Final Report

A360 Intervention Cost Report
Intervention: Ethiopia, Smart Start

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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
BMGF	Bill & Melinda Gates Foundation
CIFF	Children's Investment Fund Foundation
CEA	Cost-Effectiveness Analysis
CYP	Couple-Year of Protection
HCD	Human-Centered Design
M&E	Monitoring and Evaluation
MOH	Ministry of Health
NDA	Non-Disclosure Agreement

Executive Summary

Background

This document reports results from the costing of A360, a girl-centred approach to contraceptive programming that operated in four regions in Ethiopia. The program, known as Smart Start, served married adolescent girls. This costing focused on intervention costs in four woredas (districts) in Oromia Region incurred during the implementation period, from January 2018 – September 2020.

Objectives

The main objective of this costing is to a produce a total intervention cost as input to a cost-effectiveness analysis. Results will help expand the evidence base on adolescent family planning programs.

Methods

The study included costs of PSI and its partners, and of government and volunteer 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 woredas. 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 four study woredas were $964,987 over two years and nine months of implementation (excluding design costs), with a plausible range of between $744,449 and $1,108,780. Program costs increased substantially from 2018 to 2019, reflecting the delayed start-up in two of the four study woredas and the maturing of the program. Just under half of costs were incurred at the woreda level with the rest at the 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, and space, A360 funds still constituted the large majority of funding. Personnel made up more than two-thirds of total costs. This reflects the labor-intensive 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 Northern Nigeria, 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 Ethiopia, known as Smart Start, which focused on serving married adolescent girls. It draws on earlier, unpublished reports of three rounds of costing covering 2018 - 2020.[1]

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 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 A360 interventions (forthcoming).

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 family planning 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 Smart Start

The PSI affiliate in Ethiopia implemented Smart Start. Smart Start used financial planning as an entry point to discuss contraception with newly married couples. It leveraged the nationwide Health Extension Worker (HEW) network, supported by paid A360 mobilizers called Smart Start Navigators and the volunteer Women's Development Army. It aimed to help young couples view contraception as a tool that can help them achieve financial security and raise healthy children. HEWs were trained to host conversations about financial planning and provide contraceptive services in an approachable way to rural, married girls and their husbands, using a visual discussion guide. Smart Start operated in four of Ethiopia's 10 regions and 39 of Ethiopia's roughly 800 woredas (districts). This costing study focuses on a subset of Smart Start interventions that were conducted in four woredas in Oromia Region that were also the focus of the A360 Outcome Evaluation.

[1] Add the report citations.

[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.

2 Methods

2.1 Study perspective

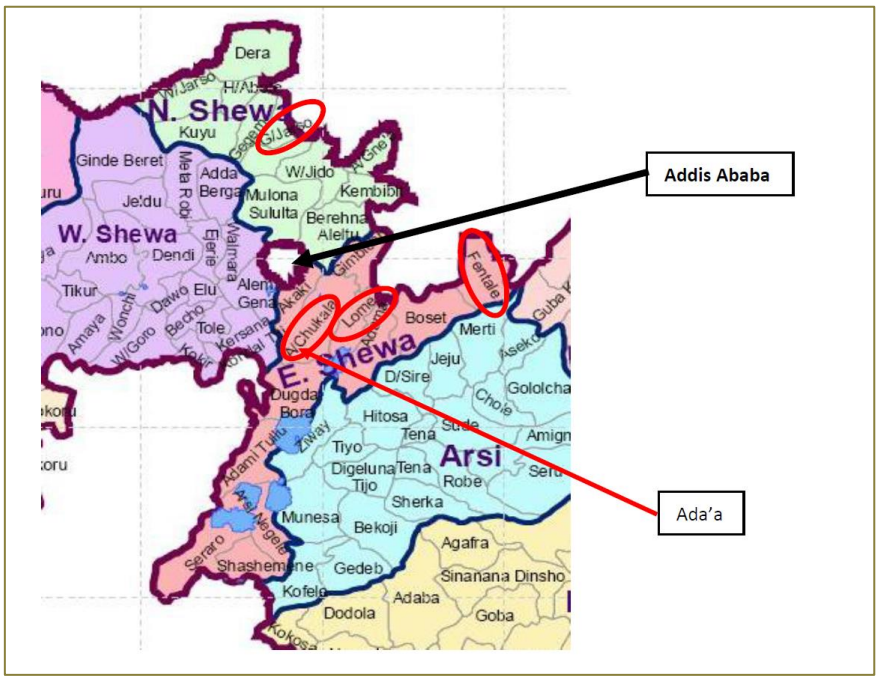
The choice of perspective or viewpoint determines whose costs to include. Ideally, any costing should adopt the perspective of society, and include all related costs, regardless of who pays for them. This costing took something less than a full societal perspective, by including costs incurred by PSI and its partners, the government, and volunteers, while excluding client costs. The perspective is that of the funder or implementer of the intervention. 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 Ethiopian 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 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

