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The business case for investing in social and behavior change for family planning

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The Business Case for Investing in Social and Behavior Change for Family Planning



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Abbreviations

AOR	Adjusted odds ratio
DALY	Disability-adjusted life year
DHS	Demographic and Health Survey
FP	Family planning
GDP	Gross domestic product
HC3	Health Communication Capacity Collaborative
ICER	Incremental cost-effectiveness ratio
IPC	Interpersonal communication
IUD	Intrauterine device
mCPR	Modern contraceptive prevalence rate
MSI	Marie Stopes International
OR	Odds ratio
PBC	Provider behavior change
PMNCH	Partnership for Maternal, Newborn, and Child Health
SBC	Social and behavior change
SBCC	Social and behavior change communication
SBCE	Social, behavioral, and community engagement
USAID	United States Agency for International Development
USD	United States dollars
WHO	World Health Organization

Executive Summary

Although the development field generally considers social and behavior change (SBC) interventions an essential part of high-quality health programs, the lack of synthesized information on costs and effectiveness has meant that decision makers have under-appreciated and under-funded SBC relative to its actual worth (Hagger 2019). This business case uses an evidence-based approach to address this imbalance by answering questions about the effectiveness, cost, cost-effectiveness, and return on investment of SBC.

All of the United States Agency for International Development's (USAID's) strategic priorities in global health—preventing child and maternal deaths, controlling the HIV/AIDS epidemic, and combating infectious diseases—employ SBC approaches to varying degrees. This SBC for family planning business case is the first in a planned series of complementary, health area-specific business cases.

Methods

To develop the SBC for family planning business case, we drew on nearly 200 studies assessing SBC effectiveness and/or costs across a range of countries. We looked at both the indirect impact of SBC interventions via intermediate outcomes such as attitudes toward and communication around family planning, and the direct impact of SBC interventions on modern contraceptive use. Across studies, we calculated impact factors using odds ratios (ORs) to standardize the relationship between exposure to the SBC intervention and outcomes.¹ From these ORs, we constructed an impact matrix for three SBC intervention types: interpersonal communication (IPC); mass, digital, and social media; and packages that combine SBC approaches. Although community mobilization and community participation were extracted from the impact literature as unique interventions, due to the limited number of results, the difficulty in assessing these interventions (which often included some form of media and/or IPC) as primarily community mobilization or participation, and the fact that most packages included community activities, we decided to combine the results from community mobilization and participation with packages. For each intervention type, we populated the impact matrix with a median OR, and a lower and upper range around that median value to capture the variation

in impact across studies. For SBC costs, we translated findings from all studies into United States dollars (USD) 2017 (Box 1). We then calculated a median and lower and upper range cost per person exposed for these SBC intervention categories: television, radio, group IPC, individual IPC, and packages. We conducted modeling using these matrices and additional input data to calculate the costs and associated impacts of scaling up SBC interventions. Note that while cost data were extracted for other specific forms of media in addition to television and radio (e.g., newspapers, billboards, live drama, digital media), there were far fewer data points for these forms of media, and the broad ranges of the costs indicated serious differences in costing methodology. Thus, only television and radio were included in the modeling.

BOX 1 SBC COST STUDY REPOSITORY

Breakthrough RESEARCH has established a repository of SBC cost studies for use by researchers, program implementers, and funders. Now available on request as an Excel file, the project is building out an online version of the repository expected to be available by September 2020.

¹An OR less than 1 implies a negative relationship between the intervention and the outcome; whereas a ratio greater than 1 implies a positive relationship.

To answer questions about the cost-effectiveness of SBC and whether it generates a good return on investment, we present two case examples of SBC programming

from the literature. We also used the data to model the scaling of SBC programming in two settings, Guinea and Zambia. We estimate the cost of SBC by using existing cost repository data; we also account for the direct service delivery cost data associated with additional use of modern contraception.² We estimated the health impact of SBC by translating additional use of modern contraception into maternal health gains that result from fewer unwanted pregnancies and reduced maternal deaths. These maternal health gains were then translated into disability-adjusted life-years (DALYs) averted using the Impact 2 model.³ To gauge the cost-effectiveness of SBC, we compared cost per DALY averted from SBC to international standards for cost-effectiveness of health interventions, which characterize an intervention as “highly cost-effective” if its cost per DALY averted is less than one times the gross domestic product (GDP) per capita of the country. We also calculated a return on investment by dividing the monetary benefit from SBC for family planning by its cost. To estimate monetary benefits, we used the Impact 2 model to calculate the direct health service costs saved when averting an unintended pregnancy. We also estimated savings from productivity losses averted based on international guidelines suggesting that between one and three times GDP per capita is saved for every DALY averted.

Key findings of our work

- **SBC is effective in improving health outcomes, but results vary by setting.** Drawing on 130 unique studies that measured both the direct impact of SBC on modern contraceptive use and its indirect impact through intermediate outcomes, the analysis found many SBC interventions have a positive impact on intermediate outcomes as well as directly on modern contraceptive use. The median OR (drawn from ORs, or adjusted odds ratios [AORs] where available) ranged between 0.9 and 2.1 for all intervention types and all intermediate outcomes. These intermediate outcomes in turn were found to have a positive

impact on modern contraceptive use, with median ORs ranging between 1.1 and 2.8. The analysis also found SBC interventions have a positive impact on modern contraceptive use directly, with median ORs between 1.3 and 1.6.

- **SBC costs range widely across and within intervention types.** Drawing on 53 unique studies from a range of countries and a variety of interventions, the analysis found that mass media interventions had significantly lower costs per person reached (\$0.12 for TV and \$0.26 for radio) compared to interpersonal communication (\$5.04 for individual and \$6.92 for group) and packages that combine multiple SBC approaches (between \$11 and \$21). Moreover, within each intervention type, costs can vary significantly by setting. It is important to assess these cost differences in the broader context of the relative effectiveness and appropriateness of any particular intervention given the audience that an intervention wants to reach and the desired behavioral outcome.
- **SBC is a highly cost-effective intervention.** Using case examples from the research literature, and drawing from modeling in Zambia and Guinea, we found that scaling SBC is a highly cost-effective health intervention. Cost per DALY averted of SBC for family planning was \$468 in Egypt, \$591 in the Philippines, \$1,051 in Zambia, and \$438 in Guinea. All of the results fall below the one times GDP per capita threshold for classification as a highly cost-effective intervention. When compared against nearly 100 health interventions in developing countries, SBC falls within the middle range of cost per DALY averted.
- **SBC generates a positive return on investment.** The business case modeling found that, for example, in Zambia, for every \$1 invested in scaling up SBC interventions, SBC saves between \$2.40 and \$5.30 when accounting for direct health care costs and productivity losses. In Guinea, \$1 invested in SBC generates between \$2.30 and \$6.10 in savings.

²Regional averages from Guttmacher’s Adding it Up 2017 Methodology Tables applied to country specific method mix based on DHS to estimate a unit cost per family planning user. This cost includes commodities, supplies, and salaries associated with clinical service provision.

³A disability-adjusted life-year (DALY) is a year lost to poor health, disability, or early death. The number of DALYs that any particular health intervention averts is one way of comparing effectiveness across a range of health interventions.

Call to action

The Breakthrough RESEARCH business case finds that SBC interventions for family planning are effective, and in the examples explored, are highly cost-effective and generate a positive return on investment. Given these findings, we suggest the following calls to action:

- **Invest more in SBC for family planning.** Given the health and economic benefits of SBC, policy makers should consider investing more in this proven approach. At the same time, policy makers should understand that the SBC impact in a country will vary depending on what interventions are scaled, existing levels of modern contraceptive use, prevailing attitudes, and the potential number of women and men SBC interventions are able to reach.
- **Use the results of this business case to advocate for increased SBC funding.** Program implementers and advocates within the SBC community can use the results of the business case to help policy makers understand the value of SBC efforts by showcasing that SBC improves family planning outcomes, leads to better health outcomes, is cost-effective, and can lead to substantial cost savings.
- **Generate additional evidence of cost and effectiveness.** Evidence of cost and effectiveness forms the heart of the business case analysis. Evidence gaps exist, particularly for relatively new SBC approaches. Researchers, program implementers, and funders should invest in updating and improving the cost and impact databases, adding case examples, collecting standardized costing data, and generating new evidence of cost-effectiveness from rigorous and high-quality studies (Box 2).

BOX 2 SBC COSTING GUIDELINES

Breakthrough RESEARCH’s “Guidelines for Costing of Social and Behavior Change Health Interventions” offer standardized and detailed information on the approaches for high-quality and applicable costing of SBC programs. The Guidelines are available at <https://breakthroughactionandresearch.org/our-work/costing-and-economic-evaluation/>

- **Conduct more country modeling.** The examples for Guinea and Zambia show the potential power of the business case for advocacy at the country level. The SBC community can apply a similar modeling approach in other countries, in combination with other advocacy efforts, to provide evidence to increase SBC investments or to defend the current level of investment in SBC efforts in different contextual settings.

- **Prioritize SBC investments based on potential impact and cost-effectiveness.** Among the various SBC interventions, we found differences in effectiveness and cost. In deciding how to structure an SBC strategy for a country or developing tailored sub-national SBC plans, program managers and policy makers need better information on the relative cost-effectiveness of the SBC approaches to combine with other feasibility and contextual factors in their decision making. Further analysis of the existing data on effectiveness and costs, and the generation of evidence to fill current knowledge gaps can help achieve that goal (Box 3).

BOX 3 BRIEFS ON PRIORITIZING SBC INVESTMENTS FOR YOUTH

Breakthrough RESEARCH has developed two briefs exploring the factors related to adolescent childbearing and youth contraceptive use in USAID priority countries to show how social behavior change (SBC) investments can be tailored to focus on the unique circumstances of different young people. “Prioritizing and targeting SBC investments to address adolescent pregnancy in USAID priority countries” and “Prioritizing and targeting SBC investments in family planning for married youth in USAID priority countries” are available at <https://breakthroughactionandresearch.org/prioritizing-and-targeting-sbc-investments-for-youth/>

1 Introduction

Why is an SBC business case needed?

The development field considers social and behavior change (SBC) interventions an essential part of high-quality health services, and practitioners agree that improving health outcomes requires changing the health-seeking behaviors of individuals and communities, as well as the norms that underpin those behaviors (United States Agency for International Development's [USAID] 2016; Social and Behavior Change Communication [SBCC] Summit Secretariat 2018). Yet, gaps in information on the costs and impacts of SBC interventions have resulted in an incomplete picture of the contribution of SBC to health outcomes and the associated costs. One result is that decision makers have under-appreciated and under-funded SBC relative to its actual worth. This business case for SBC uses an evidence-based approach to address this imbalance by answering questions about the effectiveness, cost-effectiveness, and return on investment of SBC.

USAID asked Breakthrough RESEARCH in late 2017 to begin building a business case for SBC. In March 2018, Breakthrough RESEARCH held an expert consultation that helped to develop a common understanding of and consensus on the purpose, structure, and audience for a Breakthrough RESEARCH SBC business case. From these foundations and subsequent discussions with USAID, Breakthrough ACTION, and other stakeholders, Breakthrough RESEARCH prepared, and USAID approved in July 2018, a detailed concept note describing the approach. In September 2018, Breakthrough RESEARCH developed a Roadmap that expanded on that concept note. This document summarizes results from a subsequent literature review and modeling exercise.

What is a business case?

With origins in the commercial world, the business case in the global health field has come to mean a written or oral argument for investing in a particular health area or intervention, more specifically, one that analyzes the

costs and returns of such an investment.⁴ A business case typically values returns in monetary terms, such as health system costs saved and productivity losses averted from improved health outcomes, and in terms of comparable health outcomes such as lives saved, disability-adjusted life years (DALYs) averted, or quality-adjusted life years (QALYs) gained. A commercial business case helps gauge the value of a specific investment: Do we build a new factory or not? Do we upgrade the company's computer infrastructure or not? The emphasis in global health has been on using a business case to advocate for greater investment in a particular health area or intervention.⁵

What is the purpose of the SBC business case?

The primary purpose of this Breakthrough RESEARCH SBC business case is to provide rigorous evidence to show that investing in SBC is crucial for improving program outcomes and assuring health and development impact. In turn, we expect these arguments to influence the funding and programming decisions of international and in-country funders and health officials. The essence of the SBC business case approach is to capture SBC impact and cost measures, assess the benefit of SBC in health terms (cost-effectiveness analysis) or monetary terms (benefit-cost analysis), and transmit this evidence to key audiences to inform their advocacy efforts.

By highlighting the economic dimension of SBC investments, this SBC business case closely aligns with and complements Breakthrough ACTION's SBC for family planning "Influence Strategy" (Box 4) and the work of the Partnership for Maternal, Newborn, and Child Health (PMNCH) on an investment case for social, behavioral and community engagement (SBCE) interventions for reproductive, maternal, newborn and child health (Box 5).

⁴The global health field uses the terms "business case" and "investment case" interchangeably.

⁵See, for example, Thurston and Forbes 2014, "The business case for female condoms."

BOX 4 ALIGNMENT WITH THE SBC INFLUENCE STRATEGY OF BREAKTHROUGH ACTION

Breakthrough ACTION—USAID’s flagship SBC implementation project—is leading development of a new global influence strategy to increase commitment to SBC for family planning programming and initiate discussion on identifying shared priorities to catalyze coordination among stakeholders and create impact in family planning through SBC. The influence strategy aims to address limited understanding of, investment in, and coordination on SBC. Supporting the development of the influence strategy is an analysis of spending on SBC for family planning and interviews with experts and stakeholders to gauge understanding of SBC and to highlight key obstacles to SBC investment. From this analysis, Breakthrough ACTION is developing a strategy and set of activities that work through three pathways: (1) leveraging multi-stakeholder country planning processes; (2) directly engaging targeted donors; and (3) elevating SBC programming at existing fora.

BOX 5 ALIGNMENT WITH THE PMNCH SBCE INVESTMENT CASE

The Partnership for Maternal, Newborn, and Child Health (PMNCH), a global alliance of more than 1,000 organizations from 192 nations, is developing an investment case for social, behavioral, and community engagement (SBCE) interventions for reproductive, maternal, newborn, and child health. Work to date has included an evidence gap map on SBCE interventions, a scoping exercise to gather insights from key stakeholders, and a planned analysis on the benefits and costs of SBCE interventions (Pantoja 2017).

Who is the SBC business case for?

The SBC business case aims to reach a range of primary audiences, including:

- International donors already funding SBC activities, to persuade them to maintain or increase their funding.
- International donors not currently funding SBC activities, to persuade them of the value of initiating SBC funding.
- Health ministries, including program officials, to persuade them that investments in SBC activities can enhance the impact of their efforts.
- Finance ministries, to persuade them that investing in SBC activities produces net societal benefits.
- Other government ministries, who may be coordinating SBC efforts with the health sector.

Additional audiences for this SBC business case include SBC implementing partners, researchers evaluating programs, and global bodies such as WHO, UNFPA, and UNICEF in their coordinating capacities. These individuals and groups can advocate for SBC using this business case.

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2 What is SBC?

An effective business case clearly defines the investment and its goals. Doing so helps to provide a common understanding of the parameters of the business case and to determine its scope. USAID’s High Impact Practices Initiative defines SBC as activities or interventions that seek to understand and facilitate change in behaviors and the social norms and environmental determinants that drive those behaviors.⁶ SBC interventions are grounded in behavioral theory and are informed by research and programmatic experience. Drawing on a variety of disciplines including marketing, advocacy, behavioral economics, human-centered design, and social psychology, SBC programs often consider social norms and dynamics in their design and implementation. SBC includes both communication and non-communication approaches to address behavior change, including communication between health workers and their clients, and engagement with community leaders and other influencers.⁷

To turn this definition into a set of identifiable SBC interventions, we adapted the PMNCH SBCE investment case framework (Portela et al. 2017) to delineate broad intervention categories; some adaptation from the framework was made to align with the available evidence on both impact and cost (Table 1). For example, although community mobilization and participation was designated by the PMNCH SBCE framework and extracted from the impact literature as a unique intervention category, due to the limited number of results, the difficulty in assessing these interventions (which often included some form of media and/or IPC) as primarily community mobilization or participation, and the fact that most packages included community activities, we decided to combine the results from community mobilization and participation with packages. These categories can apply to any public health area or sector.

