The Malawi Priorities Project

Cost-benefit analysis of increasing contraceptive use through post-partum counseling and free, improved access to contraception in Malawi - Technical Report

COPENHAGEN CONSENSUS CENTER

NATIONAL PLANNING COMMISSION

AFIDEP
African Institute for Development Policy

Report Contributors
Mark Radin, Department of Environmental Sciences and Engineering, University of North Carolina
Mahesh Karra, Frederick S. Pardee School of Global Studies, Boston University
Salim Mapila, National Planning Commission, Malawi
Nyovani Madise, African Institute for Development Policy
Brad Wong, Copenhagen Consensus Center

Malawi Priorities: Background

Malawi Priorities is a research-based collaborative project implemented by the National Planning Commission (NPC) with technical assistance from the African Institute for Development Policy (AFIDEP), and the Copenhagen Consensus Center (CCC) to identify and promote the most effective interventions that address Malawi's development challenges and support the attainment of its development aspirations. The project seeks to provide the government with a systematic process to help prioritize the most effective policy solutions so as to maximize social, environmental and economic benefits on every kwacha invested. Cost-benefit analysis is the primary analytical tool adopted by the project. Cost-benefit analysis will be applied to 20-30 research questions of national importance. Research will take place over the course of 2020 and 2021.

Research questions were drawn from the NPC's existing research agenda, developed in September 2019 after extensive consultation with academics, think tanks, the private sector and government. This sub-set was then augmented, based on input from NPC, an Academic Advisory Group (AAG) of leading scholars within Malawi, and existing literature, particularly previous cost-benefit analyses conducted by the Copenhagen Consensus Center. The research agenda was validated and prioritized by a Reference Group of 25 prominent, senior stakeholders. The selection of interventions was informed by numerous consultations across the Malawian policy space, and one academic and two sector experts provide peer review on all analyses.

Cost-benefit analyses in Malawi Priorities consider the social, economic and environmental impacts that accrue to all of Malawian society. This represents a wider scope than financial cost-benefit analysis, which considers only the flow of money, or private cost-benefit analysis, which considers the perspective of only one party. All benefit-cost ratios (BCRs) reported within the Malawi Priorities project are comparable.

The cost-benefit analysis considered in the project is premised on an injection of new money available to decision makers, that can be spent on expanding existing programs (e.g. new beneficiaries, additional program features) or implementing new programs. Results should not be interpreted as reflections on past efforts or the benefits of reallocating existing funds.

Inquiries about the research should be directed to Salim Mapila at salim@npc.mw.

Acknowledgements

Contents

1. Introduction and context

1.1 The Family Planning situation in Malawi

The population of Malawi grew by more than 30% between 2008 and 2017. Projections show Malawi's population doubling again from 2020 to about 2050 (Riahi et al. 2017). The high population growth rate will make it harder for Malawi to meet the basic needs of its population. Family planning interventions can reduce population growth and unlock a demographic benefit, which occurs when a demographic shift occurs that increases the relative percent of the population that is of working age and thereby increases production and investment (Bloom et al. 2003 and Canning et al. 2015). Since fertility preferences are often rooted in cultural norms and are difficult to alter through planned interventions, family planning programs are more likely to help families realize their ideal number of kids and avoid unwanted or additional births by increasing accessing to contraception (Bongaarts, 2003; Feyisetan & Casterline, 2000; Freedman, 1997; Kodzi et al., 2010; Van de Kaa, 2001).

Despite the projected population growth estimates, access to and use of contraception in Malawi has increased substantially over the past two decades. The modern contraception prevalence rate (mCPR) for married women has increased from 7% in 1992 to 58% in 2015-16 (NSO & ICF 2017). The unmet need[1] for family planning for married women dropped from 37% in 1992 to 19% in 2015-16. The unmet need for contraception for married women in rural areas (19%) is only slightly greater than the unmet need for contraception for married women in urban areas (16%). Furthermore, this increased access and use of contraception has coincided with a decrease in total fertility rates from 6.7 per women in 1992 to 4.4 (4 to 3 in urban areas and from 6.1 to 4.7 in rural areas) in 2015-16 (NSO & ICF 2017).

Malawi's progress in promoting family planning is impressive when compared to similar countries based on geography and economic conditions. Contraceptive prevalence in Malawi in 2019 was greater than in any other country in East Africa, with the exception of Zimbabwe, despite Malawi having the second lowest GDP per capita in East Africa according to the World Bank's World Development Indicators (UNDESA 2020). Contraceptive prevalence for all women in Malawi, estimated to be 47.9%, was only two percentage points below the rate in South Africa, estimated to be 49.4%, and is equal to that in Thailand, where GDP per capita is about twenty times larger than that of Malawi.[2] Overall, Malawi has had the largest increase in the mCPR for women 15-49 and the third largest reduction in total fertility rate from 2010 to 2019 in the world (UNDESA 2020).

The impressive gains in family planning in Malawi are due to significant efforts from the Government of Malawi and international development partners. Malawi joined the United Nation Foundation's Family Planning 2020 (FP 2020) and made several commitments such as increasing use of contraceptives, ending child marriage, and strengthening family planning programs in the country (FP 2019). Numerous development partners, such as USAID and DFID, are heavily engaged in large scale projects promoting the use of modern contraceptives, supporting community distribution, developing and implementing education programs, improving quality of services and infrastructure in health care facilities, engaging local leaders and youth to help promote use of contraception, reducing stockouts, and increasing contraceptive choices (FP 2020, 2016; FP 2020, 2018; FP 2020, 2019).

In addition to the donor funded programs, the Government of Malawi has developed numerous policies to promote family planning and access to sexual and reproductive health services. For example, the Directorate for Reproductive Health in the Ministry of Health implemented the 2007 Youth Friendly Health Services National Standards to address one of the most at need population (Barden-O'Fallon et al., 2020). Furthermore, a Sexual and Reproductive Health and Rights Strategy for Young People was developed in 2009 (Republic of Malawi Ministry of Health, 2009). The Ministry of Health has since evaluated and revised the Youth Friendly Health Services National Standards, culminating in the National Youth Friendly Services Strategy of 2015-2020 (Republic of Malawi Ministry of Health, 2015). Under this framework, reproductive health was introduced into primary school curricula as part of life skills education (FP 2018), and a Comprehensive Sexuality Education curriculum to reach out of school youths was developed in 2017 (FP 2019). Recently, Malawi's Vision 2063 notes managing population growth as a key component of Enabler 5: Human Capital Development, that will help the country meet its long term goal of being an inclusively wealthy and self-reliant nation (National Planning Commission, Malawi 2021).

The Health Promotion Policy, the Presidential Safe Motherhood Initiative, and programs funded by the United Nations Population Fund (UNFPA) and the Reproductive, Maternal, Newborn and Child Health (RMNCH) Trust Funds aim to change the culture around family planning through numerous advocacy efforts and promoted community-based distribution approaches (FP 2020, 2016). In 2015, the Government of Malawi passed the Marriage, Divorce and Family Relations Act that outlawed child marriage and Parliament unanimously adopted a constitutional amendment that raised the minimum legal age of marriage from 15 to 18 (FP 2020, 2018). In 2018, an online commodity system was launched to improve projections of future contraceptive need and to reduce stockouts (FP 2020, 2018).

One of the reasons the family planning programs in Malawi have had such success is because of the diversity of interventions addressing different issues in the sector. There are few programs or interventions that have evidence of success that Malawi has not implemented. Any new intervention in the sector will benefit from the existing foundation and synergies with the ongoing programs.

---

[1] Proportion of women who (1) are not pregnant and not postpartum amenorrhoeic, are considered fecund, and want to postpone their next birth for 2 or more years or stop childbearing altogether but are not using a contraceptive method, or (2) have a mistimed or unwanted current pregnancy, or (3) are postpartum amenorrhoeic and their last birth in the last 2 years was mistimed or unwanted (NSO & ICF 2017).

[2] We list the following contraceptive prevalence rate statistics to serve as a reference point: Canada 72.1%, United States of America 61.4%, Australia 57.2%, United Kingdom 71.7%, and Germany 58.1%.

As long as development partners and the Government of Malawi prioritize family planning at current levels, additional interventions are likely to have important but diminishing marginal impacts.

