

Reach Health Assessing Cost-Effectiveness for Family Planning (RACE-FP) Methodology Report: Estimating the Impact of Family Planning Interventions in the Philippines

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Supplement A. Model Population

A.1. Initial Population: Identifying WRA

The initial population in the model is the total number of WRA in the Philippines aged 15-49. This population is then disaggregated by age group (the proportion of WRA ages 15-19 vs. 20-49) and geographic region (NCR, Central Visayas, and Caraga) to allow for results to be presented with these same disaggregations.

Data were reviewed from several sources, including the United Nations Population Division, the World Bank, United Nations Development Programme, and the Philippines Statistics Authority. The latter provided more detail and disaggregation compared to any other source and was therefore used for RACE-FP population parameters. Despite date from the Philippines Statistics authority being from the 2015 census, multipliers were available to project future population estimates to calculate the estimated number of WRA in the baseline year, 2018. The size and distribution of the initial population of WRA—along with definitions, calculations, and sources—can be found in Table A.1.

Table A.1. Initial population of WRA disaggregated by age and region, Philippines 2018

Parameter	Definition	Calculation	Disaggregation	Value	Source Used
Number of WRA	Women aged 15-49	Add together projected mid-year population (01 July 2018) for each applicable age group 15-49	Philippines National	27,276,379	Philippines Statistics Authority, 2021. ¹
			National Capital Region	3,833,563	
			Central Visayas Region	1,949,847	
			Caraga Region	644,845	
Proportion of women ages 15-19 among all WRA	Women aged 15-19 divided by the total number of WRA	Adolescent females 15-19 divided by the number of WRA	Philippines National	18.5%	
			National Capital Region	16.1%	
			Central Visayas Region	18.5%	
			Caraga Region	20.0%	
Proportion of women ages 20-49 among all WRA	Women aged 20-49 divided by the total number of WRA	1 minus the value listed for the proportion of adolescent women among all WRA	Philippines National	81.5%	
			National Capital Region	83.9%	
			Central Visayas Region	81.5%	
			Caraga Region	80.0%	

A.2. Eligible Population: Women at Risk of Unintended Pregnancy

The initial population of WRA needs to be further refined to identify the eligible population for whom an FP intervention could be successful: women who are (1) not trying to conceive, (2) not covered by a previously initiated long-acting method, and (3) not abstinent.

A.2.1. WRA Currently Pregnant, Trying to Conceive, or in Menopause

WRA who are not trying to conceive include women who are currently pregnant, trying to conceive, or are in menopause. The proportion of WRA who fit these criteria can be found in Table A.2. Each relevant proportion is multiplied by the total number of WRA to identify the number of WRA that fit our definition of women not trying to conceive, and then they are removed from the at-risk population. These three categories are mutually exclusive.

After these women are removed from the calculation flow, we are left with WRA not trying to conceive (not pregnant, trying to conceive, or in menopause) and at risk of unintended pregnancy.

Table A.2. Proportion of WRA currently pregnant, trying to conceive, and in menopause, disaggregated by age and region, Philippines 2018^a

Parameter	Definition	Calculation	Geographic Area	Age Group	Value	Assumptions	Source Used
Proportion of WRA currently pregnant	The proportion of WRA in the Philippines who are currently pregnant via planned pregnancy	Used the percentage of all WRA who are currently pregnant, and multiplied by the weighted average percentage of WRA who indicated the planning status at birth was “wanted then”	Philippines National	Adolescents	2.9%	Assuming that the proportion of WRA 15-49 currently pregnant (4.1%) is consistent for adolescents (15-19) and adults (20-49)	Philippines NDHS, 2018. ²
				Adults	3.0%		
			National Capital Region	Adolescents	2.4%		
				Adults	2.5%		
			Central Visayas Region	Adolescents	2.3%		
				Adults	2.3%		
			Caraga Region	Adolescents	3.5%		
				Adults	3.7%		
Proportion of WRA trying to conceive	The proportion of currently married WRA in the Philippines who want to conceive in the next 2 years	Used the weighted average percent of WRA who are currently married and multiplied by the weighted average percent of currently married women who want to conceive in the next 2 years	NA	Adolescents	1.4%	As data are not available at the regional level, we are assuming that these values are consistent across geographic regions.	Philippines NDHS, 2018. ²
				Adults	11.2%		

Proportion of WRA in menopause	The percent of adult women ages 20-49 who are menopausal	Used the percent of women ages 30-49 who are menopausal (6.6%), applied to our population of women ages 30-49, and divided by our population of adult women ages 20-49	NA	Adolescents	NA	As data are not available on the regional level, we are assuming that these values are consistent across geographic regions.	Philippines NDHS, 2018. ²
				Adults	3.9%		

^a NDHS data were collected in 2017, and we assume that these values are consistent with what we would see in 2018.

A.2.2. WRA With Continued Coverage From a Long-Acting Method

After removing women not at risk of unintended pregnancy, we consider women who have continuing long-term coverage initiated prior to the modeled year through a long-acting method (e.g., sterilization, IUD, implants). These women are not applicable to the target population as we assume they will not be targeted by interventions or seek secondary contraceptive methods in the modeled year. We assume that long-acting contraceptive users could either be in the group not trying to conceive or among women who recently entered menopause; therefore we distribute the total number estimated to have continued coverage partially among women not trying to conceive and women who are in menopause. We assume women who are currently pregnant or trying to conceive do not have continued coverage from a long-acting method.

To calculate the number of WRA who have prior coverage from a long-acting method, we use Philippines NDHS² Table 7.3 for the proportion of users of each method. However, RACE-FP down-weights the overall usage rate using USAID CYP estimates.³ The calculation is $[(CYP-1)/CYP] * \text{overall usage rate}$. For example, we use NDHS Table 7.3 to estimate 2.6% of adult women used an IUD in 2018 and USAID estimates a CYP for an IUD of 4.6. We estimate the prior coverage by weighting the 2.6% total IUD coverage by the CYP minus 1. Therefore, the percentage of adult women previously covered by IUDs is $2.6\% * (4.6 - 1)/4.6 = 2.0\%$. Proportions of WRA with continued coverage from a long-acting method can be found in Table A.3.

After these women are removed from the calculation flow, we are left with WRA not trying to conceive, not previously covered, and at risk of unintended pregnancy.

A.2.3. WRA Who Are Abstinent

Next the model adjusts for women who are not sexually active, assuming that WRA who are abstinent will not seek a contraceptive method in the model year. Philippines NDHS² Table 4.7 reports distribution of women by timing of last sexual intercourse, by age group, listing the proportion of women who have never had sex or have not had sex in the prior year. As NDHS does not ask about abstinence used as an FP method, we assume that some of the abstinent adult women reported in NDHS Table 4.7 are previously sterilized, in menopause, or are abstinent to prevent pregnancy; therefore, after calculating the total number of WRA who are abstinent we distribute them proportionally among these groups (for further detail, please see Supplement B2. Contraceptive Utilization for how these values were calibrated). We assume that those using abstinence to avoid pregnancy would not seek any other method, and that those previously covered by IUD or implant are not within the abstinent group. The proportion of WRA who are abstinent can be found in Table A.3.

After those who are using abstinence are removed from the target population, we are left with our eligible population of WRA not trying to conceive, not previously covered, not abstinent, and still at risk of unintended pregnancy.

Table A.3. Proportion of WRA with continued coverage from a long-acting method or are abstinent, Philippines 2018^a

Parameter	Definition	Calculation	Age Group	Value	Assumptions	Source Used
Proportion of WRA with continued coverage (sterilization)	Weighted proportion of WRA with coverage from a sterilization from before model year.	Calculated the weighted value for adults ages 20-49 who use female sterilization (6.0%) using NDHS, used value provided for adolescents 15-19 (0.0%). Used CYP of 10 to convert the proportion of total users into the proportion previously covered.	Adolescents	0.0%	Assume weighted proportions are consistent across geographic location and setting.	Philippines NDHS, 2018. ² USAID CYP Estimates, 2019. ³
			Adults	5.3%	Assume WRA with continued coverage from a long-acting method will not seek secondary contraceptive methods in modeled year.	
Proportion of WRA with continued coverage (IUD)	Weighted proportion of WRA with coverage from an IUD from before model year.	Calculated the weighted value for adults ages 20-49 who use female sterilization (2.6%) using NDHS, used value provided for	Adolescents	0.2%	Assume what women in menopause may have continued coverage from a long-acting method. Assume WRA who are pregnant or trying to conceive do not have	

Parameter	Definition	Calculation	Age Group	Value	Assumptions	Source Used
		adolescents 15-19 (0.3%). Used CYP of 4.6 to convert the proportion of total users into the proportion previously covered.	Adults	2.0%	continued coverage from a long-acting method.	
Proportion of WRA with continued coverage (implant)	Weighted proportion of WRA with coverage from an implant from before model year.	Calculated the weighted value for adults ages 20-49 who use female sterilization (0.8%) using NDHS, used value provided for adolescents 15-19 (0.2%). Used CYP of 2.5 to convert the proportion of total users into the proportion previously covered.	Adolescents	0.1%		
			Adults	0.5%		
Proportion of WRA who are abstinent	Weighted proportion of WRA who have never had sex or have not had sex the year prior to survey.	[See Supplement B2. Contraceptive Utilization to view how these values from NDHS are used to calculate number of WRA abstinent to impact Model Population]	Adolescents	89.3%	Assume weighted proportions are consistent across geographic location and setting. Assume WRA abstinent WRA may be sterilized or in menopause.	Philippines NDHS, 2018. ²
			Adults	28.0%	Assume WRA using abstinence to prevent pregnancy would not seek any other method. Assume WRA previously covered by IUD or implant are not within abstinent group.	