PSI Ethiopia implemented Smart in in four regions (Amhara, Oromia, SNPPR, and Tigray) and 39 woredas (districts). The outcome evaluation, designed as a cross-sectional before and after study, took place in four woredas in the Oromia region, Adea, Fentale, Lume, and Wara Jarso.[3] The costing focused on the those four woredas (shown in Figure 1:), also referred to as the study geographies.

Figure 1: Map of North Shewa and East Shewa administrative zones showing woredas where intervention study will take place



Note: Intervention Woredas in red

Source: Outcome evaluation protocol.

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

2.3 Time frame and analytic horizon

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, two years nine months in Fentale (January 1, 2018 through September 30, 2020), and two years, two months in Adea, Lume and Wara Jarso (August 1, 2018 through September 30, 2020).

2.4 Included and excluded costs

Within the perspective described above, 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 cost to design the Smart Start program is 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:

[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

1. *Country*, to distinguish among the three A360 countries (Ethiopia, Nigeria, and Tanzania)
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 Ethiopia, the model was the same countrywide.
4. *Input type*. We classified each of the 152 individual cost categories (or line items) by the following input categories:
    a. *Commodities*, including contraceptives and their associated supplies (gloves, syringes for injection, etc.)
    b. Communication, including phone, internet, and postage
    c. Equipment, computer hardware and software, furniture, and office equipment
    d. *Indirect*, including bank charges, indirect cost fee, office supplies, audits, and utilities
    e. *Materials*, including printed media, IEC materials and events, and program related meetings
    f. Personnel, including PSI staff salary and benefits, per diems, stipends for attendance at community meetings, government staff time, and volunteer time
    g. Space, including PSI office space, and space occupied by project staff at government offices
    h. *Training*, including program-related training, and conferences and meetings
    i. *Transport*, including airfare, taxi, travel, vehicle fuel, insurance and repairs, and supportive supervision travel costs
5. *Program element*. We classified each of the line items according to the following main program elements:
    a. *Management and Supervision*, including international and national-level management, supervisory, and administrative costs, PSI's woreda-level Adolescent Health Officer, government woreda management personnel, joint supportive supervision cost and staff time cost of Health Extension Workers being supervised, woreda review meetings and quality assurance
    b. *Mobilization*, including IEC materials and events and mobile devices, kebele kickoff and transition meetings, woreda launch meetings, time of Smart Start Navigators, kebele leaders, champions, and women's development army volunteers
    c. *Research, M&E*, computer hardware and software, PSI evaluator staff cost
    d. *Services*, including time of Health Extension Workers and contraceptives and associated supplies
    e. *Training*, including program-related training
6. *Level*. We classified each line item at the level at which the cost is incurred
    a. *Woreda*, including PSI, government, and volunteer personnel, mobilization, space used by Smart Start at woreda health offices, and program-related trainings and meetings
    b. *Corridor*, including time of the PSI area program manager and program advisor

c. *National*, including any other costs incurred by PSI at the national level, including for management and technical personnel, consultants, travel, meetings, and general administration.

d. *International*, including managerial and technical support activities from outside Ethiopia by PSI or its partners IDEO.org and UCB.

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. Other in-kind costs, including time spent by volunteers

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

d. *Nonbillable G&A,* including costs incurred by PSI but not 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). Data were processed in Excel. During each round of data collection, the local consultant visited sites to observe activities and to interviews project implementers.