Despite the impressive gains in contraceptive usage, many women face significant barriers to accessing contraception and are having more children than intended. The 2015-2016 DHS found that 19% of married women and almost 40% of unmarried but sexually active women had an unmet need for contraception (NSO & ICF 2017). Furthermore, about 11% of total pregnancies were unwanted and 30% were mistimed. Numerous barriers remain for increasing access across the country including: general misconceptions regarding family planning, costs and fees for services despite policies requiring free contraceptives in public facilities, negative attitudes and communal stigma regarding family planning, lack of community support for contraception with a particular focus on unmarried but sexual active women, implementation quality of existing programs, training of project implementers, issues in ensuring all services providers have sufficient stock of offered commodities, and distance to family planning providers (Chipokosa et al., 2019; Michaels-Igbokwe et al., 2015; Pattnaik et al., 2020; Self et al., 2018).

One area for promoting family planning is through postpartum interventions. These interventions target women either while pregnant or shortly after giving birth. Postpartum interventions have proved to increase access to contraception, to reduce lifetime fertility, and to prevent numerous negative health issues related with short interpregnancy intervals (Bongaarts et al., 1990; Cleland et al., 2015; Ross et al., 1992; Rutstein, 2005). Postpartum interventions are important for promoting family planning as immediately after birth women are amenorrheic and may delay the use of contraceptives. When women rely on the lactational amenorrhea method it is difficult for them to confirm with any certainty that they are indeed amenorrheic, thereby leading to some unintended pregnancies. A number of studies in other contexts have found that postpartum interventions increased use of contraception in Honduras, Egypt, Bangladesh, and Burkina Faso or had more lasting impacts in urban Democratic Republic of Congo and Malawi (Abdel-Tawab et al., 2008; Ahmed et al., 2015; Tran et al., 2019; Tran et al.; 2020; Vernon et al., 1993). These studies evaluated individualized counseling or a complex facility-based and woman-based intervention that trained providers and offered counseling and reminders. However, there has been limited reporting on the impact of these interventions on fertility (Baqui et al., 2018; Karra et al., 2020).

In order to understand the potential impact of a postpartum intervention in Malawi, we rely on the findings of Karra et al. (2020), who present the results of a randomized control trial conducted in Lilongwe that connected married women, who had recently given birth with family planning counselors, offered them free transportation to health clinics, and covered all costs related to contraception, including treatment for side effects experienced from a selected contraceptive. The results of the experiment showed an almost 6 percentage point increase in postpartum contraceptive use, a 5.4 percentage point increase in long-acting contraceptive use two years after the intervention, and a more than 40% reduction in the probability of becoming pregnant up to 33 months after the intervention.

In addition to the potential impacts on fertility outcomes, postpartum interventions that reduce short interpregnancy intervals have numerous health benefits for both children and mothers (Conde-Agudelo et al., 2000; Conde-Agudelo et al., 2006; Rutstein, 2005; WHO, 2005). The findings of a World Health Organization (WHO) Technical Consultation on Birth Spacing found that short birth intervals increase maternal mortality, neonatal mortality, post-neonatal mortality, infant mortality, under five mortality, stillbirths, miscarriages, risk of prematurity, fetal death, low birth weight and small size for gestational age (WHO, 2005). Other studies have found additional health complications such as anemia and puerperal endometritis for women due to short birth intervals (Karra et al., 2020).

This technical report outlines the costs and benefits of expanding the intervention evaluated in Karra et al. (2020) to the entire nation of Malawi. This intervention was chosen based on a number of criteria, including demonstrated effectiveness, availability of an evidence base for estimating potential impacts, alignment with the Malawi Family Planning Costed Implementation Plan 2016-2020 (CIP) and Prioritization of Family Planning Interventions at National and District Levels for 2018–2020(Addendum), and the other ongoing activities in the family planning space.

The postpartum intervention is analyzed under three scenarios. In the first scenario, we present the results of scaling up the intervention as presented in Karra et al. (2020) to the entire nation for two years. We rely on the 2015-2016 DHS survey in Malawi to estimate the baseline demand for modern contraceptives and systematic literature reviews and meta-analyses to estimate the reduction in low-birth weight and under 5 child mortality due to avoiding short interval births. While there are numerous other potential benefits such impacts on maternal health, we are unable to estimate those benefits due to a limited evidence base.

In a second scenario, we present the results of extending the project for ten years with numerous assumptions regarding the future costs and a sustained impact on reduced fertility. In the second scenario we include benefits from reductions in maternal mortality based on the estimated total number of permanently avoided births due to the intervention.

Finally, in a third scenario, we assume that the intervention is implemented for ten years and has a sustained impact on reduced fertility. In the second scenario we include benefits from reductions in maternal mortality based on the estimated total number of permanently avoided births due to the intervention. In the third scenario we include the benefits of the demographic benefit based on the estimated total number of permanently avoided births due to the intervention by incorporating the increase in GDP per capita as presented in Ashraf et al. (2013) and Karra et al. (2017).[3]

To implement the intervention, which includes postpartum counseling, free transportation, and coverage of contraceptives and related health issues at a national scale, requires numerous inputs. The largest cost component of the intervention is the administration costs of the intervention. The administrators are responsible for arranging counseling appointments and the transportation for each individual to the health clinics as well as attending all clinical appointments along with the client. For the first scenario that assumes two years of programming and no demographic benefits, the second highest cost are the counselors (this is the third highest cost when implementing the program for ten years as in the second and third scenario). The program will require about 850 counselors that can be drawn from

---

[3] To make this estimate we assume that the intervention presented in Karra et al. 2020 is extended for 10 years and is able to reduce fertility by helping families reduce the total number of unwanted pregnancies and assuming that some mistimed pregnancies do not occur.

the unemployed health workers, nurses, or midwives across Malawi. The third highest cost in the first scenario is the estimated cost of transportation for women to health facilities (this is the second highest cost when implementing the program for ten year as in the second and third version). However, we note here the costs data for the transportation is not well-identified. The other two cost components are the costs of the family planning services and training costs for the counselors.[4] The costs for implementing are extrapolated from experiment in Lilongwe with adjustments made when other data is available. We assume that transportation costs will be similar in rural areas.[5]

Overall, the first scenario would avoid around 1,800 under five deaths and low birth weights for more than 1,200 babies, while the second and third scenarios would avoid more than 6,800 under five deaths and low birth weights for 4,700 babies. Our results indicate that implementing the intervention at a national level would have a BCR of 1.4 over two years and 1.1 over ten years, but when incorporating the benefits of a demographic benefit the BCR would increase to 37.2 at an 8% discount rate.

---

[4] The 850 is calculated by multiplying the total number of participants in the program by the ratio of required counselors per potential program participants, 1/500.

[5] While the project offered participants free round-trip rides by taxi in the urban areas, we assume that rural areas will offer women round-trip rides on motorbikes. While motorbikes are much cheaper, we assume the same costs as distances are much greater for women in rural areas therefore fuel costs would be higher.

2. Research context and Intervention selection process

The National Planning Commission (NPC), in collaboration with AFIDEP, and the Copenhagen Consensus Center (CCC) are running the Malawi Priorities project across 2020 and 2021. It is a research and advocacy exercise to identify the most effective ways to address the nation's challenges using the framework of cost-benefit analysis. The aim is to inform both development priorities for the country, acknowledging that there are insufficient resources to address all of Malawi's challenges and that maximizing outcomes requires careful, evidence-based consideration of the costs and benefits of all policies.

The starting point of all research questions is the NPC's existing research agenda, structured around the six thematic areas of Sustainable Agriculture, Sustainable Economic Development, Human Capital and Social Development, Sustainable Environment, Demography, Governance, Peace, and Security, and Human Capital and Social Development.

NPC's research agenda was developed by the commission in September 2019 after extensive consultation with academics, think tanks, the private sector and government. Consequently, the commission's research agenda, prima facie, contains questions of national importance. As a first step, Malawi Priorities drew questions from the NPC research agenda that could be answered by cost-benefit analysis (CBA). Then, additional research questions were added based on input from NPC, an Academic Advisory Group (AAG) of leading scholars within Malawi, and existing literature, particularly previous CBAs conducted by the Copenhagen Consensus Center. This process of identifying research questions for investigation generated a total of 38 potential research questions across all 6 thematic areas.

The research agenda was validated and prioritized by a Reference Group of 25 prominent, senior stakeholders from government, civil society and the private sector. The outcomes of the Reference Group exercise were used to inform which research questions to prioritize and which interventions to focus on within those research questions. The validation process finished in July 2020.

