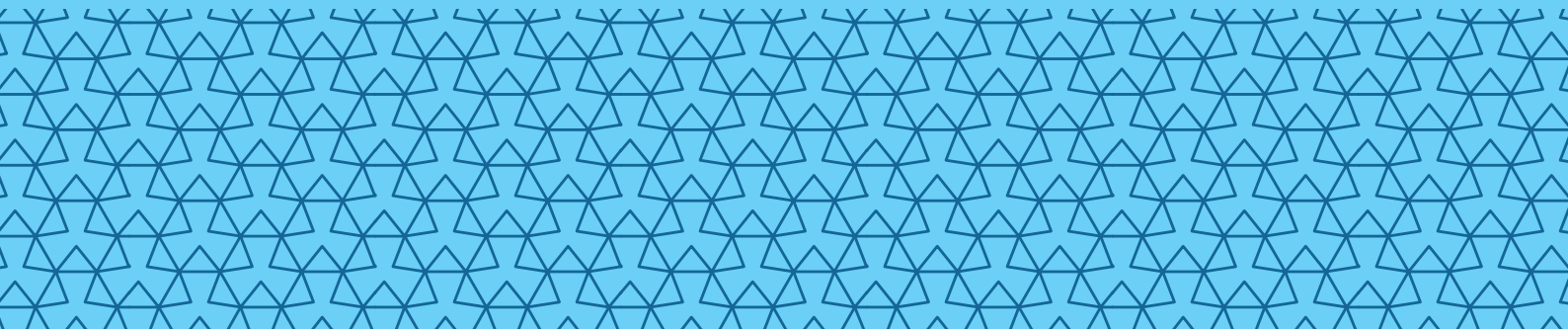




Pricing of a portable benefit package for cross-border and mobile vulnerable populations, as a rider to the Kenya National Hospital Insurance Fund benefit package

2017



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LIST OF ACRONYMS

ART	Anti-retroviral treatment
CB-HIPP	Cross Border Health Integrated Partnership Project
EAC	East African Community
EID	Early Infant Diagnosis
GLM	Generalized Linear Modelling
HCF	Health Care Facility
HCT	HIV Counselling and Testing
HH	Households living in cross border areas
IP/IPD	Inpatient Care
IRA	Insurance Regulatory Authority
KES	Kenyan Shilling
KNBS	Kenya National Bureau of Statistics
KPI	Key Performance Indicators
MIS	Management Information System
MVP	Mobile Vulnerable Populations
NHIF	National Hospital Insurance Fund
OP/OPD	Outpatient Care
PLHIV	People living with HIV
PMTCT	Prevention of Mother to Child Transmission of HIV
SGBV	Sexual and Gender Based Violence
STI/STD	Sexual Transmitted Illness/Disease
TB	Tuberculosis
UGX	Ugandan Shilling
USAID	United States Agency for International Development
USD	US dollar
WTP	Willingness to Pay

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EXECUTIVE SUMMARY

Scope and Purpose

The East African Community (EAC) partner states have facilitated movement of people within the EAC, creating a need for cross-border access of health services. However, current health systems are designed to provide services within each country's territory and not across the region. Therefore, citizens of one country lose their health coverage once they cross the border, resulting in out-of-pocket expenses when health care is needed and exposure to catastrophic and impoverishing health costs.

The Cross-Border Health Integrated Partnership Project (CB-HIPP) funded by the U.S. Agency for International Development (USAID), aims to extend integrated health services across EAC cross-border areas. Recognizing the challenge of inadequate financial protection across borders within the EAC region, CB-HIPP, through Abt Associates, sought to assess the feasibility of extending geographic coverage of public insurance beyond one country, to multiple countries within the EAC.

The scope of this assignment was to develop an actuarial pricing estimate for a potential rider to Kenya's National Health Insurance Fund (NHIF) that allows for portable benefits (i.e., benefits that can be accessed at empaneled NHIF facilities outside Kenya but within the EAC) for populations living in, and transiting cross-border areas. It should be noted that this report has not been reviewed or qualified by NHIF as it was conducted as an independent analysis. The portable benefits included in the analysis has seven service components comprising HIV testing, antiretroviral treatment, tuberculosis treatment, family planning services and screening services among others. These portable benefits could be accessed by NHIF members enrolled in the rider when they obtain covered services at empaneled health facilities across the EAC partner states. The pricing for the rider was estimated for two population groups – households living in the cross-border areas and mobile vulnerable populations (MVP) living or transiting cross-border areas. The MVP include truck drivers, fisherfolk, and clearing and forwarding agents.

The assignment included pricing three enrollment options (compulsory, opt-in and opt-out) for a portable benefit package added as a rider to the current NHIF benefit package for populations in three counties in Kenya. In the compulsory enrollment, we assumed that the NHIF benefit package was enhanced with the rider and all NHIF members in these three counties were offered the new enhanced package and the premium for the rider is borne by all NHIF members. The opt-out option assumes that some people choose to opt-out because they are not interested in the portable benefit and the associated additional premium. The opt-in option assumes that there is additional enrollment in NHIF by people who were not currently enrolled but want to become members because of the benefits offered under the rider, and are also willing to pay the NHIF premium, including the premium for the rider.

Pricing Estimates

The pricing approach followed actuarial principles. All costs were adjusted to a base year of 2018. There are three key components of the estimated cost: service cost, 10% contingency margin to allow for uncertainties in the estimate and administrative costs of KES 214 (approximately USD 2.14) per member, based on the NHIF average administrative cost. Service costs were a function of projected enrolled members, their utilization of the service components, and the unit cost of these services. The pricing estimates are summarized in *Table 1* below.

Table 1. Premium calculation - year 2018

Cost constituent	Enrollment option		
	Compulsory	Opt-out	Opt-in
Service cost	60.2	44.1	78.4
Contingency margin (10%)	6.0	4.4	7.8
Administrative expense	12.3	9.1	15.9
Total cost (KES millions)	78.6	57.6	102.1
Projected NHIF members from households and MVP in the three counties	57,453	42,250	74,032
Premium rate per member per annum (KES)	1,367	1,362	1,380

The estimated premium per member for the rider is largely the same for each enrollment option at approximately KES 1370 (USD 13.7) per member per annum. For a household with four members, this would translate to KES 5,480 (USD 54.8) per annum and approximately KES 457 (USD 4.57) per month for a household of four. This is a **90% increase** to the current monthly NHIF premium of KES 500 (USD 5) for voluntary informal sector members. An increase of this magnitude would likely be infeasible, especially noting that the last premium increase effected for both formal and informal sector contributors, by the NHIF occurred in 2015, after a four year delay due to public opposition and multiple court cases.

NHIF has an estimated 20 million members, of whom approximately 6.5 million are principal members who contribute monthly premiums. If the cost of the rider for the three border counties was spread across the all 6.5 million principal members the estimated premium would be markedly lower at KES 11.4 (USD 0.11) per principal member per annum, representing a much more modest increase of 0.19% to the existing premium for informal sector members. The NHIF could also consider absorbing this much lower expected cost per principal member per year in lieu of attempting to implement a minor premium increase, given the historical challenges for the NHIF to effect increases.

Risks and uncertainty

Given certain data limitations and the fact that this is a newly proposed rider there a number of uncertainties to estimate the cost of the rider, including:

Behavioral Aspects: the behavior of different stakeholders such as members, clinicians, and health facility management can have a profound impact on the costs, potentially resulting in costs significantly higher or lower than expected. This variation can be mitigated through very close monitoring of such behaviors¹ and through quality and cost controls and careful use of incentives for the different stakeholders.

Antiretroviral (ARV) treatment utilization and cost: ARV treatment is one of the most significant elements of cost for HIV prevention, care and treatment service component. It contributes **37%** of the total service cost. Utilization and unit costs (and inflation), and amount of first or second line ARV treatment will have a significant impact on cost.

Level of enrollment of a portable rider: enrollment in the rider is very uncertain. However, this analysis shows we can broadly expect that the overall cost per member would be relatively stable under different levels of uptake. A significant risk could be adverse selection where persons with greater than average health risks knowingly enroll and stay enrolled in the rider, thereby disproportionately increasing the costs of the rider. This can be mitigated through close monitoring focused on monthly claims experience during the first two years that the rider is in effect.

Administration expenses need further refinement: we have used an average administration expense per member based on NHIF costs. This assumes that costs will have a one to one relationship with the number of members. This assumption might not actually be the case; the set up costs and costs of administering this rider might be quite different. This can be mitigated through engagement with NHIF and also revision of the expense estimates once a decision is made on the final benefit package and enrollment option for the rider.

Recommendations

Recommendations from this analysis include the following:

Consider implementing a compulsory enrollment approach: The compulsory enrollment will spread the cost of the rider across a much larger pool, reducing the average premium. The NHIF can augment enrollment by supporting demand creation to increase enrollment overall. In addition, adding the portable rider may be perceived as adding value to all members and not just the limited target population of cross-border households and MVP. The higher the uptake the greater the number of members and amount of utilization data, plus the creation of a wider base of members to spread claims and expense costs across.

¹ For example, health facility staff may prescribe or use medicines and treatment much higher than expected, especially under a fee for service arrangement to bolster their income.

Discuss the proposed rider and pricing and enrollment options with NHIF management: It is important to get support and critical “buy-in” from the NHIF as soon as possible to ensure early identification of issues, resolution of enrollment option, and premium. The pricing and enrollment approach selected will have a direct impact on affordability, accessibility and attractiveness of this rider to potential members. To this end, NHIF may consider spreading the cost to all NHIF members to improve premium affordability.

Conduct qualitative testing of the rider prior to conducting a pilot: To increase the chance of a successful pilot, first test the appropriateness of the benefit package, pricing, and marketing and communication material associated with the rider in a controlled manner to identify any critical issues. It is cost effective in the long run to conduct preliminary qualitative testing of a product in order to mitigate the possibility of having to make major product and process changes after a pilot is underway.

Run a well-planned pilot of the rider for a minimum of six-12 months in the border areas: A pilot will generate important lessons about how well the rider meets members’ needs, how the processes work and could be improved, and also how people manage such an exercise. Conducting a pilot could also generate lessons for the NHIF on how to improve future product development and implementation.

1 INTRODUCTION

1.1 Context

The East African Community (EAC) is a regional intergovernmental organization based in Arusha, Tanzania comprising six partner states: Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda. The EAC Common Market Protocol facilitates the movement of goods, services, people and capital easing movement across borders. Mobility across borders creates a need for cross-border access of health services. Currently, partner states' health systems and social health insurance are designed to provide access to services within each country and lack provisions to extend access to services across borders. This results in financial barriers to accessing healthcare at the time of need, resulting in reliance on out-of-pocket expenses to access services and potentially catastrophic or impoverishing health expenditures. As the region furthers its integration agenda, there has been increasing recognition for the need to strengthen health systems within countries and to make provisions for portability of health benefits across countries. In addition, the EAC Vision 2050 recommends harmonization of social health protection systems and towards this the EAC secretariat is developing a Regional SHP, Data Sharing and Health Insurance Portability bill. This analysis provides evidence on the feasibility of providing a benefit package as a rider to the Kenyan National Hospital Insurance Fund (NHIF) that will inform the drafting of the bill and the future implementation of portable benefits.

1.2 Project background

The Cross-Border Health Integrated Partnership Project (CB-HIPP) is a regional project funded by the USAID Kenya and East Africa Mission and is implemented by a team of partners led by FHI 360. Project implementation dates are September 1, 2014 to August 31, 2019. It is designed to extend quality integrated health services in strategic land and wet cross-border areas and other transport corridor sites in East, Central and Southern Africa.

CB-HIPP aims to achieve three main results:

1. Increased access to and uptake of integrated health and HIV/AIDS services at strategic cross-border sites and at a select regionally recognized HIV transmission "hot spots" along Eastern, Central and Southern African transport corridors.
2. Alternative health financing models identified, implemented, tested to strengthen the long-term sustainability of networked health and HIV/AIDS service delivery.
3. Strengthened leadership and governance by intergovernmental institutions to improve the health of mobile vulnerable populations (MVPs).

Result 2 is led by Abt Associates (Abt). Abt contracted a consultant to use data collected by Abt from cross-border areas to conduct an actuarial analysis to determine the feasibility of adding a portable benefit package as a rider to an existing national health insurance program run by the NHIF in Kenya. The details of the consultant's scope of work are included in Appendix H. It should be noted that this report has not been reviewed or qualified by NHIF as it was conducted as an independent analysis.

The portable benefit package (rider) covers a set of priority interventions extracted from the CB-HIPP service package including HIV prevention and treatment, tuberculosis (TB) treatment, family planning services, screening for cancers and treatment of sexually transmitted infections (STI). The rider covers a sub-set of services covered in the NHIF core benefit package. The rider would expand geographic access for these services to additional empaneled providers located in cross border areas and along transport corridors outside of Kenya but within EAC countries.

The rider is designed for two target populations:

1. MVPs such as truck drivers, clearing and forwarding agents and fisherfolk; and
2. The general population living in cross-border areas.

The rider includes services already available in the NHIF benefit package and offered to all members within Kenya. This actuarial analysis focused on the expected cost of services covered under the rider when availed beyond Kenya but within the EAC countries, for cross-border populations in three counties of Kenya-Busia, Migori and Taita Taveta. The analysis was modelled on data from cross-border areas listed below:

Land intervention sites:

Busia, Kenya-Busia, Uganda
Malaba, Kenya-Malaba/Tororo, Uganda
Taveta, Kenya-Holili, Tanzania

Wet intervention sites:

Sio Port and Port Victoria, Kenya-Majanji, Uganda
Muhuru Bay, Kenya-Shirati, Tanzania

The rider was costed based on three potential enrollment options, namely:

1. **Compulsory:** The target populations who are current NHIF members residing or transiting the cross-border areas would be covered by the rider. This assumes there is no growth or decline in the NHIF membership for the target populations as a result of the rider.
2. **Opt-out:** The target populations who are current NHIF members are automatically enrolled with the rider unless they voluntarily opt-out of the rider. In this option, we foresee that some of these NHIF members will choose to drop out of the rider as they are not interested in the rider and are not willing to bear the additional cost of the rider.
3. **Opt-in:** The target populations who are current NHIF members maintain their NHIF membership and additional members join NHIF to enroll (opt-in) to the rider.

This report sets out the costing estimates for these three potential enrollment variations of a rider, details of the data and information used, the methodology adopted, key assumptions, risks and uncertainty with the costing, and recommendations on next steps.

2 PRODUCT PROTOTYPE

2.1 Key Features

The portable benefit package rider to the NHIF benefit package aims to expand geographic access to selected cross-border areas adjacent to Kenya for a prescribed set of existing NHIF outpatient benefits. The rider will target two populations: cross-border households and mobile-vulnerable populations residing or transiting cross border areas.

The rider covers seven health service components:

1. HIV and AIDS prevention, care and treatment
2. STI care
3. TB care
4. Cancer screening (cervical, breast)
5. Family planning
6. Gender-based and sexual violence care
7. Other healthcare services

Full details of the rider's benefits are in Appendix A.

2.2 Description of Proposed Covered Benefits

HIV and AIDS prevention care and treatment

- Testing and prevention: Condom demonstration and distribution, early infant diagnosis (EID), and adult HIV counselling and testing (HCT).
- Antiretroviral (ART) treatment: HIV care/Pre-ART, newly initiated ART, first line, and second line ART.
- Prevention of mother to child transmission of HIV (PMTCT).

STI care

- Verbal screening, laboratory diagnosis and treatment for: Syphilis, Chlamydia, Herpes and Gonorrhea.

TB screening and treatment

- TB diagnosis using sputum microscopy.
- Six-month course of TB treatment.

Cancer screening

- Breast and cervical cancer screening.

Family Planning

- Condom demonstration and distribution.
- Emergency oral contraceptives.
- Oral contraceptives.
- Injectable contraceptives.
- Intrauterine devices.

Gender-based and sexual violence care (health facility based)

- STI screening and treatment.
- Emergency oral contraceptives.
- HIV testing.
- ART post-exposure prophylaxis.