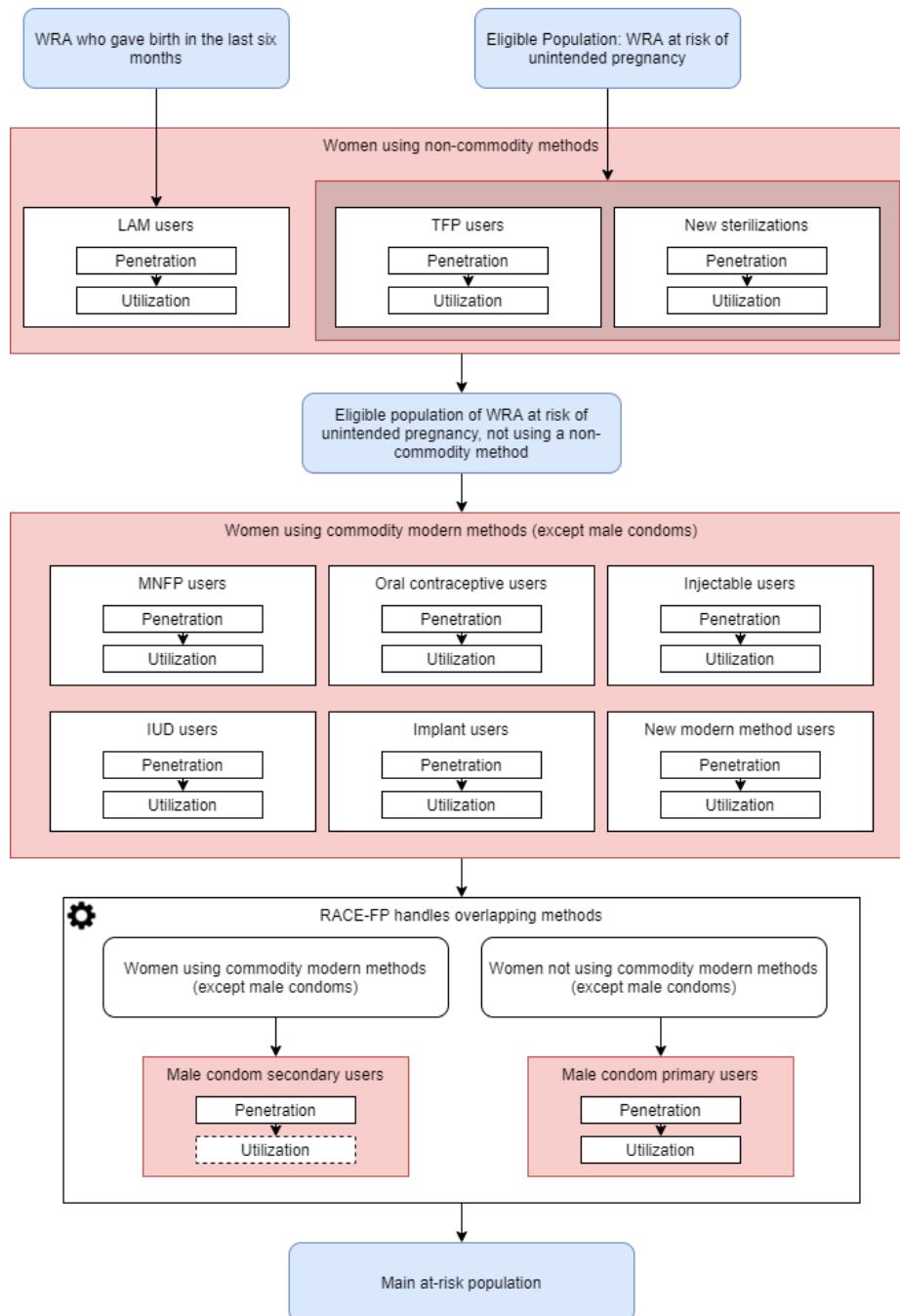
^a NDHS data were collected in 2017, and we assume that these values are consistent with what we would see in 2018.

A.3. Main At-Risk Population

The main at-risk population to be affected by FP interventions in RACE-FP includes all WRA within the eligible population (WRA not trying to conceive, not previously covered by a long-acting method, and not abstinent) who are also not using any FP method to prevent pregnancy. Figure A.1 illustrates the

final steps taken to refine the population of eligible WRA who are at risk of unintended pregnancy into the main at-risk population. Figure A.2 illustrates an example of how each method included in Figure A.1 incorporates penetration and utilization values across delivery settings and contributes to the overall number of method users.

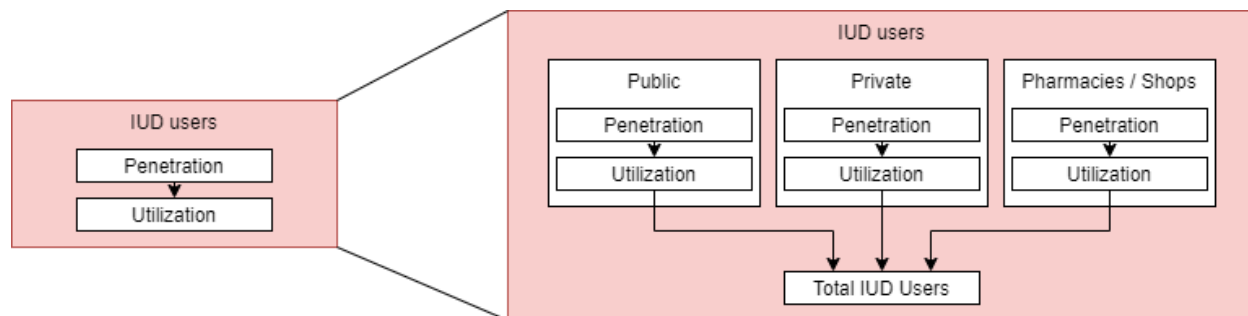
Figure A.1. Women at Risk of Unintended Pregnancy^a



= Secondary method not double counted

^a Blue rounded boxes represent continuing populations and red square boxes represent populations removed from the at-risk flow.

Figure A.2. Method user calculation



A.3.1. WRA Using Non-Commodity Methods

Non-commodity methods include lactational amenorrhea method (LAM), traditional family planning (TFP), and new sterilizations (women sterilized in the modeled time period). We assume non-commodity methods to be mutually exclusive from commodity-based methods, and exclusive from one another, so the total number of non-intervention method users is the sum of LAM, TFP, and new sterilizations. We also assume women using non-commodity methods are not using male condoms as a secondary method for the purposes of pregnancy prevention. See Supplement B2. Contraceptive Utilization for details on how utilization parameters were calibrated to identify the population of WRA using non-commodity methods.

LAM is the only method that does not use the prior level output population (WRA not trying to conceive, not previously covered, not abstinent, and still at risk of unintended pregnancy) as the input population for LAM only applies to those who recently gave birth. As a proxy, we multiply the number of women in each age group by the proportion within each age group that were pregnant in the last 6 months. We used NDHS to identify the percentage of WRA who were pregnant in the last 6 months as a proxy for the percentage who gave birth in the last 6 months. Philippines NDHS Table 5.2 lists the proportion of women currently pregnant (4.1%). This was divided by 10 months to obtain an incidence rate (0.0041) for 1 month of pregnancy. This incidence rate was then multiplied by 6 months (0.0246) and added back to the 4.1% currently pregnant (0.0656) for a total of 6.6% of women aged 15-49 who were pregnant in the last 6 months. This same logic was applied to the proportion of adolescent women and adult women (and disaggregating by age and location to have figures for all, adult, and adolescent women in every region and province of interest).

A.3.2. WRA Using Commodity-Based Methods

After non-commodity method users are removed from the calculation flow, WRA who remain at risk of unintended pregnancy are those that are not using a commodity-based method (modern natural family planning (MNFP), oral contraceptives, injectables, IUDs, implants, and male condoms). These commodity-based methods are assumed to be mutually exclusive to one another, mutually exclusive to non-commodity methods, and mutually exclusive to abstinence and women not at risk of unintended pregnancy. The exception is male condoms, which may be used as a primary or secondary method along with other commodity-based methods. If a primary method is effective at preventing pregnancy, credit is assigned to that primary method over the secondary method.

After the number of users in each setting are calculated, the number of commodity non-condom modern method users are collected in three main categories; users whose method was effective at preventing pregnancy, users whose method was “ineffective” at preventing pregnancy, and non-users. RACE-FP calculates the number of male condom users among each of these three categories. Male condom secondary users among those whose primary method was effective are not double counted in users or outcomes, secondary users whose primary method was ineffective are not double counted in the total number of users but contribute to the total number of averted unintended pregnancies. Male condom users among those who did not use a primary method are primary male condom users and are treated like other commodity modern methods. Please see Supplement B2. Contraceptive Utilization for details on how utilization parameters were calibrated to identify the population of WRA using commodity-based methods.