Before the validation process was complete, the project decided to get an early start on six research questions for which there was objective evidence of importance, and for which previous analyses had demonstrated high benefits relative to costs. A research question on reducing fertility – the subject of this analysis – was chosen as one of those to start early, based on the aforementioned unmet need for contraception in the country (NSO ICF, 2017) and the fact that multiple reports in different contexts have consistently shown high benefit-cost ratios for family planning interventions (Kohler, 2012; Stenberg et al., 2016; Kohler, 2017; Friberg et al., 2020).[6]

The intervention selection process starts with a wide universe of potential interventions. For this particular paper we started by speaking with key informants working on family planning in Malawi and by reviewing the CIP 2016-2020. The intervention selected for this analysis was chosen using several factors including:

1. **Sector expert input –** Sector experts were invited to provide insight into the family planning sector in Malawi and to identify the gaps in existing programming and the interventions likely to have the largest impact.

2. **Availability of crucial data or credible knowledge of impact –** due to time and resource constraints, all analyses conducted by Malawi Priorities are based on secondary data. No primary research is conducted, such as field experiments or trials. Therefore, each intervention is constrained by the availability of data. In many cases, one key constraint is knowledge concerning the impact of a given intervention. It is typical to formally deal with uncertainty via sensitivity analyses. However, in some cases the uncertainty is so great that it precludes even researching the intervention at all.

3. **Significant gap in current coverage levels of intervention –** all analysis conducted in Malawi Priorities focuses on marginal benefits and costs. Therefore, if an intervention already has high coverage rates or is currently being implemented at a national scale, then additional resources provided towards that intervention are unlikely to be effective.

4. **Alignment with the Malawi Family Planning Costed Implementation Plan 2016-2020 (CIP) and Prioritization of Family Planning Interventions at National and District Levels for 2018–2020: Addendum (Addendum) -** In order to coordinate efforts in promoting family planning, government officials, development partners, and sector experts developed the CIP and Addendum. The plans called for implementing numerous interventions and estimated the potential impact of these different interventions on the mCPR.

The Government of Malawi and development partners have long supported family planning interventions in the country. In discussion with sector exports numerous additional potential areas for interventions were identified: offering youth friendly health services in areas frequented by youth, focusing on interventions targeting unmarried women, increasing access to education and ending school dropouts, addressing norms around ideal family size, ending the urban-rural fertility gap, delaying age of first pregnancy, increasing information and education on sexual and reproductive health for youth from 10 to 35, strengthening community structures, improving enforcement of current laws and policies, supporting girls that were victims of early marriage and have little means of self-support, increasing the method mix, improving the stock management system, ending early marriage, and increasing community-based distribution channels and mobile health clinics. While ending child marriage or focusing on unmarried but sexually active youth was a common concern, the

---

[6] When the Reference Group provided their prioritization in July 2020, the fertility question was given an average rating of 3.8 / 5, which placed it 30th out of 38 research questions. While this ranking was relatively low, it was still within the range of the number of research questions that could be investigated by the project (range 20 to 30). A decision was made to continue with the analysis on the basis of the potential for a high BCR, and that the estimated additional work to finalize the analysis was relatively small.

experts did not align on one specific intervention as the top priority.

Family planning remains a priority for many development partners and organizations working in Malawi. Many family planning activities and interventions have already been implemented in the country and continue to receive support from development partners and both international and local organizations. Generalizing knowledge on impacts of existing interventions to Malawi is difficult as contraception is already more prevalent in Malawi than in many other low-income countries. The two largest and well documented large-scale family planning initiatives occurred in Matlab, Bangladesh and in Nvarango, Ghana. The intervention in Matlab included Community Health Worker (CHW) home visits to married women about every two weeks (Sinha 2005). During those meetings the CHWs consulted the married women about their contraceptive needs, and encouraged them to adopt contraception. At baseline, mCPR in the study area for married women was 4.9% and increased to almost 40% by 1984 (Koenig et al. 1987). These interventions led to a 14% reduction in fertility, which was equivalent to about 0.6 children per woman.

The program in Navrango included two separate interventions. The first was focused on increasing access to community health nurses that were sent to live in community-constructed health centers and provide both curative and preventive health services such as childhood immunizations and care for a number of typical ailments. The nurses also offered numerous options for contraceptives including: the pill, condoms, and depot medroxyprogesterone acetate. Nurses would also refer interested women to other clinics for sub-dermal contraceptives, permanent methods, or IUDs. The second intervention focused on communication and outreach to traditional leaders and men that lead to a more public dialogue and support for family planning. Some villages received both interventions. In the first three years of the program fertility declined in all treatment areas by about 15%, which was a reduction of one birth per women. In 2001 the Government of Ghana scaled-up the project at the national level. However, in an evaluation of the program in 2010 that the reduction in fertility declined substantially. After 5 years the fertility declined had dropped to 10% and was about 0.6 births per woman and by 2010 only the communities that had received the second interventions (and not including those that received both interventions) had a statistically significant lower fertility rate than the control villages. In this context the use of a modern contraceptive by the married women in this area was about 4% at baseline and during the first three years of the intervention there was no statistically significant increase in contraceptive use in the treatment villages that received just one of the interventions and there was a slight increase in the villages receiving both (after three years the mCPR increased to 8.2%). As mentioned earlier, Malawi has already achieved an mCPR of 45% for all sexually active women and 58% for married women, suggesting that the evidence from these studies would not be relevant for an analysis in Malawi.

The intervention selected for this analysis was identified by reviewing the priorities and expected impacts of different interventions as identified in the CIP and the Addendum and the availability of evidence on the estimated impact. We present a list of the interventions as mentioned in the Addendum along with information regarding the expected impact on the national mCPR due to each type of intervention and information on the availability and the extent to which the evidence on these interventions can be generalized in Table 1. We found community engagement interventions have had limited impact and the evidence for success is from contexts with much lower baseline mCPR (Lutalo et al., 2010; Phillips et al., 2019). While many believe youth-focused interventions are essential for reducing fertility in Malawi, a number of programs are currently running to target this area and the evidence base for expanding these interventions is limited (Brittain et al., 2018). Similarly, in addition to the numerous ongoing approaches for reducing stock-outs there is limited evidence that reducing stock-outs have an impact on fertility (Douglas-Durham et al., 2015). Mobile clinics may be effective; however, numerous NGOs already offer mobile clinics to promote family planning in rural Malawi and there is no peer-reviewed evidence base for how these clinics impact uptake and fertility (Wickstrom et al., 2013). The evidence shows that increasing community distribution and health promotion assistants may have limited impact and despite increasing funding for this distribution channel in Malawi, the 2015-16 DHS found only 23 out of 8,695 women in their sample obtained contraceptive services from community-based agents (Desai & Tarozzi, 2011; Mwaikambo et al, 2011). Furthermore, while interventions increasing method mix, using mass media, offering vouchers, and promoting social franchising could have an impact, peer-reviewed literature could not identify impacts from these interventions (Agha et al., 2007; Babalola et al., 2001; Bellows et al., 2016; Douglas-Durham et al., 2015; Gauster et al., 2015; Hennink & Clements, 2005; MacKenzie et al., 2013; Mwaikambo et al.,2011; Sharma et al., 2018).

Upon reviewing the expected impacts, priorities, and available evidence, we selected a postpartum intervention. While incorporating an antenatal intervention could reasonably enhance the impact of postpartum interventions, the evidence on antenatal interventions is mixed (Adanikin et al., 2013; Akman et al., 2010; Keogh et al., 2015; Smith et al., 2002; Soliman, 1999).

Furthermore, the Addendum identified eleven priority districts for implementing future family planning interventions and the priority interventions in those areas. The most common first priority intervention for the eleven districts was postpartum family planning interventions. This served as validation of our choice of intervention.