Other healthcare services

- Eye examination.
- Diabetes screening.
- Hypertension screening.
- Nutritional screening.

3 DATA AND INFORMATION SOURCES

3.1 Data and Information Collected

Data were collected from multiple sources during a desk review in March 2017². The main categories of information collected are:

- **Covered services:** the priority list of services to be covered by the rider served as the basis for the product prototype.
- **Portable products:** Summary information on the key features of portable health insurance products currently in the market covering some (or all) of the five East African countries (Burundi, Kenya, Rwanda, Uganda, Tanzania).
- **Population:** Estimates of population residing in /or transiting through the cross-border areas, split according to the two main target populations – households and MVP. The MVP comprised three sub-categories; truck drivers, fisherfolk and clearing and forwarding agents.
- **Government-sponsored health financing programs:** Summary information on the access to government-sponsored health financing programs for five East African countries (Burundi, Kenya, Rwanda, Uganda, Tanzania).
- **Health facility cost data (generated by CB-HIPP):** Costing data from 45 cross-border health facilities in Kenya, Rwanda, Tanzania and Uganda.
- **Willingness to pay (WTP) study dataset (generated by CB-HIPP):** The demographic, economic, health seeking behavior, and healthcare financing behavior from an ability and willingness to pay assessment targeting households, truck drivers, clearing and forwarding agents, and fisherfolk.
- **Secondary information:** Various additional secondary and contextual data relevant to the pricing exercise, including various reports on the Kenya's NHIF scheme.

3.2 Data Validation

The data were reviewed for completeness and reasonableness. For the quantitative information it was not possible to check the data against any independent sources but it was checked for internal consistency and reasonableness. The key quantitative data sources are the health facility costing data and the WTP study dataset. No material issues were discovered to indicate that the data is inaccurate or erroneous. It was not possible to perform checks on qualitative information.

The data and information collected were used as presented without making any significant adjustments. If these data are subsequently found to have material inaccuracies, then this could invalidate the actuarial calculations.

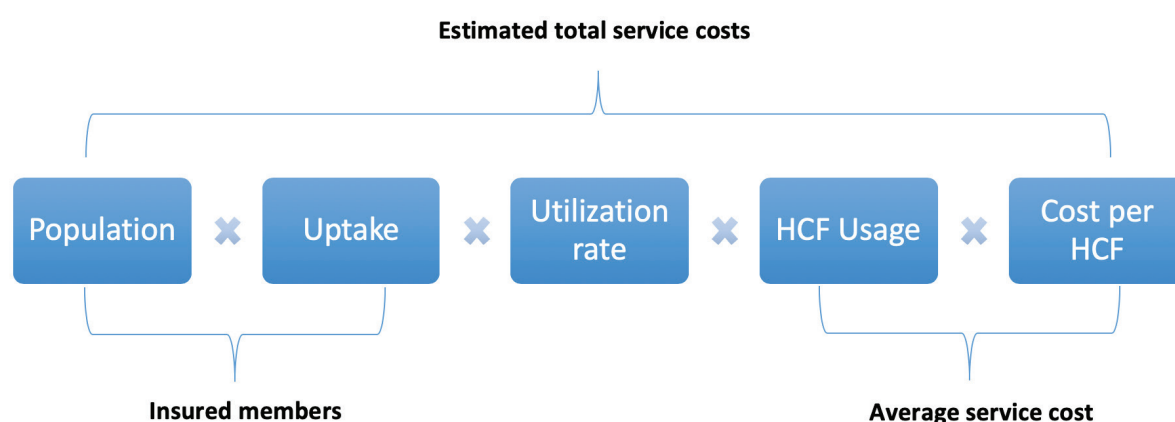
Full details of the data and information collected are set out in Appendix B and D.

4 ACTUARIAL METHODOLOGY

4.1 Summary Approach

Figure 1 below summarizes the approach to calculate estimated total service costs.

Figure 1. Calculating estimated total service costs



Key explanatory points are as follows:

- Insured members = population (MVP or households) × uptake.
- Service utilization rate varies by population group, gender, and package component.
- Healthcare Facility (HCF) Usage is the usage of health facilities at different levels of care and differs in each country.
- Cost per HCF is the cost for each component of the product prototype and was generated by the health facility costing study.
- Average service cost = Treatment cost per HCF × HCF usage rate.
- Total service costs = Insured members × Utilization rate × Average service cost.

4.2 Population Estimation³

The target populations were estimated at three land sites and two wet sites in three border counties of Kenya-Busia, Migori and Taita Taveta as detailed below:

- The household population estimates were based on the most recent census of the population numbers living within a 5km radius of the border.
- The truck driver population estimates were based on a 2012 study which measured the number of inbound and outbound border crossings.
- The clearing and forwarding agents population estimates were based on a 2015 report on the numbers of clearing and forwarding companies operating in Kenya.
- The fisherfolk population estimates were based on the 2014 Lake Victoria Fisheries Survey which estimated the number of landing sites and fisherfolk populations at the wet sites.

The underlying data for each of the population groups are from different points in time. We projected each group to a common year – 2018, using estimated population growth (based on population projections, produced by the Kenya National Bureau of Statistics (KNBS)⁴).

4.3 Enrollment option estimates

We estimated enrollment in the rider for each of the **target populations** (households, truck drivers, fisherfolk and clearing and forwarding agents) within the three counties (Busia, Migori and Taita Taveta) under three enrollment options as detailed below.

³ Refer to Appendix B section 3.3 for full details of source information for population

⁴ Analytical Report on population projections Volume XIV.pdf (KNBS publication dated March 2012)

1. Compulsory enrollment:

Uptake of the rider among target populations = NHIF members among target populations

To estimate NHIF population coverage for the target populations we used the WTP study which directly asked each group if they have health insurance and for those who do, the provider of their health insurance. We validated the household enrollment percentage with the 2013 Kenya Household Health Expenditure and Utilization Survey (HHEUS⁵) which has estimates of NHIF population coverage for each county. ***This scenario assumed there was no growth and no decline of NHIF membership associated with the addition of the rider.*** In addition, under this compulsory scenario, each NHIF member within the target populations will be covered by the rider and would pay additional premium to cover the expected cost of the rider.

2. Opt-out enrollment:

Uptake of the rider among target populations = NHIF members among target populations – NHIF members who opt out of rider

To estimate the NHIF enrollment in the rider under the opt-out option, we analyzed the WTP study dataset to define the proportion of NHIF members who disagreed or strongly disagreed with the health insurance prototype presented to them during the study. This proportion equals the proportion of NHIF members we estimate to voluntarily opt-out of the rider. The remaining proportion represents those who retain the rider; this is the proportion that will be enrolled in the rider and will pay the additional premium for the rider. As a result of being able to opt-out of the rider, the proportion of NHIF members who enroll in the rider under the opt-out scenario will be lower than under the scenario where the rider is compulsory.

3. Opt-in enrollment:

Uptake of the rider among target populations = Current NHIF members + new NHIF members who opt in to rider – current NHIF members who opt out of the rider

The enrollment in the rider among target populations under the opt-in option was estimated based on the sum of two components:

1. We analyzed the WTP study dataset to determine those persons who are **not enrolled in** NHIF but agreed or strongly agreed with the health insurance prototype presented to them during the study, and who were willing to pay the highest price presented to them for the rider. We used this proportion of individuals to estimate the target population not currently enrolled under NHIF, but who will enroll in the NHIF and also the rider when the rider is introduced because they are interested in the rider's benefits and are willing to pay for them.
2. We analyzed the WTP study dataset to define the proportion of NHIF members among the target populations who disagreed or strongly disagreed with the health insurance prototype presented to them during the study. This proportion equals the proportion of NHIF members in the target populations who we estimate to voluntarily opt-out of the rider. The remaining proportion represents those who retain the rider; this is the proportion that will be enrolled in the rider and will pay the additional premium for the rider.

4.4 Utilization Rate

We estimated the utilization rate for each benefit component in the rider for male adults, male minors, female adults and female minors from various data sources. We then applied these utilization rates to each of the target populations, allowing for the gender and adult/minor mix within each target population.

In order to estimate the utilization rate for each benefit category by gender we relied on three sources of information, namely:

- HCF costing⁶ and WTP dataset⁷ collected through CB-HIPP assessments.
- Secondary studies and data sources including TB prevalence survey, NACC HIV county estimates, and Kenya Demographic Health Surveys.
- Subjective estimates – if no other source of information was available.

5 Refer to Appendix B section 3.7 for full details of such Secondary information

6 Refer to Appendix B section 3.5 for full details of HCF costing information

7 Refer to Appendix B section 3.6 for full details of WTP source information

4.5 Service Cost

We estimated the total treatment cost for each component of the rider, based on the service costing analysis completed for each health facility in the CB-HIPP HCF cost study (and for each component of the rider). This underlying analysis was a very thorough and detailed assessment and calculation of the different components of cost involved in treatment for the different services. From this, we calculated an estimated unit cost for each of the different levels of health facility (dispensary, health center and hospital) and by ownership (public and private). We then estimated the different proportional use by level of care. For example, some types of care are more likely to be provided at a public dispensary, while other types of care are more likely to be delivered at a public hospital.

We then combine the cost per level of care with the expected proportional use at each level to derive a weighted average cost per care component. We then adjust this weighted average cost for medical inflation to reflect expected values in 2018.

We conducted this exercise for Kenyan and Ugandan facilities and then combined the two into an aggregate weighted cost, expressed in estimated 2018 values. Since, we had limited data for Rwanda and Tanzania facilities it was assumed that their cost would be broadly comparable to the weighted average cost of facilities across Kenya and Uganda in our dataset.

Further details of the methodology are set out in Appendix C and full details of data sources and information is set out in Appendix B.

4.6 Risks and uncertainty in the estimates

Given certain data limitations and the fact that this is a newly proposed rider there a number of uncertainties to estimate the cost of the rider, including:

- The behavior of different stakeholders such as members, clinicians, and health facility management can have a profound impact on the costs, potentially resulting in costs significantly higher or lower than expected. This analysis does not take into account the behavioral factors that can cause variation in pricing estimates.
- The underlying data for each of the population groups are from different points in time. We projected each group to a common year – 2018, using estimated population growth (based on population projections, produced by the KNBS⁸).
- The data and information collected were used as presented without making any significant adjustments. If these data are subsequently found to have material inaccuracies, then this could affect the validity of the actuarial calculations.
- An average administration expense per member was used based on NHIF costs from audited accounts. This assumes that costs will have a one to one relationship with the number of members. This assumption might not actually be the case; the set up costs and costs of administering this rider might be quite different.
- Enrollment estimates are uncertain and variation in this affects the pricing and premium estimates. A significant risk could be adverse selection where persons with greater than average health risks knowingly enroll and stay enrolled in the rider, thereby disproportionately increasing the costs of the rider.

This analysis is a first step in developing pricing estimates and will require further engagement with NHIF to validate assumptions and data sources.

5 GENERALIZED LINEAR MODELLING

A Generalized Linear Model (GLM) is a form of regression model that models a dependent variable (e.g. utilization rate) as a linear function of explanatory variables such as age, gender, and education attainment. GLMs are often used in actuarial pricing. The key advantage is that they are linear and general, and therefore can be applied to multiple situations.

GLMs can be powerful in determining the significance of different characteristics of members on the likelihood of a claim, and the size of the pay-out. They can also help estimate the impact of different population mix on future experience and what premium to charge. GLMs are also very important in an opt-in situation, where enrollment is voluntary, for risk rating, as the profile of members is critical to estimate expected costs.

5.1 Key Indicators

We explored the WTP dataset for variables that can have an impact on the future costs of the rider, considering the likelihood of a health event and then evaluated the likely behaviors of the member if that health event occurs. For example, we evaluated the factors that increase the odds of the occurrence of an outpatient visit such as gender, age, income, education attainment and so on.

There were three GLMs applied to the WTP dataset as follows:

1. GLM 1 tested the use of a formal healthcare service⁹ in the past year.
2. GLM 2 tested the occurrence of an outpatient (OP) visit in the past year and secondly, the number of OP visits in the past year.
3. GLM 3 tested the occurrence of an inpatient (IP) admission in the past year and secondly, the number of admissions in the past year.

We fitted the GLMs to the target population. However, some of the population groups had a relatively small sample size, creating challenges in testing for significance and/or being able to conduct the GLM analysis.

5.2 GLM Results

The results of the GLM which generated a p value less than 0.1 are set out in Table 2. The full list of variables is included in Appendix C.

We note the following comments:

- Across the populations the most common explanatory variables were household size, age, education attainment, and use of financial services. Education might possibly be acting as a proxy for socio-economic level or some other predictive factor that is not explicitly captured in the underlying dataset.
- For clearing and forwarding agents it was only possible to fit one GLM as the sample size was too small for the GLM related to OP and IP utilization.
- Households had the largest number of identified explanatory variables- this is most likely due to the larger size of the underlying dataset, rather than to a larger number of underlying predictors.

⁹ A formal healthcare service was defined as the use of a public or private health facility in the past year and excludes traditional herbalists, self-medication and purchasing medication in a drug shop or pharmacy.

Table 2. Explanatory factors for the fitted GLMs illustrated for households and fisherfolk

Variables	GLM 1: Used a healthcare service		GLM 2a: Had an OP visit		GLM 3a: Had an IP admission	
	Households	Fisherfolk	Households	Fisherfolk	Households	Fisherfolk
Gender	x					
Age				x	x	
Married						x
Household size	x	x	x		x	
Education attainment	x				x	x
Has a chronic condition	x					
Prioritizes healthcare		x		x		
Save for future goals			x			
Monthly income				x		
Member of a savings group			x			x
Member of a microfinance institution/ bank/ savings cooperative				x	x	
Use mobile money	x		x			
Use mobile banking services			x			x
Save for healthcare expenses					x	
Owns health insurance	x					

The explanatory factors likely to be captured in the NHIF enrollment process could potentially be used to apply differential pricing for enrollment options for the different populations. Some of the explanatory factors are only captured specifically for the WTP study and would be unlikely to be captured in the NHIF enrollment process such as education attainment and use of financial services). Also the administration costs of capturing this information, and the capacity required to apply this information to premium calculations must be weighed against the potential benefits.

NHIF currently collects some of the explanatory variables including gender, age, marital status, and household size which can be used for risk rating for opt-in riders. The NHIF uses community-based rating as opposed to risk rating, however this analysis provides information in the event NHIF would select an opt-in approach for specific benefits offered to a segment of the population. This analysis attempts to predict how the three different enrollment options might impact the claims experience for different populations.

6 KEY ASSUMPTIONS

6.1 Populations

6.1.1 Population projections

Table 3 sets out the projected populations in 2018 for each group at the Kenyan cross-border sites.

Table 3. Population projections (2018)

Population Group	Gender		Total	Male Prop
	Male	Female		
MVP Population				
Truck drivers	45,401	4,266	49,668	91%
Clearing and forwarding agents	4,884	1,628	6,512	75%
Fisherfolk	9,215	129	9,344	99%
Sub-total	59,501	6,024	65,525	91%
Households	164,286	176,791	341,077	48%
Total ALL	223,787	182,814	406,602	55%

Comments are as follows:

- Total potential population in the target cross border areas is estimated to be **406,602 lives**, with 65,525 MVP and 341,077 from households. There is potential overlap between the MVP and households; they are not mutually exclusive populations as the MVP may reside and transit the cross-border areas. However, for the purposes of this analysis, they are assumed to be mutually exclusive groups.
- Household population estimates are based on the Kenyan cross-border areas in Busia, Migori and Taita Taveta Counties.
- The proportional split by gender for households is from the census information and for MVP population from the WTP study.

6.1.2 Projected people living with HIV (PLHIV) population¹⁰

Table 4 estimates the people living with HIV (PLHIV) among the target population groups at the Kenyan cross-border sites.

Comments are as follows:

- The estimated total number of PLHIV is **15,139** out of the projected population base of 406,602.
- Clearing and forwarding agents and fisherfolk have a similar proportion of PLHIV, which is approximately double that of truck drivers – this has a direct impact on the average cost of the rider for these populations.

