Final Report

A360 Intervention Cost Report
Intervention: Northern Nigeria, MMA

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Submitted by Itad
In association with Avenir Health

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Disclaimer

The views within this document are entirely those of the cost-effectiveness evaluation team. They do not represent any of the individuals and organizations referred to in the report.

Contents

List of acronyms

A360	Adolescents 360
ASRH	Adolescent Sexual and Reproductive Health
BMGF	Bill & Melinda Gates Foundation
CIFF	Children's Investment Fund Foundation
CEA	Cost-Effectiveness Analysis
CYP	Couple-Year of Protection
HCD	Human-Centered Design
LGA	Local Government Area, Nigeria
M&E	Monitoring and Evaluation
MMA	Matasa Matan Arewa
MOH	Ministry of Health
NDA	Non-Disclosure Agreement
SFH	Society for Family Health, Nigeria

Executive Summary

Background

This document reports results from the costing of A360, a girl-centred approach to contraceptive programming that operated in two states in Northern Nigeria. The program, known as Matasa Matan Arewa (MMA), served married adolescent girls aged 15-19. This costing focused on intervention costs incurred in Doma and Karu Local Government Areas (LGAs) in Nasarawa State during the implementation period, from January 2018 – September 2020. Full scale-up of MMA happened in March 2019, after receiving donor approval.

Objectives

The objective of this costing is to a produce a total intervention cost as an input to a cost-effectiveness analysis. The results will help expand the evidence base on adolescent sexual and reproductive health programs.

Methods

The study included costs of PSI, its partners and of government inputs, combining top-down costing drawing on PSI and partner financial systems with bottom-up costing from surveys, interviews, and site visits. Analysts collected data in three rounds, corresponding to 2018, 2019 and 2020. Analysts developed rules to allocate joint costs to the study LGAs. Sensitivity analyses tested how the results might change with changes in key parameters such as the method for allocating joint international and national costs to the study geographies, the impact of COVID-19 on costs, and what proportion of international support costs were dedicated to adoption or replication of the intervention in other settings.

Results and discussion

Costs attributable to the two LGAs were $423,000 over two years and nine months of implementation (excluding design costs), with a plausible range of between $262,925 and $534,712. Program costs increased substantially from 2018 to 2019, reflecting the delayed start-up of implementation in Doma and the increase in scale and reach of the program. Just under half of costs were incurred at the LGA level, with the rest at the state, national, and international levels, a reflection of strong technical and managerial support from national and international staff. Even after accounting for in-kind government funding of staff, commodities, utilities, and space, A360 funds still constituted the majority of funding. Personnel made up almost two-thirds of total costs. This reflects the hands-on nature of the program's mobilization and service delivery components and the strong management and technical support functions. These findings are consistent with the program structure and in line with other, similar programs.

Analysts addressed important methodological limitations through sensitivity analysis. Readers should take caution in comparing these results to the results from the three other A360 interventions in Ethiopia, Southern Nigeria, and Tanzania, because of inherent differences in program structure and target population, as well as differences in price levels across countries. Caution is similarly warranted in the comparison of A360 results to other studies that may use different methods to calculate costs or of programs that operate at different scale. The cost-effectiveness analysis will gauge the total cost reported in the context of program outputs and impact.

1 Background and objectives

Adolescents 360 (A360), a girl-centred approach to contraceptive programming, operated four interventions in three countries (Ethiopia, Nigeria, and Tanzania). This document reports results from the costing of the A360 program in Northern Nigeria, known as Matasa Matan Arewa (MMA), which focused on serving married adolescent girls aged 15-19. It draws on earlier unpublished reports of three rounds of costing covering 2018 - 2020.[1] Results from the costing of the 9ja Girls program in Southern Nigeria, which focused on providing services to unmarried adolescent girls, are reported separately in Rosen et al (2021).

The costing forms part of a package of evaluation activities, including an outcome evaluation, process evaluation, and cost-effectiveness analysis. Itad led the A360 evaluation in collaboration with the London School of Hygiene & Tropical Medicine and Avenir Health. Avenir Health led on the costing and cost-effectiveness analysis.

This costing focuses on intervention costs incurred during the implementation period. A separate document reports cost to design the 9ja Girls and other A360 interventions.

The main objective of this costing is to a produce a total intervention cost (from January 2018 – September 2020) as input to a cost-effectiveness analysis. Results will help expand the global evidence base on adolescent sexual and reproductive health programs.

1.1 Description of the A360 intervention

1.1.1 Overall background on A360

Although many programs in developing countries have tried to reach adolescents with contraceptive services, their effectiveness has mostly been limited.[2] A360 was a five-year, US$30 million investment to increase modern contraceptive use among girls aged between 15 and 19 in Ethiopia, Nigeria and Tanzania. Proponents of A360 believed it would be more effective than previous adolescent programs by better taking into account the unique needs of adolescents, and the social, cultural, religious and economic forces that underlie access to and choices about contraception.

A360 used a multidisciplinary approach to design and implement programs developed with and for young people. The A360 approach combined human-centered design (HCD) with social marketing, developmental neuroscience, sociocultural anthropology, public health, and youth engagement. The Bill & Melinda Gates Foundation (BMGF) and the Children's Investment Fund Foundation (CIFF) funded A360 via a consortium led by Population Services International (PSI). The project began in January 2016 and ended in September 2020.

1.1.2 Description of MMA

The Society for Family Health (SFH), a Nigerian NGO, implemented A360 via a subcontract with PSI. The intervention costing reported here covers an almost three-year period beginning in December 2017 and ending in September 2020. Operating in two states in Northern Nigeria, (MMA) focuses on married adolescent girls aged 15-19 and their husbands. MMA uses a two-pronged approach to reach married adolescent girls. Female mentors recruit girls to take part in four Family, Life and Health classes, which incorporate life skills and vocational skills training as well as an opportunity for one-to-one contraceptive

[1] Stegman, Rosen, and Aboki, January 6, 2020. Cost-Effectiveness Analysis of A360 in Nigeria. Preliminary results for year 1 analysis; and Stegman, Rosen, and Aboki, April 15, 2020. Cost-Effectiveness Analysis of A360 in Nigeria. Preliminary results for round 2 (2019) analysis. Stegman, Rosen, and Aboki, June 22, 2021. Cost-Effectiveness Analysis of A360 in Nigeria. Preliminary results for round 3 (2020) analysis.