⁶Family planning high impact practices, <https://www.fphighimpactpractices.org/briefs/sbc-overview/>.

⁷For more, see USAID. 2018. Social and behavior change. <https://www.usaid.gov/what-we-do/global-health/cross-cutting-areas/social-and-behavior-change>.

TABLE 1 SBC INTERVENTION CATEGORIES AND SUB-CATEGORIES

BROAD SBC INTERVENTION CATEGORY	SBC INTERVENTION SUB-CATEGORY
Mass, digital, and social media	Radio
	TV
	Other (includes mid-media, live drama, digital, and social media)
IPC	Individual/household IPC and counseling
	Group IPC, incl. all peer and popular leader interventions
Packages	IPC and community participation
	IPC and mass media
	Other combinations (including community mobilization)

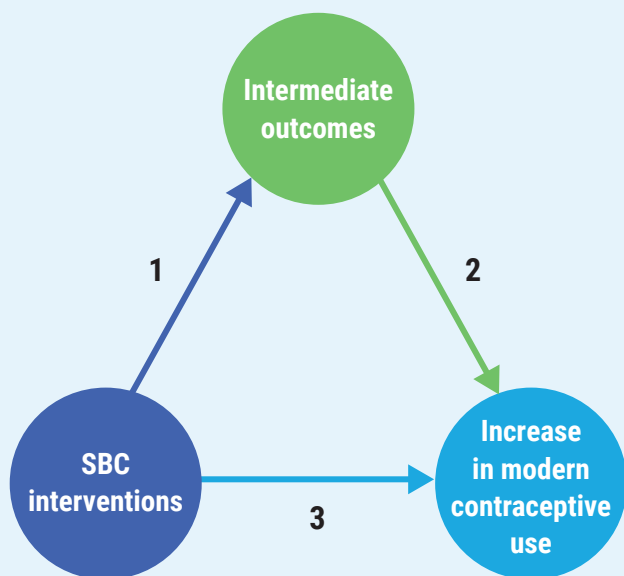
Provider behavior change (PBC; also known as provider training and service delivery adjustments in the PMNCH SBCE investment case framework) is an SBC intervention type that is of increasing priority for donors and partners (Breakthrough RESEARCH 2018) and therefore, this work sought to identify the cost and impact of PBC. However, numerous challenges were encountered. First, there was difficulty in both defining and identifying in the literature what would be classified as training for provider behavior change (e.g., reduction in provider bias, improved methods for provider communication such as motivational interviewing) versus training for standard of care; similarly, it was challenging to delineate between service delivery adjustments that may be considered SBC vs. those that would be considered a health systems or supply-side intervention. Second, a limited number of studies were identified; results of these few studies showed a wide range of both impacts and costs. Third, limited data exist to understand the current situation with regards to provider-client interactions. Therefore, PBC has not been included as an intervention within this business case. However, as new evidence is generated around PBC this is an intervention area that could be added in a future iteration of the business case.

3 What is the effectiveness of SBC for family planning?

A good business case demands a clear vision of the health impact of the investment. For the SBC business case, impact occurs when research shows that an SBC intervention, activity, or program results in a quantifiable change in a behavioral outcome. For family planning, the priority behavior is the voluntary use of modern contraceptive methods by women and men of reproductive age. Using studies from the existing literature on SBC effectiveness, we examined different pathways to impact on modern contraceptive use.⁸ We looked at both the indirect impact of SBC interventions via intermediate outcomes such as attitudes toward family planning and communication around family planning; and the direct impact of SBC interventions on modern contraceptive use (Figure 1). The standard measure we used to quantify the relationship between exposure to the SBC intervention and outcome was the OR (Box 6). Our main findings follow.

⁸See Appendix 1 for detail on methods for impact analysis.

FIGURE 1 INDIRECT AND DIRECT PATHWAYS FROM SBC TO MODERN CONTRACEPTIVE USE



BOX 6 UNDERSTANDING ODDS RATIOS

An OR less than 1 implies a negative relationship between the intervention and the outcome; a ratio greater than 1 implies a positive relationship between the intervention and the outcome. For example, a radio show that aims to improve attitudes toward family planning with an OR of 2 implies that those exposed to the show have twice the odds of having a positive attitude compared to those not exposed. The magnitude of the impact of any intervention is dependent not only on the OR, but also both the base-line levels (e.g., what share of the population already have a positive attitude) and the change in coverage (e.g., how many people are reached). Further, although the higher the OR the greater the relationship between intervention and outcome, the incremental impact of the OR differs (e.g., the increase in positive attitudes from an OR increasing from 1.2 to 1.3 is not the same as the change from an OR increasing from 2.2 to 2.3). Therefore looking at the size of the OR alone is not enough to tell us about potential impact.

There is a lot of evidence on the effectiveness of SBC for family planning interventions, although some gaps persist. Our analysis drew on 130 studies from a range of countries and spanning many different types of SBC interventions for family planning.⁹ Still, clear gaps in the evidence exist, especially around provider behavior change interventions and for some newer SBC interventions including digital media. This in part reflects the natural time lag between when new SBC interventions appear on the scene and when the field has generated a

⁹Some studies contributed multiple results to a single pathway (for example, included results related to multiple intermediate outcomes). In addition, 27 studies contributed results to multiple pathways. Therefore, study numbers listed below sum to more than 130.

sufficient body of evidence to gauge the impact of new approaches.

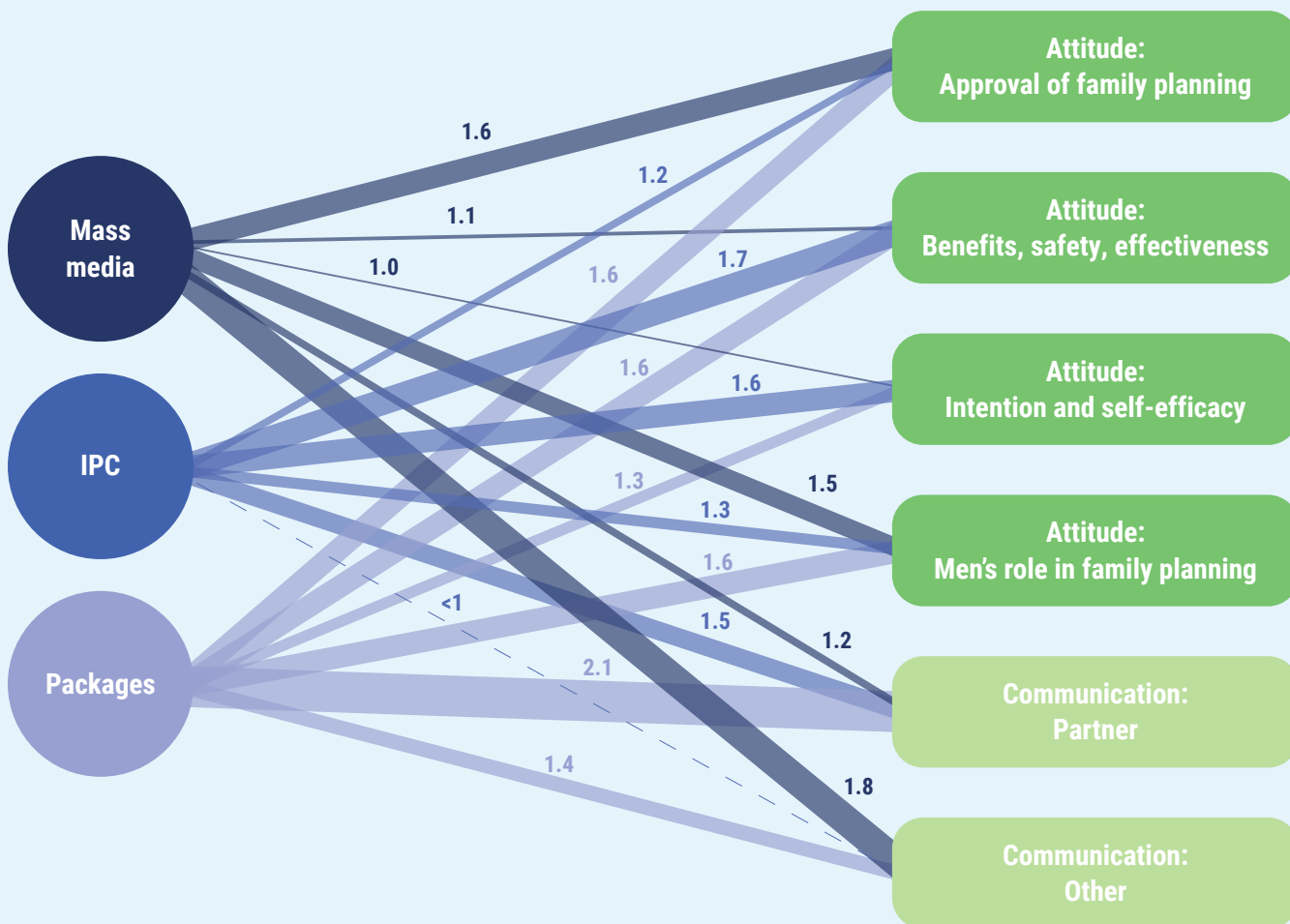
SBC has a positive impact on most intermediate outcomes, although the impact varies depending on the intervention type and intermediate outcome.¹⁰ We found a modest impact of SBC interventions on intermediate outcomes based on results from 49 studies (Figure 2). With the exception of IPC interventions' impact on communication with others about family planning, the median OR was greater than one for all intervention

¹⁰It is likely that impact also varies by other factors such as population targeted and duration of intervention. We extracted this information, but did not include in the final analysis because a) a number of intervention/outcome/target population/duration combinations would have had very little or no data for some pathways and b) this may overly complicate the analysis for the purposes of the business case; note that many more lines would be going from the circles to the boxes in Figure 2.

types and all intermediate outcomes. Thus, on average, exposure to an SBC intervention will result in an increase in one of the intermediate outcomes.

Intermediate outcomes have a positive impact on modern contraceptive use, although some intermediate outcomes seem to matter more than others do. Based on our analysis of 46 studies that linked intermediate outcomes to modern contraceptive use, we found a positive relationship for all intermediate outcomes, although the strength of that relationship varies. Communication between partners around family planning had the strongest link to modern contraceptive use, followed by beliefs regarding approval of family planning (Figure 3). This set of evidence includes non-intervention studies, since the intention is to understand the role of the intermediate outcomes in influencing modern contraceptive

FIGURE 2 MEDIAN ODDS RATIOS, RELATIONSHIP BETWEEN SBC INTERVENTION AND INTERMEDIATE OUTCOME, BY INTERVENTION TYPE AND INTERMEDIATE OUTCOME

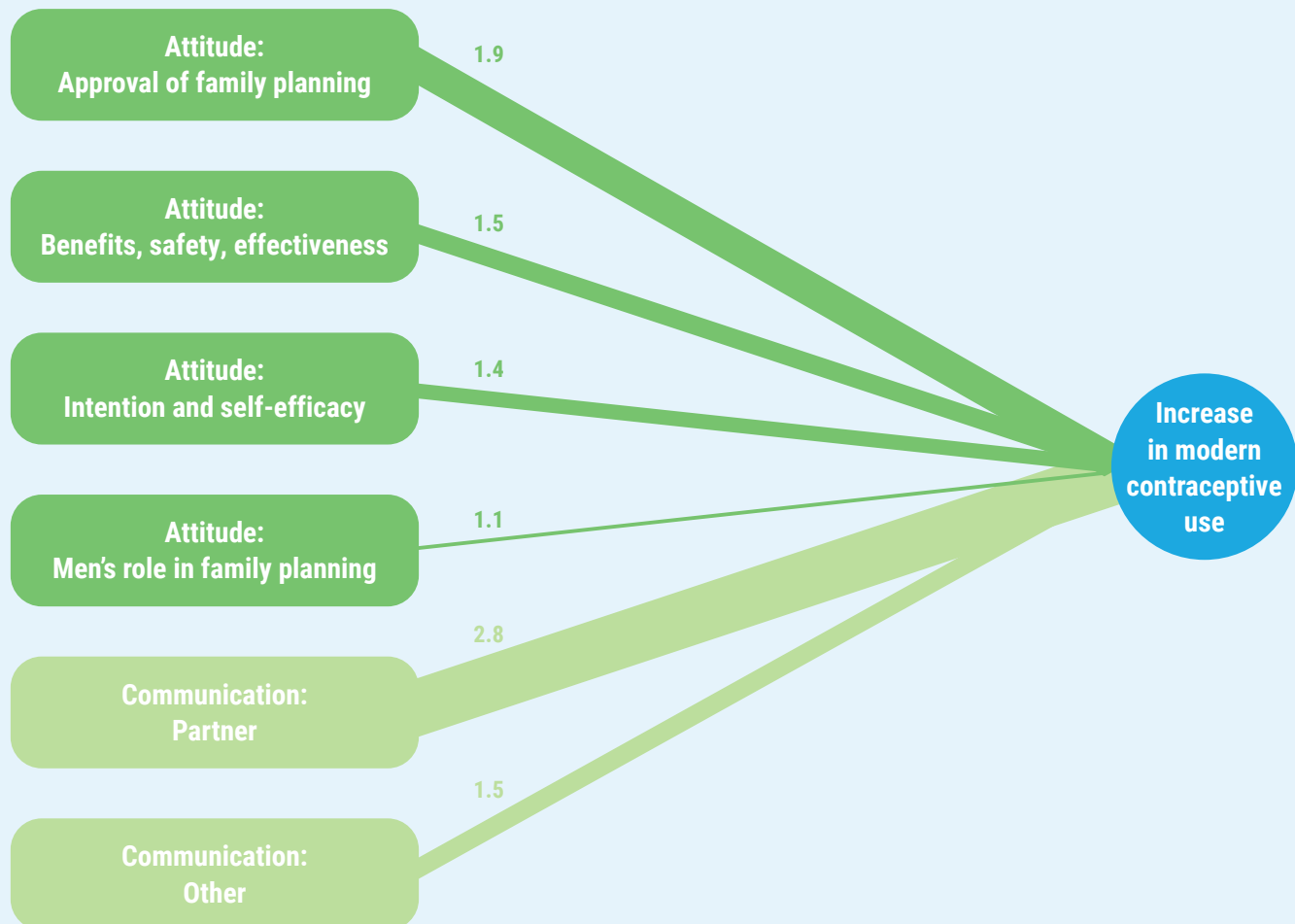


Note: width of line shows magnitude of OR on a log scale



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FIGURE 3 MEDIAN ODDS RATIOS, RELATIONSHIP BETWEEN INTERMEDIATE OUTCOME AND MODERN CONTRACEPTIVE USE



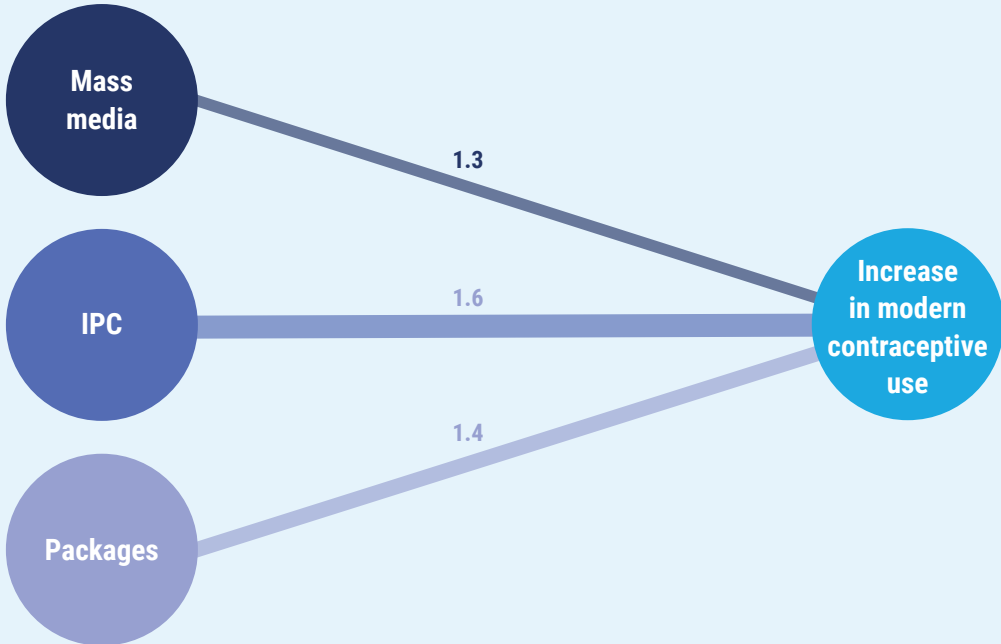
Note: width of line shows magnitude of OR on a log scale

use—whether or not an SBC intervention influenced the intermediate outcomes.