Table 4. Estimate of potential PLHIV (2018)

Population Grouping/Gender	Proportions			Total Number
	Male	Female	Total	
MVP Population				
Truck drivers	2.7%	4.6%	2.9%	1,440
Clearing forwarding agents	4.6%	7.8%	5.4%	352
Fisherfolk	5.9%	19.2%	6.1%	570
sub-total	3.4%	5.8%	3.6%	2,362
Households	2.8%	4.6%	3.7%	12,777
Total ALL	3.0%	4.7%	3.7%	15,139

¹⁰ Key sources for PLHIV proportions are from Kenyan NACC reports and from the CB-HIPP baseline study. Refer to Appendix B section 3.7 for full details of source information.

6.2 Enrollment

Table 5 sets out the estimated enrollment in NHIF (with the new rider) under the three enrollment options being considered for the target populations.

Table 5. Estimated enrollment in NHIF when the new rider is added as an NHIF benefit

Enrollment option	Population Group			
	Households	Truck drivers	Fisherfolk	Clearing and forwarding agents
Option A-Compulsory	12%	32%	5%	15%
Option B-Opt-out	9%	24%	4%	8%
Option C-Opt-in	15%	37%	14%	29%

Comments are as follows:

- Truck drivers have the highest uptake proportion when the rider is compulsory. The key source for this assumption is the WTP study which directly interviewed a sample of truck drivers to assess how many of them are NHIF members.
- The estimated uptake of the rider with the opt-out option is lower than the compulsory option as it is a function of those currently enrolled in the NHIF, but also allowing for those who are expected to “drop-off” due to not wanting the rider. We note the rate of non-renewals or “drop-off” varies by population group.
- The estimated enrollment in the rider under the opt-in option is based on current NHIF members who opt-out because they are not interested in the new rider, but allowing for those **currently not enrolled in the NHIF** who are interested and willing to pay for the rider to enroll as an NHIF member.

6.3 Utilization

Table 6 sets out the estimated utilization for the different components of the HIV prevention, care and treatment component as an illustration of the process used for all other components of the rider.

Table 6. Utilization assumptions for HIV prevention care and treatment

Disease/Care Package	Number of visits per year	Male-adult	Male-minor [<18 years]	Female-adult	Female-minor [<18 years]	Total
HIV testing prevention						
Condom demonstration distribution	1	15%		15%		
EID	1			1%		
HCT adult	2	8%		8%		
ART treatment						
Adults		80%		80%		0%
Pre ART adult	12	10%		10%		10%
Newly initiated adult	14	1%		1%		1%
First line adult	12	86%		86%		86%
Second line adult	14	3%		3%		3%
Pediatrics						
Pre ART pediatrics	12		24%		24%	24%
Newly initiated pediatrics	14		2%		2%	2%
First line pediatrics	12		74%		74%	74%
Second line pediatrics	14		0%		0%	0%
PMTCT						
PMTCT	5			1%		

Comments are as follows:

- Condom demonstration is a subjective estimate set at 15%. HCT adult is also subjective, assumed to be half the proportion receiving condom demonstration and distribution.
- EID was set equal to the PMTCT utilization less 10%.
- The proportional split of ART treatment at different levels is based on Busia county's HIV clinic data¹¹ covering the period from July 2014 to July 2015.
- The PMTCT utilization is based on NACC county (Busia, Taita Taveta and Migori) estimates of the proportions needing PMTCT.
- The vast majority of ART treatment is assumed to be first line treatment (86% for adults and 74% for minors) – this is a critical assumption that could significantly impact HIV care cost estimates.

Full details of the assumed utilization for the other covered services included in the CB-HIPP benefit package are set out in Appendix F.

6.4 Service Cost

Table 7 sets out the estimated weighted average service cost for the different components of HIV prevention, care and treatment services, and illustrates the approach used to develop cost assumptions for other services included in the rider. The service costs were generated by the CB-HIPP health facility cost study, for Kenyan and Ugandan health facilities. This is calculated in Kenya Shillings (KES) by allowing for the estimated proportional use of the six types of facilities in each country (public and private dispensary, health center and hospital), and also adjusting for estimated inflation to 2018 values.

Table 7. Service cost assumptions for HIV prevention, care and treatment

Disease/Care Package	Kenyan HCF (KES) 2018	Ugandan HCF (KES) 2018	% Difference (Uganda vs Kenya)
HIV Testing and Prevention			
Condom demonstration distribution	955	522	-45%
EID	871	476	-45%
HCT adult	1,499	499	-67%
ART treatment			
Adults			
Pre ART Adult	11,317	3,110	-73%
Newly initiated Adult	32,956	18,013	-45%
First line Adult	30,277	19,451	-36%
Second line adult	57,660	41,286	-28%
Pediatrics			
Pre ART pediatrics	11,260	2,169	-81%
Newly initiated pediatrics	38,470	21,026	-45%
First line pediatrics	35,825	15,005	-58%
Second line pediatrics	46,225	26,196	-43%
PMTCT			
PMTCT	14,316	7,244	-49%

Comments are as follows:

- The original costs were derived from the CB-HIPP health facility cost study.
- ART regimens costed between the two countries are similar.
- The study has documented the factors driving the variances in cost between Kenya and Uganda, including:
 - the differences in wages for health workers which were three times higher on average in Kenya than Uganda; and

→ ART patients on care and treatment had four visits in Uganda and 12 in Kenya which increased resource consumption and indirect costs allocated to the service.

- Across the three enrollment options, HIV care and treatment component contributed 50% of total service costs. Family planning (17.5%) and gender based violence (16%) components were the next two highest constituents of the total service costs. Therefore variations in the utilization and unit costs of these three service components can significantly affect the estimates in this analysis.

Full details of the estimated service cost for all components of the rider are set out in Appendix F.

6.5 Other Assumptions

The other key assumptions are the rate of medical inflation, exchange rates and assumed growth in NHIF membership. Comments are as follows:

- Service treatment costs were adjusted for medical inflation up to the average assumed future payment date of 30th June 2018 (halfway through the policy year).
- Medical Inflation was assumed to be 13% per annum and derived from the 2015 Aon Hewitt Global Medical Trend report and the KNBS inflation estimates¹².
- Exchange rates were derived from <https://oanda.com> from early September 2017, as follows;
- KES/USD: 0.95294 USD for every 100 KES
- UGX/KES: 2.79KES for every 100 UGX
- UGX/USD: 0.02749 USD for every 100 UGX
- Growth in NHIF member and beneficiary numbers from 2016 to 2018 is assumed to be 5% per annum. This is a subjective estimate partly based on past levels of growth in NHIF members.

6.6 Margins and Expenses

6.6.1 Contingency Margin

There is significant uncertainty in estimating claims costs for a health insurance program. This uncertainty is higher when this is a new program with no past experience of the product in force. We have considered various sources of information and attempted to set a “best estimate” of the premium without any undue bias. For a private insurer it is typical to allocate capital to an insurance product to protect against unexpected losses or deteriorating experience. In this particular case the use of capital, reserves, reinsurance or other risk management tools will depend on the practices of the NHIF scheme.

Given the uncertainties it is prudent to allow for a small contingency margin to add a “buffer” to the premium to allow for modest variations in actual experience compared to that expected. As such we have adopted a 10% contingency margin¹³. **Note though that this margin will only cover modest variations in cost and not all possible events.**

6.6.2 Administration Expenses

For simplicity we have assumed that the administration expense will be in line with that of the NHIF, KES 214 per member. The derivation¹⁴ of this assumption is set out in *Table 8*.

Table 8. Administrative expenses calculations

	2014	2015	2018
Total NHIF members	16,528,125	20,688,414	
Administrative Expenditure (KES millions)	3,707	4,232	
NHIF administrative expense per member per annum	224	205	214

¹² Aon Hewitt Global Medical Trend Rate (2015) Survey estimates Kenya medical Inflation of 10% for 2014 and 13% for 2015 with the margin above general price inflation estimated to be 5.0% to 7.5%. KNBS estimates past price inflation since 2012 of approximately 6-6.5% per annum. Assuming price inflation of 6.5% plus medical margin of 6.75%, that is, average of 5% and 7.5%) gives estimated medical inflation of 13.25%, therefore 13% was adopted.

¹³ This is a subjective assumption but based on general actuarial practice for Health Insurance Pricing. A 10% contingency margin would generally be considered the minimum contingency margin for such a product.

¹⁴ Source: National hospital insurance fund audited accounts 2015

7 PRICING SUMMARY TABLES

7.1 Aggregate Costing Estimates

7.1.1 Service Cost Estimate

Table 9 sets out the estimated service cost per member for each enrollment option for each population group.

Table 9. Estimated service cost per member (KES)

Enrollment options	Population group				
	Households	Truck drivers	Fisherfolk	Clearing and forwarding agents	All
Option A-Compulsory	1,104	866	1,405	1,499	1,048
Option B-Opt-out	1,104	866	1,405	1,499	1,044
Option C-Opt-in	1,104	866	1,405	1,499	1,059

Comments are as follows;

- Weighted costs per member for all options are the same because it is assumed that the enrollment option will only affect the numbers enrolled but have no impact on the proportionate use of services by the different populations. The last “All” column varies because the enrollment differs per option for each population resulting in different estimated service cost per member.
- Costs are **weighted aggregate costs** based on subjective estimates of utilization of health facilities in Kenya and Uganda (households and clearing and forwarding agents: 95/5, truck drivers and fisherfolk: 70/30).
- Service cost per insured is based on estimated total service cost (for the package) divided by number insured for each population group.
- Clearing and forwarding agents and fisherfolk average costs are higher as both groups have approximately double the proportion of PLHIV compared to truck drivers.
- Uganda health facilities have lower unit costs; therefore weighting the average costs with a higher utilization in Uganda lowers the average costs further for truck drivers and fisherfolk.

7.1.2 Premium Rate Estimate

The total premium is calculated as follows:

Figure 2: Total Premium Calculation



Contingency margin is estimated at 10% of the total service cost to allow for uncertainty in service cost estimates while the administration expense is based on NHIF average administration cost estimated at KES 214 per insured.

Table 10 sets out the estimated premium rate for each enrollment option for each population group.

Table 10. Premium calculations per member per annum (year 2018)

Cost component	Enrollment option		
	Compulsory	Opt-out	Opt-in
Service cost	60.2	44.1	78.4
Contingency margin	6.0	4.4	7.8
Administration expense	12.3	9.1	15.9
Total Cost (KES millions)	78.6	57.6	102.1
Total projected NHIF members among cross-border households and MVP	57,453	42,250	74,032
Premium rate per NHIF member (KES)	1,367	1,362	1,380
NHIF principal members	6,890,919		
Premium rate per NHIF principal member (KES)	11.40		

Comments are as follows:

- The estimated premium rate per member is largely the same for each enrollment option at approximately KES 1370 per member per annum. For a household with four members, this would translate to KES 5,480 per annum and approximately KES 457 per month. This is a **90% increment** to the current NHIF premium for voluntary informal sector members.
- NHIF has an estimated 20 million members, of whom approximately 6.5 million are principal members who contribute monthly premiums. If the cost of the rider for the three border counties was spread across the all 6.5 million principal members the estimated premium would be markedly lower at KES 11.4 (USD 0.11) per principal member per annum, representing a much more modest increase of 0.19% to the existing premium for informal sector members.
- The NHIF could also consider absorbing this much lower expected cost per principal member per year in lieu of attempting to implement a minor premium increase, given the historical challenges for the NHIF to effect increases.

Appendices E, F and G have detailed estimated service costs for each of the enrollment options.

7.2 Scenario Testing

Table 11 sets out the estimated impact of a number of scenarios on the compulsory enrollment option. The same scenarios could be applied to the opt-out or opt-in enrollment options with similar impact.

Table 11. Testing impact of scenarios on the compulsory enrollment option

Scenario	Total insured population	Total cost (KES millions)	Rate per insured (KES)	Difference from baseline rate per insured (KES)	Percentage Difference
Baseline	57,453	78.6	1,367		
Scenarios					
1. PLHIV 20% higher than baseline	57,453	83.2	1,448	81	5.9%
2. Cost of ARV second line treatment 25% higher than baseline	57,453	78.9	1,373	6	0.4%
3. Use of facilities in Uganda 10% higher than baseline	57,453	76.5	1,331	-36	-2.6%
4. Uptake proportions 20% higher than baseline	68,944	94.3	1,367	0	0.0%

Comments are as follows:

- The first two scenarios relate to HIV related costs or numbers being higher than expected but they only have limited impact on overall cost.
- Increased use of health facilities in Uganda will reduce overall cost of all services as the service cost in Ugandan health facilities was lower than the service cost in Kenyan health facilities.
- Higher uptake will increase cost but also increase numbers insured, with zero net effect on estimated premium.

As the HIV service component constitutes 50% of service costs, changes in number of PLHIV, proportion of first line to second line treatment and/or utilization of the HIV services between Kenya and Uganda health facilities will significantly affect estimates and projected claims costs. This will require monitoring and re-calibration of these estimates.

8 RECOMMENDATIONS AND NEXT STEPS

This section sets out the key recommendations arising from this analysis and the preparation for a potential pilot of the rider added to the NHIF benefit package.

8.1 Recommendations

1. ***Consider implementing a compulsory enrollment approach***

The compulsory enrollment will spread the cost of the rider across a much larger pool, reducing the average premium. The NHIF can augment enrollment by supporting demand creation to increase enrollment overall. In addition, adding the portable rider may be perceived as adding value to all members and not just the limited target population of cross-border households and MVP. The higher the uptake the greater the number of members and amount of utilization data, plus the creation of a wider base of members to spread claims and expense costs across.

2. ***Discuss the proposed rider and pricing and enrollment options with NHIF management***

It is important to get support and critical “buy-in” from the NHIF as soon as possible to ensure early identification of issues, resolution of enrollment option, and premium. The pricing and enrollment approach selected will have a direct impact on affordability, accessibility and attractiveness of this rider to potential members. NHIF may consider making the rider compulsory for all NHIF members to improve premium affordability.

3. ***Conduct qualitative testing of the rider prior to conducting a pilot***

To increase the chance of a successful pilot, first test the appropriateness of the benefit package, pricing, and marketing and communication material associated with the rider in a controlled manner to identify any critical issues. It is cost effective in the long run to conduct preliminary qualitative testing of a product in order to mitigate the possibility of having to make major product and process changes after a pilot is underway.

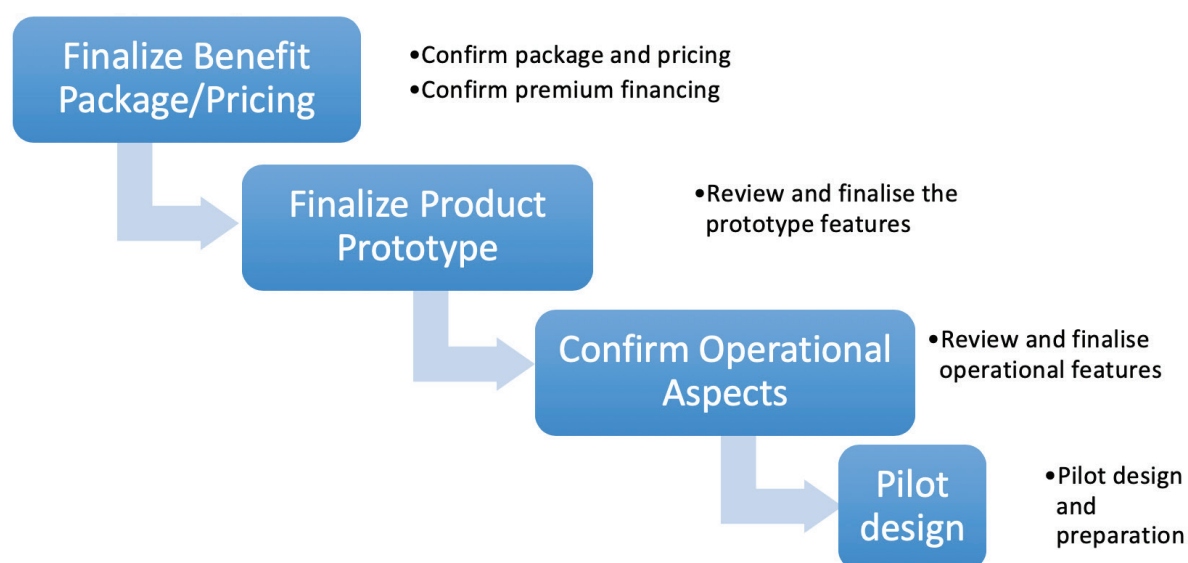
4. ***Run a well-planned pilot of the rider for a minimum of 6-12 months in the border areas***

A pilot will generate important lessons about how well the rider meets members’ needs, how the processes work and could be improved, and also how people manage such an exercise. Conducting a pilot could also generate lessons for the NHIF on how to improve future product development and implementation.