[2] Chandra-Mouli V, Lane C, Wong S. What does not work in adolescent sexual and reproductive health: a review of evidence on interventions commonly accepted as best practices. Glob Health Sci Pract. 2015;3(3):333-340. http://dx.doi.org/10.9745/GHSP-D-15-00126.

counseling with a provider. Meanwhile, male mobilizers (Interpersonal Communication Agents (IPCAs) start conversations with husbands by informing them about the benefits of healthy timing and spacing of pregnancies and encouraging them to refer their adolescent wives to a clinic for walk-in counseling. MMA is delivered by A360 Young Providers working alongside government providers through publicly-owned health facilities, in a Hub-and-Spoke model, with a permanent presence at some “hub” facilities and regular outreach services through more remote “spoke” facilities linked to each hub. MMA operates in two of Nigeria’s 36 states, though this costing study focuses on a subset of MMA interventions that were conducted in the two intervention LGAs (Doma and Karu) that are also the focus of the A360 Outcome Evaluation.

2 Methods

2.1 Study perspective

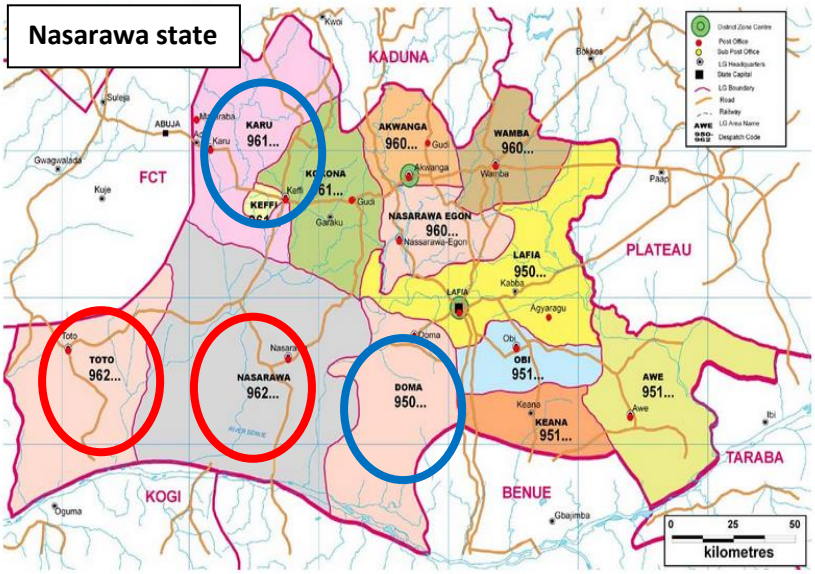
The choice of perspective or viewpoint determines whose costs to include. Ideally, any costing should adopt the perspective of society, and include all related costs, regardless of who pays for them. This costing took something less than a full societal perspective, by including costs incurred by PSI and its partners, the government, and volunteers, while excluding client costs. The analysis strives to measure economic (opportunity) costs, valuing inputs based on their alternative uses. The economic cost may diverge from the financial cost (what someone pays for a resource) for inputs such as volunteers' time and donated or subsidized goods.

The chosen perspective, as agreed to by the donors, came from the objective of the cost-effectiveness analysis and its primary audiences. These audiences include Nigerian and global program managers who decide on design and intervention approaches, as well as the donors, governments or other agencies that fund such programs. These audiences care primarily about what they need to budget from their own resources. These audiences care primarily about what they need to budget from their own funds. To acknowledge that an off-budget input can often become on-budget, the study included relevant non-budgeted costs such as volunteers' time and donated goods.

2.2 Geographic scope and outcome evaluation focus

SFH implemented MMA in two states in northern Nigeria, Kaduna and Nasarawa. States are subdivided into Local Government Areas (LGAs). The outcome evaluation, designed as a cross-sectional study with comparison groups, compared two intervention with two comparison LGAs in Nasarawa State.[3] The costing focused on the intervention LGAs, Doma and Karu (Figure 1:), referred to in this report as the study geographies.

Figure 1: Map of Nasarawa state, northern Nigeria, showing intervention and comparison LGAs



Note: Intervention LGAs in blue and comparison LGAs in red.
Source: Outcome evaluation protocol.

2.3 Time frame and analytic horizon

[3] For more information on the A360 and study geographies and how they were chosen, see the outcome evaluation protocol

The costing timeframe (the period over which the program was carried out) and analytic horizon (the period over which the costs that occur as result of the program were considered) were the same, one year and nine months in Doma, January 1, 2019 through September 30, 2020, and almost two years and nine months in Karu, January 1, 2018 – September 30, 2020.

2.4 Included and excluded costs

Within the chosen perspective, the costing tried to measure the full costs of the inputs required for the functioning of the intervention. Those included:

- On-budget global and country funding provided through the A360 project
- Nonbillable costs borne by PSI and not reimbursed by its A360 funders[4]
- Funding from other donors, if relevant
- Off-budget, leveraged counterpart costs, including the market value of in-kind provision of goods and services from PSI-affiliated, public sector or private sector providers, such as
    - Government personnel who helped to manage the program or provide counseling and services
    - Government-funded contraceptives and other health supplies
    - Volunteer time

The scope of included costs for the purposes of this study is important to keep in mind when comparing to other cost estimates that may have used a narrower perspective that included fewer costs. This is to minimize drawing mistaken conclusions about the relative cost of different programs.