Table 1: Review of Family Planning Interventions

Intervention	Expected Impact on mCPR	Expected Reach According to CIP and the Addendum	Evidence
Community Engagement	1.3 percentage points	Multiple interventions reaching 50% of all women of reproductive age	• The Matlab and Navragno studies suggest limited impact on fertility and both target populations had baseline modern contraceptive usage rates below 10%. • Lutalo et al. 2010 found no significant impact of a community outreach program in Uganda • Phillips et al. 2019 found that an expansion of the Navrango experiment to all of Ghana had limited impact.
Post-Partum Family Planning	1.1 percentage points	Reaching 30% of pregnant women via community Interventions and having all facilities integrate family planning services into delivery and immunization	• Tran et al. 2018 and Tran et al. 2019 provide strong evidence that post-partum interventions can have significant impact. • Karra et al. 2020 offer a package of services including counselling, free transportation, and free contraception and coverage of related medical issues. Trial in Lilongwe proved to be highly effective and reduced the 33-month hazard of pregnancy by more than 40%.
Youth-focused interventions	0.7 percentage points	Multiple interventions reaching 40% of young women	• Malawi has an 2015-2020 Youth Friendly Service Policy that aimed to target programming at youth. • Brittain et al. 2018 found that only two thirds of the studies evaluating the impact of youth-focused interventions had an impact on teen pregnancy rates. • Despite offering free contraceptives, cost remains a barrier (Self et al. 2018, Barden-O'Fallon et al. 2020). • DiCenso, A. (2002). Found no impact on school-based education interventions. • Malawi has already developed curriculum for both in and out-of-school youth.
Stock-out reductions	0.6 percentage points	A 50% reduction in stock-outs	• Douglas-Durham et al. 2015 found limited evidence establishing an impact of stock outs on fertility. • USAID has funded the open LMIS web-based tracking system for health commodities that is already in use.
Mobile clinic outreach	0.5 percentage points	Providing 1,508 outreach visits per year	• Unable to find relevant evidence on the impact of a mobile clinic for Malawi. • Limited literature focused on case studies rather than impacts (Wickstrom et al 2013).

Intervention	Expected Impact on mCPR	Expected Reach According to CIP and the Addendum	Evidence
Health surveillance assistants/ community-based distribution agents	0.4 percentage points	Task-sharing of all health surveillance assistants and community-based distribution agents	• Desai & Tarozzi (2011) found no impact from a community-based distribution (CBD) program in Tanzania. Sheff et al. 2019 found no impact of a CBD program in Ethiopia and Mwaikambo et al. 2011 found that 3 studies on CBD did reduce fertility rates, but these referred to the studies in Matlab and Navrango, which are not generalizable to this context.
Public sector method mix	0.4 percentage points	Training 200 facilities to provide additional methods	• MacKenzie et al. 2013 and Douglas-Durham et al. 2015 find a lack of evidence on how method mix impacts fertility. • Mwaikambo et al. 2011 also found one test that did not report on the impact of method mix on fertility.
Mass media	0.1 percentage points	Developing and airing a radio soap opera	• A systematic review found four studies looking at community education and engagement and only one of those looking at the impact of mass media on teen pregnancy rates (Sharma et al 2018). When evaluating the impact on pregnancies most of these studies only tested the impact of pregnancies within one year, which is a limited approach for evaluating the impact on pregnancy. Furthermore, the one study, Gauster et al. 2015, looking at mass media found differential impacts of the intervention based on age. • Mwaikambo et al. 2011 found no impact from the one study reporting on the impact of mass media on fertility.
Voucher	0.1 percentage points	Distributing 200,000 vouchers	• Bellows et al. (2016) finds that vouchers can increase modern contraceptive use results vary by context and fertility impacts are unclear.
Social franchising	0.0 percentage points	Accrediting around 70 additional franchisees	• No evidence on the impact of social franchising on fertility rates. • Hennink & Clements 2005, Agha et al. 2007, and Babalola et al. 2001 evaluated social franchising that had positive impacts on family planning outcomes, but none reported on fertility outcomes.

3. Cost-benefit analysis

This analysis estimated the costs and benefits of a postpartum intervention aiming to increase use of modern contraception in married women. The intervention works by sending counselors to meet with postpartum women to discuss their contraceptive options. Women interested in obtaining free contraceptives are provided with free transportation to a clinic offering the requested contraceptive option. The intervention also covers any costs related medical issues related to contraceptive use.

The four categories of costs of the interventions estimated in this analysis are:

  i. Training costs of counselors;

  ii. Staff cost of counselors;

  iii. Transportation costs;

  iv. Cost of contraceptives and treatment for related health issues; and

  v. Program administration.

The benefits estimated in the first and second scenario include:

  • Reduction in under five mortality;

  • Prevention of low birthweight births;

  • Willingness to pay (WTP) for their contraception of choice and coverage of costs of medical coverage for related issues; and

  • WTP for the transportation to receive contraception.

In the third scenario we also incorporate the potential benefit of the demographic divided expected if the intervention was able to sustain a long-term reduction in total fertility per woman.

General parameters and assumptions

As with all analyses in the Malawi Priorities series we adopt three different discount rates: 5%, 8% and 14%. All figures are reported in 2020 Malawian Kwacha (MWK) unless otherwise indicated. GDP in 2020 is projected to be MWK 6.6 billion, with a COVID-influenced 2% growth rate for 2020 based on analysis undertaken by the World Bank (World Bank, 2020). Projections for the next four years are 3.3%, 4.0%, 5.0%. Thereafter, projections use the growth rates implied by GDP estimates in the IIASA database as discussed in Riahi et al. (2017). We use the SSP2 scenario and median estimate by OECD and IIASA. Growth figures are only provided every 5 years, so we assume a constant growth rate figure per 5-year period.

Mortality benefits are monetized as per standard Malawi Priorities protocol, which follow the *Guidelines for the Conduct of Benefit-Cost Analysis in Global Health and Development* (Robinson et al. 2019). Specifically, each under five death avoided is valued by using an estimated value of statistical life year (VSLY) of MWK 182,138[7] in 2020, which is adjusted by the estimated expected real GDP growth rate and an income elasticity of 1.5. For scenario 2 and 3 we also include an estimate of the benefits of reducing maternal mortality and that is valued with the values of statistical life (VSL), valued at MWK 7,185,345 in 2020.

We monetize low birth weight by estimating the averted medical expenditures due to low-birth weights and the avoided productivity loss from each. We surveyed the literature for estimates on the cost of treating low-birth infants and use values identified by a study from a rural area in southern Mozambique (Sicure et al., 2011). We also use the results from Behrman and Alderman (2004) that found that low birth weight leads to a reduction in lifetime earnings of 7.5%. We therefore estimate that in 2021 an avoided case of low birth weight leads to lifetime earnings gain of MWK 380,000 at an 8% discount rate.

We estimate the WTP of contraceptives and the transportation based on data from Malawi. We value the demand for contraceptives based on the current mCPR from FP2020 (FP 2020, 2020) and costs of contraceptives in Malawi (UK Aid, 2020). We assume that those who receive their contraceptives in public facilities pay a small fee, 300 MWK,[8] while those in private facilities pay for the cost of the contraception and related health issue from the contraception on their own, MWK 1,500. We value the WTP for transportation by using the average cost paid for traveling to a health facility across rural Malawi, MWK 290 (Varela et al., 2019).[9] We also assume a 5% annual drop in usage of contraceptives as identified by Karra et al. 2020.

In the third scenario we incorporate the benefits of the demographic benefit by first estimating the size of the decrease in the population due to a 20% reduction in unwanted births and a 2.5% reduction in mistimed births.[10] We then take the estimate of the increase in GDP per capita based on the data from Karra et al. (2017) and assume a proportional impact based on the total reduction in the population attributed to this intervention as compared to the reduction in total population between the low fertility and medium fertility scenarios presented in Karra et al. (2017).

For costs, we use the information provided from Karra et al. (2020) and generalize to the entire country. The costs cover the salaries for family planning counselors, the transportation to the health clinics, the costs of contraceptives and related health issues, and finally program administration. In the second and third scenario, where we assume the intervention lasts for 10 years, we use data from the

---

2015-16 DHS and assume that the proportion of women who want to more children by age will not need counseling in the future. We also assume that the transportation and contraceptive costs (and benefits) are repeated annually for the proportion of people using pills or injectables, every three years for those using implants, and every five years for those using other long-acting contraceptives. However, we decrease the proportion requiring the transportation and contraceptive costs (and benefits) by 5% each year due to individual decision to stop using contraceptives. We based the distribution of usage of these methods on the 2015-16 DHS and increase the percent using implants based on the findings from Karra et al. 2020. We also assume that the administration costs increase 10% every year due to the increasing complexity in required in tracking previous participants.

