delivery day)	56%
Average amount saved before delivery	KSh 2057
Total observations (n)	93*

\* 93 card users who “saved” using the card and paid for delivery with the card at Pumwani.

However, most women who used the card repeatedly did so differently from actual savers. They deposited funds on the card at the Changamka kiosk at the hospital at the time of obtaining maternal services, and immediately debited the same amount to pay for these services.

The card transaction data indicate that 300 women used the card this way, on multiple occasions. The reasons appear to be largely explained by three factors: safety, convenience, and uncertainty about delivery location. As previously discussed, the vast majority of respondents (87 percent) said that the card was more convenient than paying with cash, and 80 percent indicated that it was safer than carrying cash. Sixty percent of respondents noted that the card helps them pay for services and leave the hospital more easily.

Respondents to the qualitative interviews indicated that using the card shortens the waiting time of visits at Pumwani by cutting down on the time needed to pay for services, as using the Changamka kiosk was reportedly faster and or easier than using the hospital’s cashier (the typical method of payment without the card).

**Respondent (#1)**, who paid for delivery at Pumwani with the Changamka card: *“When it is time to deliver, all you need to do is give them the card and as you proceed to the labor ward, they can look up your file. You don’t have to line up like the rest who are paying in cash since they have to first pay, wait for a file to be allocated to them then proceed. It shortens the process very fast.”*

**Respondent (#39)**, who obtained the card but did not use it for delivery: *“If you have the card, you just need to give it to them and you get the services rather than walk around with the money in your bag. If you have to go into the (delivery) theatre, there is always a chance your money might get stolen so it is better to keep it in the card.”*

## 7.12 DURATION OF CARD USE WAS TOO SHORT TO AFFECT TIMING OF FIRST ANC AND SAVINGS ACCUMULATION

On average, card users obtained the Changamka card 2.7 months prior to delivery (Table 18). Given that the initial ANC was by far the most common occasion to obtain a card, we assume that this point reflects the pregnancy stage at which most of these women were undergoing their first ANC at Pumwani.

**TABLE 18. WHEN DID CARD USERS HAVE THEIR INITIAL ANC VISIT?**

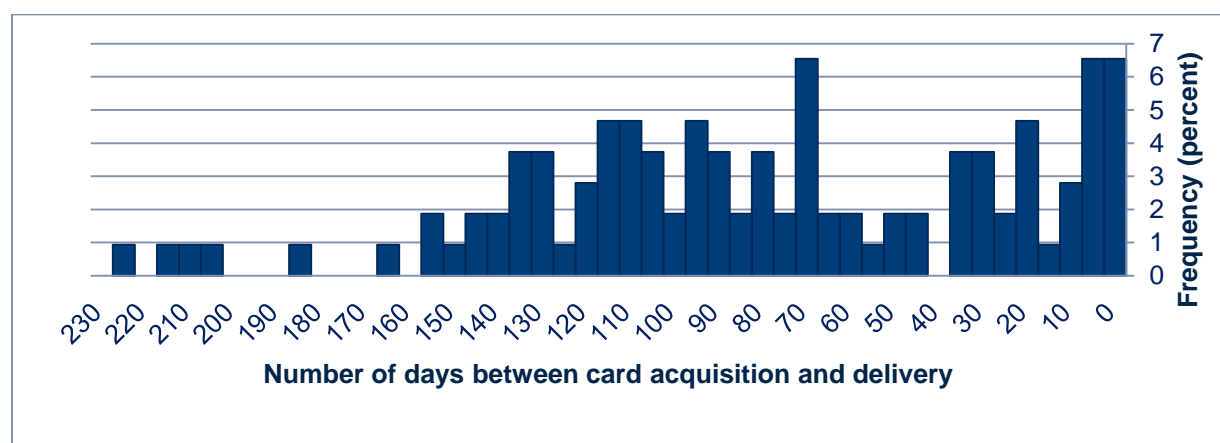
Average time from initial ANC to delivery	81 days (2.7 months)
Initial ANC (using card) in first trimester (181+ days before delivery)	4.6%
Initial ANC (using card) in second trimester (180 to 91 days before delivery)	40.1%
Initial ANC (using card) in third trimester (90 or fewer days before delivery)	55.1%
	100%
Total observations (n)	107*

Note: These calculations excluded any card user whose delivery date was within 6 months of the introduction of card, as these women were considered more likely to have obtained an ANC before the card was available (and thus the date of their first ANC would be unknown). The sensitivity of the delivery date range was tested at 6-, 7-, 8-, and 9-month cut-off points and yielded similar averages in terms of duration from initial ANC to delivery.