The study excluded the opportunity cost of client time and any client out-of-pocket fees. In addition, it excluded the following costs which were not required for the functioning of the intervention:

- Donor management costs (e.g., time and travel costs incurred by donors)
- External evaluation costs
- A360 costs that do not support the interventions, including costs associated with:
    - Creating the A360 approach and replicating or adopting the A360 approach in other settings[5]
    - Developing and carrying out the A360 learning strategy
    - A360 evaluation efforts that track project progress beyond routine monitoring
    - International and national dissemination activities (conferences, brochures, briefs, etc.)
    - Advocacy activities unrelated to the functioning of the interventions

As noted, the costs to design the MMA program are reported separately and excluded from the total costs presented in this report.

2.5 Cost categorization

The study tagged costs according to seven categories to allow appropriate analysis and consistency with data collected during the design phase. The categories included:

1. *Country*, to distinguish among the three A360 countries (Ethiopia, Nigeria, and Tanzania)

[4] After renegotiating with its donors on what constituted billable expenses, PSI stopped using nonbillable as a category in early 2019 and no longer counted nonbillable expenses.

[5] A separate report examines these costs

2. *Timing of cost.* We identified cost by data collection round, corresponding as follows:
    a. *Round 1*: January 1, 2018 – December 31, 2018
    b. *Round 2:* January 1, 2019 – December 31, 2019
    c. *Round 3*: January 1, 2020 – September 30, 2020
3. *Intervention model*. In Nigeria, A360 operated two distinct models, 9ja Girls serving primarily unmarried girls in the South and MMA serving married girls exclusively in the North. In Ethiopia and Tanzania, the model was the same countrywide.
4. *Input type*. We classified each of the 65 individual cost categories (or line items) by the following input categories:
    a. *Commodities*, including contraceptives and their associated consumable supplies (gloves, syringes for injection, etc.)
    b. Communication, including phone, internet, and postage
    c. Equipment, computer hardware and software, furniture, office equipment
    d. *Indirect*, including bank charges, indirect cost fee, office supplies, audits, and utilities
    e. *Materials*, including communication, information and education, printed media, IEC events, program related meetings
    f. Personnel, including salary and benefits, per diems
    g. Space, including clinical and educational rooms, office space, renovation costs, and meeting spaces
    h. *Transport*, including airfare, taxi, travel, vehicle fuel, insurance and repairs, supportive supervision travel costs
    i. *Training*, including hotel costs, professional development / staff training, field retreats, program-related training, conferences and meetings, and special events
5. *Program element*. We classified each of the line items according to the following main program elements:
    a. *Management and Supervision*, including all above-LGA management, supervisory, and administrative costs, government LGA-level management personnel, LGA-level program related meetings, per diem, and transport
    b. *Mobilization*, including IEC materials and events and mobile devices, mobilizers, and young designers
    c. *Research, M&E*, including any cost labeled as Research and M&E
    d. *Services*, including service personnel, contraceptives and associated supplies, clinical and education space, program-related training, renovation expenses, taxi
    e. *Training*, Professional Development/ staff training, retreats, program-related training, hotel
6. *Level*. We classified each line item at the level at which the cost is incurred
    a. *LGA*, including all costs associated with services and management within the study LGA
    b. *State*, including government state-level personnel and meeting space
    c. *National*, including costs classified by SFH as headquarters costs incurred at the regional and national level, including for management and technical personnel, consultants, travel, meetings, and general administration.

d. *International*, including managerial and technical support activities from outside Nigeria, including by PSI or its partners.

7. *Funding source.* We classified each line item according to who paid for it

   a. *Government*, including contraceptives, government service and managerial personnel, and government owned space and utilities for services, education, and meetings

   b. *A360 consortium on-budget costs*, including all costs chargeable to the A360 budget

2.6 Data collection and processing

Data collection blended top-down costing drawing on routine cost accounting systems with targeted, bottom-up studies of key inputs external to PSI, and surveys of PSI staff and other actors involved in implementation. Analysts collected data in three rounds, corresponding to the periods December 2017 – December 2018 (13 months), January – December 2019 (12 months), and January – September 2020 (9 months). A locally contracted consultant led cost data collection, with support from U.S.-based Avenir Health staff. Data were processed in Excel. During each round of data collection, the local consultant conducted site visits to observe activities and to conduct interviews with project implementers.

The study used a variety of sources for cost information, summarized in ***Error! Reference source not found.*** a nd described in more detail below. PSI and SFH routine accounting systems did not allow visibility into spending below the State level. Because the study's unit of analysis was the LGA, that meant that, for costs drawn from those accounting systems we applied rules to allocate an appropriate amount of joint costs to the study LGAs, Doma and Karu. Because Doma and Karu were the only LGAs in Nasarawa State where A360 operated, we used the Nasarawa State cost information for analysis purposes.

Table 1: Type of cost, data source, and allocation rule

Cost type	Source	Rule to allocate joint costs to study LGA**
On-budget A360 funding		
State	Joint State costs from SFH spending	Directly allocated to Nasarawa State
Abuja HQ and regional	Joint HQ and regional costs from SFH spending data	Allocated to Nasarawa State based on direct LGA costs in study geographies as % of total direct LGA costs
International management and technical support	Spend data from PSI and partners	Allocated to Nasarawa based on direct LGA costs in study geographies as % of total direct LGA costs
Leveraged government funding		
Contraceptives	Cost to Government	Directly allocated to Nasarawa State
Facility Space *	Measurement, commercial rental cost equivalent	Directly allocated to Nasarawa State
Facility Utilities *	Interviews	Directly allocated to Nasarawa State
State Government supervision and management	Interviews, Government salary data	Directly allocated to Nasarawa State
Government providers	Interviews, Government salary	Directly allocated to Nasarawa

Cost type	Source	Rule to allocate joint costs to study LGA**
	data	State
Local Government supervision and management	Interviews, Government salary data	Directly allocated to Nasarawa State

* Not collected in round 3 due to COVID-19 related restrictions
** Because Doma and Karu were the only LGAs in Nasarawa State where A360 operated, we used the Nasarawa State cost information for analysis purposes.

Table 2: provides details on the number of site visits and interviews were conducted for each round of data collection by the local consultant.