In addition to the main at-risk population, the model provides several grouped populations if the user would like to create their own outcomes including (1) total users including prior time-period users excluding abstinence, (2) total non-users including abstinence, (3) current time-period users (not including previous initiated coverage or abstinence), (4) current time-period non-users (main at-risk population), (5) current time-period users whose contraceptives were effective, and (6) current time-period users whose contraceptives failed (at risk of pregnancy).

After removing non-commodity and commodity-based method users, we are left with our main at-risk population of WRA populating our baseline scenario and those to be impacted by interventions included in the user-based scenario in RACE-FP.

Supplement B. Contraceptive Penetration, Utilization, and Effectiveness

Each contraceptive method was assessed across three constructs: penetration (P), utilization (U), and effectiveness (E). These constructs were individually assessed along a percentage continuum from 0% to 100% for each method.

B.1. Contraceptive Penetration

Contraceptive penetration parameters are the first step in the model in assessing the number of women who can access, and later use, a contraceptive method. Penetration represents access to a method depending on the setting: public, private, and community (i.e., pharmacies and shops). We assume penetration is consistent through the calculation flow (e.g., the percentage of all WRA who can access IUDs is equal to the percentage of women not covered and at risk who can access IUDs). Most commonly, stockout data were used for each method to determine penetration (calculated: 100% minus stockout % = penetration). We assumed that penetration was consistent across age groups (i.e., adolescents have the same access to a method as adults) for methods except for sterilization which adolescents cannot access. Lack of access to regionally specific data—or small sample sizes for data that were available at the regional level—resulted in the model assumption that penetration parameters are consistent across geographic location as well.

Table B.1. Contraceptive Penetration Baseline Values, Philippines 2018

Method	Disaggregation	Baseline Penetration Value	Calculation	Assumptions	Source Used
Abstinence		100%	NA	Assuming that penetration of abstinence is consistent across location, setting, and age group.	Assumption
Sterilization (BTL)	Public	35.9%	The % obtaining service from public facilities * (estimated penetration - stockout) $(0.31*(0.99-0)) + (0.21*(0.25-0)) + (0.48*(0-0)) = 35.9\%$ penetration BTL in public facilities.	Assuming penetration of sterilization is consistent across location and age group. NDHS data provides the percent distribution of modern contraceptive method users by most recent source of method (Table 7.8). Among users obtaining services in the public sector, 31% go to public hospital, 21% go to urban and rural	Philippines NDHS, 2018. ²

Method	Disaggregation	Baseline Penetration Value	Calculation	Assumptions	Source Used
				clinics, and 48% receive services from Barangay-related source. Assuming 99% of public hospitals provide BTL, 25% of urban and rural health clinics, and 0% of Barangay facilities are able to provide this service We also assume that there are no stockouts of this method in facilities capable of providing this service.	
	Private	35.9%	NA	Assuming that penetration of sterilization in private settings reflects penetration in public settings and is consistent across location and age group.	Assumption
	Community	0.0%	NA	Assuming that sterilization is not available in community settings. This is consistent across location and age group.	Assumption
Lactational Amenorrhea (LAM)		90.0%	10% of mothers had persistent milk insufficiency. $100\% - 10\% = 90\%$ penetration LAM.	Assuming that penetration of LAM is consistent across location, setting, and age group.	Neifert et al., 1990. ⁴
Traditional FP (TFP)		95.0%	NA	Assuming that penetration of TFP is consistent across location, setting, and age group. Assuming that while traditional methods are theoretically available to all, some women who use traditional methods don't have access because they don't have the knowledge (e.g., younger women might not know sex causes pregnancy), or decision-making power (e.g., withdrawal requires male partner's agreement).	Assumption
Modern Natural FP (MNFP)	Public	90.0%	NA	Assuming that penetration of MNFP is consistent across location and age group.	Assumption
	Private	10.0%			

Method	Disaggregation	Baseline Penetration Value	Calculation	Assumptions	Source Used
	Community	0.0%		Baseline values are assumptions based on expert opinion of Reach Health staff based in the Philippines (2020) that MNFP methods such as standard days method (SDM), cervical mucus method, ovulation and billings methods are mostly provided in public settings, and that MNFP is rarely provided in private settings and not available from community settings at all.	
Male Condom	Public	88.3%	Averaged 2018 POPCOM values for male condom stockouts in public facilities for all 4 quarters of 2018 to determine the average percent of reporting MHOs/CHOs with either zero stock or stockouts of condoms. 100% minus the stockout = penetration. $(0.14+0.12+0.10+0.11)/4$ = average of 11.75% reporting MHOs/CHOs experiencing stockouts in 2018. $100-11.75 = 88.25\%$ penetration of male condom in public settings.	Assuming that penetration of male condoms is consistent across location and age group, and that penetration of male condoms in community settings reflects penetration in public settings. Assuming Reach Health data used for private penetration estimates are generalizable (used total from all geographic locations, as regional data sample sizes were too small).	POPCOM FP Logistics Hotline Stock Status Report, Q1, 2019. ^a
	Private	69.8%	Weighted values for the percent of private hospitals (25% = 40/163) and private LICs (32% = 145/458) with stockout of male condoms. 100% minus the stockout = penetration. $100-30.2\%$ stockout = 69.8% penetration of male condom in private settings.		USAID Reach Health Stockout Data (Baseline), Jan-Mar 2019. ^a
	Community	88.3%	NA		Assumption
Oral Contraceptive	Public	84.3%	Averaged 2018 POPCOM values for combined oral contraceptive pills (COC) stockouts in public facilities for all 4 quarters of 2018 to determine the average percent of reporting	Assuming that penetration of oral contraceptives is consistent across location and age group, and that penetration of oral contraceptives in community settings reflects penetration in public settings.	POPCOM FP Logistics Hotline Stock Status Report, Q1, 2019 ^a

Method	Disaggregation	Baseline Penetration Value	Calculation	Assumptions	Source Used	
			MHOs/CHOs with either zero stock or stockouts of COCs. 100% minus the stockout = penetration. (0.16+0.19+0.17+0.11)/4 = average of 15.75% MHOs/CHOs experiencing stockouts in 2018. 100-15.75 = 84.25% penetration of oral contraceptives in public settings.	Assuming Reach Health data used for private penetration estimates are generalizable (used total from all geographic locations, as regional data sample sizes were too small).		
	Private	78.0%	Weighted values for the percent of private hospitals (25% = 42/167) and private LIC (21%=98/470) with stockout of oral contraceptives. 100% minus the stockout = penetration. 100%-22.1% stockout = 78.0% penetration of oral contraceptives in private settings.			USAID Reach Health Stockout Data (Baseline), Jan-Mar 2019. ^a
	Community	84.3%	NA			Assumption
Injectables	Public	89.5%	Averaged 2018 POPCOM values for injectables (DMPA) stockouts in public facilities for all 4 quarters of 2018 to determine the average percent of reporting MHOs/CHOs with either zero stock or stockouts of injectables. 100% minus the stockout = penetration. (0.12+0.11+0.10+0.09)/4 = average of 10.5% MHOs/CHOs experiencing stockouts in 2018. 100-10.5 = 89.5% penetration of injectables in public settings.	Assuming that penetration of injectables is consistent across location and age group, and that injectables are not available in community settings. Assuming Reach Health data used for private penetration estimates are generalizable (used total from all geographic locations, as regional data sample sizes were too small).	POPCOM FP Logistics Hotline Stock Status Report, Q1, 2019. ^a	
	Private	82.0%	Weighted values for the percent of private hospitals (27% = 44/162) and private LIC (15%= 72/475) with stockout of injectables. 100% minus the stockout = penetration. 100%-18.1% stockout =			USAID Reach Health Stockout Data (Baseline), Jan-Mar 2019. ^a

Method	Disaggregation	Baseline Penetration Value	Calculation	Assumptions	Source Used
			82.0% penetration of injectables in private settings.		
	Community	0.0%	NA		Assumption
Implants	Public	52.8%	Averaged 2018 POPCOM values for implants stockouts in public facilities for all 4 quarters of 2018 to determine the average percent of reporting MHOs/CHOs with either zero stock or stockouts of implants. 100% minus the stockout = penetration. $(0.64+0.45+0.41+0.39)/4$ = average of 47.25% MHOs/CHOs experiencing stockouts in 2018. $100-47.25 = 52.75\%$ penetration of implants in public settings.	Assuming that penetration of implants is consistent across location and age group, and that implants are not available in community settings. Assuming Reach Health data used for private penetration estimates are generalizable (used total from all geographic locations, as regional data sample sizes were too small).	POPCOM FP Logistics Hotline Stock Status Report, Q1, 2019. ^a
	Private	73.8%	Weighted values for the percent of private hospitals (40%=8/20) and Private LIC (25%=58/230) with stockout of PSI. 100% minus the stockout = penetration. $100\%-26.2\%$ stockout = 73.8% penetration of PSI in private settings.		USAID Reach Health Stockout Data (Baseline), Jan-Mar 2019. ^a
	Community	0.0%	NA		Assumption
IUD	Public	86.3%	Averaged 2018 POPCOM values for IUD stockouts in public facilities for all 4 quarters of 2018 to determine the average percent of reporting MHOs/CHOs with either zero stock or stockouts of IUDs. 100% minus the stockout = penetration. $(0.15+.013+0.14+0.13)/4$ = average of 13.75% MHOs/CHOs experiencing	Assuming that penetration of IUDs is consistent across location and age group, and that IUDs are not available in community settings. Assuming Reach Health data used for private penetration estimates are generalizable (used total from all geographic locations, as regional data sample sizes were too small).	POPCOM FP Logistics Hotline Stock Status Report, Q1, 2019. ^a