The study used a variety of sources for cost information, summarized in Table 1: and described in more detail below. PSI routine accounting systems did not allow visibility into spending at the woreda level. Because the study's unit of analysis was the woreda, this meant that, for costs drawn from those accounting systems we applied rules to allocate an appropriate amount of joint costs to the study woredas.

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

Cost type	Source	Method to allocate costs to the study woredas
Direct staff costs of Navigators, Adolescent Health Officers	PSI payroll	Costs allocated directly to study woredas
Direct woreda costs, including all program related costs such as training, kick-off, meeting, transition out, supportive supervision, etc	PSI special study of woreda and kebele costs	Costs allocated directly to study woredas
Program advisor and area program manager costs	PSI payroll	Costs allocated to study woredas based on number of study woredas as a % of total woredas covered by advisor or manager
Other PSI national costs not already directly allocated to a woreda	PSI accounting system	Costs allocated to study woredas based on number of active kebeles in each of the study woredas

International support costs	PSI and partner accounting system	Costs allocated to study woredas based on number of active kebeles in each study woreda
Government resources	Interviews; PSI service statistics on adopter numbers and method mix	Costs allocated directly to study woredas
Volunteer time	Interviews	Costs allocated directly to study woredas

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

Table 2: Site visits and interviews conducted

	# Site Visits	# Interviews with PSI staff	# Interviews with Government staff	# Interviews with volunteers	Total # interviews
Round 1	3	21	12	7	40
Round 2	0	10	4	0	14
Round 3	4	18	14	10	42

2.6.1 Direct staff costs of Navigators and Adolescent Health Officers

Smart Start Navigators and Adolescent Health Officers are full-time A360 staff assigned to specific woredas. Combining payroll records with information on timing of program operation in specific woredas we calculated the direct cost of their time to the program and assigned it to each of the four study woredas.

2.6.2 Direct woreda costs

PSI accounting staff tallied costs directly related to training, meetings, and supportive supervision for the four study woredas.

2.6.3 Program Advisor and Area Program Manager costs

Program Advisors are full-time A360 staff assigned to specific corridors that comprise multiple woredas. We combined payroll information with information on timing of woreda program operation to allocate a proportion of Program Advisor time to the study woredas, based on the total number of woredas under their purview, for the period in question.

PSI assigns an Area Program Manager to each of their geographic corridors to oversee all programs in that area, including A360. From payroll we got data on how much they charged to A360, then allocated that amount to specific study woredas based on the total number of woredas under their purview, for the period in question

2.6.4 Other PSI national costs not already directly allocated to a woreda

To allocate a share on other PSI national costs not already directly allocated to the study woredas, we drew on the PSI office accounting system to calculate all PSI national costs. We first reduced PSI national costs commensurate to the amount of local staff time dedicated to “adoption and replication” activities

that did not support implementation of Smart Start. Such activities that allow replication of the Smart Start 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 Smart Start 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. We then subtracted costs already attributed to spending in the four study woredas, including for Navigators, Adolescent Health Officers, Program Advisors, Area Program Officers, and direct woreda costs described above (section 2.6.2). We allocated the remainder to each study woreda based on their number of active kebeles as a proportion of the total number of active program kebeles. We chose the kebele as the allocation unit because the large majority of program costs vary directly with kebele activity.

2.6.5 International support costs

International support included costs associated with managerial and technical support activities from outside Ethiopia, including by PSI or its partners. From these partners' routine accounting systems, we first identified international support costs specifically tagged to Ethiopia.

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 proprtion attributable to Ethiopia, 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 Ethiopia. We then allocated a portion of those international support costs to the study geographies based the number of active kebeles in each woreda.

2.6.6 Government resources

We estimated cost for three types of government resources: personnel, space, and commodities.

Personnel. We estimated personnel time via direct interviews of government staff supporting Smart Start at the woreda and kebele level, including the woreda Health Officer and the A360 Focal Point assigned to the project at the woreda Health Office, the Health Extension Workers who are assigned to health posts located in kebeles, and kebele Administrators who oversee operations of the health posts and other government functions. To value their time, we drew on knowledge of government pay scales. PSI already gives a $10 daily stipend to government staff who participate in Smart Start trainings and meetings, to reimburse them for time and travel costs. We included that stipend cost under direct woreda costs and other PSI national costs as described above. Where the value of the official's time exceeded the reimbursement provided, we included that as an additional, off-budget or "leveraged" cost to the program.