Table 2: Site visits and interviews conducted

	# Site Visits	# Interviews with SHF staff	# Interviews with Government staff
Round 1	4	16	15
Round 2	4	22	20
Round 3	7	10	20

2.6.1 State-level costs

Within its routine accounting system, SFH tagged some costs to specific states where the program operated. We assigned all costs tagged to Nasarawa State to the study geographies as these were the only intervention sites in this State.

2.6.2 Abuja headquarters and regional costs

Many costs were not assigned to a specific state and classified by SFH as headquarters costs incurred at the regional and national level, including for management and technical personnel, consultants, travel, meetings, and general administration. First, we reduced these costs commensurate to the amount of local staff time dedicated to “adoption and replication” activities that did not support implementation of MMA. Such activities that allow replication of the MMA approach in other settings include presenting at conferences, writing blogs, providing assistance to other projects and organizations seeking to replicate the approach, and other efforts to communicate about MMA to various audiences. To gauge the amount of time spent on adoption and replication, we collected information directly from staff interviews, or estimated based on average reported time spent on adoption and replication. To allocate the remaining joint costs to the study LGAs, we calculated a percentage based on the amount tagged to Nasarawa State out of all spending tagged to a specific state, about 7 percent.

2.6.3 International support costs

International support included costs associated with managerial and technical support activities from outside Nigeria, including by PSI or its partners. From these partners’ routine accounting systems, we first identified international support costs specifically tagged to Nigeria. To these we added a proportion of the remaining international support costs not associated with any specific A360 country, after removing costs associated with “adoption and replication” activities. To calculate the proportion attributable to Nigeria, we carried out periodic surveys of A360 global staff to understand how they split their time between countries and where they travelled. These calculations yielded a total spent on Nigeria. We then allocated a portion of those international support costs to the study LGAs based on the amount of direct LGA spending in Nasarawa as a percent of the national total (the same allocation method used for joint SFH national headquarters costs [see section 2.6.2 above]).

2.6.4 Government resources

We estimated cost for four types of government resources: personnel, space, utilities and contraceptive commodities.

Personnel. The government funded a range of managerial and service staff critical to the operation of A360. We estimated personnel time via direct interviews of government administrative, supervisory and service staff supporting A360 activities at the State and LGA levels. To value their time, we multiplied level of effort devoted to A360 times prorated salary.

Space. For service delivery and events, the government provided A360 with space free of charge. To determine a market value for these spaces, in rounds 1 and 2 we measured the overall square footage and applied a monthly rental cost at commercially equivalent rates, based on the amount of time the space was used for A360 purposes. Because COVID-19 related restrictions precluded such measurement, in round 3 we estimated cost using an average of the space measurements in previous rounds.

Utilities. In rounds 1 and 2, based on government records we calculated a daily cost per facility for utilities such as water and electricity use in government facilities where A360 operated. We then multiplied that daily cost by the number of the days the A360 program used the facility during the study period. Because COVID-19 related restrictions precluded site visits in round 3 we used the daily utility cost estimate from rounds 1 and 2 and multiplied that by the number of days the A360 program used the facility during 2020.

Contraceptive Commodities. To calculate the cost of providing contraceptive commodities we combined information on the number of client visits, unit cost of government-provided contraceptives, cost of associated medical supplies, and norms for number of contraceptives provided per visit. We considered any client that PSI defined in its client database as “adopter” or “continuing user” to constitute a “visit” in which they received a contraceptive method whose cost should be allocated to the A360 program. For unit cost of contraceptives we used information provided by Nigerian health officials. For unit cost of contraceptives and associated medical supplies for each visit we drew on international defaults from AGI’s Adding it Up (AGI 2019). For number of contraceptives dispensed at each visit we used information from program staff. Unless captured as a “continuing user” in A360’s client database, the subsequent commodity cost associated with continuation beyond an adopter’s first visit are not included.

2.6.5 Impact of COVID-19 on costs

Much of round 3 coincided with the onset of the COVID-19 pandemic. SFH responded to COVID-19 restrictions on movement and group events by curtailing services in March 2020, then restarting after a few months modifying the program to adapt to COVID-related precautions and restrictions, carrying out unanticipated COVID-related training and community meetings, and shifting some activities such as supervision from in-person to virtual. While the pandemic generated some unanticipated costs, other costs such as travel likely decreased. The overall impact of COVID-19 on costs is difficult to ascertain because of limitations of the accounting systems. The costing excluded any identifiable costs specifically related to purchase of personal protective equipment, an amount totalling about $2,000 in Nasarawa State. Drawing on interviews with program managers, the base case cost estimate assumed no change in cost due to COVID.

2.7 Valuing inputs

We valued inputs to reflect their economic (opportunity) cost. In most cases, the economic cost will be the same as the financial cost (the amount somebody paid for it). For the MMA costing, we did not identify any volunteer costs or in-kind donations that needed to be revalued at market rates. The study valued inputs in local currency or in US dollars as appropriate, and shows results in constant 2020 US dollars, using average exchange rates for the relevant periods.

2.8 Sensitivity analysis

Limitations in data collection, missing or incomplete data, assumptions required to differentiate design and intervention costs from costs to create the A360 approach and to replicate/adopt the approach in other settings, and decisions on methods to allocate joint costs to the study geographies all generated potentially significant uncertainty around the cost results. We used one-way and multi-way sensitivity analyses to help determine the extent to which changes in these parameters might substantially alter the findings. Section 3.6 below reports the results of these sensitivity analyses.