Method	Disaggregation	Baseline Penetration Value	Calculation	Assumptions	Source Used
			stockouts in 2018. $100 - 13.75 = 86.25\%$ penetration of IUDs in public settings.		
	Private	82.8%	Weighted values for the percent of private hospitals (18%=8/45) and Private LIC (17%=39/236) with stockout of IUDs. 100% minus the stockout = penetration. $100\% - 17.2\%$ stockout = 82.8% penetration of IUDs in private settings.		USAID Reach Health Stockout Data (Baseline), Jan-Mar 2019. ^a
	Community	0.0%	NA		Assumption

^a Not publicly available, but can be available upon request.

B.2. Contraceptive Utilization

To ensure the most accurate utilization parameters for each FP method, NDHS data were recalibrated to reflect what the utilization would be among our population of interest. Data are from Philippines NDHS Table 4.7: Recent Sexual Activity, Table 7.3: Current use of contraception by age, and Table 7.8: Source of modern contraceptive methods. The primary table used to calculate utilization rates—Table 7.3—provides the percentage of all WRA who use each method. However, RACE-FP requires FP utilization parameters to reflect the proportion of WRA among our population of interest: those who are not trying to conceive, who are at risk of pregnancy, and who have access to the method (penetration). Therefore, utilization values from NDHS Table 7.3 need to be recalibrated. A primary benefit of calibrating utilization rates, rather than using flat rates as a percentage of WRA (as presented in NDHS), is that by construction RACE-FP contraceptive users cannot exceed the total number of WRA at any stage of the model, regardless of how far interventions are expanded past the baseline. This is particularly critical for adolescents in the model as almost all are abstinent, so the continuing population post-abstinence is very small. Further, it is more interpretable for users to understand the referenced population when utilization is a percentage of the previous stage of the model. The model population’s calculation flow and calibration are similar with respect to population groups. Calibration, however, is used to convert survey data into underlying utilization rates while the Model Population applies the calibrated utilization rates to various populations and allocates users across groups.

B.2.1 Creating Input Populations

To create the input population, the calibration tree^a initializes with all WRA disaggregated into adolescents 15-19 and adults 20-49 in each geographic location (Philippines national, NCR, Central Visayas, and Caraga). To identify the eligible population, we exclude WRA who are currently pregnant from planned pregnancy, trying to conceive, and adults in menopause. Next, we remove WRA with continued coverage from a long-acting method (sterilization, IUDs, and implants). Finally, we calibrate utilization for WRA who are abstinent or are using a method. See Supplement A: Model Population for details on parameters used to refine the input population. The following sub-sections—Abstinence, Non-Commodity Methods, and Commodity-Based Methods—give a brief overview of the input populations leading up to commodity-based methods.

^a A calibration tree initializes with a large population and procedurally removes populations that are not of interest before applying rates to calculate more accurate parameters for the model.

B.2.1.1. Abstinence

After women previously covered are removed, abstinence is calibrated assuming some women who are not at risk of unintended pregnancy may also be abstinent. RACE-FP calibrates utilization of abstinence as a birth control method by calculating the total number of women not sexually active (WRA multiplied by the percentage of women who have not had sex in at least 1 year in NDHS Table 4.7), then proportionally allocating them between those in menopause, sterilized, and not previously covered at risk.

B.2.1.2. Non-Commodity Methods: LAM, TFP, and New Sterilizations

After abstinence is removed, utilization rates for non-commodity methods are calculated and the populations are removed from the calibration tree. LAM penetration and the resulting calibrated utilization values are unique among contraceptive methods as they are based on women who recently gave birth. For details on how the input population was created for LAM, see Supplement A: Model Population. The input population for TFP and sterilization includes WRA still at risk after abstinent women are removed from the eligible population. As sterilization is a long-term method, we assume a CYP of 10 years which is considered during the calibration of the utilization rate. The number of new sterilizations in the modeled year is assumed to be one-tenth of the total number of women who are sterilized (prior sterilizations + new sterilizations) in the modeled year.

B.2.1.3. Commodity-Based Methods

The last section of calibration handles the utilization calculations for methods requiring commodities, which include MNFP, male condoms, oral contraceptives, injectables, IUDs, and implants. The input population in the calibration are all equal to WRA who are still at risk after non-commodity methods are removed (see Supplement A). Male condom utilization rates are calibrated along with the other commodity-based methods even though male condoms are not mutually exclusive to the others (i.e., a person can use a male condom as a secondary method). Calibration calculates the relevant utilization rates for each method and setting and passes these values to the calculation flow which handles allocating methods that may overlap with other methods, in particular male condoms. See Supplement A.2 for details on how the model ensures outcomes are not double counted. After we isolate the appropriate input populations, we pull in survey data and disaggregate the number of users by setting before calculating the final utilization rates.

B.2.2. Disaggregating End Users by Setting

NDHS Table 7.8: Source of modern contraceptive methods is used to determine the setting from which users received each method; however, there are notable exceptions: non-commodity methods (abstinence, LAM, TFP) and MNFP have no setting distribution provided by NDHS Table 7.8. To maintain the database structure of the model (method – age – setting) for abstinence, LAM, and TFP we used the overall penetration rate for the value in each setting (e.g., all women have “access” to abstinence, therefore the penetration rate at all settings is 100%). Since model users could use alternative values in the database, the arithmetic average of penetration values is used to calculate utilization for these methods. For MNFP penetration values we consulted subject matter experts (SMEs) in the Philippines for value estimates. SMEs also confirmed it to be not realistic for IUDs and implants to be conducted at the community setting, so we redistributed community distribution values for these commodities from NDHS Table 7.8 into the public and private setting distributions according to the NDHS distribution. For example, NDHS reports implants were obtained at the community, public, and private settings 1.7%, 75%, and 23.2%, respectively, with 0.1% lost to rounding. The 1.8% (1.7% + 0.1%) is allocated $1.8\% * (0.75 / (0.75 + 0.232)) = 1.37\%$ into the public setting, with the remaining 0.43% into the private setting distribution, leaving 0%, 76.37%, and 23.63% distribution among community, public, and private settings, respectively.

To calculate the number of end users of each method, we multiply the proportion of WRA in each age group using a method as indicated in NDHS Table 7.3 and multiply by the total WRA for each age group divided by the CYP for that method. Next, using NDHS Table 7.8, we distribute the total number of end users into the appropriate settings in which they were obtained.

The calibration tool contains a tree for the active scenario run dependent on the selected region. Additional users resulting from an expanded intervention(s) are entered into a calibration for the scenario run. The additional users are added to the end users of each method before being redistributed across locations according to NDHS Table 7.8.

B.2.3. Factoring in Contraceptive Penetration

Penetration values (sourced from POPCOM FP Logistics Hotline and Reach Health project data) are passed through the calibration sheet to represent the proportion of women who could access each method in each setting. The final calculation to calibrate the utilization rate is: Utilization Rate in Location = (End Users in Location) / (Penetration Rate) * (Input Population). The formula represents

those who do use the method in a location divided by those who could have used the method in a location.

Sterilization, MNFP, IUDs, and implants are assumed to be unavailable in community settings and sterilization is unavailable for adolescents, which means the penetration rate used in calibration is set to zero for the applicable age group and settings. However, the calibration tool can allow these assumptions to be changed by entering a relevant penetration rate and setting distribution.

Final utilization values used for baseline after calibration was completed are in Table B3. Utilization values for the scenario are recalibrated when a user increases exposure for an intervention, and this process is detailed in Section 4: Interventions and Supplement D2: Method Distribution.