\* Card users who had ANC and delivery at Pumwani and paid for both with the card, allowing us to compare time intervals prior to delivery.

Figures 6 and 7 illustrate the timing of card acquisition and initial savings transaction in relation to delivery date. These findings suggest that card users, despite being relatively more educated and wealthy than their peers, had their first ANC far later in their pregnancy than the WHO-recommended first trimester (World Health Organization 2006).

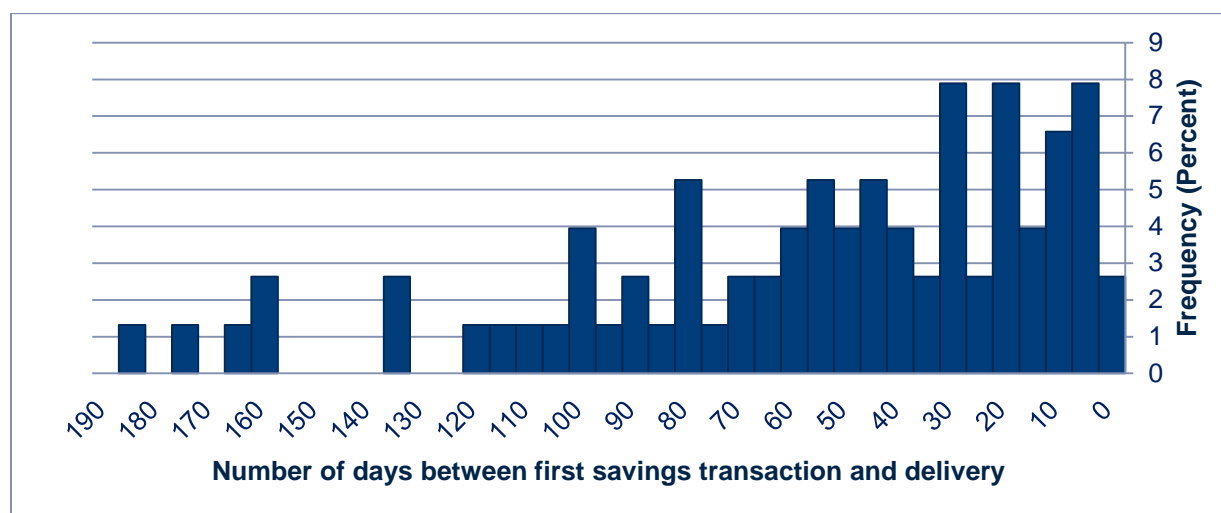
**FIGURE 6. DISTRIBUTION OF TIMING OF CARD ACQUISITION**



Note: The figure should be reviewed from right to left: the origin on the right side of the figure represents the delivery date—the further to the left the bars, the longer the time between card acquisition/first ANC and delivery.

It is possible that cultural norms in Kenya play a role in a woman’s choice of the stage in her pregnancy at which she seeks her first ANC (the typical time for acquiring the Changamka card, while it was offered at Pumwani). Due to cultural concerns regarding pregnancy and miscarriage, some women may prefer not to reveal that they are pregnant until they exhibit visible signs. As a result, these women may delay their first ANC visit until well after their first trimester. Among women who saved with the Changamka card and used it to pay for delivery (see Figure 7), the average time from first savings transaction to delivery date was only 58 days.<sup>22</sup>

**FIGURE 7. DISTRIBUTION OF TIMING OF FIRST SAVINGS TRANSACTION**



Note: Sample of card users with savings transactions (n=93).

With such limited time to save, patients would have needed to save around \$4.92 per week or \$19.69 per month on average to pay for a normal delivery at Pumwani. This amount may have exceeded the cash flow capacity of many of them, given that roughly 60 percent of card users had total monthly household expenditures of less than \$236. If given the opportunity to get the card around their eighth week of pregnancy, however, card users may be able to save the amount for normal delivery at a more relaxed pace, at \$1.46 per week.