8.2 Key phases to pilot launch

Figure 3 shows the key phases to pilot launch which are discussed further in sections below.

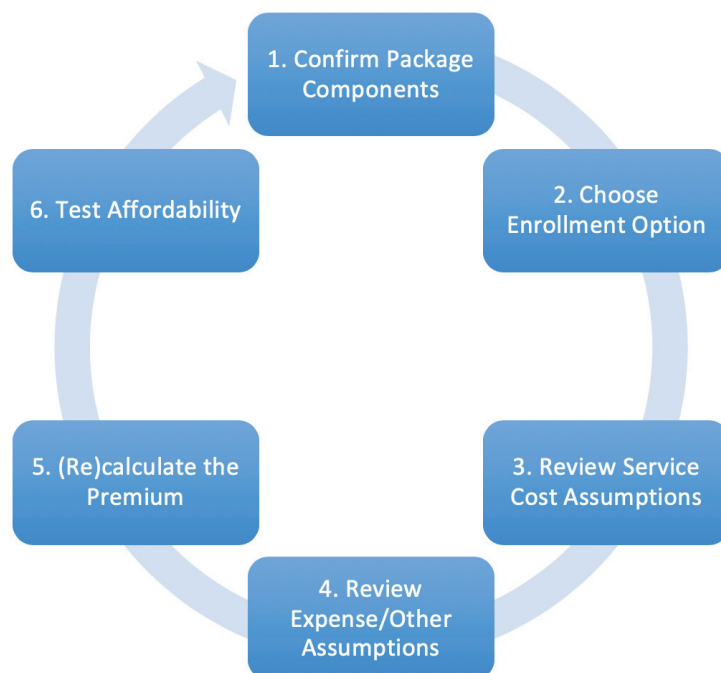
Figure 3. Key phases to pilot launch



8.3 Finalize Benefit Package and Pricing

The first phase is to finalize the benefit package and pricing in conjunction with NHIF. This involves jointly applying the pricing cycle as outlined in Figure 4.

Figure 4. Pricing Cycle



Comments are as follows for each step:

1. The pricing in this study is based on the proposed service components of the rider. These components will need to be reviewed and confirmed as being possible to administer under NHIF. Any changes to the rider's benefits will need to be identified at the start.
2. There were three possible enrollment options considered (compulsory rider, opt-out rider and opt-in rider). Once the benefit package is confirmed a decision is needed on which enrollment option will be adopted.
3. Review all the service cost assumptions with NHIF particularly utilization and unit cost estimates. NHIF may also have useful and granular utilization and cost information that can supplement this analysis. Any changes to the service cost assumptions should be identified at this stage.
4. Review the expense assumptions and the other assumptions such as medical inflation and margins.
5. Re-calculate the premium taking into account any changes in the assumptions and/or package components.
6. Finally, test the affordability of the premium with the target audience. This can be done on paper by comparing the premium to the WTP study, but we also recommend conducting controlled qualitative testing at this stage with potential members.

The pricing cycle is meant to be iterative, as any material findings from the testing of the product affordability may require us to re-consider the package components and the subsequent steps (for example if the premium is found to be too high for the target audience).

8.4 Finalize Product Prototype

We identified eight key product prototype features and developed working assumptions for each of these features. However, these assumptions will need to be reviewed and confirmed with NHIF. The working assumptions are set out in Table 12.

Table 12. Product prototype features

Feature	Details
Target Market	• MVP residing or transiting through EAC cross-border. • Cross-border households.
Insured Unit	MVP at individual level only and household at household level.
Coverage Limits	• IP limits up to six months of hospitalization. • No specific OP limits. Any coverage limits to be consistent with the NHIF scheme.
Illness/Diseases	All those stated, based on the service components.
Co-payment/Deductible	Co-payments or deductibles will be consistent with NHIF policy. None assumed in the pricing.
Exclusions	No explicit exclusions.
Policy Term	Pricing based on a 12 month policy term. However automatic monthly renewal on an ongoing basis as long as contributions are up to date.
Reinsurance	It is understood that NHIF does not reinsure. As such there is no allowance for reinsurance in the pricing.

8.5 Operational and Design Features

Eight key operational and design features are identified and working assumptions for each defined. However, the assumptions will need to be reviewed and confirmed with NHIF. The working assumptions are set out below.

1. *Health Facility and Delivery Sites contracting*

The services covered under the rider will be available at empaneled health providers in the CB-HIPP cross-border areas. These are largely dispensaries, health centers and hospitals. There will be a need for mapping of these sites and the range of services offered to determine capacity of providers to provide covered services. Subsequently, NHIF will accredit and contract these providers. Contracts should include identification systems, scope of benefits, claims procedures and payment modalities, amount of payment and dispute resolution.

2. *Claims Process and Provider Payments*

- Administrative process for the insureds to access services: follow current NHIF procedures. Insured members will have NHIF photo identification cards that members present at point of use and facilities check online to ensure it is a valid contributor.
- Need to pay and be reimbursed: Ideally it would be cashless at point of access, and there may be a preference to make it cashless across borders.
- Process for reimbursing/paying the health service provider: this will follow NHIF procedures of invoicing at the end of the month and payment within two weeks.

3. *Distribution Channel*

This will follow current NHIF procedures through NHIF branches and its intermediaries which include savings and credit cooperatives, banks and mobile network operators.

4. *Product Promotion*

Marketing through the distribution channels above and various media channels. Marketing material should be simple and cover key messages in a language that the target market can easily understand.

5. *Consumer Education*

Level and efforts to be made on educating consumers about this product and insurance services via marketing, NHIF website, and the NHIF call center should be defined.

6. *Fraud Control*

The risk of fraud /or moral hazard is unclear. It is recommended to use existing NHIF controls unless fraud risk is considered to be higher for this product.

7. Regulatory Compliance

There are possibly regulatory issues to consider with a cross border insurance product including:

- Currency control, how to pay public facilities in different countries and credit facilities at public facilities. Private facilities in Burundi, Rwanda, Tanzania and Uganda have credit facilities with private and public insurance. Public facilities in Burundi, Rwanda and Tanzania also have credit facilities with public insurers but Uganda public facilities do not have credit facilities which will need to be resolved.
- Licensing and approval from the insurance regulatory authority (IRA) in each country. IRAs govern private insurance companies, and generally separate legislation and institutions govern public insurers so this will need to be explored further as NHIF is a public entity.

8. Monitoring and Evaluation

Develop a dashboard monitoring key performance indicators (KPIs) including enrollment, numbers of claims per member, claims cost, administrative expense, and loss ratios.

8.6 Pilot design

There are a number of critical steps in setting up a pilot to test a health insurance product as set out in Figure 5.

Figure 5: Key Steps in Pilot Set-Up Design

Compose test team	•Internal NHIF “Product Champion” plus members from various departments; operations, marketing, MIS, underwriting claims •External (non NHIF) members from sponsoring parties (e.g. CB-HIPP)
Testing Protocol	•Define key measurable objectives of the pilot around Product, People, Process •Objectives to be monitored with clear pause, refine or terminate thresholds
Prepare MIS systems	•Identify any changes required to management information system •Specify, develop user test the changes
Financial Projections	•Link back to pilot and product objectives and KPIs •Numbers insured, premium collected, claims, expenses, reserves
Marketing Materials	•Link to target market understanding of health insurance. Pre-test if possible •Key message points, simple language.
Training	•Front line/distribution staff interacting with insureds •Internal staff on pilot objectives

A well-structured pilot is proposed to run for a period of six to 12 months. Monitoring and evaluating this pilot based on the defined KPIs is important. This pilot can generate important lessons about how well the rider meets members’ needs, how the processes work and how the benefits and processes could be improved. These lessons can be used to redesign the next iteration of the rider to be rolled out to all NHIF members to expand portability of health insurance across the EAC region.

APPENDIX LISTING

A	Benefit Package Prototype
B	Data Information
C	Methodology
D	NHIF Scheme
E	Population Estimates
F	Pricing Calculations
G	Summary Results
H	Consultants Scope of Work

APPENDIX A- CB-HIPP PRODUCT PROTOTYPE

Document date: October 2017

1 Introduction

1.1 Purpose

This note sets out the details of the health insurance product prototype for the two target populations targeted by the CB-HIPP program, in the border areas of Kenya/Uganda/Rwanda/Tanzania, namely;

- 1) Migrant vulnerable populations (MVP) such as truck drivers, clearing and forwarding agents and fisherfolk, and
- 2) The general population of Households (HH) living in cross border areas

The purpose of the service package is to standardize health services offered to key, vulnerable and migrant populations, people with HIV (PwHIV) and their sexual partners and to promote the public health benefit of integrated health services along EAC land transport corridors (cross-border) and wet borders. It is also planned to increase access to and uptake of integrated health services¹⁵ and HIV/AIDS services at strategic crossborder sites and selected regionally recognized HIV transmission “hotspots” along Eastern, Central and Southern transport corridors.

The output from this assignment will be a feasibility analysis on the options for developing a portable benefit package modeled on Kenya’s NHIF benefits, with recommendations on how to expand this package into existing national insurance programs in East Africa.

The costing will consider varied levels of uptake of the package by these 2 populations -there will be a baseline calculation with an assume level of uptake and then sensitivities on varied levels of uptake.

1.2 Types of Intervention

There are 3 types of interventions within this package of services, namely;

- Behavioural – interventions to change behaviour of insureds- these interventions will be delivered at community level
- Structural – activities to reduce stigma and discrimination and responding to violence- these interventions will be delivered at the community level
- Biomedical – intervention and treatment services arising that are largely related to screening, diagnosis and curative care. These will predominately be provided at the Health Facility level.

¹⁵ Integrated health services: This is the provision of different kinds of services that can be joined together to ensure and maximise collective outcomes, e.g., HIV and TB, HIV and reproductive health (RH) services during the same visit to a facility or within the community. It also includes referral from one service to another. Integrated services are provided using any of three different models: one-stop shop/supermarket, off-site and mixed models.

Some behavioural and structural interventions may be provided at health facility level.

For the purposes of the costing behavioural and structural interventions will not be included in the costing of services at health facility level - the costing will only consider “insurable” Biomedical interventions.

1.3 Mode of Delivery

There are expected to be 3 modes of delivery at health facility level, namely;

- On-site- where all the services are provided at one single facility
- Off-site - client accesses one type of service and receives the other service outside the facility/site through a referral.
- Mixed approach - where the base service is provided wholly at the facility or site, but the other service is only initiated due to inadequacies in skills and equipment in that facility or site, and the client receives the rest of the service(s) in another site or facility

For the purposes of the costing (and for simplicity) we will assume that all services are provided on-site at a single Facility. We will not consider the cost or impact of referrals.

1.4 Insurability

There are a number of criteria¹⁶ for a particular event to be considered insurable. One of the critical criteria is that the loss is fortuitous and that losses occur at random. If this is not true, then the risk is not usually considered to be insurable. Each of the biomedical services is assessed to see if it is insurable according to these criteria.

For the purposes of this costing exercise only the insurable service items will be costed as part of the Health Insurance Package.

2 Prototype and Operational Features

2.1 Product Prototype Features

The table below sets out the key product prototype features of the proposed health insurance package

Note: This prototype relates solely to the Insurable elements of the biomedical services and relates only to Curative treatment services covered under this package.

Table 1: Product Prototype Features

Feature	Details
Target Market	• Migrant vulnerable populations (MVP) such as truck drivers, clearing and forwarding agents and fisherfolk residing or transiting through the 4 border sites between Kenya, Uganda, Tanzania and Rwanda. • Households (HH) living in the border areas
Enrolment Process/Client Selection	3 options to cost: • Compulsory Rider: Additional portable benefit accessible to all members and beneficiaries, with the additional premium charged to all members. • Opt-out: Additional portable benefit or rider to existing benefits giving members the choice to opt out. In this case only those members interested in the benefit (and who don't opt out) will pay the additional premium for the benefit. • Opt-in: Additional portable benefit or rider to existing benefits giving members the choice to opt in. In this case only those members interested in the will pay the additional premium for the benefit.
Insured Unit	MVP at individual level only and HH at household level only
Coverage Limits	Limits for IP is up to 6 months of inpatient. No specific limits for outpatient. Any coverage limits to be consistent with the NHIF scheme.
Illness/Disease	All those stated, based on the 7 categories, in the biomedical interventions
Premium/Revenue	• Community rating pricing (not risk rating) • Premium payment method through a monthly contribution • Role of Subsidies - none expected
Co-payment/Deductible	Any co-payments or deductibles will be consistent with NHIF policy
Exclusions	Any co-payments or deductibles will be consistent with NHIF policy
Policy Term	Pricing based on a 12 month policy term. However automatic monthly renewal on an ongoing basis as long as contributions are up to date. No actual annual policy renewal required, though premiums are only guaranteed for 12 months period(s).
Reinsurance required	It is understood that NHIF does not reinsure. As such so there will be no allowance for Reinsurance in the pricing.

2.2 Operational & Design Features

The table below sets out the key operational process and design features for the CB-HIPP benefit package.

Table 2: Operational & Design Features for the Product

Feature	Details
Facility/Delivery Site(s)	The services covered under the product will be available at the CBHIPP sites in the Border areas (see Table 3 below). These are largely dispensaries, health centres and Hospitals.
Claims Process/Provider Payments	Administrative process for the insureds to access services: • This will follow current NHIF procedures. Insured members will have NHIF identification cards with photo ids that members present at point of use and facilities check online on the website to make sure it is a valid contributor. Need to pay and be reimbursed: • Ideally it would be cashless at point of access, preference to make it cashless beyond borders Process for reimbursing/paying the health service provider: • This will follow NHIF procedures i.e. Invoicing at the end of the month and paid within two weeks
Distribution Channel	Channel to distribute and sell this product: • This will follow current NHIF procedures: NHIF and its intermediaries which include SACCOs, Banks and planned mobile.
Insurer Role & Selection	Role expected of the risk taker and insurer: • NHIF bears all the risk Need for multiple insurers in the different countries or some cross border insurance arrangement: • NHIF will be the primary insurer but reimbursement arrangements
Product Promotion	Product to be promoted via marketing using above and below the line media channels
Consumer Education	Level and efforts to be made on educating consumers about this product and insurance services: via marketing, NHIF website, NHIF call centre
Fraud Controls	Risk of Fraud: • Moral hazard, Lack of biometric identification allows for collusion between members and facilities, supplier induced demand. Practical controls to monitor, manage and reduce fraud: • This will require investments by NHIF e.g. using biometric for identification, medical audits of claims for inpatient and portable outpatient which is likely to be FFS, capitation for in-country outpatient controls costs and reduces SID
Regulatory Compliance	Regulatory issues to consider with a cross border insurance product: • Currency control, how to pay public facilities in different countries, credit facilities at public facilities (at least some private facilities in Uganda Rwanda Tanzania already have credit facilities with private insurance.) Need for approval from the insurance regulatory in each country: • IRAs govern private insurance, generally separate legislation and institutions govern public insurers so likely we would need to explore this further as NHIF is public.