Via the direct link, SBC interventions have a positive impact on modern contraceptive use. Drawing on 69 studies that measured the direct link between SBC interventions and modern contraceptive use, we also found a positive impact for all four intervention types. The relationship was strongest for IPC, followed by packages, and mass media (Figure 4).

In summary, SBC is effective at increasing modern contraceptive use, but there is a lot of variation in results. Some interventions are more effective than others, and this effectiveness varies depending on the type of intermediate outcome at which we are looking. Further, the impact that SBC will have in a country is not only determined by these ORs, but also by baseline levels of modern contraceptive prevalence rate (mCPR), baseline attitudes and communication, and how many women and men SBC interventions are able to reach. It is important to consider that variation when making decisions about whether and how much to invest in SBC, particularly in relationship to other family planning interventions.

FIGURE 4 MEDIAN ODDS RATIOS, DIRECT RELATIONSHIP BETWEEN SBC INTERVENTION AND MODERN CONTRACEPTIVE USE



Note: width of line shows magnitude of OR on a log scale

4 What does SBC for family planning cost?

Understanding the costs of the investment is key to any good business case. Cost is the monetary value of all the resources required to carry out an SBC intervention, such as labor, commodities, materials, supplies, equipment, vehicles and other transport costs, training, supervision, management, space, and utilities. Unit costs are expressions of total costs on a per-person, per-event, or per-service basis. Cost-effectiveness ratios evaluate interventions in terms of health outcomes and benefit-cost ratios evaluate interventions in monetary terms.¹¹

What we know about SBC for family planning costs comes from a literature review and analysis carried out in 2018

¹¹For more on costs, see Rosen, J, DeCormier Plosky W, Bollinger L. 2019. *Guidelines for Costing of Social and Behavior Change Health Interventions*. Washington, DC: Breakthrough RESEARCH. <https://breakthroughactionandresearch.org/our-work/costing-and-economic-evaluation/>

and 2019. The results we present here, drawn from studies that go back to the 1980s, are shown in 2017 US dollars. We present unit costs as cost per person exposed to the intervention (for mass media) or per person participating in the intervention (for other interventions) (see **Appendix 2** for more details on the literature review and analysis). Our main findings follow.

There is some information on SBC costs, but gaps persist. We drew on 53 studies that produced 130 cost estimates. These come from a range of countries and study designs. The included costs and the level of detail authors provide on costs can vary widely from study to study. Moreover, interventions can vary in their intensity and comprehensiveness, and many study reports provide only limited intervention detail, thus complicating interpretation of these factors, particularly for package interventions.

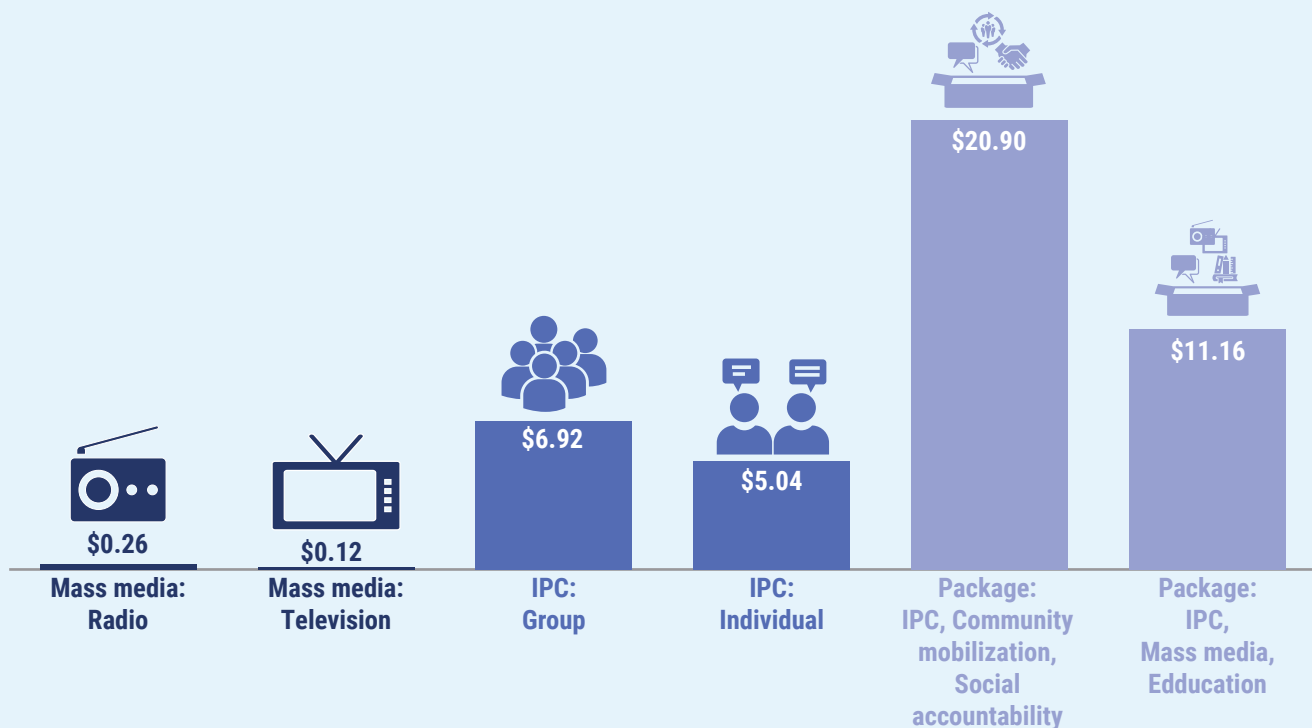
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Costs range widely across and within intervention types. TV and radio mass media cost \$0.12 and \$0.26 per person exposed. Group IPC cost \$6.92 per person participating, and individual IPC cost \$5.94 per person participating. Cost per person participating in packages is even higher, between \$11 and \$21 per person, depending on the combination (Figure 5). Within intervention types, there is quite a wide range of results around the median cost presented here. For example, radio costs between \$0.14 and \$0.75 per person exposed; group IPC ranges from \$3.28 to \$15.58 per person participating (see [Appendix 2](#)). The costs also may vary due to different economic structures of the various countries. It is important to assess these cost differences in the broader context of the relative effectiveness and appropriateness of any particular intervention given the audience that an intervention wants to reach and the desired behavioral outcome. While evidence was not sufficient to sub-divide the impact of different types of mass media, IPC, and packages, more detailed cost breakdowns could be generated. For the purpose of this business case we focus on just two-sub categories for each SBC intervention; however, more detailed results are available (see [Appendix 2](#)).

Evidence is lacking for current, expanded SBC approaches. There is very little cost evidence on social media and digital SBC approaches. Similarly, newer approaches such as streaming versus live radio lack good costing evidence. The evidence on costs of integrated SBC is also limited.

FIGURE 5 MEDIAN SBC UNIT COST, BY INTERVENTION TYPE



5 Is SBC for family planning cost-effective? Does it generate a good return on investment?

We took a two-fold approach to answering questions about the cost-effectiveness of SBC and whether it generates a good return on investment. First, we use case examples from the literature drawn from family planning studies that have both cost and impact, and have done a full analysis (or done it in a way that allows us to complete a cost-effectiveness analysis). Second, because few such studies exist, we do modeling for two countries that gives insights into SBC cost-effectiveness by leveraging what we know about SBC impact and SBC costs.

How do we know if SBC is cost-effective?

Cost-effectiveness analysis places a value on a health investment in terms of the cost to achieve a health outcome. In the health field, a standard way to gauge the cost-effectiveness of an intervention is to use the incremental cost-effectiveness ratio (ICER). The ICER is determined by dividing the additional cost of an intervention by its additional effectiveness. For the SBC for family planning business case, the main measure of effectiveness is the DALY averted, one of the effectiveness measures traditionally used to compare a wide range of health interventions. To calculate DALYs averted in the analysis shown in this section, we convert additional family planning users using country- and method-specific coefficients from FP2020 Core Indicators and Marie Stopes International's (MSI) Impact 2 model.¹² The Impact 2 model measures DALYs averted from both maternal and child health gains associated with family planning use. For purposes of this business case analysis, however, we take a more conservative approach and use only the DALYs averted produced by maternal health gains, in line with current guidance discouraging inclusion of child health

impacts in calculating DALYs averted from family planning use (Askew et al. 2017). This is important to note when comparing the ICERs generated by this analysis with other, previous calculations of family planning effectiveness and cost-effectiveness.

Once you have calculated an ICER for an intervention, how do you know if it is cost-effective? There are two main ways, both of which we use to gauge the results of this SBC business case. The first, which we use in this business case, is to benchmark against international standards for cost-effectiveness of health interventions. Following the recommendations of the Commission on Macroeconomics and Health, The World Health Organization's WHO-CHOICE initiative set standards for cost-effectiveness in terms of cost per DALY averted, classifying interventions as:

- *Highly cost-effective* (if the ICER is less than one times gross domestic product [GDP] per capita)
- *Cost-effective* (if the ICER is between one and three times GDP per capita) or
- *Not cost-effective* (if the ICER is higher than three times GDP per capita)

A second way to gauge the cost-effectiveness of SBC is to compare its ICER against the ICERs of other, similar health interventions. This ranking should, however, be done with caution. First, because SBC is more akin to a health system intervention than to the clinical interventions which are the subject of most cost-effectiveness analysis. Second, because methods can vary greatly across studies. A recent synthesis of a large number of cost-effectiveness studies presents health interventions in three categories: less than \$100 per DALY averted, between \$100 and \$1,000 per DALY averted, and greater than \$1,000 per DALY averted (Horton et al. 2017).¹³ Overall, the study found that over half of the 93 interventions

¹²For more on MSI's Impact 2 model, see: https://mariestopes.org/media/3321/methodology_paper_june_2018-1.pdf and <http://impact-calculator.psi.org/>.

¹³Costs are in USD 2012.

considered cost less than \$200 per DALY averted, in USD 2012.

How do we know if SBC provides a good return on investment?

Another form of economic evaluation, return on investment or benefit-cost analysis, values a particular investment in purely monetary terms. The simplest way to calculate a benefit-cost ratio is to divide the expected monetary benefit from the intervention by its cost. If an intervention costs \$1 and generates \$3 in benefits, the benefit-cost ratio is 3. Any investment with a benefit-cost ratio greater than 1 is considered a good investment. For this SBC for family planning business case, we calculate two types of monetary benefits associated with increased family planning use: health service costs saved when averting an unintended pregnancy, and productivity loss saved when averting the maternal illness and death associated with unintended pregnancy. We derived estimates of health service cost savings from the Impact 2 model. We estimated productivity loss averted based on international guidelines suggesting that between one and three times GDP per capita is saved for every DALY averted.¹⁴

Case examples from the literature

We present two case examples of SBC studies from the literature with both cost and impact results (see [Appendix 3](#) for more on how we chose these studies).¹⁵



Case example 1: SBC programming in Egypt

The Egyptian government has a long history of mass media activities aimed at behavior change, including increasing demand for family planning by improving knowledge and attitudes toward family planning to influence reproductive intentions and behaviors. Robinson and Lewis (2003) examined the costs and impacts of four separate mass media campaigns over two years.

¹⁴See, for example, Jamison et al. 2013a and Jamison et al. 2013b, Supplementary Appendix 3, Table A 3.10.

¹⁵For comparability to the country modeling results below, we translated findings into USD 2017. We extended study results by estimating DALYs averted and service delivery costs from additional family planning users using the methods described in [Appendix 4](#).

The campaigns aimed to reach approximately 10 million married women aged 15–49 and their spouses with access to television. Each of the four campaigns had a distinct focus:

- The *Doctor Karima Mukhtar* campaign consisted of a television drama series featuring a female doctor answering questions and addressing attitudes about the benefits and safety of family planning.
- The *Gold Star Clinic* campaign included television spots as well as print advertising and outreach activities to inform the public about designated “Gold Star” family planning providers with verified high-quality practices in order to increase demand for family planning services provided at these clinics, which were primarily intrauterine devices (IUDs).
- The *Private Sector Initiative Ask-Consult* campaign aimed to facilitate better communication and interaction between clients and private sector providers, especially pharmacists who dispensed oral birth control pills. The television spots were designed to increase demand for quality services and employed a new logo and “Ask-Consult” slogan.
- The *Ahmed Maher Male Responsibility* campaign was a series aimed at influencing the attitudes of men for taking responsibility for family planning along with their partners. As such, the campaign focused primarily on male methods, predominantly condoms.

In evaluating the effectiveness of these campaigns, researchers first examined the campaigns’ reach, as measured by exposure, through population surveys. Overall, the campaigns were largely successful in reaching their desired population, with an estimated exposure of 45 percent for the Ahmed Maher campaign, 70 percent for Karima Mukhtar, 81 percent for Gold Star Clinic, and 83 percent for Ask-Consult. Researchers also linked the campaigns to the rise in the modern contraceptive prevalence rate over the two-year period (48 percent to 55 percent). Based on these calculations, they estimated that the campaigns generated 1.2 million additional users.

The cost per person exposed ranged from \$0.03 in the Karima Mukhtar to \$0.15 for the Ahmed Maher campaign. Adjusting for inflation, the four media campaigns cost \$3.07 per additional user in 2017 dollars, and \$8.50 when accounting for the direct service delivery costs associated with these additional users. This translates to an ICER of \$468 per DALY averted, well under the one

times GDP per capita threshold for highly cost-effective interventions and in the middle range of developing country health interventions.



Case example 2: Family planning television campaign in the Philippines

In the Philippines, the Department of Health ran a nationwide family planning television campaign to promote modern contraceptive use. Formative research found that a husband's support for family planning was important and that women wanted a contraceptive method that was *hiyang*, meaning "a natural fit to one's body." As such, the campaign aimed to increase contraceptive prevalence by improving the attitudes toward modern contraceptives, both generally and specifically among husbands, and generating spousal communication around family planning. Based on these objectives, the campaign produced four advertisements featuring an attractive couple with two children discussing how family planning has enhanced their lives. The ads ended with the Secretary of Health promising that local providers can help women find a contraceptive method that is *hiyang* for them.