2.9 Ethical and other research considerations

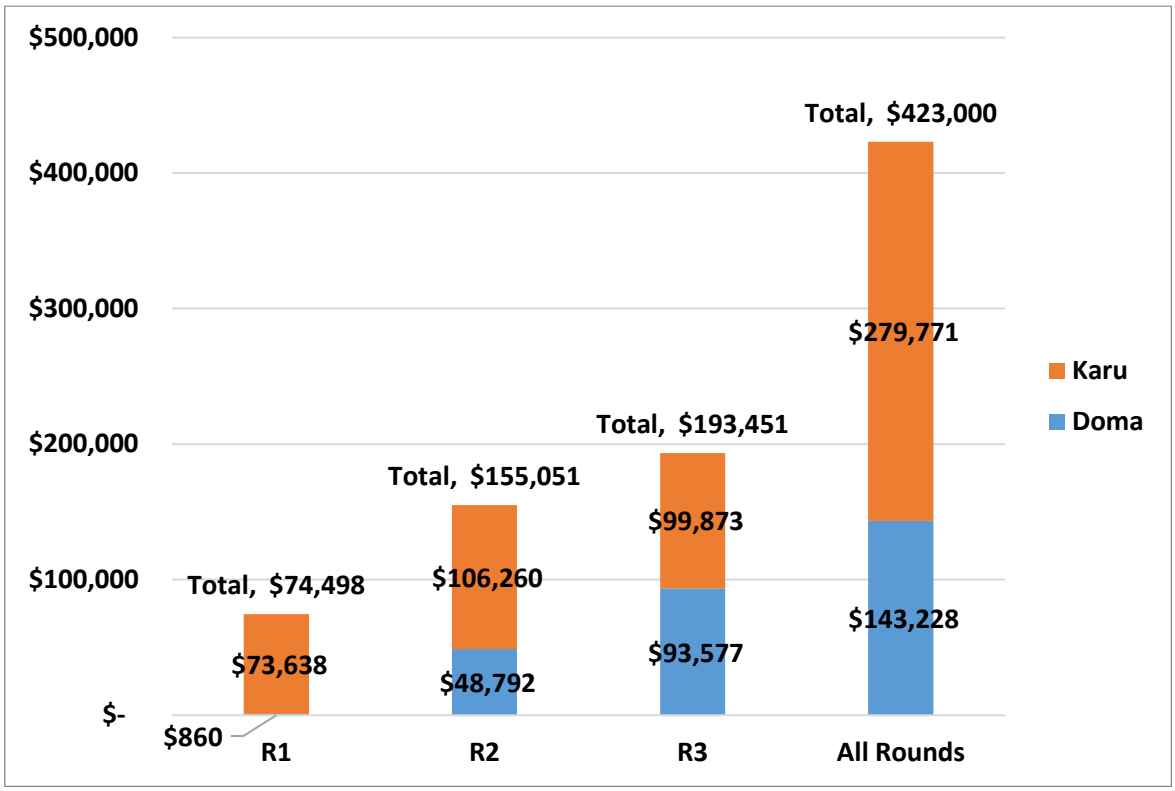
No clients were interviewed for the costing. Where the costing involved interviews of health personnel working on MMA, it operated under the ethical considerations of the outcome evaluation and process evaluation IRB approvals. Recognizing understandable concerns about making sensitive cost information public, the evaluators signed a non-disclosure agreement (NDA) with the PSI consortium that permitted Itad and its subcontractors to view and analyze cost data needed to carry out the study analyses while protecting confidentiality. The NDA allows the publication of cost data at an appropriate level of aggregation. To protect the identity of individual personnel or health facilities, we do not identify them by name in this or any other public document. In addition, no results were publicly released until all institutions whose data has been used had a chance to review.

3 Results

3.1 Total cost

The total cost of MMA attributable to the study LGAs for December 2017 – September 2020 was $423,000, split between $143,228 for Doma and $279,771 for Karu. From about $74,000 in round 1, costs doubled to $155,000 in round 2, reflecting the beginning of implementation in Doma LGA in January 2019. Total cost increased further in round 3, to $193,000 (Figure 2:).

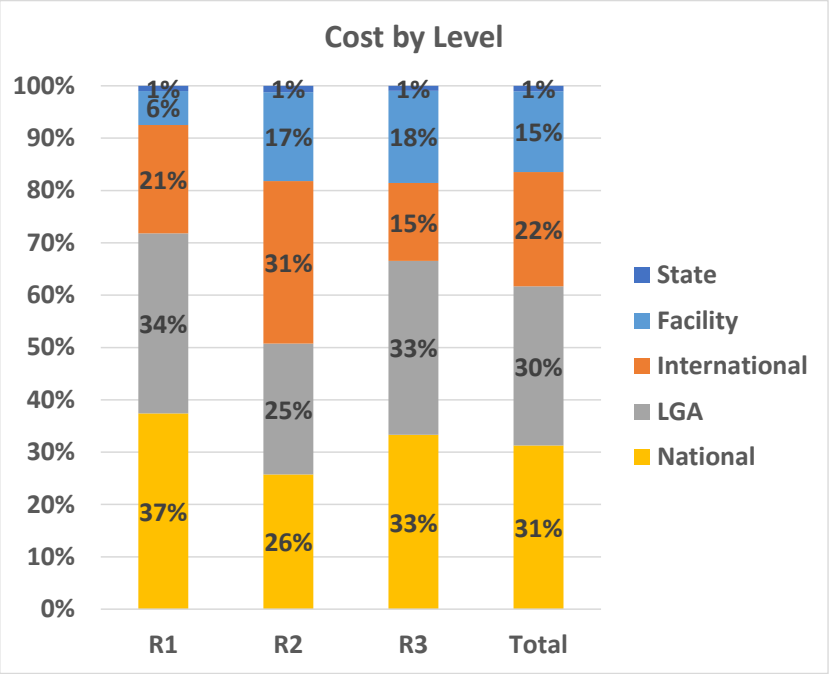
Figure 2: Cost of MMA in Nasarawa, December 2017 – September 2020, by round and total



3.2 Cost by level

Costs were incurred roughly equally at the national, LGA, and international levels, a pattern that held throughout all three rounds of analysis. Costs attributable directly to health facilities accounted for a smaller proportion of costs, with little cost incurred at the state level. These proportions remained relatively stable over the three rounds of data collection and analysis (Figure 3:).