Table B.3. Contraceptive Utilization Baseline Values, Philippines 2018

Method	Age Group	Setting	Baseline Utilization Value	Assumptions
Abstinence	Adolescents		93.7%	Assuming abstinence is consistent across geographic location and setting.
	Adults		33.5%	
Sterilization (BTL)	Adolescents		0.0%	Assuming sterilization is not available to adolescents.
	Adults	Community	0.0%	Assuming sterilization is not available in community settings.
		Public	2.6%	Assuming sterilization among adults is consistent across geographic location.
		Private	0.8%	
LAM	Adolescents		6.9%	Assuming LAM use is consistent across geographic location and setting.
	Adults		5.1%	
TFP	Adolescents		12.2%	Assuming TFP use is consistent across geographic location and setting.
	Adults		22.7%	
MNFP	Adolescents		0.0%	Assuming MNFP use is consistent across geographic location and setting.
	Adults	Community	0.0%	Assuming MNFP is not available in community settings.
		Public	0.1%	Assuming MNFP use in public and private settings is consistent across geographic location.
		Private	0.1%	
Male Condoms	Adolescents	Community	4.5%	Assuming male condom use consistent across geographic location.
		Public	1.9%	
		Private	0.0%	
	Adults	Community	2.7%	
		Public	1.1%	
		Private	0.0%	
Oral Contraceptives	Adolescents	Community	20.5%	Assuming oral contraceptive use consistent across geographic location.
		Public	10.8%	

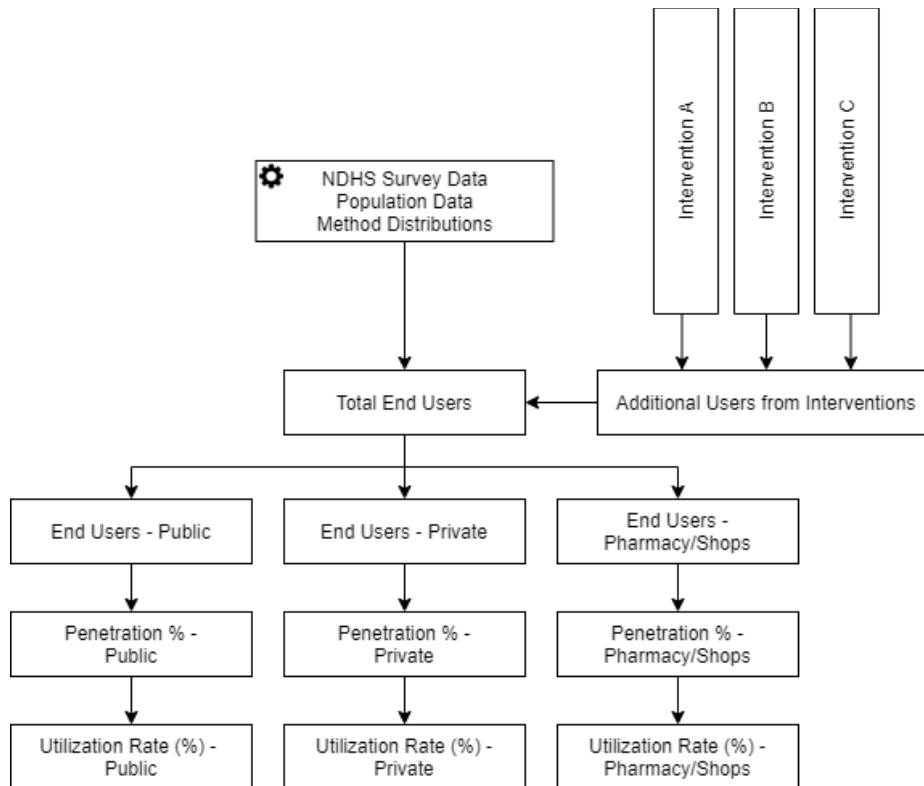
Method	Age Group	Setting	Baseline Utilization Value	Assumptions
	Adults	Private	0.3%	
		Community	31.4%	
		Public	16.6%	
		Private	0.5%	
Injectables	Adolescents	Community	1.8%	Assuming injectable use consistent across geographic location.
		Public	9.9%	
		Private	0.6%	
	Adults	Community	1.8%	
		Public	10.0%	
		Private	0.6%	
IUD	Adolescents	Community	0.0%	Assuming IUDs are not available in community settings.
		Public	1.3%	Assuming IUD use consistent across geographic location.
		Private	0.2%	Assuming IUD use consistent across geographic location.
	Adults	Community	0.0%	Assuming IUDs are not available in community settings.
		Public	1.5%	Assuming IUD use consistent across geographic location.
		Private	0.2%	Assuming IUD use consistent across geographic location.
Implants	Adolescents	Community	0.0%	Assuming implant are not available in community settings.
		Public	2.2%	Assuming implant use consistent across geographic location.
		Private	0.5%	Assuming implant use consistent across geographic location.
	Adults	Community	0.0%	Assuming implant are not available in community settings.
		Public	1.3%	Assuming implant use consistent across geographic location.
		Private	0.3%	Assuming implant use consistent across geographic location.

B.2.4. Calibration Modifications for Scenario

Utilization rates for contraceptives in the scenario are calibrated in a similar way to baseline utilization rates, disaggregating by method, geographic location, age group, and delivery setting. Utilization parameters are recalibrated for the scenario run based on interventions a user expands. While the baseline is fixed for a particular run assuming the user does not change the background database values, the scenario calculation flow and calibration are dynamic in the model. When the user builds a scenario, intervention parameters will update the full calculation flow and calibration for the scenario run. RACE-FP recalculates utilization rates by injecting new users into end users of appropriate sections in the calibration process. Changes at various levels may have downstream impact as the population adjusts for those new users.

Figure B1 demonstrates how RACE-FP recalibrates utilization rates for a single method for each scenario run. Interventions included in the scenario are independently evaluated via exposure, success, intervention population adjustments (see Supplement D3: Intervention Population Adjustments), and distribution parameters, then aggregated and distributed into End Users. Once scenario users are allocated into total end users, the calibration process takes over to recalculate appropriate utilization rates as described above.

Figure B.1. Scenario Run Method Utilization Recalibration



B.3. Contraceptive Effectiveness

Contraceptive effectiveness reflects the real-world success of each contraceptive method included in the model. These effectiveness parameters are used to determine who is still at risk of pregnancy despite using a contraceptive method (i.e., the contraceptive effectiveness parameter identifies the number of users for whom the method did not work and are therefore at risk of pregnancy).

Effectiveness parameters used in RACE-FP were consistent across geographic location (Philippines national, National Capital Region (NCR), Central Visayas, and Caraga), age groups (adolescents vs. adults), and setting (public, private, community).

Table B.4. Contraceptive Effectiveness Baseline Values, Philippines 2018

Method	Baseline Effectiveness Value	Calculation	Assumptions ^a	Source Used
Abstinence	99.0%	NA	While we assume that perfect use would be 100% effective, we acknowledge that abstinence is not used or reported perfectly and there are instances of non-desired sex (i.e., rape) can result in pregnancy.	Assumption
Sterilization (BTL)	99.5%	0.5% of women experience unintended pregnancy during the first year of typical use of BTL (Trussell, Table 1). Calculated: $100 - 0.5 = 99.5\%$ effectiveness BTL.	Assuming that effectiveness of BTL in the US is consistent with effectiveness in the Philippines.	Trussell, 2011. ⁵
Lactational Amenorrhea (LAM)	94.1%	Cumulative probability of pregnancy during LAM is 5.9 per 100 women at 12 months (Kennedy, Table 2). Calculated: $100 - 5.9 = 94.1\%$ effectiveness LAM.		Kennedy & Visness, 1992. ⁶
Traditional FP (TFP)	82.4%	The 12-month contraceptive failure rate per 100 episodes of use (Polis, Table 5) is 20.4 for withdrawal and 14.1 for periodic abstinence. The percent distribution of women according to contraceptive method (Polis, Table 3) is 8.2% withdrawal and 6.7% periodic abstinence (n=8,773 total women). Calculated weighted average failure rate of 17.6%. $100 - 17.6 = 82.4\%$ effectiveness TFP.	Assuming Philippines effectiveness data from 2003 used by Polis is consistent with 2018 effectiveness.	Polis et al., 2016. ⁷

Method	Baseline Effectiveness Value	Calculation	Assumptions ^a	Source Used
Modern Natural FP (MNFP)	76.0%	24% of women experience a pregnancy during the first year of typical use of fertility awareness-based methods (Trussell, Table 1). Fertility awareness-based methods include SDM, Two Day method, ovulation method, and symptothermal method. Calculated: $100 - 24 = 76\%$ effectiveness MNFP.	Assuming that effectiveness of MNFP in the US is consistent with effectiveness in the Philippines.	Trussell, 2011. ⁵
Male Condom	89.1%	The 12-month contraceptive failure rate per 100 episodes of use (Polis, Table 5) is 10.9 for male condoms. Calculated: $100 - 10.90 = 89.1\%$ effectiveness male condoms.	Assuming Philippines effectiveness data from 2003 used by Polis is consistent with 2018 effectiveness.	Polis et al., 2016. ⁷
Oral Contraceptive	95.2%	The 12-month contraceptive failure rate per 100 episodes of use (Polis, Table 5) is 4.8 for oral contraceptives. Calculated $100 - 4.8 = 95.2\%$ effectiveness oral contraceptives.	Assuming Philippines effectiveness data from 2003 used by Polis is consistent with 2018 effectiveness.	Polis et al., 2016. ⁷
Injectables	98.1%	The 12-month contraceptive failure rate per 100 episodes of use (Polis, Table 5) is 1.9 for injectables. Calculated $100 - 1.9 = 98.1\%$ effectiveness injectables.	Assuming Philippines effectiveness data from 2003 used by Polis is consistent with 2018 effectiveness.	Polis et al., 2016. ⁷
Implants	99.9%	0.05% of women experience a pregnancy during the first year of typical use of Implanon (Trussell, Table 1). Calculated: $100 - 0.05 = 99.95\%$ effectiveness.	Assuming that effectiveness of Implanon in the US is consistent with effectiveness in the Philippines.	Trussell, 2011. ⁵
IUD	99.4%	The 12-month contraceptive failure rate per 100 episodes of use (Polis, Table 5) is 0.6 for IUD. Calculated $100 - 0.6 = 99.4\%$ effectiveness.	Assuming Philippines effectiveness data from 2003 used by Polis is consistent with 2018 effectiveness.	Polis et al., 2016. ⁷

^a Assuming all baseline effectiveness parameters are consistent across age group, geographic region, and setting.