Six months after the broadcasts ended, a national survey evaluated the campaign. The survey captured exposure to the campaign based on recall of campaign images and slogans as well as attitudes toward family planning and family planning use. Using the survey data, Kincaid and Do (2006) employed a combination of three different analytical techniques for a methodologically rigorous approach called *multivariate causal attribution* to test for a causal relationship between the SBC intervention and family planning use. Overall, they found that the campaign resulted in a 6 percent increase in modern contraceptive use, yielding nearly 350,000 additional modern contraceptive users. The total cost of the campaign was approximately \$550,000, including costs for design, pretesting, production, and broadcasting. The total costs translated to \$0.10 per woman exposed.

Adjusting for inflation, the campaign would cost \$1.94 per additional user in 2017 dollars, and \$7.00 when accounting for the direct service delivery costs associated with these additional users. This would result in an ICER of \$591 per DALY averted in 2017 dollars, which is highly cost-effective as a health intervention using the one times GDP per capita threshold, and in the middle range of developing country health interventions.

Country-level modeling of SBC cost-effectiveness and return on investment benefit

A limited number of studies assess the cost-effectiveness of SBC for family planning interventions. However, as we showed in [sections 3 and 4](#), much larger evidence bases exist with information on the impact of SBC for family planning interventions and the costs of SBC for family planning interventions separately. We can thus model the potential cost-effectiveness of SBC for family planning interventions for a specific country by leveraging this information along with country program and demographic data (see [Appendix 4](#) for detail on the modeling approach).

For this business case modeling, we selected two countries, Zambia and Guinea, which provide contrasting examples of the potential role of SBC for family planning in countries with very different levels of modern contraceptive use and demand. They are also two countries where Breakthrough ACTION is applying its SBC for family planning influence strategy ([section 1](#)). Results from the two countries cannot be directly compared because each has a different context and SBC scale up plan. Rather, the results reflect the unique situations and scale up in each country and not relative differences in the cost-effectiveness of SBC in the two countries. Further, these results reflect a single scale up scenario and are based on the impacts and costs found within the summary matrices. They are also desk studies, and thus their findings would benefit from having further validation of assumption in-country. Thus, the reader should take these as illustrative results.



Results of modeling exercise in Zambia

What is the current family planning and SBC situation in Zambia?

In 2018, 36 percent of all women, and 49 percent of married/in-union women were using a modern method of contraception.¹⁶ According to the most recent Demographic and Health Survey (DHS) (2014), the mean ideal number of children was 4.7, and the total fertility rate was 5.3. The maternal mortality ratio in 2015 was 224, which is much lower than the average for sub-Saharan Africa, which was 547 in 2015 (WHO et al. 2015).

¹⁶Track20/family planning2020 Progress Report

Zambia performs well on most of the intermediate outcomes considered, with the exception of communication with others where only 28 percent of women reported talking about family planning with their friends or neighbors (2001/2 DHS) (Table 2).¹⁷

How does the modeling scale up SBC interventions in Zambia?

Scale up was aligned as best as possible to SBC-related interventions described in Zambia’s Family Planning

¹⁷Questions on approval and communication about family planning are no longer asked in DHS surveys, so we are reliant on older data for these indicator baselines.

Services Integrated Family Planning Scale Up Plan (2013–2020). The plan sets out an ambitious goal of reaching 58 percent mCPR among married women by 2020 through six strategic priorities related to demand generation, adolescents, training, reaching underserved populations, addressing stock outs, and improving coordination. Demand generation activities include the development and roll out of multi-media campaigns, and training national and community level national champions. Details from the plan-related scale up of specific interventions or introduction of new activities were converted into increases in coverage of SBC interventions (Table 3).

TABLE 2 BASELINE VALUES FOR INTERMEDIATE OUTCOMES, ZAMBIA

INTERMEDIATE OUTCOME	%	SOURCE AND INDICATOR
Beliefs on approval of family planning	82	Zambia DHS 2001/2; respondent approves of family planning (“Would you say that you approve or disapprove of couples using a contraceptive method to avoid getting pregnant?”)
Attitudes on the benefits, safety, and effectiveness of family planning	75	Zambia 2003–05 study; inverse of % of respondent reporting concerns or worries about contraception (average for injectable and pill—most common method): https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2825682/
Attitudes around intentions and self-efficacy of family planning	76	Zambia DHS 2014: Can ask partner to use condom
Attitudes regarding men’s role in family planning	65	Zambia DHS 2014: Decision making for family planning— jointly with partner
Communication between partners about family planning	70	Zambia DHS 2001/2; discussed with spouse at least once
Communication with others about family planning	28	Zambia DHS 2001/2; discussed with friend/neighbor (highest of the non-partner responses)

TABLE 3 SCALE UP MODELED IN ZAMBIA

SBC INTERVENTION	CHANGE IN COVERAGE (%)	MAPPING TO PLAN
Mass media	Radio	Coverage split between radio and TV; radio listener group overall removed. Plan suggests wide-scale use of radio and TV messages; coverage established based on DHS data on share of women who regularly listen to/watch radio and TV. [†]
	TV	
IPC	Group	Coverage from community health champions split between group and individual
	Individual	
Packages	IPC & community mobilization	Coverage based on community health campaigns
	IPC & mass media	Coverage based on radio listener groups

[†] Due to a lack of information on the expected reach/exposure of the mass media campaign, the percent who listen to or watch radio and TV regularly was used as a proxy for exposure, representing an upper bound of potential reach.

What does modeling say about the impact of SBC in Zambia?

Scaling up SBC interventions according to the coverage levels shown in Table 3 contributes to a 5 percentage point increase in mCPR over five years (2019 to 2023). This increase in mCPR translates into 535,900 additional users in 2023 (as compared to 2018). Cumulatively over the five years, this additional modern contraceptive use averts 578,800 unintended pregnancies and 46,400 DALYs.

The SBC intervention contributing the most to the increase in mCPR is mass media, which accounts for over half (57 percent) of the increase; this is partly due to the much higher coverage levels of mass media than other SBC interventions (Table 3). The remainder of the impact is split fairly evenly between packages and IPC (Figure 6).

FIGURE 6 RELATIVE CONTRIBUTION OF EACH SBC INTERVENTION TO INCREASE IN mCPR, ZAMBIA

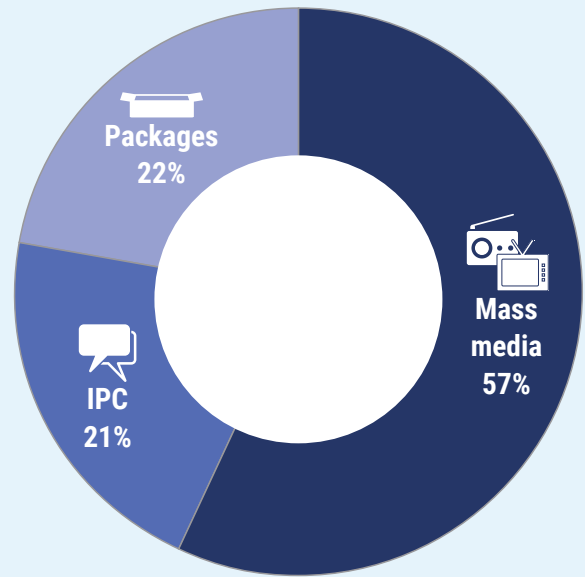
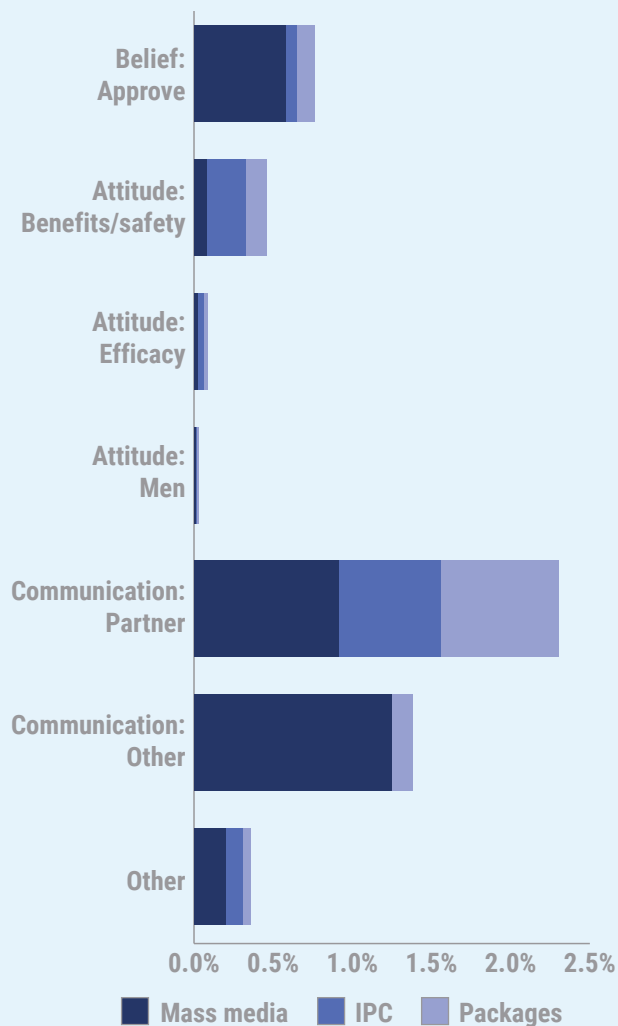


FIGURE 7 INCREASE IN mCPR BY SBC INTERVENTION AND INTERMEDIATE OUTCOME, ZAMBIA



In terms of intermediate outcomes, increases in partner communication play the largest role leading to changes in modern contraceptive use, accounting for just over 40 percent of the increase (Figure 7). Three other intermediate outcomes also have sizable contributions: communication with others (26 percent), beliefs on approval of family planning (14 percent), and attitudes toward family planning (8 percent).

What does modeling say about the cost and cost-effectiveness of SBC in Zambia?

The total cost of implementing the planned SBC interventions ranges from \$28.2m to \$58.8m; with a median cost estimate of \$38.3m cumulatively over the five-year period (assuming steady scale up during the period).¹⁸ Another \$10.5m is needed for direct service delivery costs related to the additional users.

The SBC ICERs are \$30 per additional user¹⁹, \$84 per pregnancy averted, and \$1,051 per DALY averted (Figure 8).²⁰

¹⁸The SBC cost reflects sensitivity analysis around key cost parameters (see Appendix 4).

¹⁹This calculation includes the interim years between 2018 and 2023, so is in essence the cost per “adopter year” over this period.

²⁰The graphs show the results based on median unit cost, and the range around this median cost using the 25th percentile (Q1) and 75th percentile (Q3) findings from the unit cost matrix described in section 4).

Even accounting for wide variation in SBC costs, this SBC scale up scenario produces a cost per DALY averted considered “highly cost effective” by WHO standards, falling below one times GDP per capita of \$1,535 (blue line in Figure 8).²¹ and just slightly above the middle range of Horton et al.’s (2017) rankings.

Benefit-cost analysis finds that, for every \$1 invested in scaling up SBC interventions in Zambia, nearly \$1 is saved in direct health care costs, and between \$2.40 and \$5.30 is saved when including productivity losses (Figure 9).

In sum, scaling up SBC in Zambia is effective in increasing modern contraceptive prevalence, is a highly cost-effective intervention, and generates a positive return on investment.

²¹Additional sensitivity analysis finds that under almost all scenarios, SBC remains a highly cost-effective intervention in Zambia.

FIGURE 8 THREE MEASURES OF COST-EFFECTIVENESS OF SBC, ZAMBIA

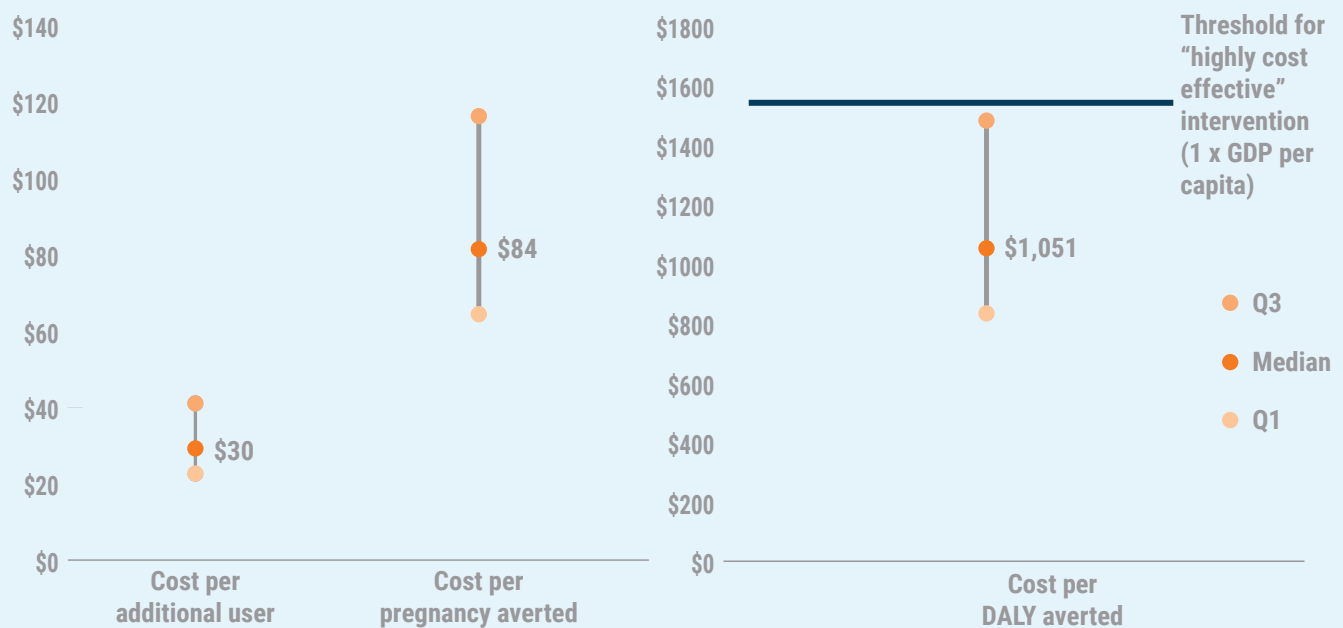


FIGURE 9 SAVINGS PER \$1 INVESTED IN SBC INTERVENTION SCALE UP, ZAMBIA





Results of modeling exercise in Guinea

What is the current family planning and SBC situation in Guinea?

In 2018, 11 percent of all women, and 7 percent of married/in-union women were using a modern method of contraception.²² The maternal mortality ratio in 2015 was 679, which is higher than the average for sub-Saharan Africa, which was 547 in 2015 (WHO et al. 2015).

Guinea has low to moderate starting levels on most of the intermediate outcomes considered for the modeling. Approval of family planning has the highest rating, but even then, just under half of women report approving of family planning (2005 DHS) (Table 4).²³

²²Track20/family planning2020 Progress Report

²³Questions on approval and communication about family planning are no longer asked in DHS surveys, so we are reliant on older data for these indicator baselines.

TABLE 4 BASELINE VALUES FOR INTERMEDIATE OUTCOMES, GUINEA

INTERMEDIATE OUTCOME	%	SOURCE AND INDICATOR
Beliefs on approval of family planning	49	Guinea 2005 DHS: respondent approves of family planning ("Would you say that you approve or disapprove of couples using a contraceptive method to avoid getting pregnant?")
Attitudes on the benefits, safety, and effectiveness of family planning	n/a	No baseline data for this outcome could be located
Attitudes around intentions and self-efficacy of family planning	24	Guinea 2012 DHS: Can ask partner to use condom
Attitudes regarding men's role in family planning	30	Guinea 2012 DHS: Decision making for family planning— jointly with partner
Communication between partners about family planning	10	Guinea 2005 DHS: discussed with spouse at least once
Communication with others about family planning	21	Guinea 2005 DHS: discussed with friend/ neighbor (highest of the non-partner responses)

How does the modeling scale up SBC interventions in Guinea?