Space. The government provides Adolescent Health Officers with free office space at the woreda Health Office. Because the local consultant was unable to visit the health office during round 3 because of COVID-19 restrictions, we used measurements of space, and previous estimates of equivalent monthly rental cost per square meter to calculate the imputed cost to the program based on the amount of time the space was used 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 Ethiopian health officials. For the cost of additional medical supplies for the initial 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.

2.6.7 Volunteer time

Smart Start also relies on two types of community volunteers for mobilization activities, Women's Development Army (WDA) volunteers who live in the kebele and help to identify and counsel couples for the program, and Champions, young people who live in the kebele who mobilize their peers. We estimated their time committment via direct interviews. Like for government staff, PSI reimburses volunteers $10 daily for attendance at training and meetings, the cost of which we included already in direct woreda costs and other PSI national costs. We valued volunteer time at prevailing wage rates for day laborers, ETB 50 ($1.79) for a WDA and ETB 35 ($1.35) for Champions. Where the value of the volunteer's time exceeded the stipend provided, we included that as an additional, off-budget or "leveraged" cost to the program.

2.6.8 Impact of COVID-19 on costs

Much of round three (January – September 2020) coincided with the onset of the COVID-19 pandemic. Although services continued throughout the pandemic, Smart Start program management made several adjustments to program operations, including shifting from group to individual counseling, restrictions on travel, suspension of community-level meetings, development of COVID-specific training materials, and provision of personal protective equipment to staff. While the pandemic generated some unanticipated costs, others costs such as travel and meetings costs likely decreased. The overall impact of COVID-19 on costs is difficult to ascertain because of limitations of the accounting system. Drawing on interviews with program managers, the base case cost estimate assumed no change in cost due to COVID. We carried out a sensitivity analysis to test this assumption (see section 2.8).

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 the input). For the Smart Start 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. The results of the sensitivity analysis are reported below (section 3.6).

2.9 Ethical and other research considerations

No clients were interviewed for the costing. Where the costing involved interviews of health personnel working on Smart Start, 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

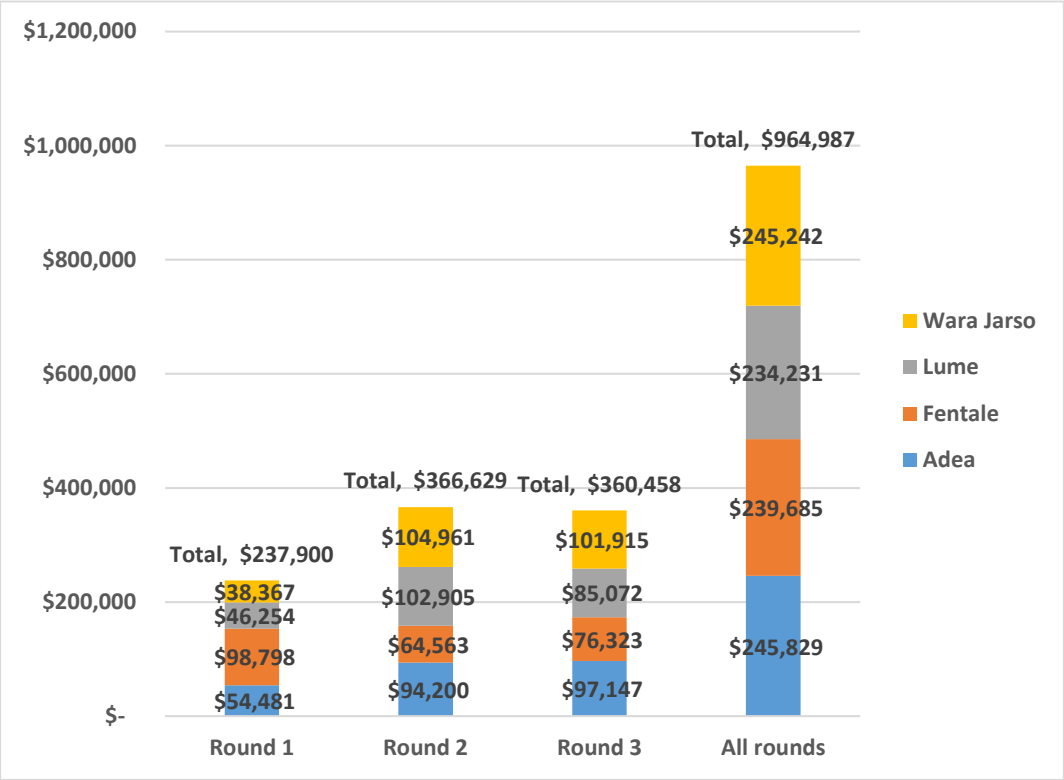
them by name in this or any other public document. In addition, no results were publicly released until all institutions whose data has been used had a chance to review.