Supplement C. Contraceptive Commodity Costs

This supplement provides an overview of how FP commodity costs were calculated. Guttmacher Institute's Adding It Up methodology⁸ guided the methodology used for calculating commodity costs for RACE-FP, and Philippines-specific data were used whenever possible.

The cost of each commodity includes direct and indirect costs:

- **Direct costs** include the unit costs of the commodity for 1 full year of coverage, cost of other supplies required (e.g., syringe, gloves), in-country transportation and distribution, and physician fees. Direct costs vary by method.
- **Indirect costs** are the leadership, management, and intervention costs in 2018 to support the national FP program.



All costs were adjusted for inflation to 2018 Philippine pesos (Php). Philippines Core CPIs⁹ were collected from Trading Economics for each year data were available from our sources, using a 2012 base year. All costs used were originally listed either in U.S. Dollars (USD) or Php. If costs were provided in USD, we first adjusted for inflation using the Philippines CPIs of the source year and 2018. For example, if a value was given in 2007 USD, we calculated the value in 2018 USD = Value in 2007 USD * (2018 Philippines CPI / 2007 Philippines CPI). After adjusting for inflation, we converted the 2018 USD value into Php using the average 2018 exchange rate of 52.64 Php/USD.

C.1. Direct Costs

C.1.1. Estimating Unit Costs

The unit cost of a contraceptive method is the cost for one unit (e.g., one packet of oral contraceptives that would prevent pregnancy for 1 month). Several Philippines-specific data sources were reviewed to identify unit costs to the DOH; data used for unit costs in RACE-FP came from The Philippine Clinical Standards Manual on Family Planning¹⁰ and the Philippines National Family Planning Costed

Implementation Plan (CIP) 2017-2020.¹¹ Unit costs used to calculate total commodity costs can be found in Table C1.

The Philippine Clinical Standards Manual on Family Planning lists case rates of the Philippine Health Insurance Corporation (PhilHealth) as of 2013. Several PhilHealth Circulars documents^{12; 13; 14} from 2008 to 2015 were reviewed, which corroborated the reimbursement costs in Clinical Standards Manual. PhilHealth Circular cost reimbursement data include both a health care facility fee and a physician fee. The health care facility fee component covers “all applicable health facility charges inclusive of any of the following: room and board; drugs and medicines used during surgery or confinement; x-ray, laboratory, and other ancillary procedures; supplies used during surgery or confinement; and use of special rooms e.g., operating room, recovery room.”¹¹ Health care facility fees as listed in PhilHealth Circulars were used to determine unit costs for the methods covered by PhilHealth. Based on the definition, we assume that health care facility fees include both unit costs and the cost of other required supplies for the method. As PhilHealth only reimburses for long-acting reversible contraceptives (LARCs), PhilHealth cost data were only available for sterilization, implants, and IUDs. All costs were listed in 2013 Php and were converted to 2018 Php.

For methods not covered by PhilHealth that are included in the model, data were used from the Philippines National Family Planning Program Costed Implementation Plan (CIP) 2017-2020.¹¹ The CIP projects the number of commodities and cost needed to cover all women with unmet needs through 2020, including the total cost and total units procured by method. Actual procurements from 2017 and 2018 were deducted from this projection, demonstrating the remaining costs and amount of FP commodities needed to satisfy the total number of women with unmet need for those years. 2018 projections were used for RACE-FP, dividing the total cost by the total number of units procured to identify the unit cost for each method. These figures were cross referenced with procurement data notes from the Philippines DOH from 2018 and the 5th Annual Report on the Implementation of Responsible Parenting and Reproductive Health Act.¹⁵ Unit costs were relatively consistent across methods with few discrepancies; however, CIP unit cost data were used for methods not covered by PhilHealth due to the completeness in the number of methods presented.

C.1.1.1. Number of Units Needed Per Year

After identifying the unit cost for each method, we needed to apply couple years protection (CYP) estimates to determine the number of units required for a user to have contraceptive coverage for 1

year. USAID 2011 updated CYP estimates³ were used to identify the number of units required per year for each method.

Based on these estimates, the unit costs for condom were multiplied by 120, the unit cost of contraceptives pills was multiplied by 15, and the unit cost of injectables was multiplied by 4 to determine the yearly commodity cost for each method for one year of use. As the other methods included—sterilization, implants, and IUDs—have protection for more than 1 year, the unit cost was unchanged. We assumed that LAM, TFP, and MNFP methods supported coverage for 1 year for simplicity.

C.1.2. Estimating the Cost of Other Supplies

PhilHealth Circular health care facility fee data includes the cost of other supplies that are required for the methods included (sterilization, implant, and IUD). As this parameter was used for unit costs for sterilization, implants, and IUDs, we did not add any other costs and assume this estimate represents the total commodity cost. We assumed that no additional supplies are necessary for traditional FP (TFP), male condoms, or contraceptive pills.

The Philippines CIP lists costs associated with LAM as 1.31 Php per unit. However, as there is no commodity affiliated with LAM, we assumed this 1.32 Php per unit was for the cost of other supplies instead of unit costs. For MNFP, the unit cost is from the CIP for one cycle bead used in standard days method (SDM); however, we assume that the consultation for LAM is similar to a consultation with MNFP and therefore added 1.31 Php as the cost for other supplies to MNFP.

The final method that requires estimates for costs of other supplies is injectables (e.g., gloves, syringes). Philippines-specific data were unavailable for this estimate, so we used Adding It Up¹⁶ supply estimate for 1 year of use of injectables in “Rest of Asia” geographic location. The estimate was converted from 2008 USD to 2018 Php.

For any method with costs for other supplies required, this estimate was added to the annual unit cost for each method to get the total commodity cost per year per user.

C.1.3. Total Commodity Cost

Estimated total commodity costs to the DOH for one woman to have contraceptive coverage for 1 year are in Table C1. Total commodity costs are calculated by multiplying the unit cost by the total number of

units required for 1 year of coverage for the user, then the cost of other supplies required to support 1 year of coverage is added to this figure to obtain the total commodity cost.

Commodity costs as listed in the Reproductive Health Supplies Coalition Donor Database,¹⁷ UNFPA’s Reproductive Health Interchange Database,¹⁸ and Avenir Health’s Unit Cost Database¹⁹ were also reviewed and compared to our commodity cost estimates using Philippines government data. Most recent data from the Reproductive Health Supplies Coalition donor support database were only available from 2006 (for condoms, IUDs, injectables, and oral contraceptives). Data on UNFPA’s Reproductive Health Interchange Database were available for the Philippines for condoms, IUDs, implants, and oral contraceptives for 2018. Unit prices varied drastically between these resources and by donor. Avenir Health’s Unit Cost Database provided estimated costs for contraceptive pills only, although cited a study from 1988. Due to the wide variation in prices and available data in these reference sources, we deemed the PhilHealth Circulars and CIP estimates as the most reliable resources for determining unit costs by method in the Philippines.

Table C.1. Total Commodity Costs, 2018 Php

Method	Unit Cost	# Units Required per Year ³	Cost of Other Supplies	Total Commodity Cost per Year
Sterilization (BTL)	3,428.95 ¹⁰	1	0 ^a	3,428.95
Lactational Amenorrhoea (LAM)	0	1	1.31 ^{b,11}	1.31
Traditional FP	0	1	0	0
Modern Natural FP (SDM)	131.15 ¹¹	1	1.31 ^{c,11}	132.46
Male Condom	3.95 ¹¹	120	0	471.6
Oral Contraceptive	25.89 ¹¹	15	0	388.35
Injectables (DMPA)	49.84 ¹¹	4	102.12 ¹⁶	301.48
Implants (Implanon)	2,057.37 ^a	1	0 ^b	2,057.37
IUD (Copper)	1,371.58 ^a	1	0 ^b	1,371.58

^a Healthcare Facility Cost from PhilHealth Circular data cover the unit cost as well as any other commodities required for the method.

^b Assuming costs in the CIP are for other supplies, as there is no commodity to provide to the woman for this method

^c Assuming that the cost of other supplies for LAM is comparable to the cost of other supplies that would be needed for SDM consultation.

C.1.4. Other Direct Costs: In-Country Transportation and Distribution and Physician Fees

We added 10% to the total commodity cost per year to account for in-country transportation and distribution. This estimate came from a MEASURE Evaluation Report: Methods for Estimating the Costs of Family Planning,²⁰ which concluded that while many studies they explored did not review logistical or transportation costs, “four studies conducted by USAID in 2009 added an additional 10% to the commodity costs to account for in-country transportation and distribution costs.”²⁰ ReachHealth

Philippines colleagues reviewed and confirmed that 10% is a reasonable estimate to use for transportation and distribution costs.