Scale up was aligned as best as possible to SBC-related interventions described in the National Budgeted Action Plan for Family Planning (2019–2023). This plan sets out a goal of reaching an mCPR among all women of 18.52 percent by 2030 by addressing five areas: demand creation, supply and access to services, commodity security, enabling environment, and coordination. Within demand creation there are three objectives: improving the quality of family planning messages, increasing the commitment of men in gender promotion and support for modern contraceptive use, and addressing the reproductive health needs of adolescents (not included in the modeling). Details from the plan-related scale up of specific interventions or introduction of new activities were converted into increases in coverage of SBC interventions (Table 5).

What does the modeling say about the impact of SBC in Guinea?

Scaling up SBC interventions in Guinea according to the coverage levels shown in Table 5 contributes to a 3 percentage point increase in mCPR over five years (2019 to 2023). This increase in mCPR translates into 166,500

TABLE 5 SCALE UP MODELED, GUINEA

SBC INTERVENTION	CHANGE IN COVERAGE	MAPPING TO PLAN
Mass media: radio	41	Plan only indicates radio programming not TV, so coverage allocated to radio. Plan suggests wide-scale use of radio messages; coverage established based on DHS data on share of women who regularly listen to radio.
Mass media: TV	0	
IPC: group	5	Includes women's groups, husbands' schools, religious and community leaders. Mostly group, but small share allocated to individual
IPC: individual	2	
Packages: IPC & community mobilization	3	National campaigns and community dialogue.
Packages: IPC & mass media	0	Not indicated in plan

additional modern contraceptive users in 2023 (as compared to 2018). Cumulatively over the five years, this additional use averts 135,700 unintended pregnancies and 34,800 DALYs.

The SBC intervention contributing the most to the increase in mCPR is mass media, which accounts for more than three quarters (78 percent) of the increase; this is partly due to the much higher coverage levels of mass media than other SBC interventions (Table 5). IPC interventions account for 14 percent of the increase in mCPR, while packages account for the remaining 8 percent (Figure 10).

In terms of intermediate outcomes increases, the change in mCPR is fairly evenly attributed to increases in beliefs on approval of family planning, increases in communication with others, and increases in partner communication (each accounting for 22 percent to 34 percent of the total). Around 15 percent of the increase is not directly attributable to one of the intermediate outcomes, related to lack of baseline data on attitudes about family planning (Figure 11).

What does modeling say about the cost and cost-effectiveness of SBC in Guinea?

The total cost of implementing the planned SBC interventions ranges from \$8.2 to \$21 million, with a median cost estimate of \$12.2 million cumulatively over the five-year

FIGURE 10 CONTRIBUTION OF EACH SBC INTERVENTION TO INCREASE IN mCPR, GUINEA

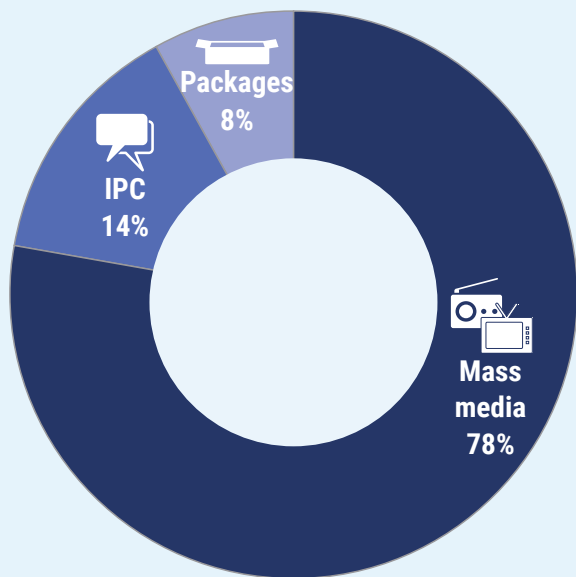
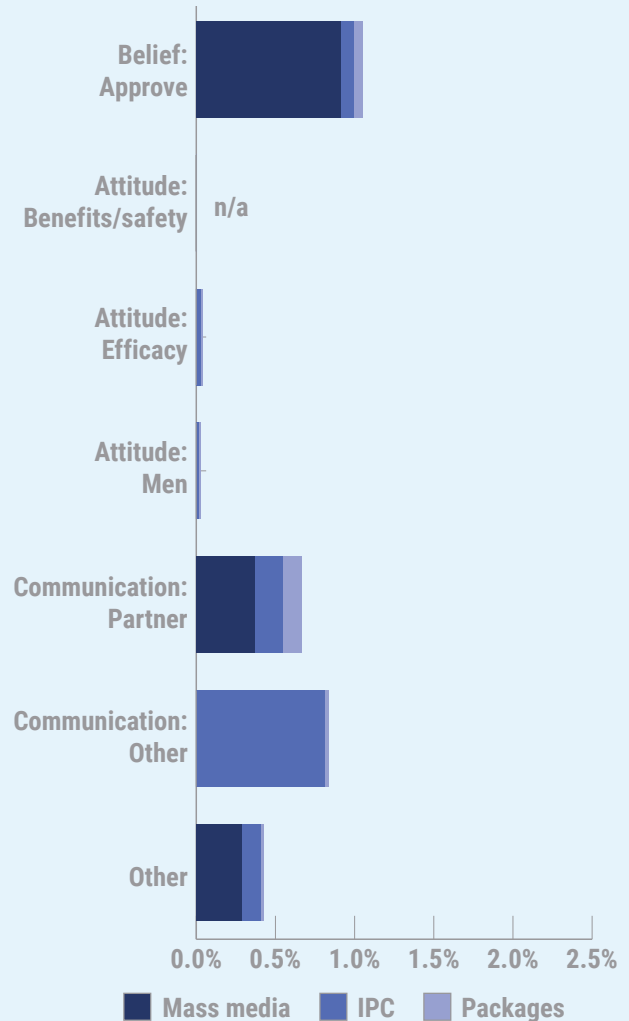


FIGURE 11 INCREASE IN mCPR BY SBC INTERVENTION AND INTERMEDIATE OUTCOME, GUINEA



period (assuming steady scale up during the period).²⁴ Another \$3 million is needed for direct service delivery costs related to the additional users.

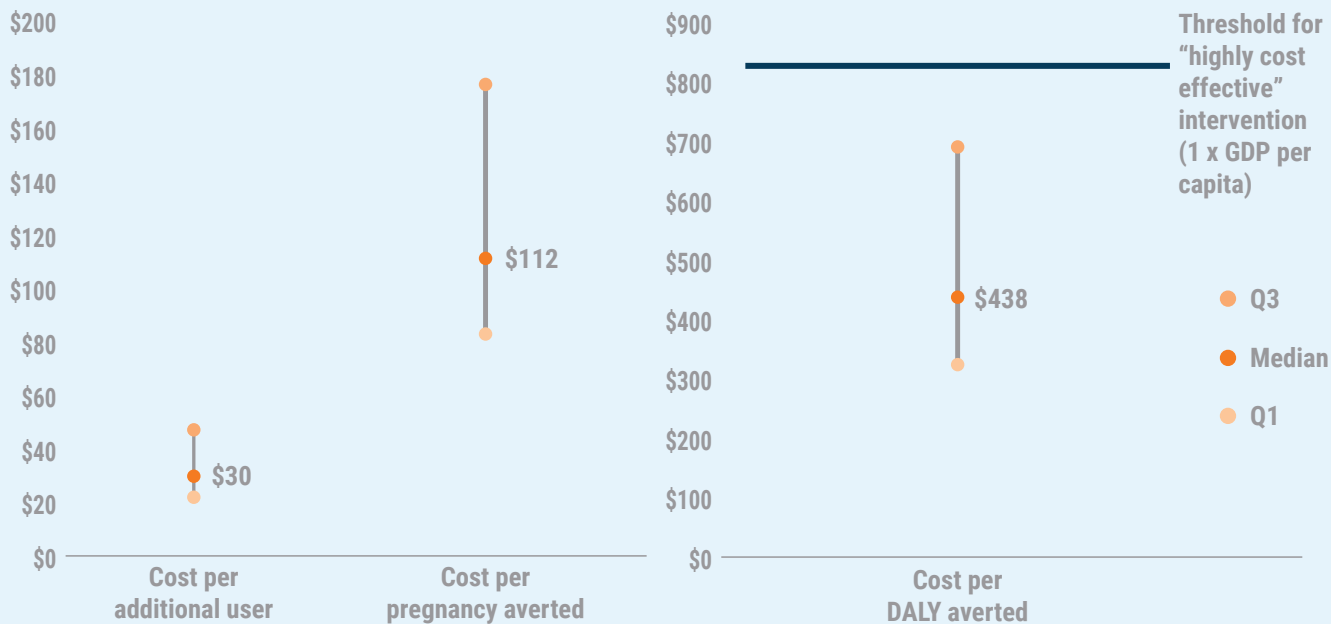
The SBC ICERs are \$30 per additional user²⁵, \$112 per pregnancy averted, and \$438 per DALY averted (Figure 12).²⁶

²⁴The SBC cost reflects sensitivity analysis around key cost parameters (see Appendix 4).

²⁵This calculation includes the interim years between 2018 and 2023, so is in essence the cost per “adopter year” over this period.

²⁶The graphs show the results based on median unit cost, and the range around this median cost using the 25th percentile (Q1) and 75th percentile (Q3) findings from the unit cost matrix described in section 4).

FIGURE 12 THREE MEASURES OF COST-EFFECTIVENESS OF SBC, GUINEA



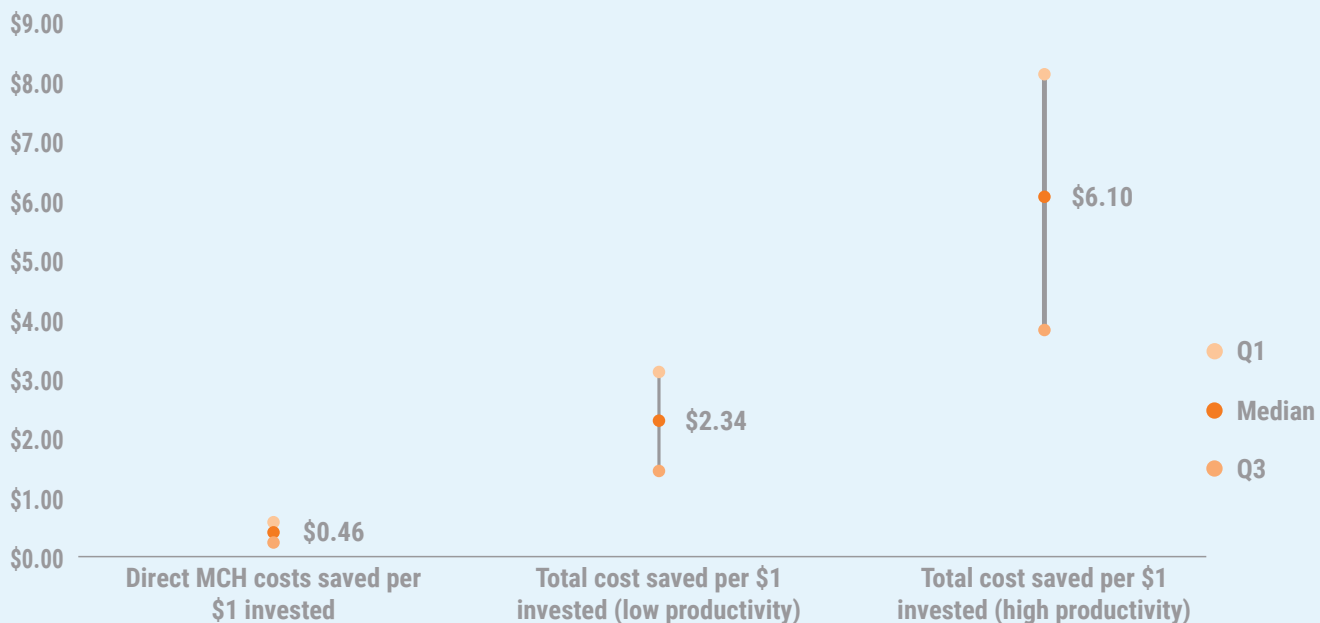
Even accounting for wide variation in SBC costs, this SBC scale up scenario produces cost per DALY averted results considered "highly cost effective" by WHO standards, falling below 1 times GDP per capita of \$822 (blue line in Figure 12).²⁷ and in the middle range of what Horton et al. (2017) finds. Benefit-cost analysis finds that, for every

\$1 invested in scaling up SBC interventions in Guinea, SBC saves nearly \$0.50 in direct health care costs, and between \$2.30 and \$6.10 in total when accounting for productivity loss averted (Figure 13).

²⁷Additional sensitivity analysis finds that under almost all scenarios, SBC remains a highly cost-effective intervention in Guinea.

In sum, scaling up SBC in Guinea is effective in increasing modern contraceptive prevalence, is a highly cost-effective intervention, and generates a positive return on investment.

FIGURE 13 SAVINGS PER \$1 INVESTED IN SBC INTERVENTION SCALE UP, GUINEA



6 Call to action

This business case set out to answer, using an evidence-based approach, questions about the effectiveness, cost-effectiveness, and return on investment of family planning SBC interventions. The literature review and analysis, case examples from the research literature, and the results of country modeling in Guinea and Zambia confirm that SBC interventions for family planning are effective, and, in the examples explored, are highly cost-effective and generate a positive return on investment. Given these findings, we suggest the following calls to action:

- **Invest more in SBC for family planning.** Given the health and economic benefits of SBC, policy makers should consider investing more in this proven approach. At the same time, policy makers should understand that the SBC impact in a country will vary depending on what interventions are scaled, existing levels of modern contraceptive use, prevailing attitudes, and the potential number of women and men SBC interventions are able to reach. It is important to consider that variation when making decisions about whether and how much to invest in SBC, particularly in relationship to other family planning interventions.
- **Use the results of this business case to advocate for increased SBC funding.** Program implementers and advocates within the SBC community can use the results of the business case to help policy makers understand the value of SBC efforts by showcasing that SBC improves family planning outcomes, leads to better health outcomes, is cost-effective and can lead to substantial cost savings.
- **Generate additional evidence of cost and effectiveness.** Evidence of cost and effectiveness forms the heart of the business case analysis. Evidence gaps exist, particularly for relatively new SBC approaches. Researchers, program implementers, and funders should invest in updating and improving the cost and impact databases, adding case examples, collecting standardized costing data, and generating new evidence of cost-effectiveness from rigorous and high-quality studies.²⁸
- **Conduct more country modeling.** The examples for Guinea and Zambia show the potential power of the business case for advocacy at the country level. Those in the SBC community can apply a similar modeling approach in other countries, in combination with other advocacy efforts, to provide evidence to increase SBC investments or to defend the current level of investment in SBC efforts.
- **Provide guidance on the relative cost-effectiveness of various SBC approaches.** Among the various SBC interventions, we found differences in effectiveness and cost. In deciding how to structure an SBC strategy for a country or developing tailored sub-national SBC plans, program managers and policy makers need better information on the relative cost-effectiveness of the SBC approaches to combine with other feasibility and contextual factors in their decision making. Further analysis of the existing data on effectiveness and costs and the generation of evidence to fill current knowledge gaps can help achieve that goal.

To achieve these next steps requires cooperation, inspiration, ideas, and funding from the broader SBC funding, implementing, advocacy, and research communities. Funders are key to increasing SBC spending, and can help pay for the analytics needed to refine the business case. Implementers can partner with research organizations to design and carry out studies. Researchers can guide the SBC community in its search for relevant studies and provide feedback on analytical methods. Advocates and all other stakeholders can provide insight on effective advocacy messages. Together, the SBC community can build on the results of this SBC for family planning business case to help countries more effectively and efficiently achieve their health and development goals.