3 Results

3.1 Total cost

The total cost of Smart Start attributable to the four study woredas for January 2018 – September 2020 was $964,987. Spending went up substantially from $237,900 in round 1, to $366,629 in round 2, then plateaued at $360,458 in round 3. Total spending per woreda was about the same, ranging from $234,231 in Lume to $245,829 in Adea (Figure 2:).

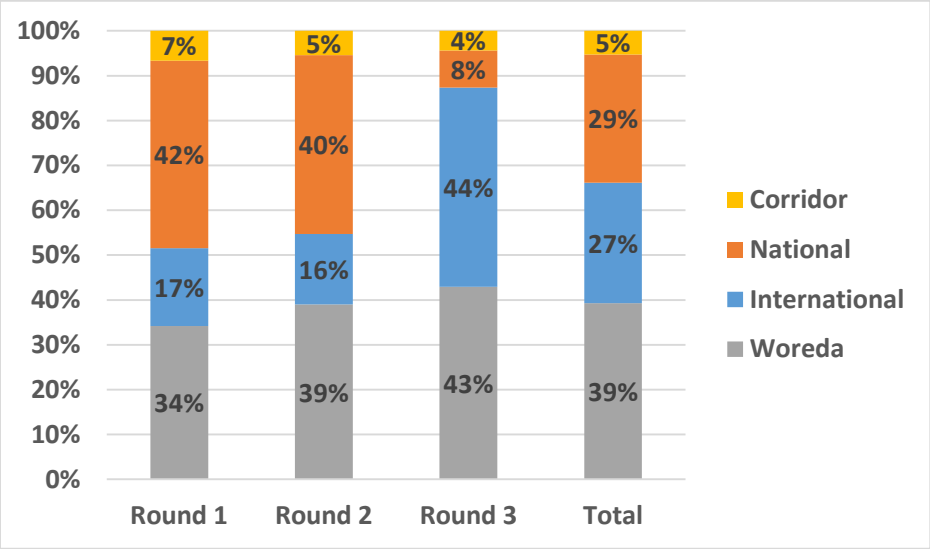
Figure 2: Cost of Smart Start, January 2018 – September 2020, by round, woreda, and total



3.2 Cost by level

Most costs were incurred at the woreda level (39%), followed by national (27%), international (29%), and corridor (5%). These proportions were roughly similar in rounds 1 and 2, but round 3 saw a shift from national to international spending (Figure 3:). Likely the change in funding sources for Smart Start underlay this shift. Beginning in January 2020, funding for all but the study woredas changed from A360 to another funder (RISE). Fixed international management costs then had to be spread over a smaller program, thus raising costs.