When available, the PhilHealth Circular physician fee data were used (sterilization, implants, and IUD), and converted from 2013 Php to 2018 Php. The physician fee component covers, “FP counseling and client assessment; intraoperative services including provision of anesthesia; and postoperative consultation within 90 days from day of surgery, including dressing changes, local incision care, removal of sutures, management of complications that do not require hospitalization.”¹²

For other methods, we used estimates of physician fee costs from Adding It Up model¹⁶ (“other Asia” category). Estimates were in AIU in 2008 USD, so this was converted to 2018 USD then converted to 2018 Php. Where data were not available in AIU, we made assumptions: we applied the physician fee estimate from male condoms to LAM and MNFP, and assumed providers do not consult on TFP, and therefore listed the physician fee for TFP is 0.

C.1.5. Total Direct Cost & Direct Cost per CYP

While the total direct cost accounts for in-country transportation and distribution and physician fees added to the total commodity cost (the unit cost and cost of other supplies required for the method for one year of coverage for one person), some methods provide protection greater than 1 year: sterilization, implants, and IUDs. For these methods, we divided the total direct cost by the USAID CYP estimate to determine the cost per CYP for each method.

Table C.2. Total Commodity Cost, Direct Cost, and Direct Cost per CYP, 2018 Php

Method	Total Commodity Cost per Year	+10% In-Country Transport / Distribution ²⁰	Physician Fees	Total Direct Cost	CYP ³	Total Direct Cost per CYP
Sterilization (BTL)	3,428.95	3,771.84	1,142.98 ^a	4,914.82	10	491.48
Lactational Amenorrhea (LAM)	1.31	1.44	72.01 ^b	73.46	1	73.46
Traditional FP	0	0	0 ^b	-	1	-
Modern Natural FP (SDM)	132.46	145.71	72.01 ^b	217.72	1	217.72
Male Condom	471.6	518.76	72.01 ¹⁶	590.77	1	590.77
Oral Contraceptive	388.35	427.19	84.98 ¹⁶	512.16	1	512.16
Injectables (DMPA)	301.48	331.63	102.26 ¹⁶	433.89	1	433.89
Implants (Implanon)	2,057.37	2,263.11	1,371.58 ^a	3,634.68	2.5	1,453.87
IUD (Copper)	1,371.58	1,508.74	914.39 ^a	2,423.12	4.6	526.77

^a Department of Health. The Philippine Clinical Standards Manual on Family Planning. (2014 Edition). Manila, Philippines. Table on p. 332: Medical cases and corresponding case rates of the Philippine Health Insurance Corporation as of 2013.

https://doh.gov.ph/sites/default/files/publications/FPCSM_2014.pdf

^b Assumption.

C.2. Indirect Costs

Indirect costs were calculated using the Philippines CIP¹¹ Table 10 enumerating leadership and management components and intervention costs in 2018, which totaled 240,322,189 Php and included FP unit staff / per diem / transport, service provider capacity-building, warehousing and storage spaces, management information systems, and strengthening M&E systems.

To determine the indirect cost to apply to each method, we divided the total number of FP users for each method as identified by the Philippines NDHS² by USAID CYP estimates³ to identify the number of women engaging with the health system in the year 2018 for each contraceptive (e.g., dividing the total number of IUD users in 2018 using NDHS data by the CYP for copper IUDs will give the number of *new* IUD users in 2018). This is necessary for long-acting methods, because the cost is applied the first year. See Table C3 for the estimated number of new users per method in 2018.

Once the total number of new FP users was estimated, we divided the CIP estimate of total indirect costs in 2018 (240,322,189 Php) by the total number of new FP users in 2018 (6,193,208.28) to obtain the indirect cost parameter 38.80 Php per new user in 2018. This indirect cost was consistently applied to all methods included in RACE-FP.

Table C.3. Estimated Number of New FP Users by Method, Philippines 2018

Method	Number of users per method ²	CYP ³	Estimated Number of New FP Users
Sterilization (BTL)	1,105,377	10	110,537.70
Lactational Amenorrhea (LAM)	82,010	1	82,010.00
Traditional FP	1,789,476	1	1,789,476.00
Modern Natural FP (SDM)	869,901	1	869,901
Male Condom	196,064	1	196,064.00
Oral Contraceptive	1,731,196	1	1,731,196.00
Injectables (DMPA)	1,113,597	1	1,113,597.00
Implants (Implanon)	348,242	2.5	139,296.80
IUD (Copper)	741,197	4.6	161,129.78
Total number of new FP users in 2018			6,193,208.28

C.3. Overall Contraceptive Commodity Cost

Adding the indirect cost parameter (38.80 Php) to the total direct cost per CYP for each method provides the overall contraceptive commodity cost for each method. This parameter is applied in the model to the number of current users of each method for baseline and each additional user of each method in the

scenario developed in RACE-FP. Table C4 displays the overall contraceptive commodity costs applied in RACE-FP.

Table C.4. Overall Contraceptive Commodity Costs (Direct + Indirect Costs), 2018 Php

Method	Total Direct Cost per CYP	Indirect Cost	Overall Contraceptive Commodity Cost (Direct + Indirect)
Sterilization (BTL)	491.48	38.8	530.28
Lactational Amenorrhea (LAM)	73.46	38.8	112.26
Traditional FP	-	38.8	38.80
Modern Natural FP (SDM)	217.72	38.8	256.52
Male Condom	590.77	38.8	629.57
Oral Contraceptive	512.16	38.8	550.96
Injectables (DMPA)	433.89	38.8	472.69
Implants (Implanon)	1,453.87	38.8	1,492.67
IUD (Copper)	526.77	38.8	565.57

Supplement D. Intervention Parameters

D.1. Intervention Exposure, Success, & Cost

Table D.1. Intervention Exposure, Success, & Cost Parameters

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
Increase the proportion of women receiving PNC within 2 days of delivery	<p>As PPFp is an intervention occurring during PNC, the proportion of women receiving PNC within 2 days of delivery is serving as a proxy for exposure.</p> <p>This intervention only impacts those who were pregnant in the last 6 months (based on NDHS).</p>	Exposure	Proportion of WRA receiving PNC within 2 days after delivery	PPFP occurs in the PNC setting. Ideally, we would have the exposure as the proportion of WRA exposed to PPFp, or factor in the proportion of PNC visits that include FP consultation. Because these data are not available, we are using proportion engaging in PNC as a proxy, with the assumption that 100% of those who have a PNC visit will receive PPFp consultation.	Philippines NDHS, 2018. ²	<p>% of women in the Philippines who delivered in health facility (77.7%)</p> <p>% of women in the Philippines who delivered elsewhere (22.3% = 100-77.7)</p> <p>% of women in the Philippines who delivered in health facility who received a postnatal check within 2 days of delivery (92.3%)</p> <p>% of women in the Philippines delivering elsewhere who received PN check within 2 days of delivery (54.8%)</p> <p>Weighted average of those who receive postnatal check within 2 days after delivery = 83.86%</p>	83.86%
		Success	Among WRA who receive PNC within 2 days after delivery, the proportion who are served and accept a FP method	<p>Philippines-specific data were not available to support this parameter.</p> <p>The data source presented a range of success rates, and we are assuming that PPFp is effective in the Philippines, therefore, the higher end of the range is most appropriate for use in this model.</p>	High Impact Practices in Family Planning (HIPs), 2017. ²¹	After reviewing evidence from country programs in Afghanistan, Honduras, Indonesia, and Niger, “findings show that if women are provided comprehensive counseling and are proactively offered contraception from a range of choices as part of childbirth care, between 20% and 50% of women will leave the facility with a method.”	50%
		Cost	The amount (2018 Php) per WRA exposed to	We are assuming that by receiving PNC, a woman is exposed to PPFp. As we’re using PNC as a proxy, that means that the cost is the amount	Philippines National FP Program Costed Implementation Plan (CIP), 2017-2020. ¹¹	Numerator: In the Philippines, 12,622,650 Php was spent on capacity-building for Nurse Deployment Program on Competency-Based Training and	9.02 Php

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
			PPFP intervention.	<p>(2018 Php) per WRA receiving PNC within 2 days of delivery.</p> <p>We are using the exposure variable (proportion of WRA receiving PNC after delivery) and applying to the number of registered live births from Philippine Statistics Authority to get the denominator. We assume that our exposure variable is accurate.</p> <p>The item from the CIP likely is not truly representative of the total amount the government spent on PPFP, however, due to limited data it was the closest parameter we had access to.</p>	Philippine Statistics Authority, 2018. ²²	<p>postpartum IUD insertion (Table 11).</p> <p><u>Denominator:</u> 1,398,886 registered live births are assumed to be exposed to PPFP during a PNC visit occurring within 2 days. Estimated 83.86% receive PNC check within 2 days after delivery (exposure parameter) and estimated 1,668,120 registered live births in 2018 (Philippine Statistics Authority).</p> <p><u>Parameter value:</u> 12,622,650 / 1,398,886 = 9.02 Php</p>	
Increase the proportion of public sector providers trained in FP service provision (FPCBT1)	<p>Women visiting facilities with a provider trained in FPCBT1 will increase the likelihood of receiving FP counseling and/or a method during their visit.</p> <p>This intervention only impacts WRA who are at risk of pregnancy and seek care at</p>	Exposure	The proportion of public facilities with a provider trained in FP competency-based training (FPCBT1)	<p>Data are not available representing the proportion of trained providers that consult with their clients on FP, or whether a person interested in FP will be able to meet with a provider trained to provide these services. Therefore, we are assuming that women visiting facilities with a provider trained in FPCBT1 have the potential to be exposed to FP during their visit. This assumes that trained providers are consulting on FP with their clients interested in FP.</p> <p>National-level data are not available for this parameter, so we are using Reach Health baseline (2018) data. We are assuming that the government facilities from which data were collected are representative of nationwide trends.</p>	Philippines Department of Health, 2018. ¹⁵	778 (45.36%) government facilities in the Philippines have a public provider trained in FP Competency-based Training (FPCBT1)	45.36%