Feature	Details
Monitoring & Evaluation	Controls and M&E is planned and practical for this product: • Use what already exists unless there are other additional controls we would be proposing. Type of information and data to be captured and reported (and to whom): • Dashboard monitoring key indicators like uptake for an opt out product (growth and renewal ratios) numbers of claims/member, claims ratio, loss ratio etc. NHIF only publishes financial accounts and reports to their board. There is no other statutory body they report to
Pilot Testing	Run as a pilot, when and for how long: • Pilot for 6 to 12 months with ongoing monitoring and formal review before proceeding to roll-out Plans for roll-out after pilot: • Providing certain success criteria are met

Table 3: Health Facilities to be used for access to the insured services

Country	Cross Border Site	Public Facilities			Private Facilities		
		Hospital	Health Centre	Dispensary	Hospital	Health Centre	Clinic
Kenya	Busia	2	1	1	1	1	3
	Malaba	1	0	1	0	2	0
	Port Victoria/ Sio Port	2	1	3	0	0	0
	Taveta	1	1	1	0	0	3
Rwanda	Gatuna	0	2	0	0	0	0
Tanzania	Holili	0	0	1	0	1	1
	Cross Border Site	Public Facilities			Private Facilities		
		Hospital	Health Centre III	Health Centre II	Hospital	Health Centre	Clinic
Uganda	Busia	0	0	1	1	3	0
	Malaba	0	1	0	1	1	0
	Majanji	0	1	2	0	0	0
	Kasensero	0	0	1	0	0	0
	Katuna	0	1	0	0	1	1

3 Biomedical Benefit Package

Details of the Biomedical Interventions in the Benefit Package are set out in the table below

Clinic/ department	Disease/Care Package	Type of Care	Number of Visits per year for this service
	A. HIV Care Component		
	HIV Testing & Prevention		
FP	Condom demonstration and distribution	FP	1
CCC	Early infant diagnosis	Outpatient - ART/PMTCT/ CCC	1
VCT	HCT adult	Outpatient - VCT	2

Clinic/ department	Disease/Care Package	Type of Care	Number of Visits per year for this service
	ART treatment		
	Adults		
CCC	Pre ART Adult	Outpatient - ART/PMTCT/ CCC	12
CCC	Newly initiated Adult	Outpatient - ART/PMTCT/ CCC	14
CCC	First line Adult	Outpatient - ART/PMTCT/ CCC	12
CCC	Second line adult	Outpatient - ART/PMTCT/ CCC	14
	Pediatrics		
CCC	Pre ART peds	Outpatient - ART/PMTCT/ CCC	12
CCC	Newly initiated peds	Outpatient - ART/PMTCT/ CCC	14
CCC	First line peds	Outpatient - ART/PMTCT/ CCC	12
CCC	Second line peds	Outpatient - ART/PMTCT/ CCC	14
	PMTCT		
CCC	PMTCT	Outpatient - ART/PMTCT/ CCC	5
	B. STI Care Component		
	STI Prevention		
FP	Condom demonstration and distribution	FP	1
	STI Screening & Treatment		
OPD	Syphilis Screening and treatment	Outpatient Gen (incl STI)	1
OPD	Chlamydia screening and treatment	Outpatient Gen (incl STI)	1
OPD	Herpes screening and treatment	Outpatient Gen (incl STI)	1
OPD	Gonorrhoea screening and treatment	Outpatient Gen (incl STI)	1
	C. Tuberculosis Component		
TB Clinic	Tb screening and treatment	Outpatient - TB	8
	D. Cancers		
FP	Breast and Cervical cancer screening	FP	1
	E. Family Planning		
FP	Condom demonstration and distribution	FP	1
FP	Emergency Pill	FP	1
FP	Oral contraceptive	FP	4
FP	Injectable contraceptive/ Depoprovera	FP	4
FP	IUD	FP	1
FP	Implant	FP	1
	F. Sexual Violence		

Clinic/ department	Disease/Care Package	Type of Care	Number of Visits per year for this service
OPD	SGBV	OPD_ALL	3
	G. Other Care		
OPD	Eye exam with snell's chart	Outpatient - eye	1
OPD	Diabetes screening	OPD_ALL	1
OPD	Hypertension screening	OPD_ALL	1
CCC	Nutritional screening	Nutrition	1

APPENDIX B – DATA

1 Introduction

This Appendix sets out key details on the data collection process, subsequent validation and any major data limitations.

2 Data collection process

The data collection process followed a number of steps, beginning with initial scoping discussions in January 2017 up to final data collection and validation 6 months later in July 2017. An initial data review was conducted and documented (in a data review note) in March 2017¹⁷. This review considered whether the data available (or expected to be available) would be sufficient for an Actuarial Costing Exercise. Subsequent to that review additional data and information was collected on the Health Facility costings, Willingness to Pay study datasets and various secondary sources of information (such as NHIF scheme reports).

3 Data Collected

We list below the main categories of information collected;

1. Benefit Package Details: this listed the priority list of services to include in the package and served as the basis for the Product Prototype
1. Portable Products: Summary information on the key features of portable health insurance products currently in the market covering some (or all) of the 5 border countries
1. Population: Estimates of population residing in and/or transiting through the border areas, split according to the two major categories (MVP & HH), and the sub-categories of MVP (Truckers, Fisherfolk and Clearing Agents)
1. Government Health Programs: Summary information on the access to social and/or government related programs for health financing for the 5 countries
1. Health Facility Costing Data: Costing data from 45 cross border health facilities in Busia Kenya-Uganda, Malaba Kenya-Uganda, Katuna Uganda-Gatuna Rwanda, Taveta Kenya-Holili Tanzania and Sio Port/Port Victoria Kenya-Majanji Uganda
1. Willingness to Pay (WTP) study: The demographic, economic, health seeking behavior and healthcare financing behavior information from an ability and willingness to pay assessment targeting households, truck drivers, clearing and forwarding agents and fisherfolk
1. Secondary Information: Various additional items of secondary and contextual data relevant to the pricing exercise, including various reports on the Kenyan NHIF scheme.

Full details of the data collected are set out below.

3.1 Benefit Package

We collected the following items;

- “Service Package for Key, Vulnerable and Migrant Populations to support the implementation of EAC Minimum Package along East African Land Transport Corridors and Wet Border Areas”- CB-HIPP Service Package_September 2015.pdf
- Product Design Concept Outline, dated January 2017

3.2 Portable Products

We collected the following items;

- “Trends in health expenditure and implications for health insurance presentation.pdf”- presentation dated August 2016 outlining developments in health care expenditure in east Africa and implications for micro health insurance.

17 CB-HIPP Data review note, entitled “201703_CB HIPP Data Review Note v0.1.pdf” dated 17th March 2017

3.3 Population Numbers

We collected the following items;

- Census information
 - 2009 census Volume 1C-Population Distribution by Age, Sex and Administrative Units.pdf (KNBS publication dated August 2010)
 - Analytical Report on population projections Volume XIV.pdf (KNBS publication dated March 2012)
- County Statistical Abstract reports (KNBS publication 2015)
 - Busia County
 - Migori County
 - Taita Taveta County
- Fisherfolk Survey Reports
 - LAKE-VICTORIA-FISHERIES-FRAME-SURVEY-2014-NATIONAL-REPORT_Kenya.pdf
 - Lake-Victoria-Fisheries-Frame-Survey-Report-2012 Uganda.pdf
 - Lake-Victoria-Fisheries-Frame-Survey-Report-2014 Tanzania.pdf
- Land and Wet Sites population estimates (Excel)
 - Population Estimates - Land and Wet cross border areas.xlsx
 - Profile Population Estimates - Land and Wet Sites_030316.xlsx
- Truck Drivers studies
 - Border crossing monitoring along the norther corridor 2012 SSATP study from April 2013)

3.4 Government Health Programs

We collected the following items;

- CB-HIPP Healthcare Financing Regulatory Assessment -Final draft.pdf-“A regulatory analysis of access and financing of HIV and AIDS services in the East African Community: Towards establishing a regional financing mechanism”
- NHIF Information:
 - National hospital insurance fund audited accounts 2012, 2015
 - Case Study Kenya National Hospital Insurance Fund (NHIF) (Case Study from June 2014)
 - NHIF benefits package
 - NHIF Presentation to FBO constituency meeting-3-2-20171
 - NHIF Strategic_Plan_2014-2018
 - Presentation-by-Chacha-Marwa-NHIF.pptx
 - NHIF members form
 - NHIF performance presentation (May 2017)

3.5 Health Facility Costing Data

We collected the following items;

- MASH Summary sheets (with statistics and cost estimates from a sample of health facilities in each country;
 - Kenya (22)
 - Uganda (15)
 - Rwanda (2)
 - Tanzania (3)
- Service Costing Summary sheets for each country (with detailed workings of cost estimates for each treatment option available under the package)
- Abt - Data request for Busia AMPATH CCC data -07122015_EK.xlsx (ART usage statistics for

- Busia County spit by level, over a 13 month period July 2014 to July 2015)
- CB HIPP Costing Report_final draft for editing.docx (copy of Word document of costing report, dated February 2017)

3.6 Willingness to Pay Study

We collected the following items;

- Copies of WTP questionnaire for each population group (Households, Truckers, Fisherfolk and Clearing Agents)
- Copies of WTP dataset for each population group (Households, Truckers, Fisherfolk and Clearing Agents)
- WTP summary notes (201705_Notes on WTP study.docx)

3.7 Secondary Information

We collected the following items;

- National Health Accounts 2012/13
- 2015_10_HowMobileHealthTechnologyIsTransformingAccessToAndUtilizationOfQualityHealthcareInKenya (Case Study on use of Mobile Health Platforms in Kenya)
- 2016_01_WhatFactorsInfluenceTheDecisionToEnrollInHealthInsuranceInRuralKenya (Case Study on factors influencing HI enrolment)
- 2016_Kenyan_Healthcare_Sector_Report_Complete
- CB-HIPP Baseline Evaluation Draft Report June 6 2017
- GBV Costing Study (from 2016)
- HFG-Mobile-Money_CASE-STUDY-12-KENYA-NATIONAL (Case Study on use of Mobile Money in Kenya)
- Kenya Demographic Health Survey KIR 2014
- Kenya HHEUS (Kenyan Household Health Expenditure Survey 2013)
- HIV/NACC
 - NACC - Situation analysis and Case Study Report - 17-10-2016 final
 - Kenya-HIV-Estimates-2015
 - Kenya-HIV-County-Profiles-2016
- TB
 - Kenya TB Prevalence Survey Report
 - TB-Prevalence-Survey-Findings-and-Call-to-Action infographic (2016)
 - kenya-tuberculosis-prevalence-per-county.xlsx

4 Data validation

The data was reviewed for completeness and reasonableness. For the quantitative information it was not possible to check the data against any independent sources but it was checked for internal consistency and reasonableness. The key quantitative data sources are the Health Facility Costing Data and the WTP study dataset. No material issues were discovered to indicate that the data is inaccurate or erroneous. It is not possible to perform checks on qualitative information.

Generally speaking, the data was of sufficient quality for this Actuarial Analysis and to perform the scope and purpose of the work as set out in the report.

The data and information collected was used as presented without making any significant adjustments. If this data is subsequently found to have material inaccuracies, then this could invalidate the costing calculations and possibly require a new costing exercise to be completed.

APPENDIX C – METHODOLOGY

1 Introduction

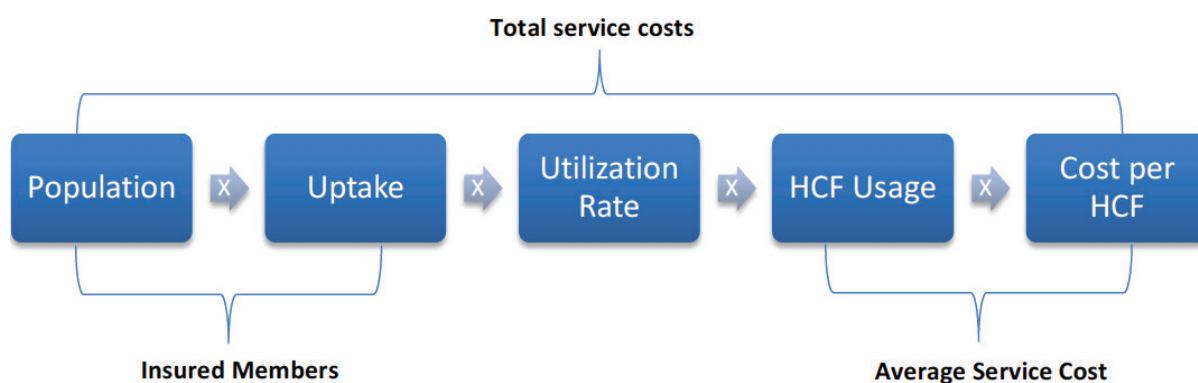
This Appendix sets out key details on the Methodology adopted to conduct the Actuarial Analysis.

2 Methodology Adopted

2.1 Broad Methodology

Figure 1 below outlines the basic approach to calculate total service costs.

Figure 1: Calculating total service costs



Key explanatory points are as follows;

- Insured Members: Equals population (MVP/HH) multiplied by uptake
- Service Utilisation rate: varies by pop group, gender, package component
- HCF Usage: Usage of health facilities at different levels and different countries
- Average service cost: Treatment cost per HCF * HCF usage rate
- Total service costs: Insured members * Utilisation rate * Average service cost

2.2 Population Estimation

We estimated the possible population at 3 land sites and 3 wet sites in the Border counties of Kenya. For the Household population we based on the Census population (from 2009) numbers living within a 5km radius of the border. For the Truckers we based on a 2012 study which measured the number of inbound and outbound border crossings. For Clearing Agents we based on a 2015 report on the numbers of clearing and forwarding agency companies operating at the Kenyan border sites. For Fisherfolk we based off the 2014 Lake Victoria Fisheries Survey which estimated the number of landing sites and Fisherfolk population at those site.

The underlying data point for each of the different population groups is at different points in time. We projected each up to a common year- 2018, using estimated population growth (based off the Kenyan population projections, produced by the KNBS).

Full details of estimated Population numbers are set out in Appendix E

2.3 Uptake

We estimated uptake for each of the 4 populations (HH, Truckers, Fisherfolk and Clearing Agents) at 2 levels- those which currently have NHIF cover, and those which might opt-in or opt-out.

Compulsory Rider:

To estimate the current level of NHIF coverage we relied on the 2013 Kenya Household Health Expenditure and Utilization Survey (HHEUS) which has estimates of NHIF coverage for each county. We also used the WTP study which directly asked each population group if they have NHIF cover.

Opt-out:

In order to estimate the possible uptake for the Opt-out option, we analyzed the WTP study dataset for those persons who have NHIF cover but who disagreed or strongly disagreed with the product prototype that was presented to them. Therefore, the Opt-out uptake proportions are lower than the uptake proportions for those with the Compulsory rider (as we assume a number of those with NHIF will not want the CB-HIPP package).

Opt-in:

In order to estimate the possible uptake for the Opt-in option, we analyzed the WTP study dataset for those persons who do not have NHIF cover and who agreed or strongly agreed with the product prototype that was presented to them, and who were willing to pay the highest price presented to them for this product. We then add this proportion to the estimated Opt-out proportion. The table below sets out the estimated uptake for the 3 different options for the 4 different population groups.

The table below sets out the estimated uptake for the 3 different options for the 4 different population groups.

Table 1- Estimated Uptake rate per option

OPTION	Population Grouping			
	HH	Truckers	Fisherfolk	Clearing Agents
OPTION A-COMPULSORY RIDER	12%	32%	5%	15%
OPTION B-OPT OUT	9%	24%	4%	8%
OPTION C-OPT-IN	15%	37%	14%	29%

Comments are as follows:

- We note that Truckers has the highest uptake proportion. The key source for this assumption is the WTP study which directly interviewed a sample of Truckers to assess how many of them have NHIF cover.
- We note that the estimated uptake for Opt-out is lower than Compulsory as it is a function of those currently with NHIF cover, but allowing for those that are expected to “drop-off” due to not wanting the CB-HIPP cover. We note the rate of “drop-off” varying by population group.
- We note that the estimated uptake for Opt-in is based on Opt-out but allowing for those currently without NHIF who are interested and willing to pay for the Product Prototype and decide to opt-in.