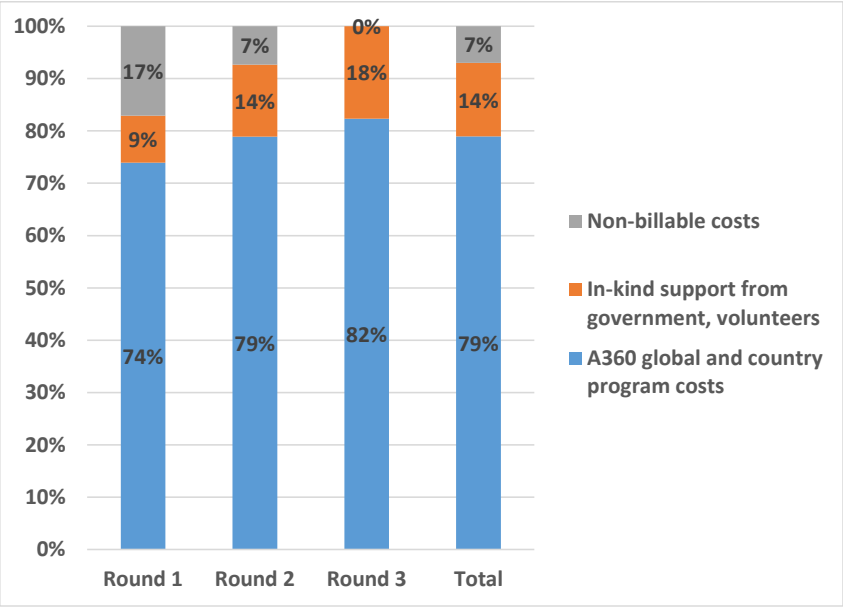
Figure 3: Cost of Smart Start, by level, round and total



3.3 Cost by funding source

The A360 global and country program accounted for the large majority of costs (79%) relative to funding from government and volunteers (14%), and non-billable costs absorbed by PSI (7%). Non-billable costs made up gradually decreasing proportions over the three data analysis rounds as PSI renegotiated with its donors and non-billable costs became billable expenses (Figure 4:).

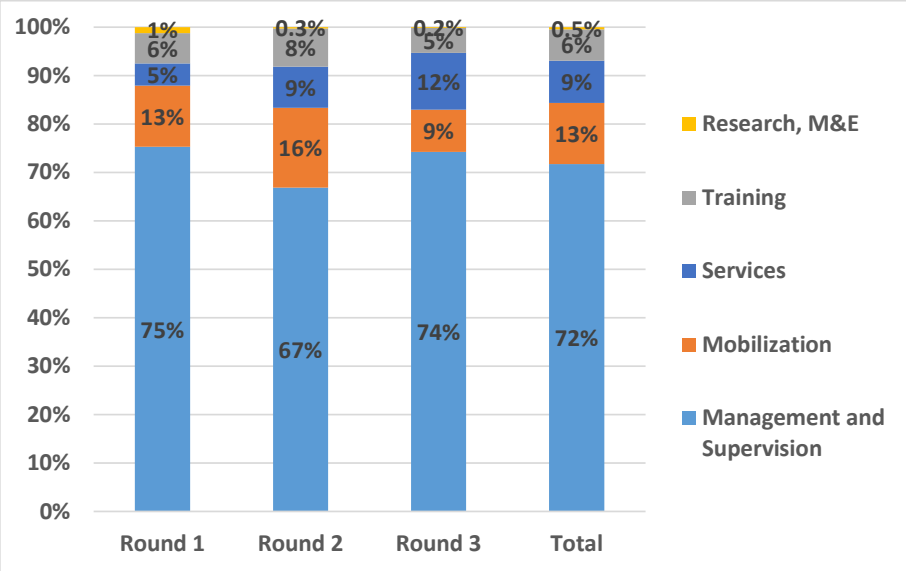
Figure 4: Cost of Smart Start, by funder, round and total



3.4 Cost by main program element

Management and supervision accounted for the bulk of costs (72%), followed by mobilization (13%), services (9%), training (6%), and research and M&E (0.5%). These proportions remained relatively stable over the three analysis rounds (Figure 5:).