²⁸See Breakthrough RESEARCH's SBC Costing Guidelines for more information on how to produce high-quality SBC costing studies (<https://breakthroughactionandresearch.org/our-work/costing-and-economic-evaluation/>)

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APPENDICES

Appendix 1 Methods for impact literature review and extraction

The objective of the impact literature extraction was to generate evidence-based summary ORs that link SBC interventions to an increase in mCPR. This requires summarizing evidence in three main categories:

1. Link from SBC interventions to intermediate variables.
2. Link from intermediate variables to mCPR.
3. Direct link from SBC interventions to mCPR.

From SBC interventions to intermediate outcomes and mCPR: impact extraction from HC3 and FP Goals databases

When linking SBC interventions to outcomes, analysts did not conduct a new comprehensive search for SBC impact literature, because of previous comprehensive searches (up to the publication year of 2016) for the HC3 database and for the FP Goals model. All studies from the HC3 database coded as family planning or empowerment, and all non-duplicative studies from the FP Goals database coded with a type of SBC intervention (e.g., communication, mass media, social marketing) were subject to abstract and (if eligible) full-text review. Additionally, studies from the SBC cost extraction with relevant impact data were also included.

The inclusion criteria were: (1) described an SBC intervention; (2) was in English, Spanish, or French; (3) the study was located in a World Bank designated low- or middle-income country at the time of the study; (4) the study needed to have a comparison group (at minimum a study design with intervention/control, pre/post, or exposed/unexposed groups); and (5) included a family planning use outcome (e.g., mCPR). In addition to the family planning use outcome, analysts extracted other relevant behavior change outcomes related to:

- Improved attitudes of individuals and members of the household.
- Improved social norms in community.

- Better joint decision-making in the household.
- Improved communication about family planning.

Given the heterogeneity of knowledge indicators and the more distal nature of changes in knowledge in the causal chain leading to behavior change outcomes, knowledge indicators were not extracted.

Extractors captured data from each included study using a study extraction template in Microsoft Excel, which included the SBC intervention category, intervention details, study location, populations the intervention aimed to reach, study design, sample sizes, effect sizes, type of ratio provided, and the level of significance associated with the effect size.

In total, 288 family planning studies were initially screened, with 211 meeting the inclusion criteria and extracted. Among these, approximately 20 percent were double-extracted to ensure quality and consistency between the four data extractors.

Linking SBC to intermediate outcomes

Initially, the WHO/3ie mapping framework was used to classify interventions and intermediate outcomes (Portela et al. 2017). This classification, however, proved difficult to operationalize in the extracted data, with many categories not having sufficient observations to aggregate across studies. As such, the SBC intervention classification of each line item in the impact extraction database was reviewed and classified as one of three major intervention types: (1) mass media, (2) IPC, and (3) intervention packages. Intervention packages typically consisted of community-based mobilization that relied on a combination of mass media, counseling, and provider training.

The specific outcomes for each extracted line item were categorized into one of four outcome categories:

1. Overall modern contraceptive use.
2. Method-specific modern contraceptive use (e.g., IUD adoption, condom use).
3. Intermediate outcomes related to family planning, including beliefs, attitudes, and communication.

4. Other family planning related outcomes (e.g., increased birth spacing, pregnancy, age at first birth).

Intermediate outcomes were first divided into two groups: (1) beliefs/attitudes about family planning and (2) communication about family planning. Next, these outcomes were further classified to capture different dimensions of these intermediate outcomes with an effort to be consistent with other theoretical frameworks. After two rounds of review and broader consultation with the research team, the intermediate outcomes included:

1. Beliefs related to the approval of family planning.
2. Attitudes related to the benefits of family planning and safety and efficacy.
5. Attitudes on intentions and self-efficacy around family planning use.

6. Attitudes related to the role of men in family planning.
7. Communication between partners.
8. Communication with others such as friends and family members.

When combining these eight categories with the SBC intervention types, each intermediate outcome observation could be classified into one of 20 different “buckets” that could be used to estimate the relationship between the SBC intervention and intermediate outcome. Note that not all outcome subcategories were identified for all intervention types (Table 6).

To find a common metric within the buckets, an OR was sought for each intermediate outcome observation. For many observations, the ORs (or AORs) were reported and

TABLE 6 ODDS RATIOS, RELATIONSHIP BETWEEN SBC INTERVENTIONS AND INTERMEDIATE OUTCOMES, MEDIAN, 25TH PERCENT LOWER BOUND, 75TH PERCENT UPPER BOUND

OUTCOME	INTERVENTION	# STUDIES	Q1	MEDIUM	Q3
Beliefs—approval of family planning	Mass media	9	1.11	1.58	1.78
	IPC	6	1.22	1.23	1.73
	Packages	16	1.33	1.61	2.13
Attitudes on the benefits/safety/effectiveness of family planning	Mass media	4	1.05	1.09	1.15
	IPC	2	1.71	1.71	2.48
	Packages	7	1.35	1.64	2.20
Attitudes intention/self-efficacy of family planning	Mass media	7	0.78	1.04	1.14
	IPC	7	0.95	1.57	1.87
	Packages	7	1.20	1.29	1.47
Attitudes of men's role in family planning	Mass media	2	1.29	1.55	1.80
	IPC	2	1.14	1.26	1.37
	Packages	4	1.03	1.59	3.62
Communication between partners	Mass media	12	1.11	1.24	1.95
	IPC	1	1.54	1.54	1.54
	Packages	8	1.18	2.10	3.79
Communication with others	Mass media	7	1.26	1.79	2.19
	IPC	2	0.97	0.97*	1.36
	Packages	6	1.35	1.45	1.60

*For the modeling this OR was entered as 1 so this intervention would have no effect on communication with others; if the .97 was included there would be an associated decline in this outcome.

already extracted. In other instances, the ORs needed to be calculated from extracted data, most commonly using pre-post percentage data. Logistic regression coefficients were exponentiated; however, linear regression coefficients were not utilized since they could not be converted to ORs.

Within each bucket, a study was limited to one observation to represent the strength of the association between the intervention and outcome. If a study had multiple observations within a bucket, either the ORs were averaged or the best representative observation was chosen. For example, if the study reported findings from multiple sites, the researcher averaged the ORs across sites to get the average effect size. In contrast, if multiple outcomes in the same bucket were presented and one outcome was clearly more representative of the intermediate outcome, the researcher selected that outcome to represent the study. If the appropriate approach was not clear, the researcher consulted the broader research team for consensus on the best approach. In total, 55 studies feed into the matrix.

Analysts used a simple weighting process to factor in the strength of study design in aggregating across studies. Each study was given a score of 1–3 based on the following study designs: (1) cross sectional and pre-post only studies, (2) pre-post with control group or studies with advanced analytical techniques that approximate pre-post with control findings (e.g., propensity score matching), and (3) randomized controlled trials. After weighting, the median, range, and interquartile range (Q1 = 25th percentile lower bound; Q3 = 75th percentile upper bound) OR value were calculated for each bucket to represent the relationship between the SBC intervention and the intermediate outcome (Table 6).

Direct linkages from SBC interventions to mCPR

Prior work developing the FP Goals model²⁹ reviewed the literature to generate ORs used for estimating the increases to mCPR based on family planning interventions, including SBC interventions. To avoid duplication of efforts and to ensure consistency with already reviewed and peer-reviewed processes, the FP Goals findings served as the foundation of linking SBC interventions directly to mCPR. The three sub-intervention categories used in FP Goals mapped well to the mass media, IPC, and packages categories for this analysis; however, a

provider behavior change intervention category was not captured in FP Goals.

Since FP Goals was not limited to SBC, FP Goals classified some SBC interventions in other sub-categories such as youth or postpartum family planning. In these cases, the findings were reclassified into the mass media, IPC, or packages categories based on the description of the intervention. Next, the HC3 database entries were reviewed to identify additional outcomes that could be added into FP Goals for updated median ORs. Data from 26 additional studies were included in FP Goals.

Table 7 details the median ORs from the original FP Goals matrix to the updated ORs once youth and postpartum ORs were reclassified and additional ORs from the extraction database were included.

TABLE 7 ODDS RATIOS, DIRECT IMPACT OF SBC INTERVENTION ON MODERN CONTRACEPTIVE PREVALENCE

SBC INTERVENTION	ORIGINAL FP GOALS MEDIAN OR	REVISED MEDIAN [Q1-Q3] OR
Mass media	1.3	1.3 [1.1–1.5]
IPC	1.5	1.6 [1.2–2.0]
Packages	1.3	1.4 [1.2–1.6]

Linking intermediate outcomes to modern contraceptive use

Three research steps were taken to find literature that would link intermediate outcomes to modern contraceptive use. First, each study from the review process described above with intermediate outcomes was reviewed to ascertain whether the analysis modeled modern contraceptive use as a function of intermediate variables. This yielded eight studies. Second, a PubMed search was conducted to capture studies that predicted modern contraceptive use as a function of intermediate variables that would not have been identified in the other searches because they did not focus on SBC interventions. A total of 1,525 abstracts were identified, 476 of which were reviewed; of these, 29 had relevant data which were included. Finally, a series of supplemental searches of Google Scholar, and review of citations in included studies were used to identify nine additional studies. In total, 46 studies were identified

²⁹http://www.track20.org/pages/our_work/innovative_tools/FPgoals.php

with quantitative findings linking intermediate outcomes to modern contraceptive use. Some studies had multiple findings in that more than one intermediate outcome was used to predict modern contraceptive use. Each finding was classified as an observation into the eight intermediate outcome buckets.

When studies had multiple observations in a bucket, they were either combined or the preferred observation was selected. In some cases, more than one observation per study was allowed if the results were from different countries or if outcomes represented different dimensions of the concept within the same bucket (for example, under attitudes on the benefits, safety, and effectiveness of family planning, two outcomes from a study were included—attitude that family planning methods are effective and belief that family planning causes cancer). For each bucket, the median, range, and interquartile range (Q1 = 25th percentile lower bound; Q3 = 75th percentile upper bound) were calculated (Table 8).

Appendix 2 Methods for cost literature extraction and analysis

Literature search

A literature search found 130 cost studies from which we extracted 711 cost estimates (Figure 14). First, a search of the peer-reviewed SBC cost literature was conducted using PubMed. The peer-reviewed literature search terms were designed to capture the intersection between costing information, SBC interventions, and key health areas. No date restrictions were specified in order to capture as many cost studies as available. The final search terms are listed at the end of this appendix. On 8 July 2018, these search terms yielded 6,403 hits for abstract review by the SBC Cost Study Repository development team.

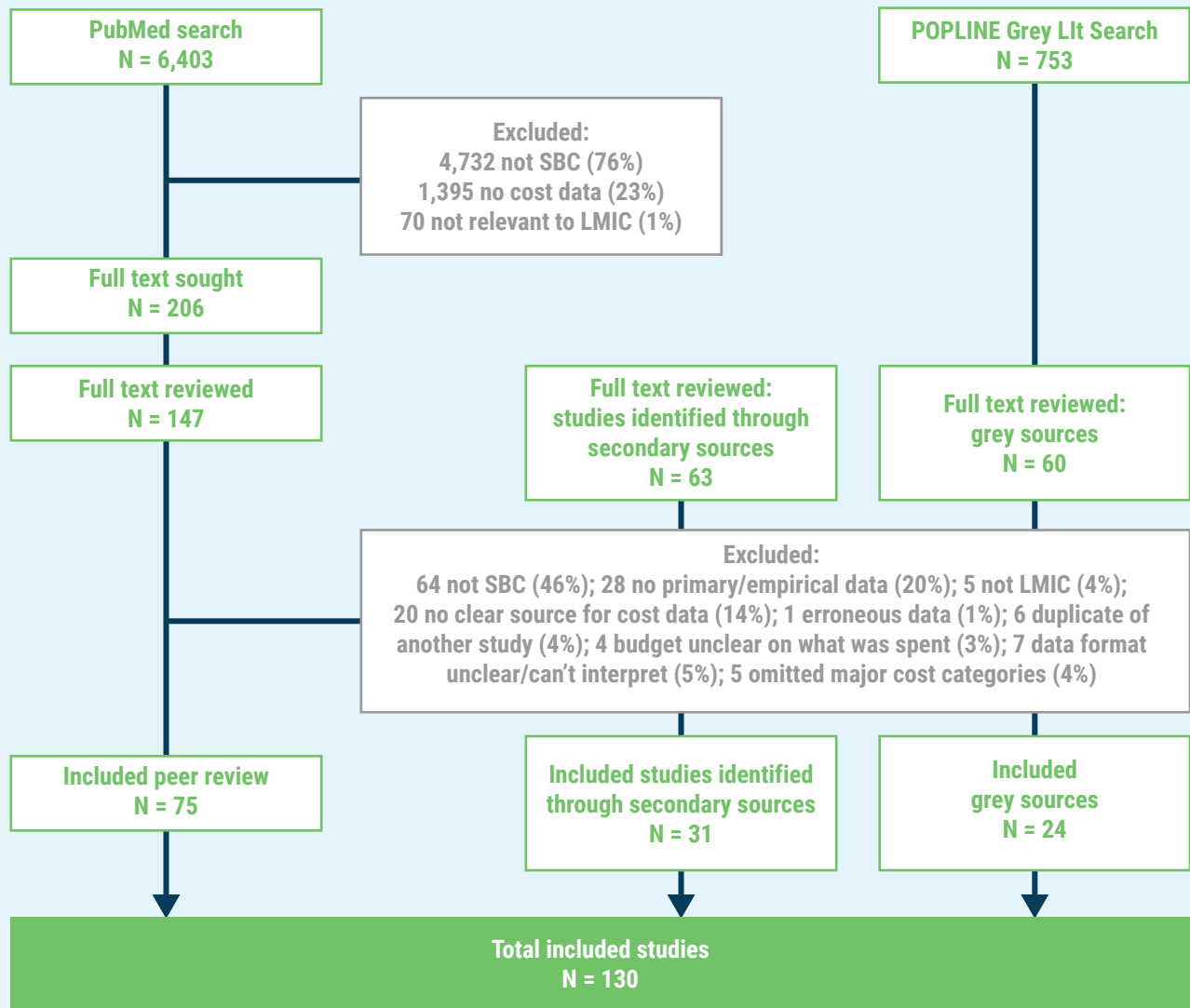
Each retrieved abstract was downloaded into an EndNote 8.0 library and reviewed based on four criteria: (1) described an SBC intervention; (2) indicated the inclusion of cost data; (3) was in English, Spanish, or French; and (4) the study was conducted in a World Bank designated low- or middle-income country at the time the study. Among the 6,403 abstracts, the majority (n=4,732) were excluded because they did not describe an SBC intervention. Another 1,395 abstracts were excluded because they did not indicate that the study included cost data and 70 were excluded because they were not conducted in low- or middle-income countries. A total of 206 abstracts that met all four criteria were sought for a full-text review.

Since the search had no date limitation, many studies dated back to the 1970s and 1980s and were not available from electronic databases. As such, only 147

TABLE 8 ODDS RATIOS, IMPACT OF INTERMEDIATE OUTCOMES ON MODERN CONTRACEPTIVE PREVALENCE

OUTCOME	# OR	Q1	MEDIAN	Q3
Beliefs regarding approval of family planning	31	1.4	1.9	3.4
Attitudes on the benefits, safety, and effectiveness of planning	7	1.3	1.5	2.1
Attitudes around intentions and self-efficacy of family planning	7	1.1	1.4	2.4
Attitudes regarding men's role in family planning	8	1.0	1.1	2.2
Family planning communication between partners	34	2.0	2.8	3.8
Communication with others about family planning	8	1.4	1.5	3.0

FIGURE 14 SBC COST LITERATURE SEARCH RESULTS



peer-reviewed studies from the PubMed search were available for full-text review. Among these, the following additional criteria were applied: (5) studies had cost estimates that were clearly and accurately reported in tables or text, (6) studies had some primary/empirical data reported and/or analyzed, (7) and the source of the data was reported.