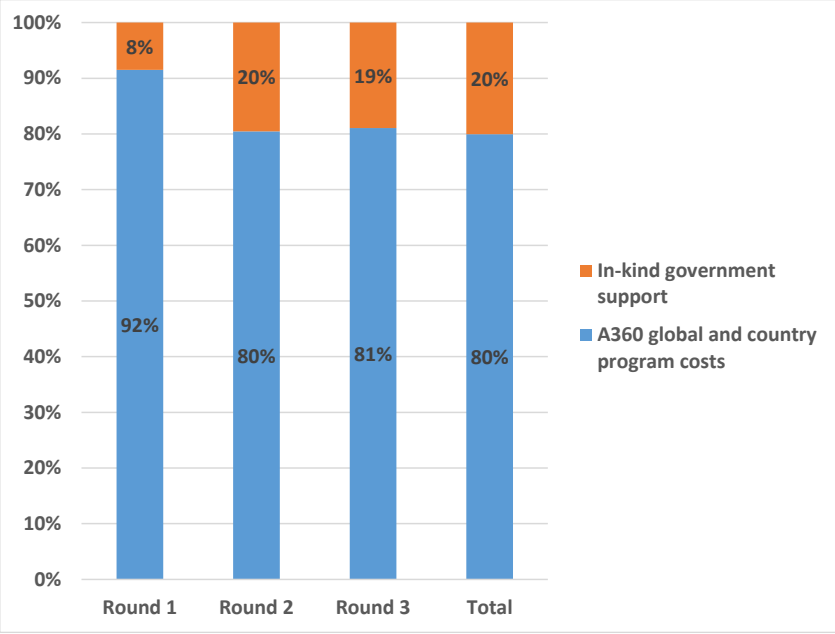
Figure 3: Cost of MMA in Nasarawa, by level, round and total



3.3 Cost by funding source

The A360 global and country program accounted for the majority of costs (80%) relative to funding from government (20%). These proportions were relatively unchanged over the three rounds (Figure 4:).

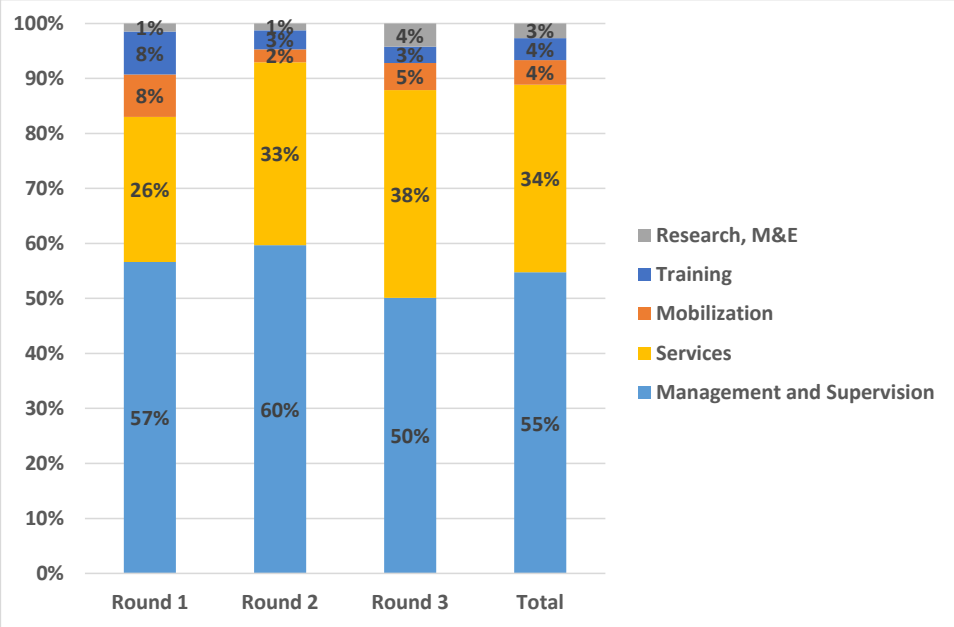
Figure 4: Cost of MMA in Nasarawa, by funder, round and total



3.4 Cost by main program element

Management and supervision accounted for the bulk of costs (55%), followed by services (34%), mobilization (4%), training (4%), and research and M&E (3%). These proportions remained relatively stable over the three analysis rounds (Figure 5:).

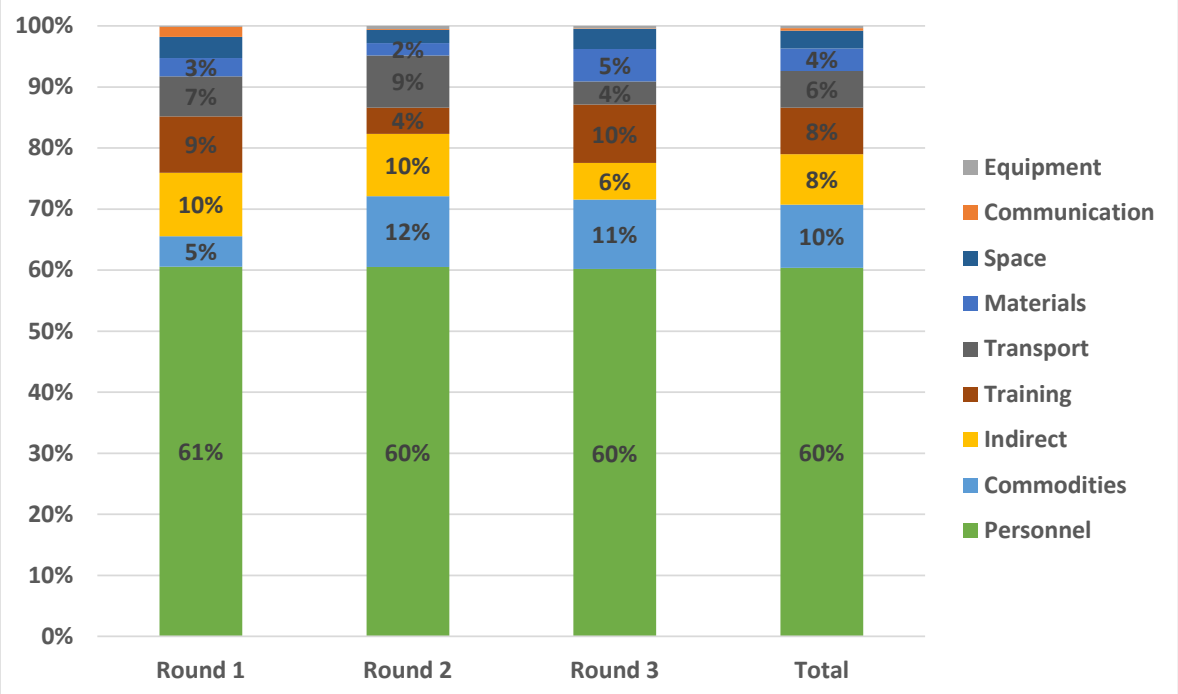
Figure 5: Cost of MMA in Nasarawa, by main program element, round and total