2.4 Utilization Rate

We estimated the Utilization rate for each component of the package, for Male Adults, Male Minors, Female Adults and Female Minors. We then use these 4 sets of Utilization rates for each of the 4 target populations, allowing for the different gender (and adult/minor) mix within each target population.

In order to estimate the Utilization rate for each package component and gender we relied on 3 sources of information, namely;

- HCF costing and WTP dataset collected for this study
- Secondary studies and data sources (eg TB prevalence survey of 2016, NAAC studies), and
- Subjective estimates – if no other source of information is available.

2.4.1 HIV Care

The table below sets out the estimated utilization for the different components of the HIV Care.

Table 2- Utilization Assumptions for HIV Care Component

Table 2- Utilization Assumptions for HIV Care Component					
Disease/Care Package	Number of visits per year for this service	Male-Adult	Male-Minor [<18]	Female-Adult	Female-Minor [<18]
A. HIV Care Component					
HIV Testing & Prevention					
Condom demonstration and distribution	1	15%		15%	
Early infant diagnosis	1			1%	
HCT adult	2	8%		8%	
ART treatment					
Adults					
Pre ART Adult	12	10%		10%	
Newly initiated Adult	14	1%		1%	
First line Adult	12	86%		86%	
Second line adult	14	3%		3%	
Pediatrics					
Pre ART peds	12		24%		24%
Newly initiated peds	14		2%		2%
First line peds	12		74%		74%
Second line peds	14		0%		0%
PMTCT					
PMTCT	5			1%	

2.4.2 STI Care, TB and Cancers Screening

The table below sets out the estimated utilization for STI Care, Tuberculosis and Cancer Screening

Table 3- Utilization Assumptions for STI Care, TB and Cancer Screening

Disease/Care Package	Number of visits per year for this service	Male-Adult	Male-Minor [<18]	Female-Adult	Female-Minor [<18]
B. STI Care Component					
STI Screening & Treatment		9.6%		9.6%	
Syphilis Screening and treatment	1	2.4%		2.4%	
Chlamydia screening and treatment	1	2.4%		2.4%	
Herpes screening and treatment	1	2.4%		2.4%	
Gonorrhoea screening and treatment	1	2.4%		2.4%	
C. Tuberculosis Component					
Tb screening and treatment	8	0.5%	0.5%	0.2%	0.2%
D. Cancers					
Breast and Cervical cancer screening	1			11.1%	

2.4.3 Family Planning

The table below sets out the estimated utilization for Family Planning

Table 4- Utilization Assumptions for Family Planning

Disease/Care Package	Number of visits per year for this service	Male-Adult	Male-Minor [<18]	Female-Adult	Female-Minor [<18]
E. Family Planning					
Family Planning/Contraception				55.3%	
Condom demonstration and distribution	1			11.5%	
Emergency Pill	1			7.5%	
Oral contraceptive	4			0.0%	
Injectable contraceptive/ Depoprovera	4			25.1%	
IUD	1			2.4%	
Implant	1			8.7%	

2.4.4 Sexual Violence and Other Care

The table below sets out the estimated utilization for Sexual Violence and Other Care

Table 5- Utilization Assumptions for Sexual Violence and Other Care

Disease/Care Package	Number of visits per year for this service	Male-Adult	Male-Minor [<18]	Female-Adult	Female-Minor [<18]
F. Sexual Violence					
SGBV	3	2.2%		8.4%	
G. Other Care					
Eye exam with snell's chart	1	2.7%	2.7%	2.7%	2.7%
Diabetes screening	1	6.2%	3.1%	6.2%	3.1%
Hypertension screening	1	6.2%		6.2%	
Nutritional screening	1	2.3%	2.3%	2.3%	2.3%

2.5 Service Cost

We estimated the total treatment cost for each component of the package, based on the Service costing analysis completed for each health facility (and for each component of the package). This underlying analysis was a very thorough and detailed assessment and calculation of the different components of cost involved in treatment for the different services.

From this we calculated an estimated unit cost for each of the 6 different levels of health facility (Dispensary, Health Clinic and Hospital and Public & Private level).

We then estimated the different proportional use of the different levels, depending on the care component. For example, for some types of care, it is more likely to be handled at Public Dispensary level, or for other types of care it may be more likely to be handled at Private Hospital level.

We then combine the cost per level of care with the expected proportional use at the different levels to derive a weighted average cost per care component. We then adjust this weighted average cost for medical inflation to bring it up to expected values in 2018.

We conducted this exercise for Kenyan and Ugandan facilities and then combined the two into an aggregate weighted cost in 2018 values. Note that it is expected that some insureds may possibly use facilities in Tanzania or Rwanda. However, we had limited data for these facilities and assumed that their cost would be broadly comparable to the weighted average across Uganda and Kenya.

C3 Health Event Frequency & GLM Analysis

Component	HH	Truckers	FisherFolk	Clearing Agents
C3.1 HEALTH EVENT STATISTICS				
Incidence of Health Event				
Number of HH surveyed				
# with no visit to HCF	37%	71%	39%	54%
# who delayed due to lack of money				
"Underlying number without a health event	25%	63%	24%	49%
OP frequency (if a health event AND used a HCF)				
# with a visit to HCF				
OP Visit count >=1	59%	27%	54%	40%
No. of Visits in the year	1.9	1.5	3.8	1.7
IP frequency (if a health event AND used a HCF)				
# with a visit to HCF				
IP Admission >=1	30%	11%	17%	4%
No. of Admissions in the year	1.9	1.5	1.5	1.7
Aggregate Stats for full population(s)				
OP Utilisation rate	37%	8%	33%	18%
IP Utilisation rate	19%	3%	10%	2%
C3.2 UPTAKE STATISTICS				
Aggregate Uptake				
Option/HH Status				
Compulsory Rider	12%	32%	5%	15%
Opt-Out	9%	24%	4%	8%
Opt-In	15%	37%	14%	29%
C3.3 RESULTS OF FITTING GLM's				
GLM/Significant Explanatory Variable	HH	Truckers	FisherFolk	Clearing Agents
GLM 1: Underlying number without a health event-"MAX"	sex, household_size, Education, Chronic Condition, Malaba_malaba, Portvic_sioport_majani, mpesa, own_insurance	mobile_bank, age, exp_save_insurance	Household_size, and health_priority	gender, age, education
GLM 2a: OP Visit count >=1	HH size, portvic_sioport_majani, exp_save, savings_grp, mpesa, mobile_bank, formal_saving	married, household_size, ability_cover_exp	bank, sacco, monthly_income, age, health_priority	SAMPLE TOO SMALL
GLM 2b: No. of Visits in the year	Education, portvic_sioport_majani, exp_save, ability_cover_health_exp	SAMPLE TOO SMALL	bank, education	SAMPLE TOO SMALL
GLM 3a: IP Admission >=1	age, HH size, education, ability_cover_health_exp, bank, mfi, own_insurance, formal_saving	education, age	mobile_bank, married, savings_grp, education	SAMPLE TOO SMALL
GLM 3b: No. of Admissions in the year	age, education, mobile_bank, ability_cover_health_exp	SAMPLE TOO SMALL	SAMPLE TOO SMALL	SAMPLE TOO SMALL

APPENDIX D – NHIF SCHEME

1 Introduction

This Appendix sets out key features of the Kenyan National Hospital Insurance Fund. These features are set out here as the costing exercise assumes that the CB-HIPP product will potentially be added as a rider to the NHIF scheme. As such it is important to consider the key features of the NHIF scheme and how any such rider might interact with this scheme, and to what extent the current NHIF scheme currently provides the coverage required under the CB-HIPP package of services

Key questions to answer;

- What elements of coverage currently available under NHIF will overlap with the CB-HIPP rider coverage (including portability)?
- What is the average contribution rate for formal and informal sector members?
- What is the NHIF coverage or uptake in the border areas and for the target population of CBHIPP?
- Are there NHIF experience statistics that can aid in the pricing of the CB-HIPP rider?

2 Outline of the NHIF scheme

2.1 Summary of Benefit Package¹⁸

There are 3 major components (Annex) of cover, namely;

Annex 1- Basic Care-(Outpatient)

- Consultation
- Lab Tests and Investigations
- Drugs Admin & dispensing
- Dental Services
- Radiology Services
- Nursing and Midwifery Services
- Surgical Services
- Physiotherapy

Annex 2- Inpatient Care

Annex 3- Other Specialised Services

- Renal Dialysis
- Drug & Rehabilitation Services

2.2 Contribution

The contribution was revised in April 2015 (was planned in 2010 but extended court case prevented that from happening). As per the Annual report¹⁹ “New rates agreed upon and gazetted and implemented in April 2015. Enhanced services including Outpatient Cover (new) and Inpatient Cover.”

The revised rates are as follows;

- Formal Sector
 - have minimum of Ksh150 per household per month (phpm) for those earning under Ksh5,999, and
 - maximum of Ksh1700phpm for those earning over Ksh100,000 (compared to maximum of Ksh 320 prior to the change)
- Informal Sector – fixed contribution of Ksh500phpm per household (compared to Ksh160pm prior to the change)
- Overall (estimated) Combined Average Contribution for 2016 is Ksh269 per household per month – BEFORE the rate change in April 2015

18 Based on November 2015 Benefit Package (after most recent changes)

19 national hospital insurance fund audited accounts 2015

2.3 Operational features of the NHIF scheme

Summary notes as follows²⁰ relating to the Financial Pooling Framework

- Inflow: Formal Sector Contributions, Informal Sector Contributions, Sponsored Programs
- Fund: Principle Contribution+ Penalties+ Investment Income
- Outflow: Purchase of benefits (to HCF) + Administration Costs

3 Coverage of relevant population

3.1 NHIF coverage/uptake nationally (and gaps)

Summary notes as follows²¹;

- Registered Members (Mar 2017): 6,250, 267
- Total Beneficiaries: 25,001, 068
- Proportion of Kenyans Covered: 57%
- Accredited Health Facilities: 2,037

Proportion of Formal population covered-? **Expected to be very high given compulsory nature of the cover for the formal sector but actual Formal Coverage proportions not known**

Proportion of informal population covered-? **Not known with certainty**

3 4

3.2 NHIF coverage/uptake in border areas

No information is publicly available from NHIF- refer to HHEUS

3.3 NHIF coverage/uptake of vulnerable populations

No information is publicly available from NHIF- refer to HHEUS

4 Current Equivalent Cover

4.1 Current portability options

IP Foreign Treatment: A member who is treated outside the country is entitled to claim part of the money used for inpatient depending on the days spent in the hospital. Rebate of KES 4,000 per inpatient day. **This is the only portability option we are currently aware of.**

4.2 Current riders

Refer to the Civil Servants and County Government Scheme(s). **These are not considered relevant to the CB-HIPP costing.**

4.3 Current Benefit Package components

The following features of the Current Benefit Package are considered relevant to the costing of CBHIPP rider.

4.3.1 General Coverage

- OP Outpatient Care has a capitated PPM of KES1,200 to basic care facilities and KES1,400 to tertiary care facilities
- OP Rehabilitation Package for Drug and Substance Abuse. Covers one treatment session per annum at a package rate of KES60,000 per member per year.

4.3.2 HIV/AIDS related treatment

NHIF currently provides the following coverage of treatment services (preventive and curative) typically related to HIV/AIDS.

20 NHIF Presentation to FBO constituency meeting-3-2-20171.pdf- Presentation by NHIF CEO in March 2017

21 NHIF Presentation to FBO constituency meeting-3-2-20171.pdf- Presentation by NHIF CEO in March 2017

- HIV Testing (under OP cover)
- Haematology (under OP Cover)
- Certain Antiviral Medicines²²
 - Nucleoside/Nucleotide reverse transcriptase inhibitors; abacavir (ABC), lamivudine (3TC), stavudine (d4T), tenofovir disoproxil fumarate tablet (TDF), zidovudine (ZDV or AZT)
 - Non-Nucleoside reverse transcriptase inhibitors; efavirenz (EFV or EFZ), nevirapine (NVP)
 - Protease inhibitors
 - Fixed Dose Combinations
- Certain Family Planning Procedures
 - Barrier Methods; Male Condoms and Diaphragms (Female Condoms)

4.3.3 Sponsored Programs

- Health Insurance Subsidy Program (HISP) for beneficiaries of the Orphans & Vulnerable Children Cash Transfer Program (OVCT) funded by GOK & WBG
- Health Insurance Subsidy Program for the Elderly- for beneficiaries within the Older Persons Cash Transfer (OPCT) program
- As per the 2015 Annual report this covers 22,000 households countrywide.

This program is not specifically relevant to CB-HIPP costing exercise.

²² The drugs at minimum will be the ones stipulated under the Kenya Essential Drug List of 2010 and also referenced to the 19th WHO Model List of Essential Medicines (April 2015). Refer to pages 12 and 13 of the NHIF Benefits Package for full details of specific drugs for each sub-section.

E1 POPULATION ESTIMATES

E1.1 Estimates by Population type and Location for KENYA only

Population Type	Border location	Unit Count	Persons per Unit	Total Persons	Extract Year	Pricing UW Year	Assumed Growth (pa)	Adjusted Total Persons	Male Prop	Male Count	Female Count
MVP INDIVIDUALS											
Truck drivers	Malaba-Kenya/Malaba - Uganda	16,491	2.0	32,983	2012	2018	2.8%	38,858	91%	35,520	3,338
	Busia-Kenya/Busia-Uganda	3,688	2.0	7,376	2012	2018	2.8%	8,689	91%	7,943	746
	Holili-Tanzania/Taveta-Kenya	900	2.0	1,800	2012	2018	2.8%	2,121	91%	1,938	182
	sub-total	21,079		42,158				49,668		45,401	4,266
Clearing Agents	Kenya	1,200	5.0	6,000	2015	2018	2.8%	6,512	75%	4,884	1,628
Fisherfolk	Port Victoria	2,983	1.0	2,983	2014	2018	2.8%	3,327	99%	3,282	46
	Sio Port	702	1.0	702	2014	2018	2.8%	783	99%	772	11
	Muhuru Bay	4,692	1.0	4,692	2014	2018	2.8%	5,234	99%	5,162	72
	sub-total	8,377		8,377				9,344		9,215	129
TOTAL MVP INDIVIDUALS								65,525		59,501	6,024
HOUSEHOLDS											
HH-Land Sites	Busia			47,915	2009	2018	2.8%	61,271	48%	29,657	31,615
	Malaba			67,440	2009	2018	2.8%	86,239	49%	41,900	44,339
	Taveta			26,848	2009	2018	2.8%	34,332	47%	16,272	18,060
	sub-total			142,203				181,842		87,829	94,013
HH-Wet Sites	Muhuru Bay			23,018	2009	2018	2.8%	29,434	48%	14,229	15,206
	Port Victoria			56,342	2009	2018	2.8%	72,047	48%	34,439	37,608
	Sio Port			45,164	2009	2018	2.8%	57,753	48%	27,790	29,964
	sub-total			124,524				159,235		76,458	82,777
TOTAL HOUSEHOLDS				266,727				341,077		164,286	176,791

Notes:

- Truck Drivers:** Data is from Nov 2011 to Mar 2012 based on average monthly crossings from 5 month sample period. This is the estimated number of trucks transiting through the border area (inbound or outbound). Assumed that each Truck crosses both ways (inbound/outbound) on average each month, so the total number of unique trucks transiting across the year is ~21,000.
- Clearing Agents:** This is the number actual clearing agent companies (rather than persons) on the Kenyan side. The number of persons per coy is an assumed average (anecdotal).
- Fisherfolk:** This is the total Fisherfolk population from the Lake Victoria Census(es) of 2014 - living on the particular countries side of the Lake.
- Persons per Unit:** this is subjective estimate(s) unless stated otherwise
- Assumed Growth:** Based on assumed annual growth in the Kenyan Population Projections
- Male Proportion:** this is based on the WTP study (for MVP Individuals) and Census for the Households