Each full-text study was also reviewed for references to other relevant SBC cost studies and when identified, secondary sources were sought. Secondary sources were also drawn from the HIV and TB Unit Cost Study Repository and from studies reviewed for the SBC Impact Data Repository that were flagged by the reviewer as having potentially usable cost data, for a total of 63 secondary sources subject to full-text review. Additionally, a targeted grey literature review was conducted in

POPLINE, Google Scholar, and on organizational websites (e.g., USAID, PSI, Population Council, FHI360). For the grey literature search, the targeted POPLINE searches generated 753 abstracts, and 60 studies were retrieved for full-text review. Of the 270 studies from the cost literature search, secondary sources, and grey literature that were full-text reviewed, 140 were excluded for the following reasons: 64 were not SBC; 28 had no primary/empirical data; 5 were not from low- or middle-income countries; 20 had no clear source for the cost data; 1 had erroneous data and there was no response after contacting the author; 6 were duplicates of another study that had a different publication year or first author; 4 listed only a budget and it was not clear what was spent; 7 had a data format that was unclear and the data couldn't be interpreted; and 5 omitted major cost categories for the intervention type. In total, 130 cost studies were included

from all sources: 75 from the cost literature search, 31 from secondary sources, and 24 from the grey literature search. From these included studies, 711 cost estimates were extracted, there being more cost estimates than studies because most studies had multiple cost estimates based on different geographic areas, populations, or SBC intervention components (see Figure 14 for more details).

Data from each included study were captured using a study extraction template in Microsoft Excel, which included the health area, SBC intervention category and sub-category, intervention details, study location, and population/s (category; and number aiming to reach, exposed, and/or participated). Costing experts and SBC program implementers were consulted in the design of the data extraction form and several sources were used to ensure alignment of the priority fields, including the Reference Case for Estimating the Costs of Global Health Services and Interventions (Vassall et al. 2017), the PrEP Costing Guidelines (DeCormier Plosky et al. 2018), the Guidelines for Costing of Social and Behavior Change Health Interventions (Rosen et al. 2019), the primer on costing of Social Norms Interventions (Homan 2016), and the Unit Cost Study Repository (Global Health Cost Consortium 2019). To capture costs, columns were included for detailed extraction of the cost data, including type of cost (e.g., total cost or unit cost), unit of measurement, economic/financial cost, cost perspective, intervention phase, reported currency and currency year, the cost disaggregation (into the categories of personnel, commodities, other recurrent costs, and capital costs), revenue, client cost, whether scale was discussed in the paper, and reporting of any calculations Avenir Health did to create or adjust a unit cost from the study.

Cost data extraction occurred from June to December 2018 by two data extractors. The study manager reviewed two initial studies per extractor to provide feedback and improve accuracy and consistency. Extractors received detailed instructions, and weekly meetings were held to answer additional questions. Once extraction was completed, the cost data were cleaned by the study manager for key columns (e.g., number trying to reach, number exposed, denominator explanation, cost type, unit of measurement, cost per output, economic/financial cost, cost perspective, intervention phase, author reported currency).

Cost data analysis

Analysis of the cost data began with standardizing all cost data to 2017 USD, in alignment with the process used by

the Global Health Cost Consortium. First, we reviewed the reported year of the cost data, and where the study author did not give a year for the reported cost data, a formula was used that took the publication date and subtracted one year. In cases where the reported currency was not in USD, the currency was then converted to USD by using the market exchange rate published by the World Bank³⁰ for the reported year of the cost data. Once all cost data was in USD, the costs were then inflated to 2017 USD using the US GDP Price Deflator from the World Bank³¹ (note that 2017 was the latest year available at the time of the analysis).

To try to isolate for costs that are comparable, all cost data were then filtered to separate the analysis by intervention category, and select for the cost type, unit of measurement, and intervention phase appropriate to that intervention category. Data were then sorted by intervention type, health area, cost type, and study lead author. With the data filtered and sorted, an additional quality review was conducted to strive for greater consistency and comparability. Each unit cost was verified as representing costs per person exposed or per person participating, requiring the study manager to calculate from other reported data in several instances. Outliers (high or low cost for what the study manager subjectively determined to be “typical” implementation by intervention type) were further reviewed for an explanation. If one was found that would require reclassification of intervention type or adjustments of the cost (e.g., to remove medical commodities), those actions were taken, and the unit cost was listed for inclusion in the analysis. If none was found, or the explanation (e.g., a denominator that was not completely clear; supervision that seemed more intensive than in other studies; there were structural intervention components) did not disqualify use of the unit cost (e.g., major cost categories for the intervention type were omitted, medical commodity costs could not be disaggregated and were a significant portion of the cost), it was listed as an outlier.

Analysis for the minimum, first quartile, mean, median, third quartile, and maximum was then conducted for each intervention category and type. Separate analysis was done for the costs inclusive of outliers, without outliers, and only for the outliers. In alignment with the use

³⁰Exchange rates available at: <https://data.worldbank.org/indicator/PA.NUS.FCRF>

³¹US GDP Price Deflator: <https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS>

of the median for impact estimates, it was decided that the median costs for each cost type exclusive of outliers would be drawn into the modeling work.

Resulting unit cost estimates

The results of the cost analysis are in Table 9. Of the 711 cost estimates in the SBC Cost Study Repository, there were 94 that were used for the analysis in Table 9 (from 53 unique studies) for the “excluding outliers” column and 130 estimates (from 70 unique studies) for the “with outliers” column. Exclusion of estimates from the SBC Cost Study Repository from the analysis was primarily because: the estimate did not meet one of the filter criteria for standardization (e.g., a cost type other than a unit cost such as a total cost of cost-effectiveness estimate; a client cost perspective; design phase costs only), the estimate had a denominator that was not comparable to

those used in the analysis (e.g., per person in the area or per person targeted), or the estimate was coded “no” in the analysis because of methodological issues (e.g., the denominator was not clearly defined; critical costs omitted; couldn’t disaggregate the service costs from the SBC costs). As in the case of the impact data, one study may have multiple observations for the same intervention type and/or multiple observations across intervention types, and therefore the number of studies in the right column of Table 9 does not equate to the unique number of studies in the analysis. Note that all costs are reported in 2017 US dollars. The units for “Mass media” interventions are per person exposed, with the exception of “SMS (texting)/phone call,” which is considered to be participatory. The units for the IPC and package interventions are per person participated. Note that the “Mass media” category is listed as per person exposed, even though the

TABLE 9 MEDIAN AND INTERQUARTILE RANGE FOR SBC INTERVENTION COSTS, EXCLUDING AND WITH OUTLIERS

INTERVENTION	MEDIAN & INTERQUARTILE RANGE (EXCLUDING OUTLIERS)	MEDIAN & INTERQUARTILE RANGE (WITH OUTLIERS)	# STUDIES (STD.)/ OBSERVATIONS (OBS.) (# WITH OUTLIERS IN PARENTHESES)
Mass media	\$0.25 [\$0.12–\$0.75]	\$0.35 [\$0.12–\$1.99]	20 std./33 obs. (23 std./45 obs.)
Radio	\$0.26 [\$0.14–\$0.75]	\$0.26 [\$0.13–\$1.29]	6 std./9 obs. (8 std./11 obs.)
TV	\$0.12 [\$0.07–\$0.25]	\$0.17 [\$0.09–\$0.39]	4 std./8 obs. (5 std./10 obs.)
Billboards	\$0.18 [\$0.15–\$0.21]	\$0.25 [\$0.12–\$1.02]	2 std./2 obs. (4 std./5 obs.)
Newspapers	\$0.30 [\$0.30–\$0.30]	\$0.30 [\$0.16–\$10.46]	1 std./1 obs. (3 std./3 obs.)
Live drama	\$1.50 [\$0.33–2.84]	N/A (because no outliers)	3 std./4 obs. (N/A)
Social marketing	\$0.17 [\$0.16–\$0.17]	\$0.18 [\$0.17–\$1.97]	2 std./2 obs. (3 std./3 obs.)
SMS/phone call	\$2.16 [\$1.69–\$2.74]	\$1.99 [\$1.26–\$2.45]	5 std./5obs. (5 std./7 obs.)
Mixed mass media	\$0.34 [\$0.19–\$0.49]	N/A (because no outliers)	2 std./2 obs. (N/A)
IPC	\$6.51 [\$3.16–\$15.58]	\$6.92 [\$3.26–\$18.23]	28 std./40 obs. (40 std./54 obs.)
Group IPC	\$6.92 [\$3.28–\$15.58]	\$6.76 [\$2.95–\$15.52]	18 std./24 obs. (19 std./25 obs.)
Individual IPC	\$5.04 [\$3.22–\$7.55]	\$7.55 [\$5.01–\$32.05]	8 std./13 obs. (17 std./23 obs.)
Mixed IPC	\$44.28 [\$23.64–\$48.84]	\$5.96 [\$1.57–\$35.44]	3 std./3 obs. (6 std./6 obs.)
Packages (all)	\$10.23 [\$2.06–\$20.90]	\$11.16 [\$1.92–\$34.84]	17 std./21 obs. (24 std./31 obs.)
Community	\$1.69 [\$0.80–\$1.92]	N/A (because no outliers)	6 std./7 obs. (N/A)
IPC/Participation	\$20.90 [\$17.51–\$26.01]	\$31.93 [\$20.90–\$217.52]	6 std./7 obs. (11 std./13 obs.)
IPC/Mass media/ Education	\$11.16 [\$6.95–\$25.38]	\$7.35 [\$2.28–\$12.09]	6 std./7 obs. (9 std./11 obs.)

participatory intervention of “SMS (texting)/phone call” is included in the cost for the category. Similarly, the intervention category of “Packages” and intervention type of “IPC/Mass Media” is listed as per person participated, even though some aspect of per person exposed through mass media is included in the cost. Technically, these categories could be listed as a mix of per person exposed and participated, but here they are designated by what comprised the majority of the cost.

The medians excluding outliers and the medians including outliers are similar, except for “Mixed IPC,” “IPC/Participation,” and “IPC/Mass media/Education.” This is for two principal reasons. The first is that mixed (across intervention types in the same intervention category) or package interventions (mixed across intervention categories) often had insufficient detail in the intervention description to assess with confidence the components and intensity of the components that were included. Therefore, it was exceedingly difficult to understand what a “typical” intervention might be. Secondly, it was challenging to assess how the reported cost inputs related back to the reported mixed or package intervention components. In addition, and as in the case of every outlier cost estimate, there were unique problems with study methodology and reporting that contributed to outlier status. For example, in the case of “Mixed IPC” there were three cost estimates coded for inclusion (with a median cost of \$44.28) and three coded as outliers (with a median cost of \$1.09). The large difference in these medians leads to the question of what “typical” implementation for mixed IPC would look like. Intervention descriptions in the studies did not allow for such assessment, and the three outliers were then determined because of other issues with study methodology or reporting. In one case, the intervention was only for six days and it was unclear if components involving screening for malaria were included in the cost. In another, there were components of facility-based IPC and group IPC, but the group IPC piece was unclear, and it was difficult to assess to what extent it was included in the cost. For the third, the study author had cost estimates for multiple SBC interventions that were all lower than the cost estimates for comparable intervention types and it was difficult to verify which cost inputs referred to which intervention type. To improve standardization, all cost estimates from that author were listed as outliers.

For the cost estimates excluding outliers, the “Mass media” intervention category had the lowest cost

(median of \$0.25 per person exposed), and “Packages” had the highest (median of \$10.23 per person participating). This is principally due to the unit (or denominator) for the unit costs (the total cost for the intervention in the numerator divided by the unit of measurement). While the mass media interventions are measured in units of “people exposed,” which can be a very large denominator if implemented nationally, IPC and packages are measured in units of “people participating,” which is usually conducted more locally and is a relatively small denominator. This could be thought of as the difference between SBC interventions that are communicating “at/to” people and those communicating more directly “with/among” people. It should be noted that the interquartile ranges for the costs excluding outliers were wide both within each intervention type and within each intervention category, due to the heterogeneity in how the interventions were implemented, costed, and reported; however, the interquartile ranges for the costs including outliers were much wider. In the case of the intervention type “IPC/[community mobilization or] participation,” the costs, including outliers, on the higher end of the interquartile range are from studies that are either for adolescents that are intensive (e.g., facility adaptations for privacy, many counseling sessions, or costly skill building components) or for stigmatized populations that include structural components to reduce bias among police, lawmakers, or mass media personnel.

Finally, while the costs for “Mass media” are lower than those for “IPC” or “Packages,” caution should be taken with utilization of these estimates. It may be the case that different types of interventions are better suited for different purposes, such as scaling up IPC or packages when the intent is to reach those not initially convinced by mass media or the issue is one of adherence. Therefore, the selection of SBC interventions for implementation will also need to be suited to the context, considered with respect to effectiveness, and conducted in accordance with national priorities.

PubMed SBC cost literature Search Terms

(((Cost[Title/Abstract] OR Price[Title/Abstract] OR “Health economic”[Title/Abstract] OR Dollar[Title/Abstract] OR USD[Title/Abstract] OR \$[Title/Abstract] OR €[Title/Abstract] OR £[Title/Abstract])) AND (SBC[Title/Abstract] OR IPC[Title/Abstract] OR “Interpersonal counseling”[Title/Abstract] OR “Intrapersonal counseling”[Title/Abstract] OR “Face-to-face”[Title/Abstract] OR “Social marketing”[Title/Abstract] OR “Social

mobilization"[Title/Abstract] OR "Social change"[Title/Abstract] OR "Socio-behavioral"[Title/Abstract] OR Socio-behavioural[Title/Abstract] OR "Change behavior"[Title/Abstract] OR "Change behaviour"[Title/Abstract] OR "Planned behavior"[Title/Abstract] OR "Planned behaviour"[Title/Abstract] OR "Behavior change"[Title/Abstract] OR "Behaviour change"[Title/Abstract] OR "Behavioral change"[Title/Abstract] OR "Behavioural change"[Title/Abstract] OR "Behavioral economic"[Title/Abstract] OR "Behavioural economic"[Title/Abstract] OR Attitude[Title/Abstract] OR Norm[Title/Abstract] OR Tradition[Title/Abstract] OR Traditional[Title/Abstract] OR "Demand creation"[Title/Abstract] OR "Demand generation"[Title/Abstract] OR "Demand generating"[Title/Abstract] OR "Generate demand"[Title/Abstract] OR "Demand-side"[Title/Abstract] OR "Demand side"[Title/Abstract] OR mHealth[Title/Abstract] OR "M-health"[Title/Abstract] OR Adhere[Title/Abstract] OR Communication[Title/Abstract] OR Advocacy[Title/Abstract] OR Outreach[Title/Abstract] OR Mobile[Title/Abstract] OR Campaign[Title/Abstract] OR Media[Title/Abstract] OR Advertise[Title/Abstract] OR Advertisement[Title/Abstract] OR Entertain[Title/Abstract] OR Edutainment[Title/Abstract] OR Drama[Title/Abstract] OR SMS[Title/Abstract] OR "Text message"[Title/Abstract] OR Phone[Title/Abstract] OR Peer[Title/Abstract] OR "Behavioral design"[Title/Abstract] OR "Behavioural design"[Title/Abstract] OR "Design behave"[Title/Abstract] OR "Human-centered design"[Title/Abstract] OR "Human centered design"[Title/Abstract] OR Radio[Title/Abstract] OR Television[Title/Abstract] OR TV[Title/Abstract])) AND ("Family planning"[Title/Abstract] OR Reproductive[Title/Abstract] OR Mother[Title/Abstract] OR Father[Title/Abstract] OR Couple[Title/Abstract] OR Pregnancy[Title/Abstract] OR Pregnancies[Title/Abstract] OR Pregnant[Title/Abstract] OR Birth[Title/Abstract] OR Contraception[Title/Abstract] OR Contraceptives[Title/