Thus, if pregnant women could obtain the card (and have their first ANC) earlier in their pregnancy, it is likely that they would not only limit medical risks, but also be able to save more in preparation for delivery.

<sup>22</sup> The calculations for time of first savings transaction excluded any card user whose delivery date was within 6 months of the introduction of card, as these women would likely not have had enough time to save using the card. The sensitivity of the delivery date range was tested at 6-, 7-, 8-, and 9-month cut-off points and yielded similar averages in time from initial ANC to delivery.

## 8. SUMMARY OF FINDINGS

Based on analysis of the card use database as well as quantitative and qualitative interviews, the Changamka maternal care payment card, while facing challenges, does appear to provide a valuable service to its users and may help to address some of the barriers to facility-based maternity care.

The interviews indicate that respondents have a good understanding of the importance of facility-based deliveries, but that such services come at a relatively high cost, often paid out-of-pocket, that would require the future mother to save money herself. The issue of transportation to a hospital during labor was frequently cited in interviews as an obstacle to facility-based delivery. Even if a woman obtained the necessary funds and had transportation to receive facility-based care, many noted that they encounter disrespectful treatment at hospitals, and many indicated that carrying cash to a hospital is not safe.

The relevant literature and this study's findings suggest that a health-dedicated commitment savings device, such as the Changamka card, appears to be valued by clients, or at least by those who understand how to use it. Many card users felt that the card was safer than carrying cash, and that it helped them prevent spending their savings on other things. Many also noted that the card was convenient and that it helped streamline the process of paying for and receiving care at the hospital.

Card users tended to be far more concentrated among higher socioeconomic levels, characterized by higher levels of education and household spending, than non-card users utilizing the same hospital. While the Changamka card did not appear to reach the poorest consumer groups as often, it is likely that such groups are also less inclined to adopt early-stage technological or financial interventions.

Discontinuation of the card was a serious problem. The vast majority of card users only used the card once, and few actually used the card as a savings vehicle. However, it appears that this result was driven by lack of product support and information, rather than by dissatisfaction with the card itself or its operation. In addition, because the card could be used at only a single facility, card users had no incentive to use it for savings if they were uncertain they would use that facility for delivery.

Lastly, the marketing of the Changamka card exclusively inside a hospital was a necessary business decision, but also caused significant problems. Given that each card costs Changamka about \$2, distributing them outside of the hospital or in locations where there was little likelihood that they would ever be used would quickly have resulted in unsustainable costs. However, due to the relatively late date at which most women visited the hospital for ANC services, the time at which the cards were typically obtained was generally too late in a woman's pregnancy to give her enough time to save sufficiently to pay for delivery with her savings. Similarly, given that most women who receive facility-based ANC services will also deliver in a facility, it is unlikely that the card encouraged many women to use a facility instead of a home-based birth.

# 9. KEY OPPORTUNITIES AND LESSONS

The findings presented in this report suggest five main opportunities that medical savings systems such as Changamka may want to follow to leverage the potential of a financial instrument to increase access to quality maternity care. These lessons showcase issues that face health finance entrepreneurs and policy makers generally, when implementing new mechanisms targeting relatively poor consumers.

## 9.1 REACH POORER AND LESS EDUCATED CONSUMERS THROUGH ACTIVE MARKETING AND OUTREACH

While there is substantial evidence to suggest that consumers at lower socioeconomic status levels do use savings mechanisms, these individuals may be too risk averse to adopt newly introduced solutions (Collins et al., 2009; Rogers, 2005). To the extent that savings solutions rely on technological platforms that may appear risky, it is likely that lower-income families—those that may benefit the most from savings mechanisms—will not be among the first to take up these solutions. As the M-Pesa experience in Kenya has demonstrated, however, once trust in the underlying technology has been bolstered by observation of successful transactions, uptake among the poor can indeed be massive. This suggests that sustained marketing efforts that rely on a range of mechanisms, such as peer testimonials, media campaigns, etc., may increase trust in financial instruments of various kinds, even among the poorest classes of society.