3.5 Cost by main input type

Personnel costs accounted for almost two-thirds of the total (60%), with the remaining input types each accounting for less than 10% of the total. This pattern maintained across the three data analysis rounds (Figure 6:).

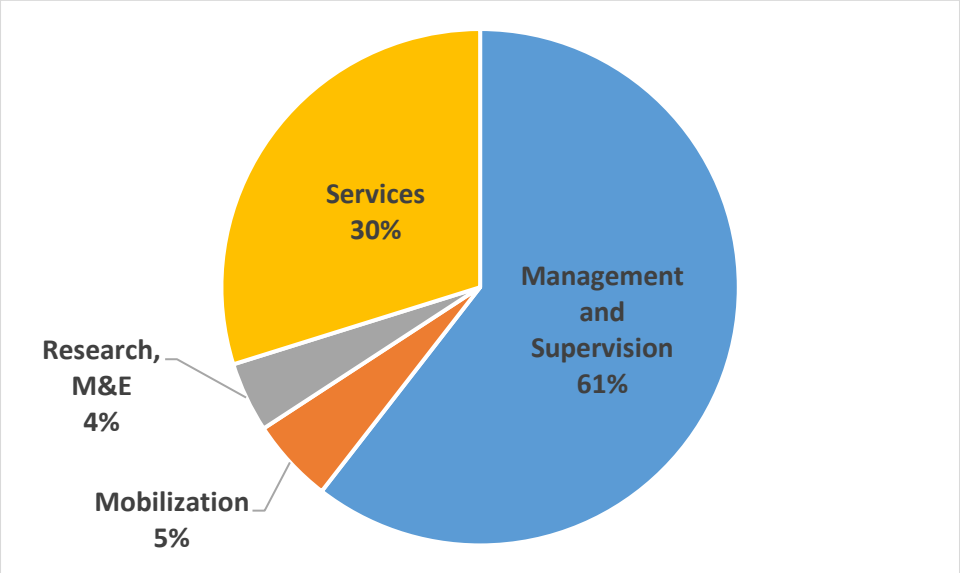
Figure 6: Cost of MMA in Nasarawa, by main input type, round and total



3.6 Personnel cost by main program element

Given their large share of the total, it is of interest to see how personnel costs split across different program elements. As Figure 7: shows, the large majority of personnel costs went to management and supervision (61%) and services (30%).

Figure 7: Personnel costs of MMA in Nasarawa, by main program element



3.7 Sensitivity analysis

Sensitivity analyses tested changes in key assumptions and parameters which might change the findings. We first carried out one-way sensitivity analyses, in which we independently measured the impact of changing individual parameters. We then combined the individual parameters to conduct multi-way sensitivity analysis in which all parameters are varied simultaneously.

3.7.1 One-way sensitivity

Covid-19 cost impact. In our base case, we assumed no additional cost to the intervention because of Covid-19 related expenses (except small costs associated with purchasing personal protective equipment). In the sensitivity analysis, we assumed that Covid-19 had inflated spending by 25% in 2020. This reduced the total intervention cost estimate by $48,363.

International support cost going to replication/adoption. International support costs included costs not initially assigned to a specific country and then reassigned to the interventions in the A360 countries. These costs excluded activities dedicated to replication/adoption of A360 in other settings. We estimated the amount dedicated to replication/adoption based on staff surveys. Recognizing the significant uncertainty in these estimates, we carried out sensitivity analyses lowering and raising these international support costs by 50% in either direction. This produced a shift of $30,369 in either direction.

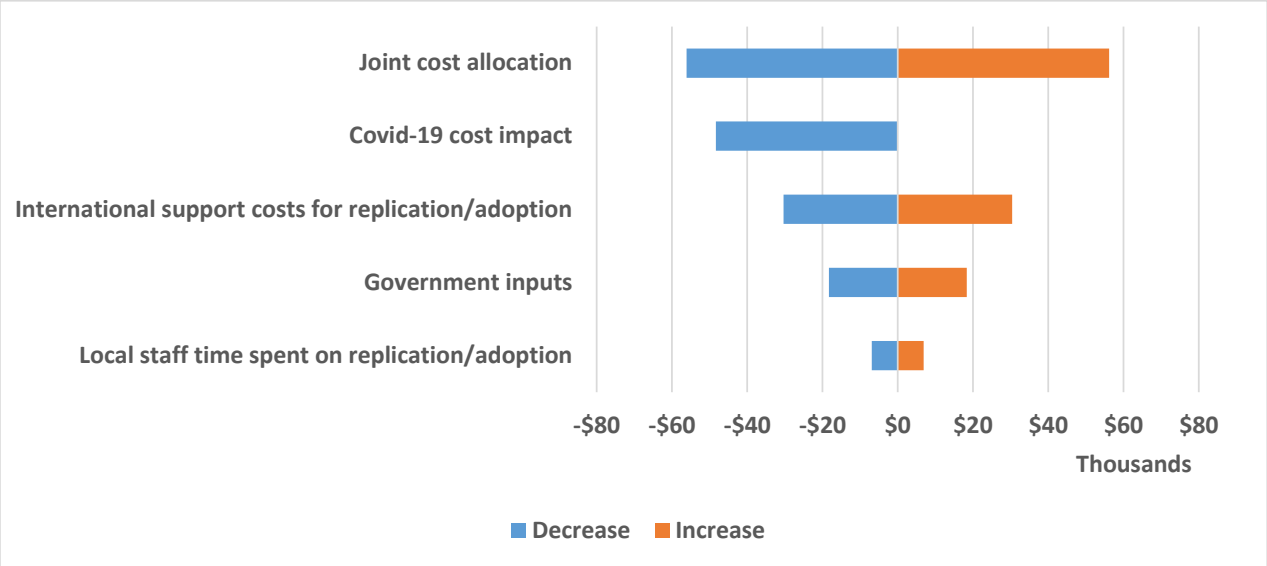
Local staff time spent on replication/adoption. As for international staff, local staff costs assigned to the intervention were reduced by estimates of time spent on replication/adoption activities. To address uncertainty in responses to surveys and incompleteness of surveys, we carried out a sensitivity analysis lowering and raising staff time spent on replication/adoption activities by 50% in either direction. This produced a shift of $6,879 in either direction.