Abstract] OR HIV[Title/Abstract] OR AIDS[Title/Abstract] OR "Harm Reduction"[Title/Abstract] OR Integrated[Title/Abstract] OR Integration[Title/Abstract] OR "Sector wide"[Title/Abstract] OR "Sector-wide"[Title/Abstract] OR "Health System"[Title/Abstract] OR Malaria[Title/Abstract] OR Zika[Title/Abstract] OR Youth[Title/Abstract] OR Adolescent[Title/Abstract] OR "Newly married"[Title/Abstract]))

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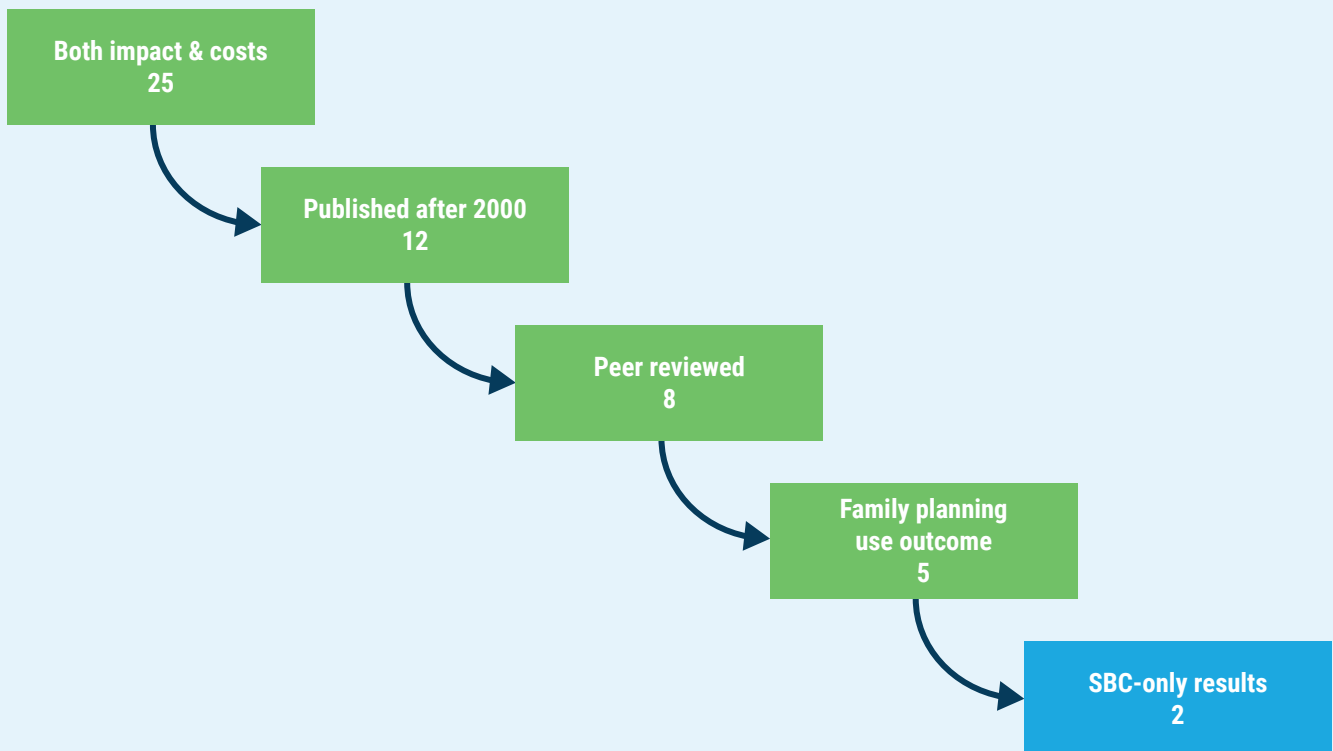
Appendix 3 Selection of case examples

From the literature review described in **Appendices 1** and **2**, we used a series of selection criteria to highlight case examples most relevant to this business case (Figure 15). We found 25 studies that had both cost and impact results. Of those, we then chose studies that were (1) published since 2000, (2) published in a peer-reviewed journal, (3) had outcome data related to modern contraceptive use, and (4) had a clear SBC intervention with costs specific to SBC. The two studies presented in this document, Robinson and Lewis 2003 and Kincaid and Do 2006, matched those criteria.

These were the only two studies that fit these criteria, thus revealing gaps in the literature. That the two selected case studies both examined mass media interventions indicates a particular need for cost-effectiveness studies on the other SBC intervention categories (IPC, provider behavior change, and community mobilization packages). A challenge for the SBC field moving forward is to do more studies that, from the start, include a cost-effectiveness analysis of a broader range of SBC

interventions, including those that integrate across health areas.

FIGURE 15 SELECTION CRITERIA FOR CASE EXAMPLES



Appendix 4

Modeling cost-effectiveness of SBC

Modeling the cost-effectiveness of SBC requires two parts—modeling the impact of SBC intervention on mCPR and subsequent health impacts and modeling the cost of SBC scale up (Figure 16). The modeling approach builds on previous modeling work including for HIV (Goals model)³², family planning (FP Goals model)³³, and other health areas, e.g., maternal-child health, TB, malaria, noncommunicable diseases, and nutrition. The modeling utilizes the impact and cost matrices that came from an extensive literature review process (see [Appendices 1 and 2](#)).

³²For more information on the Goals model: <http://www.avenirhealth.org/software-spectrum.php>

³³For more information on the FP Goals model: http://track20.org/pages/our_work/innovative_tools/family_planninggoals.php

Model inputs

In addition to utilizing the impact and cost matrices, the data inputs in Table 10 are also used.

Modeling an increase in mCPR

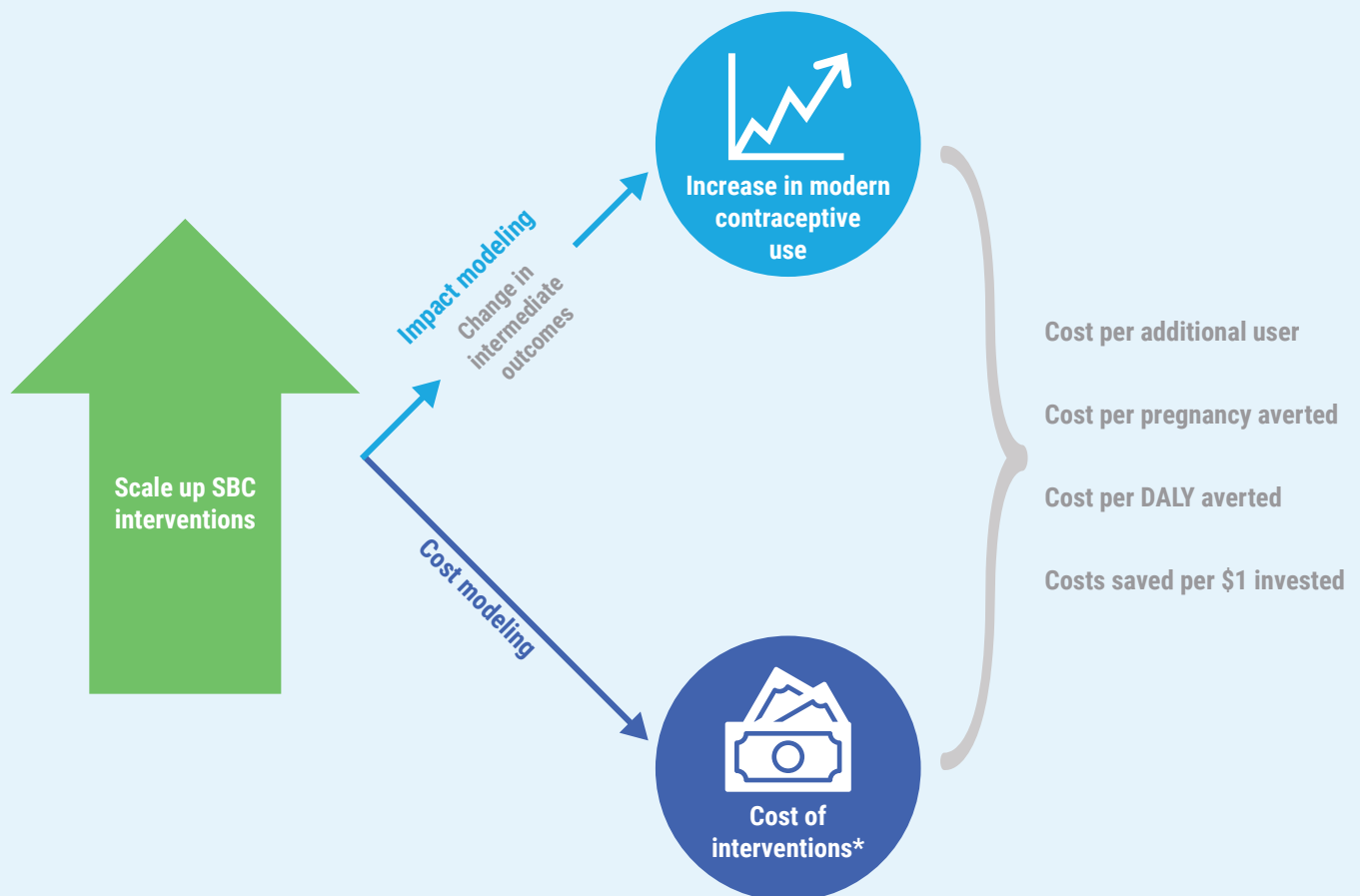
The impact of scaling up SBC interventions on mCPR is modeled in two ways—first, indirectly through the intermediate outcomes, then, directly in order to capture any residual impact.

Generally, for impacts, calculations account for the baseline level, the change in coverage, and the OR associated with the change in coverage to estimate the end line level.

These sets of calculations are done three times, each utilizing a different impact matrix:

- Change in intermediate outcomes due to SBC scale up (indirect pt 1).

FIGURE 16 GENERAL APPROACH TO MODELING COST-EFFECTIVENESS OF SBC



*Also includes direct service provision costs for additional users attributable to SBC interventions

TABLE 10 ADDITIONAL DATA INPUTS FOR MODELING COST-EFFECTIVENESS OF SBC

DATA	SOURCE
Baseline information	
mCPR among all women in 2018	FP2020 Progress Report
Mean ideal number of children	Most recent DHS
Women of reproductive age in 2018 and 2023	UN Population Division World Population Prospects 2017
Intermediate outcomes baseline levels	See details in section 5
Scale up of SBC interventions	
Increase in coverage for each intervention	See details in section 5
Impacts averted coefficients	
Pregnancies averted per user	Country specific, based on FP2020 Core Indicators
DALYs averted per pregnancy averted	Country specific, based on Impact 2 v5
Cost of an unintended pregnancy	Country specific, based on Impact 2 v5
Direct cost of family planning service provision	
Commodity, supply, and personnel cost by method	Sub-regional estimates from Adding It Up 2017
Method mix	Most recent DHS

- Change in mCPR due to changes in intermediate outcomes (indirect pt 2).
- Change in mCPR due to SBC scale up (direct).

If the direct change in mCPR is larger than the indirect change in mCPR, this additional “residual” impact is included in the overall change (classified as “other”).

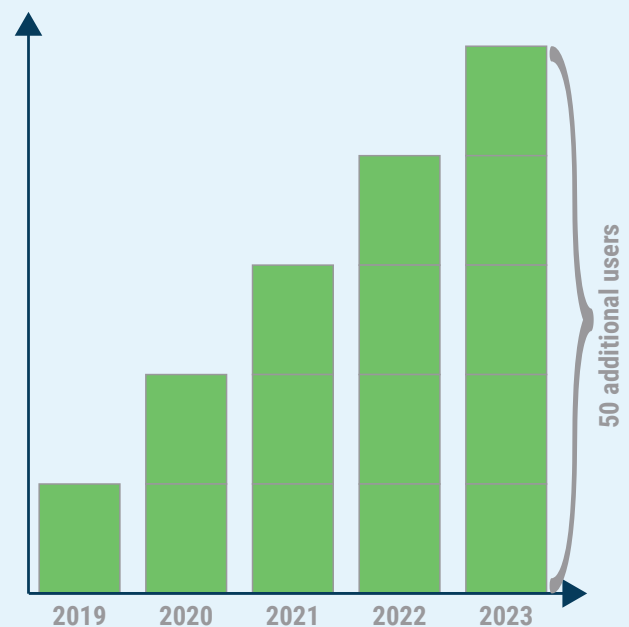
Modeling health and economic impacts

The increase in mCPR translates into additional users by estimating the total users in 2018 and the total users in 2023. This calculation therefore accounts for both increases in mCPR as well as changes in the number of women of reproductive age.

The model assumes linear scale up over the five-year period. Therefore, interim “user-years” are calculated for 2019–2022 to account for both impacts and costs associated with the increase in users over the full time period. Figure 17 illustrates this concept. Take a scenario where 50 additional users are reached by 2023. In this illustration, each block represents 10 additional users. Cumulatively over the five-year period, there are a total of 150 additional user years (15 blocks). A similar concept is applied for the impacts—total impacts represent the cumulative impacts over the five years.

Impacts are calculated based on the impact coefficients (see model inputs). For example, the number of pregnancies averted is calculated as the total number of additional user years x pregnancies averted per user.

FIGURE 17 ILLUSTRATION OF THE CONCEPT OF “USER-YEARS”



In addition to calculating the direct maternal and child health care savings, an estimate is also made of the cost saved due to averted productivity loss. Studies suggest that each DALY averted generates savings of between 1 and 3 times GDP per capita. Range is calculated based on maternal DALYs averted and the country GDP per capita.

Modeling SBC costs

The increased coverage in SBC interventions is translated into the number of women reached by multiplying the change in coverage (a model input) by the number of reproductive aged women in 2023. Using the same approach as described above, cumulative units of women reached are calculated to account for the total reach over the five-year scale up period. For mass media, units are the number of people who recall a message; for IPC and packages, units are the number of people who participate.

Modeling direct cost of family planning service provision

In order for additional users to exist, women must access contraceptive supplies and services. Therefore, the analysis takes into account not only the cost of the SBC interventions, but also the direct costs associated with the additional users. Based on the input data (direct cost per method and method mix), a weighted average cost per user is calculated. This is then multiplied by the estimated number of additional user years to estimate the five-year total costs associated with family planning service provision.

Calculating cost-effectiveness

Finally, the impact and cost estimates are brought together to estimate the cost per additional user, cost per unintended pregnancy averted, and cost per DALY averted. These are done using the total cost—meaning the SBC intervention cost plus the direct service delivery cost. The cost per DALY averted is benchmarked against the country's GDP to determine cost-effectiveness using WHO guidance that any intervention below 1 GDP per capita is “highly cost effective” while an intervention falling between 1 and 3 times GDP per capita is “cost effective” (WHO Commission on Macroeconomics and Health 2001).

Calculations of costs saved per USD invested are also calculated by dividing the cost savings (from direct maternal and child health costs as well as productivity loss) to the total cost (SBC intervention + direct service delivery).

Sensitivity testing

Sensitivity testing is conducted on both the impacts and costs. Generally, results presented represent using the median impact and cost values from the matrices. However, the model is also run using the interquartile range (lower bound = 25 percent, upper bound = 75 percent) in order to account for uncertainty in these estimates.

Limitations

Like all modeling, the results are only as good as the model inputs and assumptions. Care has been taken to use the best estimates available from existing data sources. Further, the results are meant to be illustrative—if this package of SBC intervention is scaled up, this is the likely resulting cost-effectiveness.

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