The analysis uses data from the 2015-2016 DHS Malawi survey, the IIASA-WiC POP-SSP2, and peer reviewed literature to estimate the number people participating in the program, the number of unwanted births avoided, the number of mistimed births avoided, and the number low-birth weight births avoided. To estimate the total number of women eligible for the program each year, we calculated the total number of married women giving birth each year in a health facility disaggregated by five-year age groups. To estimate the number of unwanted and mistimed births each year we use the findings from the DHS 2015-2016 survey. Finally, we used data from Rutstein (2005) along with birth interval disaggregated by five-year age groups from the DHS to estimate the number of low-birthweight births avoided. In the first scenario, we assume that the program is implemented for two years and with impacts occurring from year three to year five. In scenario 1, almost 1 million women will participate in the program. Over the three-year period with benefits, the program will result in the avoidance of more than 70,000 short-term pregnancy interval births, more than 1,700 under five deaths, and about 1,200 low birthweight births. We present the total numbers of participating women per and impact on births for scenario 1 in Table 3 below.

Table 2: Total Program Participants and Impacts Scenario 1

	Year 1	Year 2	Year 3	Year 4	Year 5
Women	439,963	455,123			
Health and Fertility Impacts					
Short term births avoided			24,098	24,862	23,894
Under 5 deaths avoided due to increased birth intervals			586	605	581
Low birthweight births avoided			387	401	414

In the second and third scenario, we assume the program is implemented for ten years with impacts occurring from year three till year thirteen. We project the future number of participants using the same process as in scenario 1, but we subtract women that have already participated in the program and have no desire for future births based on the proportion of each age group expressing no desire for future births in the 2015-16 DHS. When implementing the program for another seven years the program will reach an additional 8 million women, some who may receive the intervention twice. We present the marginal number of participants and impacts in scenario 2 and 3 in Table 3. The number of short-term births avoided are those births from pregnancies that would have occurred within 33 months of a previous birth that do not. Some of these births occur later in the future while some never occur. We assume that about 35,000 of those births that mothers would have classified as mistimed do not occur while almost 120,000 of those births that mothers would have classifieds as unwanted do not occur. We also assume that almost 700 maternal deaths are avoided (estimated by taking the maternal mortal rate and multiplying this by the number of mistimed and unwanted births avoided). Finally, almost 7,000 under 5 deaths are avoided and almost 4,700 low birthweight births are avoided.

---

[11] While women who receive sterilization will not require additional transportation for further contraceptives, due to limited data we group together women who adopted sterilization and intrauterine devices (IUD). Therefore, we do include this group of women in our calculations as requiring transportation five years after initially receiving contraception, a slight overestimate of costs. We tested the sensitivity of our results to this assumption and results were insignificantly different.

Table 3: Total Program Participants and Impacts (additional for Scenario 2 and 3)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Women	439,963	455,123	606,953	685,667	801,374	880,357	1,062,348	1,084,171	1,211,512	1,246,119			
Impact: Avoided Births													
Short term births avoided			24,098	24,862	23,894	24,626	25,359	26,091	26,823	25,780	26,397	27,014	25,780
Avoided mistimed births			3,089	3,188	3,043	3,143	3,243	3,343	3,443	3,296	3,381	3,466	3,089
Avoided unwanted births			10,359	10,693	10,207	10,542	10,876	11,211	11,546	11,055	11,340	11,625	10,359
Maternal deaths avoided			59	61	58	60	62	64	66	63	65	66	59
Under 5 deaths avoided due to increased birth intervals			586	605	581	598	616	633	651	624	639	654	586
Low birthweight births avoided			387	401	414	427	411	423	435	447	459	441	451

4. Postpartum Family Planning Intervention

Interventions

In this section we conduct a CBA of the postpartum counseling, transportation, and contraception costs intervention for reducing under five mortality and low-birth weights. This intervention will be based off the successful experiment as detailed in Karra et al. (2020). The intervention targeted married women that were pregnant or had recently given birth. The intervention includes the following components:

1) a brochure and four home visits from family planning counselors;

2) free transportation to a family planning clinic; and

3) financial reimbursement for family planning services and related health complications.

Married women who give birth at health facilities will be provided with a brochure explaining the program and will be connected with a local program administrator. The administrator will arrange a time for the local counselor to conduct a household visit. Counselors will revisit households up to four times and only at the request of the participant. We follow the assumption in Karra et al. (2020) that 44% of participants choose to obtain contraceptive through this program. If a woman decides she wants to obtain contraception, the administrator will arrange an appointment and transportation to the nearest health facility or mobile clinic offering the requested contraceptive method. The administrator will also attend all family planning appointments and provide payments for all the costs of the contraceptives and any treatment costs for potential negative health consequences of the contraceptives will be covered by the program. The intervention is limited to women between 18-49.

While Karra et al. (2020) presents the results of a single pilot that may not be generalizable to the entire country, it is important to note that the pilot was implemented in Lilongwe where both access and usage of contraceptives were higher than in the rural areas of the country. Despite the higher usage of modern contraceptives and access to nearby health facilities, this simple intervention still managed to have a large impact. Therefore, it could be argued that the impacts in rural areas, which have lower baseline rates of contraceptive use and less access to health facilities or sources of contraceptives, would likely be greater. Furthermore, while distances to facilities may be larger in rural areas, there is evidence that people in rural areas prefer to access contraception further from home in order to ensure privacy (Self et al. 2018). However, without further evidence we generalize the results of the pilot in Lilongwe to the rest of the country.

Costs

Four categories of costs of the interventions are estimated:

i.   Training costs of counselors;

ii. Staff cost of counselors;

iii. Transportation costs;

iv. Cost of contraceptives and treatment for related health issues; and

v.   Program administration.

The costs used here are estimated from the pilot as described in Karra et al. (2020). The training costs are calculated by assuming MWK 187,500 per counselor. We assume 900 are trained, while around 850 are hired for the first year based on the ratio of 6 counselors per about 1000 program participants as was required in the pilot. Counselors are paid MWK 225,000 per month. The transportation costs are the costs for hiring taxi and motorbike drivers to work full time. The costs are assumed to be about MWK 320,000 per month per driver, with about one driver per 1,000 targeted women for two years (we assume that only 44% of the targeted women take up the intervention as was found in Karra et al. [2020]). The contraceptive and treatment costs are assumed to be MWK 2,250 for each of the 44% of targeted women that choose to access contraceptives through the program. The administration costs are about MWK 7,300 per targeted women per year.

Scenario 1 Costs:

The total present value of the costs of scenario 1, where the program is offered for two years, is MWK 13,939 million. The administration costs of the program are the largest cost component for each year. The salary costs of the counselors are the second large cost component, followed by transportation costs. The final costs of contraceptives and any associated medical costs are the smallest component of the costs. We present the disaggregated costs by year and total present values in Table 4.

Scenario 2 & 3 Annual Costs:

The total present value of the costs of scenario 2 and 3, where the program is offered for ten years, is MWK 75,130 million. The costs for scenario 2 and 3 are the same as the intervention delivered is the same. The largest component remains the administration costs which we assume grow at a 10% annual as the program grows and becomes more complex. The second highest cost component is

Table 4: Annual cost of Scenario 1 (MWK million)

	Year 1	Year 2	Total Present Value
Counselor	2,316	2,395	4,198
Transportation	1,640	1,697	2,973
Contraception and Related Medical Costs	431	446	781
Administration	3,216	3,327	5,380
Training	169	0	156
Total	7,772	7,865	13,939

Note: The present value of the costs are discounted by 8%.

the transportation costs. One of the major reasons the transportation costs grow so large is that we assume that women who had already participated in the program require continued transportation (and medical) support. Specifically, we assume that those using short-term contraceptives, pills and injectables (34%), require annual support,[12] the proportion of people using implants (15%) require support every three years,[13] and those using other long-acting methods (15%) require support every five years.[14] However, we also assume a 5% annual discontinuation rate as some users decide to stop using their contraception or that they may want to get pregnant or they may no longer need contraception as they age. The cost of the counselors decreases slowly every year as more and more women have already received the counseling treatment and are assumed to not need additional counseling. Finally, the costs of contraception and related medical issues, which we assume grows in the same manner as the transportation costs do, are the smallest component of the total costs. We present the disaggregated costs by year and total present values in Table 5 below.