## 9.2 REACH WOMEN—OUTSIDE OF FACILITIES—BEFORE FIRST ANC, TO ENCOURAGE THEM TO ACCESS ANC EARLIER AND TO SAVE MORE

Card users in the study obtained the Changamka card relatively late in their pregnancy—an average of 81 days prior to delivery. Moreover, among the small number of women who actually used the card as a platform to save for delivery, the duration between first deposit and delivery was only 58 days. These time periods are probably too short to accumulate sufficient savings to cover the cost of delivery—as well as too short to ensure safe maternity. If a savings vehicle such as Changamka were made available to pregnant women earlier in their pregnancy, there would be greater incentive to take up and continue using the card, as well as more time to save the amount necessary for a normal delivery. This requires, however, that cards be made available outside of maternity hospitals, so that access to the card can precede (and, ideally, affect) the decision to seek ANC services. Availability of the card in non-maternity settings may also result in greater interest by husbands/partners. To the extent that men have more control than their spouses/partners over family finances, uptake may be positively affected. It is unclear

whether this effect would partly counteract the value of having a savings mechanism that is unknown to family members, as mentioned by several respondents.

Since the physical card had a cost for Changamka and was offered free of charge to pregnant women, handing out cards to thousands of women in the street would result in significant losses on the cards without a guarantee of recouping investment through card use. A more targeted and controlled distribution of cards—in outpatient clinics, social service centers, or microfinance institutions—may limit this risk. The introduction of mobile phone-based “virtual cards” that carry little or no unit cost in distribution—an innovation currently tested by Changamka—may further increase the profitability outlook of the concept.

### **9.3 PROVIDE BETTER INSTRUCTIONS, SUPPORT, AND SMS REMINDERS**

The most common reason for discontinuation of card use cited by respondents was a lack of understanding about how to use the card. It is likely that improved information and sustained support may help customers understand not only how to credit and debit the card but also where they can use it. This information could be provided by on-site operators as well as through lower-cost platforms, such as automated SMS to users’ mobile phones. This solution could easily be part of a larger messaging campaign, in which medical guidance—possibly adapted to the user’s pregnancy stage—could be combined with savings reminders.

It is likely that many similar technology-based interventions may be met with similar levels of misunderstanding. Implementers promoting technological interventions need to anticipate and plan for ways to identify and address problems caused by lack of understanding.

### **9.4 USE KNOWN AND TRUSTED FINANCIAL INTERMEDIARIES**

M-Pesa has convincingly shown that technology-based financial mechanisms, even without backing from bank guarantees or deposit protection, can quickly attract business from the majority of the public in a developing country. Nevertheless, there is little doubt that name recognition and good reputation of the savings mobilizing institution can, at least initially, affect the level of trust, critical for attracting deposits. Changamka, as a new institution with an underdeveloped marketing strategy, faced significant challenges in convincing pregnant women to leave money on the card for extended periods of time. The involvement of more established and recognized banking or microfinance institutions is likely to contribute to higher trust levels, higher deposits, and higher use of savings for medical purposes.

### **9.5 EXPAND PROVIDER NETWORK TO PROVIDE FACILITY CHOICE, IN ORDER TO ATTRACT AND RETAIN CLIENTS**

Some card users indicated that they did not use the card as much as they had intended to. When asked to explain this choice, 25 percent noted that they were uncertain about what facility they would use in the future, and thus did not want to risk saving money on a card that could only be used for maternity care at Pumwani. Concerns about transportation also appear to play

a role in this decision, as indicated by the fact that Changamka card users lived much closer to Pumwani than their peers who did not use the card. In order to be responsive to the needs of this target population, promoters of maternal health financing tools should build a network of providers that offers sufficient facility choice and minimizes the cost and time of transportation for women in labor. At the same time, if these promoters are unable to offer sufficient business value to partner facilities—as was the case with Pumwani—the network cannot be sustained.

This dilemma is likely to exist for the earlier portion of any firm’s growth path—in particular, self-funded and for-profit health finance businesses. Until they reach a critical mass of clients, these businesses will be challenged to convince facilities of the value of partnering with them. If a company such as Changamka can significantly boost client flow to a facility, then the business proposition for facilities to join and remain a part of the provider network becomes much more attractive. In turn, having access to a sizable provider network can help the company to attract and help retain clients.

Health finance entrepreneurs should be cognizant of this pre-threshold period and endeavor to convince partner facilities that, although the early stages of the intervention may be slow and difficult, all parties—providers, health finance entrepreneurs, and clients—will ultimately benefit.

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