Allocation of joint national and international spending to study geographies. A large proportion of total costs were joint national and international costs not identified with a specific LGA. To allocate these costs

to the study LGAs (Doma and Karu) we drew on partial information on LGA- and state-specific spending to estimate spending in the study LGAs as a proportion of total LGA-level spending. Recognizing the considerable uncertainty in this estimated proportion, we carried out a sensitivity analysis varying this proportion up or down by 50% of its base case value. This produced a shift of $56,151 in either direction.

Decrease or increase cost of government input. The cost of government personnel, space, and utilities drew on a sample that was not necessarily representative or complete. Similarly, commodity cost calculations incorporate some uncertainty around visit norms and, for some inputs, drew on default standard international costs and not local costs. Given the uncertainty in our base case estimate, we carried out a sensitivity analysis that lowered or raised government-funded costs by 25%. This produced a shift of $18,312 in either direction.

Figure 8: Results of sensitivity analysis around interventions costs, northern Nigeria



3.7.2 Multiway sensitivity analyses

We combined the one-way sensitivity analyses to produce plausible lower and upper bounds for total costs of $262,925 and $534,712, translating to a percentage decrease of 38% and an increase of 26% relative to the base case estimate.

4 Discussion

The costing of the MMA program in Northern Nigeria aimed to provide input to a cost-effectiveness analysis serving to expand the evidence base on adolescent sexual and reproductive health programs. The forthcoming cost-effectiveness analysis will gauge the total cost in the context of program outputs and impact.

The overarching findings of the costing analysis are:

- Costs attributable to the study LGAs, Doma and Karu in Nasarawa State, were $423,00 over two years and nine months of implementation, with a plausible range of between $262,925 (-38%) and $534,712 (+26%).
- Program costs increased substantially from round 1 to round 2, reflecting the delayed start-up of implementation in Doma and the maturing of the program.
- Just over half of costs were incurred above the LGA level and for management and supervision, a reflection of strong technical and managerial support from national and international staff.
- Even after accounting for in kind government funding of staff, commodities, and space, A360 funds still constituted 80% of funding.
- That personnel made up almost two-thirds of total costs reflects the hands-on nature of the program's mobilization and service delivery components and the strong management and technical support functions.
- These findings are consistent with the program structure and in line with other, similar programs.

The following important methodological limitations should be kept in mind when interpreting these results:

- The mostly top-down costing approach relied on PSI and sub-awardee financial systems, which did not provide full detail on costs specific to the study geographies. We tried to address this limitation by developing appropriate rules to allocate costs to the study geographies. Nonetheless, recognizing that such rules may still have produced errors in estimation, we carried out sensitivity analysis to address this uncertainty.
- For leveraged costs of the government, we used a bottom-up approach that relied on interviews and site-specific data collection. Although for some inputs we were able to use a census approach, for others we relied on nonrepresentative sampling. Moreover, for some inputs we had incomplete data collection due to inability to contact some personnel, and COVID-19 pandemic related restrictions. To address potential errors in the resulting leveraged cost estimates, we also applied sensitivity analysis.
- Using retrospective surveys and interviews may also have generated potential recall error, both in estimates of leveraged costs and of how A360 split their time between working on the intervention itself versus activities to replicate/adopt A360 in other settings. We addressed this through sensitivity analysis.
- Sensitivity analysis could not address all methodological limitations. Employing a full, bottom-up ingredients costing approach—for example using time and motion studies to estimate level of effort—might have yielded more accurate estimates, but also would have required more evaluation resources.

The reader should take caution in comparing these results to the results from the three other A360 interventions in Ethiopia, Southern Nigeria, and Tanzania, because of inherent differences in program structure and target population, as well as differences in price levels across countries. Caution is similarly warranted in the comparison of A360 results to other studies that may use different methods to calculate costs or of programs that operate at different scale.

References

Atchison, Christina Joanne; Mulhern, Emma; Kapiga, Saidi; Nsanya, Mussa Kelvin; Crawford, Emily E; Mussa, Mohammed; Bottomley, Christian; Hargreaves, James R; Doyle, Aoife Margaret; (2018) Evaluating the impact of an intervention to increase uptake of modern contraceptives among adolescent girls (15-19 years) in Nigeria, Ethiopia and Tanzania: the Adolescents 360 quasi-experimental study protocol. Technical Report. BMJ Publishing Group. DOI: https://doi.org/10.1136/bmjopen-2018-021834

Rosen, James E., Peter Stegman, Hafsatu Aboki, and Michelle Weinberger. 2021. A360 Intervention Cost Report: Southern Nigeria, 9ja Girls

Rosen, James E. and Michelle Weinberger. 2018. Cost-effectiveness analysis evaluation plan. Submitted by Itad, in association with Avenir Health, 29 June 2018

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