Table 5: Annual cost of Scenario 2 and 3 (MWK millions)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Present Value
Counselor	2,315	2,395	2,295	2,279	2,094	1,807	2,014	2,227	2,136	2,483	14,856
Transportation	1,640	1,697	2,263	2,556	2,988	3,282	3,961	4,042	4,517	4,646	19,656
Contraception and Related Medical Costs	431	446	595	672	786	863	1,041	1,063	1,188	1,222	5,168
Administration	3,216	3,327	4,160	4,723	4,959	5,634	6,394	7,250	8,213	8,651	35,294
Total	7,771	7,865	9,312	10,231	10,827	11,586	13,411	14,582	16,054	17,001	75,130

Note: Present Value of costs is discounted by 8%

Benefits

We estimate the value of numerous benefits from the postpartum program, such as reduced under five mortality, prevention of low birthweight babies, free provision of contraceptives and any related medical issues, and free transportation to health clinics. We emphasize here that the health benefits from reduced under five mortality and prevention of low birthweight babies is due to the increased spacing between birth intervals as this intervention reduced short-interval births. The non-health benefits are estimated as WTP for those services from the perspective of the program participants. In the third scenario we also incorporate the potential benefit of the demographic dividend expected if the intervention was able to sustain a long-term reduction in total fertility per woman. This benefit is estimated from the model presented in Karra et al. (2017) that simulated the economic impact of the demographic benefit.

Scenario 1 & 2 Benefits:

The total impact of the intervention was presented in a previous section. We value the reduction in mortality by using VSLY of MWK 182,138 and VSL of MWK 7,185,345 in 2020, which is adjusted for real economic growth annually. The reductions in low birthweight are valued by the value of averted treatment per case, which we estimate at a constant value of MKW 325,125 per case as well as an increase in total lifetime income of a present value of MKW 434,300. We next estimate the WTP for the travel and receiving

---

[12] Since the budget is based on two years of need this means this cost is budgeted every two years.

[13] People using implants in year one, require additional support in year four, year seven, and year ten.

[14] While this includes people getting sterilized the exact proportion getting sterilized is unknown. Therefore, we assume those using long-acting methods in year one require support again in year six.

contraception benefits. To value these services we assume that women currently using modern contraceptives value this service based on the costs they currently pay and would have continued to pay in the absence of this program.[15] We value the transportation benefit based on the average roundtrip cost of transportation to a facility to receive contraception at MWK 450, which is what women who wanted contraception would have paid in the absence of this program. We assume that women who receive contraception from the public sector, 80% of the total, pay a small fee of around MWK 300 that covers services fee or other miscellaneous costs that are often charged to patients in public facilities. We assume that women who receive contraception from the private sector, 20% of the total, pay around MWK 1,500 for contraceptive services. We present the benefits as realized in scenario 1 and scenario 2 in Table 6.

Table 6: Present Value Total Benefits for Scenario 1 & 2 (MWK millions)

	Scenario 1	Scenario 2
Mortality Benefits	17,040	65,182
Income Benefits for Avoided Low Birthweight	461	12,549
Averted Medical Expenditures for Avoided Low Birthweight	287	840
Transportation Benefits	232	1,536
Contraception Benefits	284	1,877
Total	18,305	81,984

Note: Present value of benefits discounted at 8%.

Scenario 3 Benefits:

The benefits in scenario 3 are valued using the same approach as described for scenarios 1 and 2. However, we do not include the benefit of lifetime income increases for the avoided low birthweights. Instead, we include the demographic benefits, which we assume increases the GDP per capita for every individual in the country (Karra et al. 2017). Karra et al. (2017) developed a macrosimulation model of economic growth that builds upon Ashraf et al. (2013). The model uses data from United Nations that simulates different populations changes according to a low fertility scenario, medium fertility scenario, and a high fertility scenario. The model assumes that reductions in fertility has positive impacts on the economy through increasing female labor force participation, increasing investment in children's education, improving health outcomes for children, changing the age structure of a country, and increasing the capital-labor ratio. The model assumes that lower fertility leads to smaller families that promote both physical health benefits and cognitive benefits that increase human capital and productivity. Another important channel of economic growth is through an increased savings rates as more working age people have fewer dependents. The model accounts for differential impacts on men and women as reductions in fertility would likely have larger impacts on women's educational attainment and labor force participation. An innovation from Karra et al. (2017) on the Ashraf et al. (2013) model is that Karra et al. (2017) incorporate three economic sectors that pay different wages and employ different proportions of the economy. The three sectors are an industrial high-wage sector, a traditional low-wage sector, and a raw materials sector. The model then simulates the economic impact of the three different populations scenarios through these numerous channels.

To calculate the demographic benefit used in this analysis we used the estimates of the population reduction between the low and medium fertility scenarios and the associated change in income to calculate the expected change in income due to the population change realized in this analysis. For example, in the first five-year period the expected population change between the medium fertility and low fertility scenarios was about a 1% reduction in the population and the associated economic growth was about a 3% increase in GDP per capita. In our analysis we assume about a 0.3% reduction in the population and calculate the associated economic growth as about 1% of GDP per capita (0.3*3=1). We then adjust this average for the five-year period to increase each year. For the first year we take 75% of the average, the second year is 87.5% of the average, the third year is 100% of the average, the fourth year is 112.5% of the average, and the fifth year is 125% of the average. We use this same approach for both the five-year periods. We present the present value of the benefits for scenario 3 in Table 7 below.

Table 7: Present Value Total Benefits for Scenario 3 (MWK million)

	Scenario 3
Demographic Benefits	2,723,302
Mortality Benefits	65,182
Averted Medical Expenditures for Avoided Low Birthweight	840
Transportation Benefits	1,536
Contraception Benefits	1,877
Total	2,792,737

Note: Present value (PV) of benefits discounted at 8%.

---

[15] While usage of contraceptives continues to increase, we do not incorporate this assumption into the counterfactual.

Benefit-Cost ratios

The benefits of the postpartum package are just slightly over the costs of implementation in scenario 1 with a BCR of 1.4, but are more than 37 times larger in scenario 3, when the benefits of a demographic benefit are incorporated. In scenario 2 the intervention has a BCR of about 1.1. We present the BCRs of the 3 scenarios with a 5% discount rate and 14% discount rate in Table 8. We find this range of discount rates have a much larger impact on the results from scenario 2 and 3 because those interventions have many benefits in the future.

Table 8: Present Value of the Cost and benefits of interventions (MWK million)

	Cost	Benefit	BCR
Scenario 1:			
5% Discount Rate	14,536	21,353	1.5
8% Discount Rate	13,939	18,305	1.4
14% Discount Rate	12,869	14,537	1.2
Scenario 2:			
5% Discount Rate	87,312	103,103	1.2
8% Discount Rate	75,130	81,984	1.1
14% Discount Rate	56,108	57,331	1.0
Scenario 3:			
5% Discount Rate	87,312	5,448,599	62.8
8% Discount Rate	75,130	2,792,737	37.2
14% Discount Rate	56,108	1,030,465	18.4

5. Summary and Discussion of Results

Despite severe wealth and resource constraints, Malawi has made significant progress in increasing access to contraception and reducing fertility rates between 1990 and 2015. The Government of Malawi and international organizations continue to prioritize family planning in Malawi and fund interventions to increase contraceptive use and reduce fertility rates. However, almost 40% of all births are either mistimed or unwanted and the average fertility rate is about one birth larger than the average realized fertility rate (NSO and ICF, 2017).

While there is consensus that short birth intervals lead to numerous negative health outcomes for both children and mothers, the quantitative evidence on the size of these impacts are limited. The only health benefits we are able to value are the reduction in under five mortality, the reduction in low birthweight infants, and reductions of maternal deaths for permanently avoided births. We exclude numerous other outcomes including pre-term births, small-for-gestational age, and maternal health complications such as anemia and puerperal endometritis. Furthermore, increasing birth intervals can reduce overall fertility and help unlock the benefits of a demographic benefit that spreads limited resources across a smaller population leading to increased productivity and higher incomes for everyone.