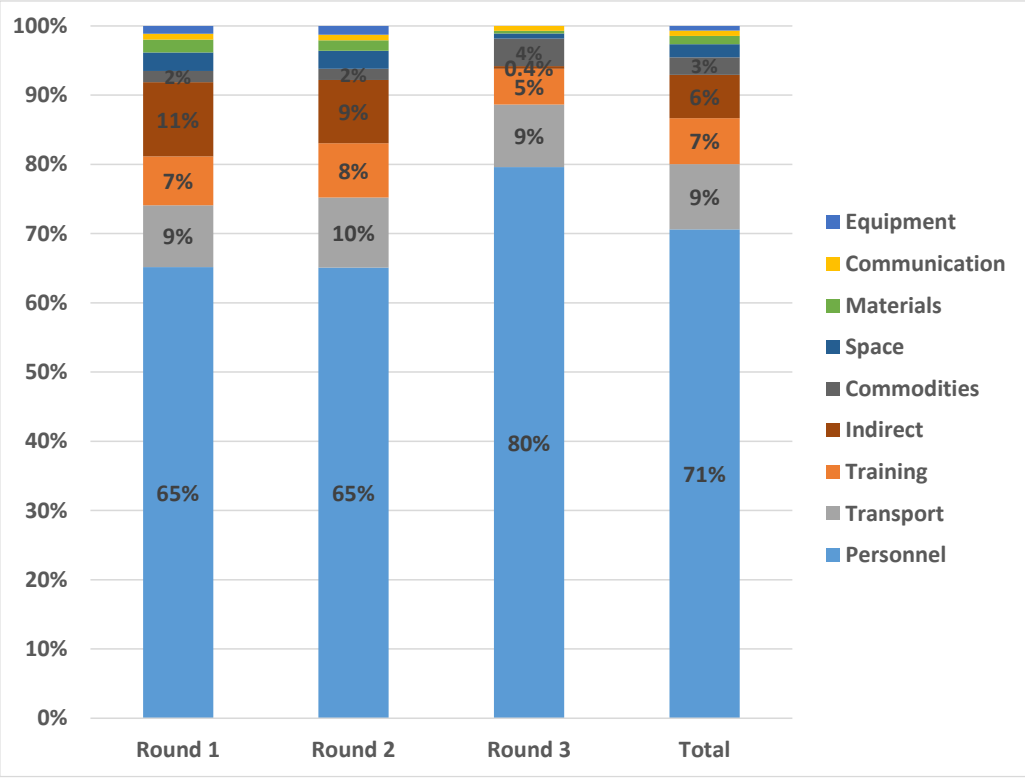
Figure 5: Cost of Smart Start, by main program element, round and total



3.5 Cost by main input type

Personnel costs accounted for greater than two-thirds of the total (71%), with the remaining input types accounting for less than 10% of the total. This pattern was about the same across the three data analysis rounds, with the exception of an increase in personnel as a percent of the total to 81% in round three (Figure 6:).

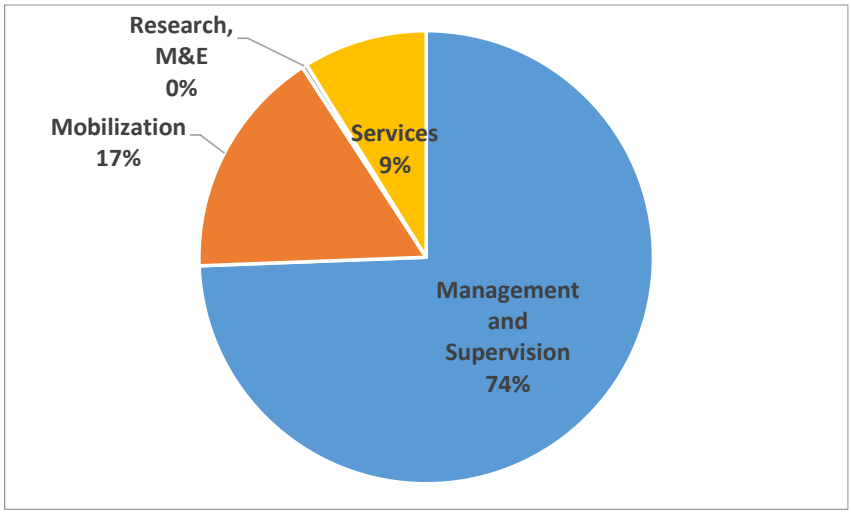
Figure 6: Cost of Smart Start, by main input type, round and total



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 (74%) and mobilization (17%).

Figure 7: Personnel costs of Smart Start, 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

We carried out one-way sensitivity analysis on six key parameters around which considerable uncertainty existed.

Covid-19 cost impact. In our base case, we assumed no additional cost to the intervention because of Covid-19 related expenses. In the sensitivity analysis, we assumed that Covid-19 had inflated spending by 25% in 2020. This reduced the total intervention cost estimate by $90,114.

International support cost for adoption/replication. International support costs included costs initially not 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 $81,401 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 decrease of $4,545 and increase of $7,827.