E1.2 HH-Split between Adults and minors

Population Type	Border location	County	Males-No	M-Adults (%)	M-Minor [<18] (%)	M-Adults (#)	M-Minor [<18] (#)	Females-No	F-Adults (%)	F-Minor [<18] (%)	F-Adults (#)	F-Minor [<18] (#)
HH-Land Sites	Busia	Busia	29,657	42%	58%	12,318	17,339	31,615	47%	53%	14,809	16,806
	Malaba	Busia	41,900	42%	58%	17,403	24,497	44,339	47%	53%	20,769	23,570
	Taveta	Taita Taveta	16,272	52%	48%	8,398	7,874	18,060	51%	49%	9,184	8,875
	sub-total		87,829			38,119	49,710	94,013			44,763	49,251
HH-Wet Sites	Muhuru Bay	Migori	14,229	40%	60%	5,698	8,530	15,206	46%	54%	6,982	8,224
	Port Victoria	Busia	34,439	42%	58%	14,304	20,135	37,608	47%	53%	17,616	19,992
	Sio Port	Busia	27,790	42%	58%	11,542	16,247	29,964	47%	53%	14,036	15,928
	sub-total		76,458			31,545	44,912	82,777			38,634	44,143
Total			164,286			69,664	94,622	176,791			83,397	93,394

E1.3 HH-Estimates of People Living with HIV (PLHIV)

Numbers of PLHIV by Gender

Population Type	Border location	Pop Count	Male-Adult			Male-Minor [<18]			Female-Adult			Female-Minor [<18]			ALL
			Prevalence	PLHIV count	Pop Count	Prevalence	PLHIV count	Pop Count	Prevalence	PLHIV count	Pop Count	Prevalence	PLHIV count	Pop Count	
HH-Land Sites	Busia	12,318	5.0	611	17,339	0.8	145	14,809	8.2	1,219	16,806	0.8	140	140	2,116
	Malaba	17,403	5.0	864	24,497	0.8	205	20,769	8.2	1,712	23,570	0.8	197	197	2,978
	Taveta	8,398	3.7	313	7,874	0.6	46	9,184	8.7	801	8,875	0.6	51	51	1,210
HH-Wet Sites	Muhuru Bay	5,698	13.1	745	8,530	1.1	94	6,982	15.2	1,059	8,224	1.1	91	91	1,989
	Port Victoria	14,304	4.9	707	20,135	0.8	168	17,616	8.2	1,446	19,992	0.8	167	167	2,489
	Sio Port	11,542	5.0	572	16,247	0.8	136	14,036	8.2	1,154	15,928	0.8	133	133	1,995
TOTAL		69,664	5.5	3,812	94,622	0.8	794	83,397	8.9	7,391	93,394	0.8	780	780	12,777

E1.4 MVP-Estimates of People Living with HIV (PLHIV)

Numbers of PLHIV by Gender

Population Type	Border location	Pop Count	Male			Female			All		
			Prevalence	PLHIV count	Pop Count	Prevalence	PLHIV count	Pop Count	Prevalence	PLHIV count	Prevalence
MVP INDIVIDUALS											
	Truck drivers										
	Malaba-Kenya/Malaba - Uganda	35,520	2.7	972	3,338	4.6	154	38,858	1,127	2.9%	
	Busia-Kenya/Busia-Uganda	7,943	2.7	217	746	4.6	35	8,689	252	2.9%	
Clearing Agents											
	Holili-Tanzania/Taveta-Kenya	1,938	2.7	53	182	4.6	8	2,121	61	2.9%	
	Kenya	4,884	4.6	225	1,628	7.8	127	6,512	352	5.4%	
	Port Victoria	3,282	5.9	194	46	19.2	9	3,327	203	6.1%	
Fishfolk											
	Sio Port	772	5.9	46	11	19.2	2	783	48	6.1%	
TOTAL MVP INDIVIDUALS											
	Muhuru Bay	5,162	5.9	305	72	19.2	14	5,234	319	6.1%	
		59,501		2,013	6,024		349	65,525	2,362	3.6%	

E2 HIV STATISTICS

E2.1 Estimates of People Living with HIV (PLHIV)

HIV Prevalence proportions for Mobile or Settled population (Baseline Study)

Population Type	Border location	Mobile Pop		Host/Settled Pop		
		Prevalence	95% CI	Prevalence	95% CI	
Land Sites	Busia	5.0	2.9-7.1	2.4	0.3-4.6	
	Malaba	4.1	0.7-7.6	4.8	2.7-6.9	
	Taveta	1.2	0.0-3.8	3.1	1.1-5.1	
Wet Sites	Muhuru Bay	14.7	3.7-25.6	4.8	2.8-6.8	
	Port Victoria	6.2	0.0-17.8	5.1	2.7-7.5	
	Sio Port	6.2	0.0-17.8	5.1	2.7-7.5	
Fisherfolk				6.1	3.8-8.4	Get by region & gender split
Clearing Agents				5.4	4.6-6.2	Based on Host population, overall average
Truck Drivers		2.9	0.7-5.2			Get by region & gender split

Source: CB-HIPP Baseline Study, Section VI

HIV Prevalence proportions by Gender (NACC)

Population Type	Border location	Male		Female		NACC		Baseline vs NACC Agg
		Prevalence	95% CI	Prevalence	95% CI	Aggregate	Baseline	
Land Sites	Busia	5.0	-	8.3	-	6.7	2.4	0.36
	Malaba	5.0	-	8.3	-	6.7	4.8	0.72
	Taveta	3.8	-	8.9	-	6.4	3.1	0.49
Wet Sites	Muhuru Bay	13.1	-	15.2	-	14.2	4.8	0.34
	Port Victoria	5.0	-	8.3	-	6.7	5.1	0.77
	Sio Port	5.0	-	8.3	-	6.7	5.1	0.77
Fisherfolk		3.8	2.0-5.7	12.3	6.7-17.9			

From Baseline Study

Source: Kenya HIV County Profiles-2016 [NACC] (Except Fisherfolk and Truck Drivers)

HIV Prevalence proportions-ADOPTED FOR COSTING

Population Type	Border location	Male Prop	F/M of Prev	Male (Adult)	Female (Adult)	Total	check	Children	Notes
Land Sites	Busia	48%	1.7	5.0	8.2	6.7	6.7	0.8%	Used NACC
	Malaba	49%	1.7	5.0	8.2	6.7	6.7	0.8%	Used NACC
	Taveta	47%	2.3	3.7	8.7	6.4	6.4	0.6%	Used NACC
Wet Sites	Muhuru Bay	48%	1.2	13.1	15.2	14.2	14.2	1.1%	Used NACC
	Port Victoria	48%	1.7	4.9	8.2	6.7	6.7	0.8%	Used NACC
	Sio Port	48%	1.7	5.0	8.2	6.7	6.7	0.8%	Used NACC
Fisherfolk		99%	3.2	5.9	19.2	6.1	6.1	n/a	Used Baseline Study
Clearing Agents		75%	1.7	4.6	7.8	5.4	5.4	n/a	Used Baseline Study
Truck Drivers		91%	1.7	2.7	4.6	2.9	2.9	n/a	Used Baseline Study

E2.2 Proportions aware of status and on ART

HIV awareness & ART proportions for Mobile or Settled population (Baseline Study)

Population Type	Border location	MVP		Host/Settled Pop	
		Know +	on ART	Know +	on ART
Both Sites (M)		39%	88%	38%	84%
Both Sites (F)		46%	86%	52%	84%
Fisherfolk (M)		63%	86%		
Fisherfolk (F)		72%	97%		

Source: MVP from CB-HIPP Baseline Study, Section VI (page 79). Host pop-KAIS study (2012)

ART uptake/coverage proportions by Adult/Children (NACC)-who know they are HIV+

Population Type	Border location	Adults		Children	
		Male	Female	Male	Female
Land Sites	Busia	80%	80%	82%	82%
	Malaba	80%	80%	82%	82%
	Taveta	41%	41%	46%	46%
Wet Sites	Muhuru Bay	76%	76%	88%	88%
	Port Victoria	80%	80%	82%	82%
	Sio Port	80%	80%	82%	82%

Source: Kenya HIV County Profiles-2016 [NACC]

ART uptake proportions-ADOPTED FOR COSTING

Population Type	Border location	Males		Females	
		Know +	on ART	Know +	on ART
Land Sites	Busia	38%	80%	52%	80%
	Malaba	38%	80%	52%	80%
	Taveta	38%	41%	52%	41%
Wet Sites	Muhuru Bay	38%	76%	52%	76%
	Port Victoria	38%	80%	52%	80%
	Sio Port	38%	80%	52%	80%
Fisherfolk		63%	86%	72%	97%
Clearing Agents		38%	80%	52%	80%
Truck Drivers		38%	80%	52%	80%

Very high awareness

PMTCT Proportions

	Busia	Taita Taveta	Migori	Total
Female-Adult (#)	222,138	107,358	280,307	609,803
Need for PMTCT (#)	1,932	683	5189	7,804
Prop needing PMTCT	0.87%	0.64%	1.85%	1.28%
Receiving PMTCT (#)	1,701	407	4647	6,755
PMTCT coverage	88%	60%	90%	87%

E3 HOUSEHOLD CENSUS NUMBERS

KENYA-CENSUS TOTALS

Town	District	Full Census Pop-District	Census Pop-with 5km radius	County	County Pop	Insurance Coverage	NHIF prop	Numbers Insured w NHIF
Year		2009	2009		2015	2013		
Land site								
Busia	Busia	327,852	47,915	Busia	825,836	11.3%	95.0%	88,653
Malaba	Teso North	117,947	67,440	Busia	825,836	11.3%	95.0%	88,653
Taveta	Taita Taveta	67,665	26,848	Taita Taveta	347,195	13.9%	97.7%	47,150
sub-total		513,464	142,203		1,998,867	11.2%		224,457
Wet Site								
Muhuru Bay	Migori	335,873	23,018	Migori	1,048,602	11.3%	99.4%	117,781
Port Victoria	Busia	327,852	56,342	Busia	825,836	11.3%	95.0%	88,653
Sio Port	Samia	93,500	45,164	Busia	825,836	11.3%	95.0%	88,653
sub-total		757,225	124,524		2,700,274	10.9%		295,088
Total All		1,270,689	266,727		4,699,141	11.1%		519,545
Notes		(a)	(b)	(c)	(c)			11.1%

Notes:

(a) Census Population-Full: this is the full Census Population for this District (Urban & Rural Combined) from the 2009 Census

(b) Census Pop-within 5km radius- this is the numbers within a 5km radius of the Border- this rule of used to estimate the 'true border population'. Refer to Land Site and Wet Sits 030316 Excel File

(c) County Pop comes from "Kenya-HIV-County-Profiles-2016, therefore is a 2015 (or 2016) population estimate for the County

(d) Insurance Coverage comes from 2013 Kenya Household Health Expenditure and Utilisation Survey (HHEUS).

This an aggregate proportion for both informal and formal sector **combined**

E4 MVP NUMBERS

E4.1 Estimates of Truck Crossings/Truckers

Number of Truck Crossings per month

Border Post/Month	Inbound			Outbound		
	Gatuna	Busia	Malaba	Gatuna	Busia	Malaba
Nov-11	2,319	431	14,937	2,735		20,013
Dec-11	2,800	577	14,794	2,284		19,112
Jan-12	2,546	1,505	16,138	2,145	6,471	18,255
Feb-12	2,408	960	8,586	2,797	6,045	19,060
Mar-12		1,392	15,775		6,692	18,244
Monthly Average	2,518	973	14,046	2,490	6,403	18,937
Daily Average	84	32	468	83	213	631
Trucks Surveyed	200	179	214	174	259	248

Source: "Border crossing monitoring along the northern corridor 2012.pdf" Table 2, p17

Border location	Monthly Average			Unique Trucks
	Inbound	Outbound	Total	
Malaba-Kenya/Malaba - Uganda	14,046	18,937	32,983	16,491
Busia-Kenya/Busia-Uganda	973	6,403	7,376	3,688
Holili-Tanzania/Taveta-Kenya			1,800	900
sub-total Kenya			42,158	21,079
Katuna - Uganda/Gatuna Rwanda	2,518	2,490	5,009	

E4 MVP NUMBERS

E4.2 Estimates of Clearing & Forwarding Agency Companies/Person

Country	Clearing and Forwarding Agency Companies members of FEAFFA
Kenya	1,200
Uganda	300
Rwanda	120
Tanzania	600

E4 MVP NUMBERS

E4.3 Estimates of Fisherfolk Numbers

Border location	Sub-County	Landing sites	Fisherfolk population
Kenya	2014 Lake Victoria Fisheries Survey		
Lake Victoria all		378	40,113
Port Victoria	Bunyala Sub-county	19	2,983
Sio Port	Samia Sub-county	5	702
Muhuru Bay	Nyatike Sub-county	31	4,692
Uganda	2012 Lake Victoria Fisheries Survey		
Lake Victoria all		555	63,921
Majajji	Busia District	4	358
Tanzania	2014 Lake Victoria Fisheries Survey		
Lake Victoria all		642	103,540
Kirongwe	Mara Region	174	24,220
Lake Tanganyika	No data available		

F1 HOUSEHOLDS-SUMMARY COSTS OF THE BENEFIT PACKAGE (KES mn.)

Disease/Care Package	Option A	Option B	Option C
Insured Population	40,330	29,191	52,278
Insured Population-PLHIV	1,511	1,094	1,958
Insured Population-aware of PLHIV status	712	515	923
A. HIV Care Component			
HIV Testing & Prevention			
Condom demonstration and distribution	2.5	1.8	3.3
Early infant diagnosis	0.1	0.1	0.1
HCT adult	2.0	1.4	2.5
ART treatment			
Adults			
Pre ART Adult	0.5	0.4	0.7
Newly initiated Adult	0.2	0.1	0.2
First line Adult	12.8	9.3	16.6
Second line adult	0.9	0.7	1.2
Pediatrics			
Pre ART peds	0.2	0.1	0.2
Newly initiated peds	0.1	0.0	0.1
First line peds	1.7	1.2	2.2
Second line peds			
PMTCT			
PMTCT	1.5	1.1	2.0
B. STI Care Component			
STI Prevention			
Condom demonstration and distribution	-	-	-
STI Screening & Treatment			
Syphilis Screening and treatment	0.2	0.2	0.3
Chlamydia screening and treatment	0.3	0.2	0.4
Herpes screening and treatment	0.2	0.2	0.3
Gonorrhoea screening and treatment	0.2	0.2	0.3
C. Tuberculosis Component			
Tb screening and treatment	1.6	1.1	2.0
D. Cancers			
Breast and Cervical cancer screening	0.8	0.6	1.0

E. Family Planning**Family Planning/Contraception**

Condom demonstration and distribution	1.1	0.8	1.4
Emergency Pill	0.1	0.1	0.2
Oral contraceptive	0.0	0.0	0.0
Injectable contraceptive/ Depoprovera	6.3	4.6	8.2
IUD	0.2	0.1	0.3
Implant	1.6	1.2	2.1

F. Sexual Violence

SGBV	6.8	4.9	8.8
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G. Other Care

Eye exam with snell's chart	0.6	0.4	0.7
Diabetes screening	1.3	0.9	1.6
Hypertension screening	0.2	0.2	0.3
Nutritional screening	0.5	0.3	0.6
TOTAL SERVICE COST (KES mn.)	44.5	32.2	57.7

Cost per package component

A. HIV Care Component	22.5	16.3	29.2
B. STI Care Component	1.0	0.7	1.3
C. Tuberculosis Component	1.6	1.1	2.0
D. Cancers	0.8	0.6	1.0
E. Family Planning	9.3	6.8	12.1
F. Sexual Violence	6.8	4.9	8.8
G. Other Care	2.5	1.8	3.2
TOTAL SERVICE COST (KES mn.)	44.5	32.2	57.7
Cost per Insured (KES)	1,104	1,104	1,104
Family Size	4.0	4.0	4.0
Cost per HH (KES)	4,414	4,414	4,414
NHIF Insured Principal Members	6,890,919	6,890,919	6,890,919
Cost per NHIF Principal Member (KES)	6.5	4.7	8.4

F2 MVP-SUMMARY COSTS OF THE BENEFIT PACKAGE (KSH mn.)