We note some limitations to this analysis. First, we rely on a pilot project conducted in Lilongwe that may not be generalizable to the entire country in terms of both impacts and costs. However, as we argued previously, Lilongwe has the highest rates of modern contraceptive use and access. In such an environment, one would expect a limited impact to the post-partum intervention as described. Despite the high access, this intervention still increased usage of modern contraceptive and reduced the prevalence of shortly spaced births. Implementing this intervention in areas with lower access and lower baseline usage rates would likely have a larger impact. We also do our best to attempt for cost difference using conservative approaches. Second, we limit this analysis to only married women due to the design of the intervention in Karra et al. (2020), however, this intervention would likely have even greater impacts for unmarried women who face significant barriers to contraceptives. We were unable to incorporate unmarried women into this analysis as we believed the impacts were not generalizable for unmarried women. Third, we assume that this program would induce health facilities to ensure sufficient supply of the numerous contraceptive methods that would be demanded by the program participants. We make this assumption because we include a budget for paying for contraception as part of the project. This payment will either support increased private sector participation in ensuring that local healthcare providers have the necessary access to contraception or provide a stable source of revenue to use to purchase modern contraception. The details of how this would impact the supply side are beyond the scope of this analysis. Fourth, we assume that the program would be fully funded as detailed within this analysis. While this program has high administration costs, the complexity of organizing counseling sessions, family planning appointments, and attending family planning meetings, is costly and any reduction in these services could severely reduce the impact of the intervention.

In this report we have assessed the costs and benefits of providing women with postpartum counselling services and free access to contraceptives and transportation. In this analysis we evaluate three scenarios:

1. Scenario 1, where the program is implemented for only 2 years and benefits include:
    a. Reduction in under five mortality
    b. Averted medical expenditures for treating low birthweight infants
    c. Increased income for avoided low birthweight infants
    d. WTP for transportation to a health clinic
    e. WTP for contraceptives
2. Scenario 2, where the program is implemented for 10 years and benefits include:
    a. Reduction in under five mortality
    b. Reduction in maternal mortality
    c. Averted medical expenditures for treating low birthweight infants
    d. Increased income for avoided low birthweight infants
    e. WTP for transportation to a health clinic
    f. WTP for contraceptives
3. Scenario 3, where the program is implemented for 10 years and benefits include:
    a. Increased incomes for all due to the demographic benefit
    b. Reduction in under five mortality
    c. Reduction in maternal mortality
    d. Averted medical expenditures for treating low birthweight infants
    e. WTP for transportation to a health clinic
    f. WTP for contraceptives

Our analysis shows that implementing this program for two years passes a benefit-cost test, while implementing the program for ten years will have a BCR around 37.2 if it succeeds in reducing the population. Since we are uncertain of the long-term implications of

fertility attributable to this intervention policymakers should consider the BCR of this intervention to range from 1.1 to 37.2. In particular, it is likely that the intervention pays itself off just on mortality and non-demographic dividend benefits. If decision makers believe that it would lead to a permanent reduction in births then the intervention could yield benefits substantially larger than costs. This analysis does not include numerous potential health benefits, psychological benefits, and other benefits related to comfort and choice. However, considering that other family planning interventions are likely to continue and assuming that fertility declines as indicated in its current trajectory, this intervention could have positive interactions that further increase the benefits of the demographic benefits. Therefore, the benefits could possibly be even larger than detailed in this analysis.

We note here that there may be cheaper ways to implement the intervention analyzed here. A potential experiment would be to incorporate the existing health structure into this program to reduce administration and staffing costs. For rural areas, the program could consider using visiting mobile clinics to provide the long-acting contraceptives. However, while these options may be cheaper, it is unknown whether they could deliver similar benefits. Additionally, experimentation in rural areas and with unmarried women could help policymakers develop a superior program.

6. References

- Abdel-Tawab, N. G., Loza, S., & Zaki, A. (2008). Helping Egyptian women achieve optimal birth spacing intervals through fostering linkages between family planning and maternal/child health services.
- Adanikin, A. I., Onwudiegwu, U., & Loto, O. M. (2013). Influence of multiple antenatal counselling sessions on modern contraceptive uptake in Nigeria. The European Journal of Contraception & Reproductive Health Care, 18(5), 381-387.
- Ahmed, S., Ahmed, S., McKaig, C., Begum, N., Mungia, J., Norton, M., & Baqui, A. H. (2015). The effect of integrating family planning with a maternal and newborn health program on postpartum contraceptive use and optimal birth spacing in rural Bangladesh. Studies in family planning, 46(3), 297-312.
- Akman, M., Tüzün, S., Uzuner, A. R. Z. U., Başgul, A., & Kavak, Z. (2010). The influence of prenatal counselling on postpartum contraceptive choice. Journal of International Medical Research, 38(4), 1243-1249.
- Ashraf, Q. H., Weil, D. N., & Wilde, J. (2013). The effect of fertility reduction on economic growth. Population and development review, 39(1), 97-130.
- Barden-O'Fallon, J., Evans, S., Thakwalakwa, C., Alfonso, W., & Jackson, A. (2020). Evaluation of mainstreaming youth-friendly health in private clinics in Malawi. BMC health services research, 20(1), 1-13.
- Baqui AH, Ahmed S, Begum N, et al. Impact of integrating a postpartum family planning program into a community-based maternal and newborn health program on birth spacing and preterm birth in rural Bangladesh. J Glob Health 2018; 8: 1–12.
- Bellows, B., Bulaya, C., Inambwae, S., Lissner, C. L., Ali, M., & Bajracharya, A. (2016). Family planning vouchers in low and middle income countries: a systematic review. Studies in family planning, 47(4), 357-370.
- Bloom, D., Canning, D., & Sevilla, J. (2003). The demographic dividend: A new perspective on the economic consequences of population change. Rand Corporation.
- Bongaarts, J., Mauldin, W. P., & Phillips, J. F. (1990). The demographic impact of family planning programs. Studies in family planning, 21(6), 299-310.
- Bongaarts, J. (2003). Completing the fertility transition in the developing world: The role of educational differences and fertility preferences. Population Studies, 57(3), 321-335.
- Canning, D., Raja, S., & Yazbeck, A. S. (2015). Africa's demographic transition: dividend or disaster? The World Bank.
- Chipokosa, S., Pattnaik, A., Misomali, A., Mohan, D., Peters, M., Kachale, F., Ndawala, J., & Marx, M. A. (2019). How strong are Malawi's family planning programs for adolescent and adult women? Results of a national assessment of implementation strength conducted by Malawi's National Evaluation Platform. Journal of Global Health, 9(2). https://doi.org/10.7189/jogh.09.020901
- Cleland, J., Shah, I. H., & Daniele, M. (2015). Interventions to improve postpartum family planning in low-and middle-income countries: program implications and research priorities. Studies in family planning, 46(4), 423-441.
- Conde-Agudelo, A., & Belizán, J. M. (2000). Maternal morbidity and mortality associated with interpregnancy interval: cross sectional study. Bmj, 321(7271), 1255-1259.
- Conde-Agudelo, A., Rosas-Bermúdez, A., & Kafury-Goeta, A. C. (2006). Birth spacing and risk of adverse perinatal outcomes: a meta-analysis. Jama, 295(15), 1809-1823.
- Feyisetan, B., & Casterline, J. B. (2000). Fertility preferences and contraceptive change in developing countries. International family planning perspectives, 100-109.
- Freedman, R. (1997). Do family planning programs affect fertility preferences? A literature review. Studies in family Planning, 1-13.
- Hall, J. A., Barrett, G., Phiri, T., Copas, A., Malata, A., & Stephenson, J. (2016). Prevalence and determinants of unintended pregnancy in Mchinji District, Malawi; using a conceptual hierarchy to inform analysis. PloS one, 11(10), e0165621.
- Karra, M., Canning, D., & Wilde, J. (2017). The effect of fertility decline on economic growth in Africa: A macrosimulation model. Population and development review, 43, 237-263.
- Karra, M., Maggio, D., Guo, M., Ngwira, B., & Canning, D. 2020. The Causal Effect of Improved Access to Postpartum Family Planning: Evidence from a Single-Blind, Randomized Controlled Trial in Urban Malawi. Working Paper.
- Keogh, S. C., Urassa, M., Kumogola, Y., Kalongoji, S., Kimaro, D., & Zaba, B. (2015). Postpartum contraception in northern Tanzania: patterns of use, relationship to antenatal intentions, and impact of antenatal counseling. Studies in family planning, 46(4), 405-422.
- Kodzi, I. A., Casterline, J. B., & Aglobitse, P. (2010). The time dynamics of individual fertility preferences among rural Ghanaian women. Studies in Family Planning, 41(1), 45-54.
- Kohler, H. P. (2012). Challenge Paper, Population, Copenhagen Consensus 2012.
- Kohler, H.P. (2017). Costs and benefits of expanding sexual reproductive health services in Haiti, Haiti Priorise, Copenhagen Consensus
- Family Planning 2020 (FP 2020). 2016. Malawi Official Update. http://www.familyplanning2020.org/news/malawi-official-

update

- Family Planning 2020 (FP 2020). 2018. Malawi Commitment Self-Reporting Questionnaire 2018. https://www.familyplanning2020.org/sites/default/files/Malawi-Commitment-Self-reporting-Questionnaire-2018_0.pdf