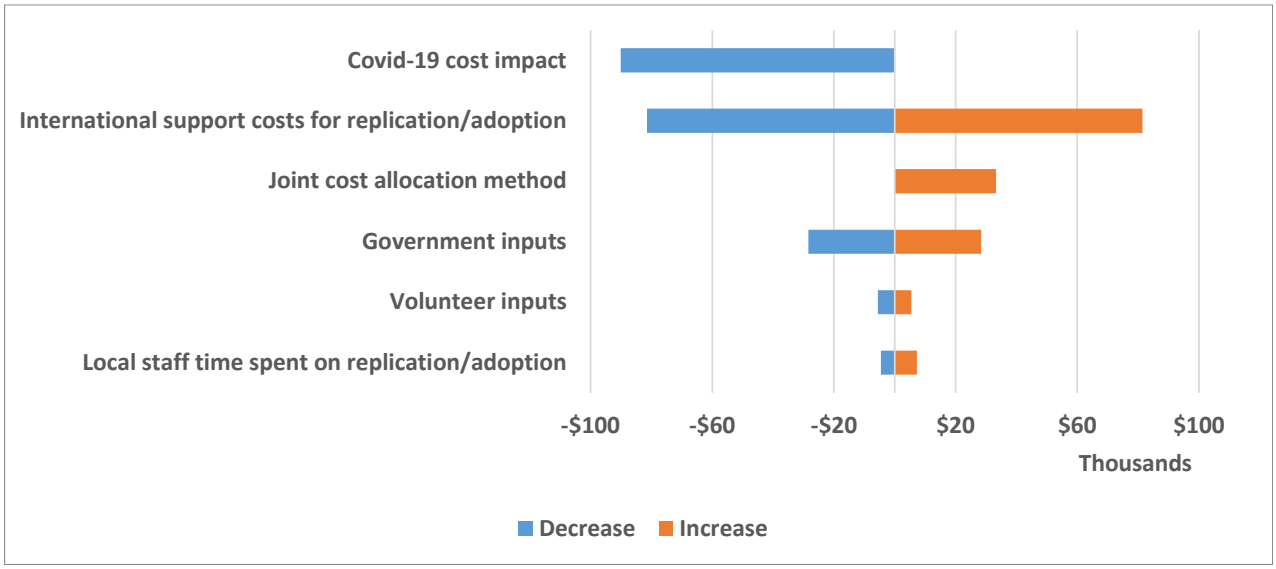
Allocation of joint national and international spending to study geographies. A large proportion of total costs were joint national and international costs not identified with a specific woreda. In the base case, we allocated these costs to woredas based on the number of active kebeles in each woreda. Recognizing the

considerable uncertainty in this estimated proportion, we carried out a sensitivity analysis splitting these joint costs equally across woredas. This produced a shift upwards of $33,343.

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 $28,363 in either direction.

Decrease or increase cost of volunteer inputs. The cost of volunteer also drew on a nonrepresentative, incomplete sample. To address the uncertainty in our base case estimate, we carried out a sensitivity analysis that lowered or raised volunteer costs by 25%. This produced a shift of $5,507 in either direction.

Figure 8: Shift in total intervention cost from one-way sensitivity analysis, Ethiopia



3.7.2 Multiway sensitivity analyses

We combined the one-way sensitivity analyses to produce plausible lower and upper bounds for total costs of $744,449 and $1,108,700, translating to a percentage decrease of 23% and an increase of 15% relative to the base case estimate.

4 Discussion

The costing of Smart Start in Ethiopia aimed to provide input to a cost-effectiveness analysis serving to expand the evidence base on adolescent family planning 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 four study woredas were $964,987 over two years and nine months of implementation, with a plausible range of between $744,449 (-23%) and $1,108,780 (+15%).
- Program costs increased substantially from round 1 to round 2, reflecting the program maturation and delayed start-up in three of the four woredas.
- Just over half of costs were incurred above the woreda level and almost three-fourths of costs were 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, and volunteer time, A360 funds still constituted the large majority of funding.
- That personnel made up more than two-thirds of total costs reflects the labor-intensive 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 subawardee 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 Northern Nigeria, 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.

5 References

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