F2.1 TRUCKERS

Disease/Care Package	Compulsory Rider	Opt-Out	Opt-In
Insured Population	15,685	12,107	18,574
Insured Population-PLHIV	455	351	539
Insured Population-aware of PLHIV status	182	141	216
A. HIV Care Component			
HIV Testing & Prevention			
Condom demonstration and distribution	1.9	1.5	2.3
Early infant diagnosis	0.0	0.0	0.0
HCT adult	1.4	1.1	1.7
ART treatment			
Adults			
Pre ART Adult	0.1	0.1	0.2
Newly initiated Adult	0.0	0.0	0.1
First line Adult	3.4	2.6	4.0
Second line adult	0.3	0.2	0.3
Pediatrics			
Pre ART peds	0.0	0.0	0.0
Newly initiated peds	0.0	0.0	0.0
First line peds	0.0	0.0	0.0
Second line peds	0.0	0.0	0.0
PMTCT			
PMTCT	0.2	0.1	0.2
B. STI Care Component			
STI Prevention			
Condom demonstration and distribution	0.0	0.0	0.0
STI Screening & Treatment			
Syphilis Screening and treatment	0.2	0.1	0.2
Chlamydia screening and treatment	0.2	0.2	0.3
Herpes screening and treatment	0.2	0.1	0.2
Gonorrhoea screening and treatment	0.2	0.1	0.2
C. Tuberculosis Component			
Tb screening and treatment	0.7	0.6	0.9
D. Cancers			
Breast and Cervical cancer screening	0.0	0.0	0.0

E. Family Planning**Family Planning/Contraception**

Condom demonstration and distribution	0.1	0.1	0.2
Emergency Pill	0.0	0.0	0.0
Oral contraceptive	0.0	0.0	0.0
Injectable contraceptive/ Depoprovera	0.7	0.5	0.8
IUD	0.0	0.0	0.0
Implant	0.2	0.2	0.2

F. Sexual Violence

SGBV	2.6	2.0	3.1
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G. Other Care

Eye exam with snell's chart	0.2	0.2	0.2
Diabetes screening	0.6	0.5	0.7
Hypertension screening	0.2	0.1	0.2
Nutritional screening	0.2	0.1	0.2
TOTAL SERVICE COST (KSH mn.)	13.6	10.5	16.1

Cost per package component

A. HIV Care Component	7.3	5.7	8.7
B. STI Care Component	0.8	0.6	0.9
C. Tuberculosis Component	0.7	0.6	0.9
D. Cancers	0.0	0.0	0.0
E. Family Planning	1.1	0.8	1.3
F. Sexual Violence	2.6	2.0	3.1
G. Other Care	1.1	0.9	1.3
TOTAL SERVICE COST (KSH mn.)	13.6	10.5	16.1
Cost per Insured (KES)	866	866	866
Family Size	4.0	4.0	4.0
Cost per HH (KES)	3,466	3,466	3,466
NHIF Insured Principal Members	8,002,314	8,002,314	8,002,314
Cost per NHIF Principal Member (KES)	1.7	1.3	2.0

F2 MVP-SUMMARY COSTS OF THE BENEFIT PACKAGE (KSH mn.)

F2.2 CLEARING AGENTS

Disease/Care Package	Compulsory Rider	Opt-Out	Opt-In
Insured Population	1,008	543	1,890
Insured Population-PLHIV	54	29	102
Insured Population-aware of PLHIV status	24	13	44
A. HIV Care Component			
HIV Testing & Prevention			
Condom demonstration and distribution	0.1	0.1	0.3
Early infant diagnosis	0.0	0.0	0.0
HCT adult	0.1	0.1	0.2
ART treatment			
Adults			
Pre ART Adult	0.0	0.0	0.0
Newly initiated Adult	0.0	0.0	0.0
First line Adult	0.5	0.3	0.9
Second line adult	0.0	0.0	0.1
Pediatrics			
Pre ART peds	0.0	0.0	0.0
Newly initiated peds	0.0	0.0	0.0
First line peds	0.0	0.0	0.0
Second line peds	0.0	0.0	0.0
PMTCT			
PMTCT	0.0	0.0	0.1
B. STI Care Component			
STI Prevention			
Condom demonstration and distribution	0.0	0.0	0.0
STI Screening & Treatment			
Syphilis Screening and treatment	0.0	0.0	0.0
Chlamydia screening and treatment	0.0	0.0	0.0
Herpes screening and treatment	0.0	0.0	0.0
Gonorrhoea screening and treatment	0.0	0.0	0.0
C. Tuberculosis Component			
Tb screening and treatment	0.0	0.0	0.1
D. Cancers			
Breast and Cervical cancer screening	0.0	0.0	0.0

E. Family Planning**Family Planning/Contraception**

Condom demonstration and distribution	0.0	0.0	0.1
Emergency Pill	0.0	0.0	0.0
Oral contraceptive	0.0	0.0	0.0
Injectable contraceptive/ Depoprovera	0.2	0.1	0.3
IUD	0.0	0.0	0.0
Implant	0.0	0.0	0.1

F. Sexual Violence

SGBV	0.3	0.1	0.5
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G. Other Care

Eye exam with snell's chart	0.0	0.0	0.0
Diabetes screening	0.0	0.0	0.1
Hypertension screening	0.0	0.0	0.0
Nutritional screening	0.0	0.0	0.0
TOTAL SERVICE COST (KSH mn.)	1.5	0.8	2.8

Cost per package component

A. HIV Care Component	0.8	0.4	1.6
B. STI Care Component	0.1	0.0	0.1
C. Tuberculosis Component	0.0	0.0	0.1
D. Cancers	0.0	0.0	0.0
E. Family Planning	0.2	0.1	0.4
F. Sexual Violence	0.3	0.1	0.5
G. Other Care	0.1	0.0	0.2
TOTAL SERVICE COST (KSH mn.)	1.5	0.8	2.8
Cost per Insured (KES)	1,499	1,499	1,499
Family Size	4.0	4.0	4.0
Cost per HH (KES)	5,998	5,998	5,998
NHIF Insured Principal Members	8,002,314	8,002,314	8,002,314
Cost per NHIF Principal Member (KES)	0.2	0.1	0.4

F2 MVP-SUMMARY COSTS OF THE BENEFIT PACKAGE (KSH mn.)

F2.3 FISHERFOLK

Disease/Care Package	Compulsory Rider	Opt-Out	Opt-In
Insured Population	431	409	1,289
Insured Population-PLHIV	26	25	79
Insured Population-aware of PLHIV status	17	16	50
A. HIV Care Component			
HIV Testing & Prevention			
Condom demonstration and distribution	0.1	0.1	0.2
Early infant diagnosis	0.0	0.0	0.0
HCT adult	0.0	0.0	0.1
ART treatment			
Adults			
Pre ART Adult	0.0	0.0	0.0
Newly initiated Adult	0.0	0.0	0.0
First line Adult	0.3	0.3	1.0
Second line adult	0.0	0.0	0.1
Pediatrics			
Pre ART peds	0.0	0.0	0.0
Newly initiated peds	0.0	0.0	0.0
First line peds	0.0	0.0	0.0
Second line peds	0.0	0.0	0.0
PMTCT			
PMTCT	0.0	0.0	0.0
B. STI Care Component			
STI Prevention			
Condom demonstration and distribution	0.0	0.0	0.0
STI Screening & Treatment			
Syphilis Screening and treatment	0.0	0.0	0.0
Chlamydia screening and treatment	0.0	0.0	0.0
Herpes screening and treatment	0.0	0.0	0.0
Gonorrhoea screening and treatment	0.0	0.0	0.0
C. Tuberculosis Component			
Tb screening and treatment	0.0	0.0	0.1
D. Cancers			
Breast and Cervical cancer screening	0.0	0.0	0.0

E. Family Planning**Family Planning/Contraception**

Condom demonstration and distribution	0.0	0.0	0.0
Emergency Pill	0.0	0.0	0.0
Oral contraceptive	0.0	0.0	0.0
Injectable contraceptive/ Depoprovera	0.0	0.0	0.0
IUD	0.0	0.0	0.0
Implant	0.0	0.0	0.0

F. Sexual Violence

SGBV	0.1	0.1	0.2
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G. Other Care

Eye exam with snell's chart	0.0	0.0	0.0
Diabetes screening	0.0	0.0	0.0
Hypertension screening	0.0	0.0	0.0
Nutritional screening	0.0	0.0	0.0
TOTAL SERVICE COST (KSH mn.)	0.6	0.6	1.8

Cost per package component

A. HIV Care Component	0.5	0.4	1.4
B. STI Care Component	0.0	0.0	0.1
C. Tuberculosis Component	0.0	0.0	0.1
D. Cancers	0.0	0.0	0.0
E. Family Planning	0.0	0.0	0.0
F. Sexual Violence	0.1	0.1	0.2
G. Other Care	0.0	0.0	0.1
TOTAL SERVICE COST (KSH mn.)	0.6	0.6	1.8
Cost per Insured (KES)	1,405	1,405	1,405
Family Size	4.0	4.0	4.0
Cost per HH (KES)	5,622	5,622	5,622
NHIF Insured Principal Members	8,002,314	8,002,314	8,002,314
Cost per NHIF Principal Member (KES)	0.1	0.1	0.2

G SUMMARY COSTS OF THE BENEFIT PACKAGE (KES mn.)

G.1 OPTION A-COMPULSORY RIDER

Disease/Care Package	Population Grouping				
	HH	Truckers	Fisherfolk	Clearing Agents	All
Insured Population	40,330	15,685	431	1,008	57,453
Insured Population-PLHIV	1,511	455	26	54	2,046
Insured Population-aware of PLHIV status	712	182	17	24	934
Cost per package component					
A. HIV Care Component	22.5	7.3	0.5	0.8	31.2
B. STI Care Component	1.0	0.8	0.0	0.1	1.8
C. Tuberculosis Component	1.6	0.7	0.0	0.0	2.4
D. Cancers	0.8	0.0	0.0	0.0	0.8
E. Family Planning	9.3	1.1	0.0	0.2	10.7
F. Sexual Violence	6.8	2.6	0.1	0.3	9.7
G. Other Care	2.5	1.1	0.0	0.1	3.7
TOTAL SERVICE COST (KES mn.)	44.5	13.6	0.6	1.5	60.2
Service Cost per Insured (KES)	1,104	866	1,405	1,499	1,048
Family Size	4.0	4.0	4.0	4.0	4.0
Service Cost per HH (KES)	4,414	3,466	5,622	5,998	4,192
NHIF Insured Principal Members	6,890,919	6,890,919	6,890,919	6,890,919	6,890,919
Service Cost per NHIF Principal Member (KES)	6.46	1.97	0.09	0.22	8.74

OPTION B-OPT OUT

Disease/Care Package	Population Grouping				
	HH	Truckers	Fisherfolk	Clearing Agents	All
Insured Population	29,191	12,107	409	543	42,250
Insured Population-PLHIV	1,094	351	25	29	1,499
Insured Population-aware of PLHIV status	515	141	16	13	684
Cost per package component					
A. HIV Care Component	16.3	5.7	0.4	0.4	22.9
B. STI Care Component	0.7	0.6	0.0	0.0	1.4
C. Tuberculosis Component	1.1	0.6	0.0	0.0	1.7
D. Cancers	0.6	0.0	0.0	0.0	0.6
E. Family Planning	6.8	0.8	0.0	0.1	7.7
F. Sexual Violence	4.9	2.0	0.1	0.1	7.1
G. Other Care	1.8	0.9	0.0	0.0	2.7
TOTAL SERVICE COST (KES mn.)	32.2	10.5	0.6	0.8	44.1
Service Cost per Insured (KES)	1,104	866	1,405	1,499	1,044
Family Size	4.0	4.0	4.0	4.0	4.0
Service Cost per HH (KES)	4,414	3,466	5,622	5,998	4,174

OPTION C-OPT-IN

Disease/Care Package	Population Grouping				
	HH	Truckers	Fisherfolk	Clearing Agents	All
Insured Population	52,278	18,574	1,289	1,890	74,032
Insured Population-PLHIV	1,958	539	79	102	2,678
Insured Population-aware of PLHIV status	923	216	50	44	1,232
Cost per package component					
A. HIV Care Component	29.2	8.7	1.4	1.6	40.8
B. STI Care Component	1.3	0.9	0.1	0.1	2.4
C. Tuberculosis Component	2.0	0.9	0.1	0.1	3.0
D. Cancers	1.0	0.0	0.0	0.0	1.0
E. Family Planning	12.1	1.3	0.0	0.4	13.8
F. Sexual Violence	8.8	3.1	0.2	0.5	12.5
G. Other Care	3.2	1.3	0.1	0.2	4.8
TOTAL SERVICE COST (KES mn.)	57.7	16.1	1.8	2.8	78.4
Service Cost per Insured (KES)	1,104	866	1,405	1,499	1,059
Family Size	4.0	4.0	4.0	4.0	4.0
Service Cost per HH (KES)	4,414	3,466	5,622	5,998	4,238

Aggregate Premium Calculation (2018 year)

Component	A-COMPULSORY RIDER	B-OPT OUT	C-OPT-IN
Service Cost	60.2	44.1	78.4
Contingency Margin	6.0	4.4	7.8
Admin Expense	12.3	9.1	15.9
Total Cost (KES mn.)	78.6	57.6	102.1
Insured Count	57,453	42,250	74,032
Premium Rate per Insured (KES)	1,367	1,362	1,380
NHIF Insured Principal Members	6,890,919		
Premium Rate per NHIF Principal Member (KES)	11.40		

APPENDIX H: CONSULTANT'S SCOPE OF WORK

Document date: October 2017

1. Benefit Package

CB-HIPP aims to support the development of a portable benefit package (CB-HIPP package) for vulnerable populations living in cross-border areas within Kenya as a potential rider to the Kenyan NHIF, covering a set of priority interventions targeted by CB-HIPP, and designed for two target population groups:

1. The general population living in cross-border areas (Households), and
2. Migrant vulnerable populations (MVP) specifically truck drivers, clearing and forwarding agents and fisherfolk

2. Target Sites

The CB-HIPP package will be prioritized in the following cross-border areas within the East African Community (EAC) partner states:

1. Land Intervention Sites:

- Busia, Kenya-Uganda;
- Malaba, Kenya-Uganda;
- Taveta, Kenya-Holili, Tanzania;

2. Wet Intervention Sites:

- Sio Port, Kenya-Uganda
- Port Victoria, Kenya-Majanji, Uganda;
- Muhuru Bay, Kenya-Shirati, Tanzania;

3. Package Options

The costing analysis will focus on three options for the CB-HIPP portable benefit package using Kenya's NHIF as a reference for this feasibility analysis.

- a. Compulsory Rider: add portability as a benefit accessible to all members and beneficiaries, with the additional premium charged to all members.
- b. Opt-out: Add portability as an additional benefit or rider to existing benefits giving members the choice to opt out. In this case only those members interested in the benefit (and who don't opt out) will pay the additional premium for the benefit.
- c. Opt-in: Add portability as an additional benefit or rider to existing benefits giving members the choice to opt in. In this case only those members interested in the benefit will pay the additional premium for the benefit.

4. Scope of work

The scope of this assignment is to develop an Actuarial pricing estimate for a portable benefit package (CB-HIPP package) for vulnerable populations living in cross-border areas within Kenya (as a potential rider to the Kenyan NHIF), including the following tasks:

- Generalised linear modelling: (GLM) analysis on ability and willingness to pay data to determine risk rating of specific groups and predictors of health service usage for the different population groups
- Costing Analysis: Develop a pricing estimate for the portable benefit package for the 3 options (compulsory, opt-out, opt-in)