- Family Planning 2020 (FP 2020). 2019. Malawi Commitment Self-Reporting Questionnaire 2019. http://www.familyplanning2020.org/sites/default/files/Malawi_Questionnaire_Self-Report_2019_FINAL.pdf

- Family Planning 2020 (FP 2020). 2020. Track 20 Malawi. http://track20.org/Malawi

- Friberg, I., Weissman, E., Wong, B., Razvi, S. Carvalho C., 2020, Cost-effectiveness of maternal and newborn health interventions and packages in 59 low-and-middle-income countries, Merck for Mothers, Copenhagen Consensus Center

- Michaels-Igbokwe, C., Terris-Prestholt, F., Lagarde, M., Chipeta, E., & Cairns, J. (2015). Young People's Preferences for Family Planning Service Providers in Rural Malawi: A Discrete Choice Experiment. PLOS ONE, 10(12), e0143287. https://doi.org/10.1371/journal.pone.0143287

- National Planning Commission, Malawi. 2021. Malawi's Vision, An Inclusively Wealthy and Self-Reliant Nation, National Planning Commission.

- National Statistical Office (NSO) [Malawi] and ICF. 2017. Malawi Demographic and Health Survey 2015-16. Zomba, Malawi, and Rockville, Maryland, USA. NSO and ICF.

- Palamuleni, M. E., & Adebowale, A. S. (2014). Prevalence and determinants of unintended pregnancies in Malawi. African Population Studies, 28(1), 551-563.

- Pattnaik, A., Mohan, D., Tsui, A., Chipokosa, S., Katengeza, H., Ndawala, J., & Marx, M. A. (2020). The aggregate effect of implementation strength of family planning programs on modern contraceptive use at the health systems level in rural Malawi. Cold Spring Harbor Laboratory. https://doi.org/10.1101/2020.04.17.046524

- Republic of Malawi Ministry of Health. 2009. National Sexual and Reproductive Health and Rights (SRHR) Policy. https://malawi.unfpa.org/sites/default/files/pub-pdf/SRHR%20POLICY%20FINAL.pdf

- Republic of Malawi Ministry of Health. 2015. Ministry of Health National Youth Friendly Health Services Strategy 2015–2020. https://www.healthpolicyproject.com/pubs/673_YFHSStrategyFINALWEB.pdf

- Riahi K., Van Vuuren D. P., Kriegler E., Edmonds J., O'Neill B. C., Fujimori S., Bauer N., Calvin K., Dellink R., Fricko O., Lutz W., Popp A., Cauresma J.C., Samir K.C., Leimach M., Jiang L., Kram T., Rao S., Emmerling J., Ebi K., Hasegawa T., Havlík P., Humpenöder F., Da Silva L.A., Smith S., Stehfest E., Bosetti V., Eom J., Gernaat D., Masui T., Rogelj J., Strefler J., Drouet L., Krey V., Luderer G., Harmsen M., Takahashi K., Baumstark L., Doelman J.C., Kainuma M., Klimont Z., Marangoni G., Lotze-Campen H., Obersteiner M., Tabeau A., & Tavoni M. 2017. The Shared Socioeconomic Pathways and their Energy, Land Use, and Greenhouse Gas Emissions Implications: An Overview. Global Environmental Change, 42, 153-168. doi: https://doi.org/10.1016/j.gloenvcha.2016.05.009

- Ross, J., & Lloyd, C. (1992). Methods for measuring the fertility impact of family planning programs: The experience of the last decade. Family Planning Programs and Fertility. New York, NY: Oxford University Press Inc.

- Rutstein, S. O. (2005). Effects of preceding birth intervals on neonatal, infant and under-five years mortality and nutritional status in developing countries: evidence from the demographic and health surveys. International Journal of Gynecology & Obstetrics, 89, S7-S24.

- Self, A., Chipokosa, S., Misomali, A., Aung, T., Harvey, S. A., Chimchere, M., Chilembwe, J., Park, L., Chalimba, C., Monjeza, E., Kachale, F., Ndawala, J., & Marx, M. A. (2018). Youth accessing reproductive health services in Malawi: drivers, barriers, and suggestions from the perspectives of youth and parents. Reproductive Health, 15(1). https://doi.org/10.1186/s12978-018-0549-9

- Sicuri, E., Bardají, A., Sigauque, B., Maixenchs, M., Nhacolo, A., Nhalungo, D., ... & Menéndez, C. (2011). Costs associated with low birth weight in a rural area of Southern Mozambique. Plos one, 6(12), e28744.

- Soliman, M. H. (1999). Impact of antenatal counselling on couples' knowledge and practice of contraception in Mansoura, Egypt. EMHJ-Eastern Mediterranean Health Journal, 5 (5), 1002-1013.

- Smith, K. B., Van Der Spuy, Z. M., Cheng, L., Elton, R., & Glasier, A. F. (2002). Is postpartum contraceptive advice given antenatally of value? Contraception, 65(3), 237-243.

- Stenberg, K., Sweeny, K., Axelson, H., Temmerman, M., Sheehan, P., (2016).Returns on Investment in the Continuum of Care for Reproductive, Maternal, Newborn, and Child Health. In: Disease Control Priorities (third edition): Volume 2, Reproductive, Maternal, Newborn, and Child Health, edited by R. Black, M. Temmerman, R. Laxminarayan, N. Walker. Washington, DC: World Bank.

- Tran, N. T., Seuc, A., Coulibaly, A., Landoulsi, S., Millogo, T., Sissoko, F., ... & Gaffield, M. E. (2019). Post-partum family planning in Burkina Faso (Yam Daabo): a two group, multi-intervention, single-blinded, cluster-randomised controlled trial. The Lancet Global Health, 7(8), e1109-e1117.

- Tran, N. T., Seuc, A., Tshikaya, B., Mutuale, M., Landoulsi, S., Kini, B., ... & Kiarie, J. (2020). Effectiveness of post-partum family planning interventions on contraceptive use and method mix at 1 year after childbirth in Kinshasa, DR Congo (Yam Daabo): a single-blind, cluster-randomised controlled trial. The Lancet Global Health, 8(3), e399-e410.

- UK Aid. 2020. Annual Review: "Tsogolo Langa" Expanding Access to Family Planning and Sexual and Reproductive Health and Rights Services in Malawi Programme. https://devtracker.fcdo.gov.uk/projects/GB-GOV-1-300216/documents

- United Nations Department of Economic and Social Affairs, Population Division (UNDESA) (2020). World Fertility and Family Planning 2020: Highlights (ST/ESA/SER.A/440)

- Van de Kaa, D. J. (2001). Postmodern fertility preferences: from changing value orientation to new behavior. Population and Development Review, 27, 290-331.
- Varela, C., Young, S., Mkandawire, N., Groen, R. S., Banza, L., & Viste, A. (2019). Transportation barriers to access health care for surgical conditions in Malawi a cross sectional nationwide household survey. BMC public health, 19(1), 264.
- Vernon, R., López-Canales, J. R., Cárcamo, J. A., & Galindo, J. (1993). The impact of a perinatal reproductive health program in Honduras. International family planning perspectives, 103-109.
- Wickstrom, J., Yanulis, J., Lith, L. V., & Jones, B. (2013). Approaches to mobile outreach services for family planning: a descriptive inquiry in Malawi, Nepal, and Tanzania. The RESPOND Project Study Series: Contributions to Global Knowledge, (13).
- World Health Organization. Report of a WHO Technical Consultation of Birth Spacing. Geneva, Switzerland: World Health Organization, 2005.

The Malawi Priorities Project

2021

MALAWI PRIORITIES PROJECT

COPENHAGEN CONSENSUS CENTER

NATIONAL PLANNING COMMISSION

AFIDEP
African Institute for Development Policy

Cost-benefit analysis of increasing contraceptive use through post-partum counseling and free, improved access to contraception in Malawi