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
	public facilities (based on NDHS).	Success	Among WRA who visit a public facility with a provider trained in FPCBT1, the proportion who are served and accept a FP method.	Due to unavailability of data representing the percent of WRA who were served and accepted a method at a public facility from a provider trained in FPCBT1, Bayes' theorem was used to estimate the success rate. To use Bayes' Theorem to calculate this parameter, we used the percent of women who use any method (NDHS); the percent of public facilities with a provider trained in FPCBT1 (5th Annual Report RPRH); and among women who use a method, the percent that obtain from the public sector (POPCOM).	Assumption based on Bayes Theorem and data from the following sources: <ul style="list-style-type: none"> Survey on Family Planning, Awareness of POPCOM, and Most Important Problem of Women Today, 2020.²³ Philippines NDHS, 2018.² Philippines Department of Health, 2018.¹⁵ 	<p>Bayes' Theorem is $P(\text{uses} \text{location}) = \frac{P(\text{location} \text{uses}) * P(\text{location})}{P(\text{uses})}$</p> <p>$P(\text{location} \text{uses}) = \text{POPCOM Social Weather Survey (Chart 8)}$ lists 53% of females who have used or are presently using any FP methods get them from Rural Health Units/Main Health Centers (44%) or hospitals (9%).</p> <p>$P(\text{location}) = \text{Exposure parameter:}$ 45.36% of government facilities have a provider trained in FPCBT1</p> <p>$P(\text{uses}) = 33.6\%$ of women use any method. (Philippines NDHS)</p> <p><u>Parameter value:</u> = $[53\% * 45.36\%] / 33.6\% = 71.6\%$</p>	71.60%
		Cost	The amount (2018 Php) per WRA exposed to FP counseling by a trained provider in public facility	<p>Data specifying the cost of FPCBT1 training in public facilities is not available, therefore, we are using the amount spent on all FP training and workshops. We are assuming that the amount allocated to LGUs for FP training and FP-related workshops encompasses the amount DOH spent to increase the capacity of public sector providers.</p> <p>For the denominator, we need to estimate the number of WRA seeking care at public facilities with a trained provider in FPCBT1. We used NDHS data representing the proportion of WRA who seek medical advice or treatment from public facilities in the 30 days prior to interview. Therefore, we are assuming that WRA seek FP</p>	<p>Philippines Department of Health, 2018.¹⁵</p> <p>Philippines NDHS, 2018.²</p>	<p><u>Numerator:</u> LGUs allocated ~406.4 million Php for FP training, FP-related workshops, and procurement of FP commodities. In 2018, 162,642,000 Php was spent to procure commodities at the national level. $406,400,000 - 162,642,000 = 243,758,000$ Php</p> <p><u>Denominator:</u> Among females who sought advice or treatment in the 30 days prior to survey, 34% visited a public medical facility first (does not include Barangay health station or mobile clinic/other). Multiplied by the total number of women of reproductive age in the Philippines (27,449,067, Philippine Statistics Authority), for a total of 9,332,683 WRA going to public facilities. Of these, the number being exposed to FP (based on exposure variable of</p>	57.58 Php

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
				counseling from public facilities at same frequency they seek general medical advice or treatment. Further, we assume that all WRA seek care, therefore this proportion is consistent across populations. Lastly, we assume that the exposure variable (the proportion of public facilities with a trained provider) is accurate.		45.36% of public facilities with a trained provider in FPCBT1) is 9,332,683 * 0.4536= 4,233,305 WRA theoretically capable of being exposed to providers in private facilities trained in FPCBT1. <u>Parameter value:</u> = 243,758,000 Php / 4,233,305 = 57.58 Php per woman exposed to intervention	
Increase the proportion of registered Barangay Health Workers (BHWs) who provide FP information, referrals, and/or services	This intervention only impacts WRA who are at risk of pregnancy and seek care from BHS or BHWs (based on NDHS). Both referrals and provision count toward success parameter.	Exposure	The proportion of registered BHWs providing FP information, referrals, and/or services.	National-level data representing the proportion of BHWs providing FP consultation are not available for this parameter. Reach Health baseline (2018) data were available on the number of CHWs providing information, referrals, and/or services in select regions and were used to calculate the numerator. The National BHW Registry System was used to calculate the total number of registered BHWs in the same regions in which Reach Health data were available from 2018 to calculate the proportion of registered BHWs providing FP information, referrals, and services. We assume that the Reach Health data are comprehensive (i.e., the project was able to identify all CHWs providing FP), and we are also assuming our estimated exposure reflects the Philippines nationwide.	Reach Health Baseline Data, 2019. ^a Philippines National Barangay Health Worker Registry System, 2020. ²⁴	<u>Numerator:</u> 555 male CHWs and 81,580 female CHWs provided FP information, referrals, and/or services during 2019 (total = 82,135). Geographic locations from which this sample was collected include: Region 3 (Central Luzon), Region IV-A (Calabarzon), Region V (Bicol), Region VI (Western Visayas), Region VII (Central Visayas), Region IX (Zamboanga Peninsula), Region X (Northern Mindanao), Region XI (Davao), Region XII (Soccska), National Capital Region, & Region XIII (Caraga) <u>Denominator:</u> The average number of BHWs registered in the Philippines in 2018 in the same regions where Reach Health baseline data are available is 155,183. <u>Parameter value:</u> = 82,135/155,183 = 52.9%	52.90%
		Success	Among WRA consulting with BHWs on FP, the proportion who are	National-level data were not available to support this parameter. However, a Philippines-specific study was conducted in the 1990s that examined women's' experiences consulting with BHWs on FP. While	Jain et al., 2002. ²⁵	Among women living in communities served by a BHW, 56% of women who had discussed FP with a BHW had been allowed to choose their method based on information provided on a range of available choices.	56%

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
			served and accept a FP method.	BHW intervention may look different today than it did in the 90s, we are assuming this parameter is consistent with the success rates we would see in the Philippines in 2018. Lastly, available data only represent the proportion of women counseled in FP who received their method of choice, suggesting that this parameter would be higher if it represented the proportion of women receiving any FP method. Lastly, we are assuming that the women represented in this parameter were either provided the method directly or referred to a facility to obtain the method of their choice.			
		Cost	The amount (2018 Php) per WRA exposed to FP counseling by a BHW	<p>Data specifying the total amount spent on BHW support, therefore, we are using the amount spent on supervising BHWs in implementing the FP program. Likely, the parameter used in the model is a lower estimate compared to full amount spent supporting BHWs.</p> <p>For the denominator, we need to estimate the number of WRA seeking care from BHWs capable of providing FP information, referrals, and/or services. We used NDHS data representing the proportion of WRA who seek medical advice or treatment from Barangay Health Stations (BHS) in the 30 days prior to interview. Therefore, we are assuming that WRA seek FP counseling from BHSs at same</p>	<p>Philippines National FP Program Costed Implementation Plan (CIP), 2017-2020.¹¹</p> <p>Philippines NDHS, 2018.²</p>	<p><u>Numerator:</u> National FP CIP (Table 11) indicates the DOH spent 9,804,000 Php on the supervision of BHWs in the implementation of FP program.</p> <p><u>Denominator:</u> Among females who sought advice or treatment in the 30 days prior to survey, 26.4% visited a Barangay Health Station first. Multiplied by the total number of women of reproductive age in the Philippines (27,449,067, Philippine Statistics Authority), for a total of 7,246,554 WRA going to Barangay Health Stations. Of these, the number being exposed to FP (based on exposure variable of 52.9%). $7,246,554 * 0.529 = 3,833,427$</p> <p><u>Parameter value:</u> = $9,804,000 \text{ Php} / 3,833,427 \text{ WRA visiting a Barangay}$</p>	2.56 Php

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
				frequency they seek general medical advice or treatment, and that seeking advice from a BHS is comparable to seeking advice from a BHW. Further, we assume that all WRA seek care, therefore this proportion is consistent across populations. Lastly, we assume that the exposure variable (the proportion of registered BHWs that provide FP information, referrals, and services) is accurate.		Health Station = 2.56 Php per woman exposed	
Increase the proportion of eligible WRA reached through mobile outreach	This intervention only impacts WRA who are at risk of pregnancy and seek care from mobile clinical (based on NDHS).	Exposure	Among eligible WRA, the proportion reached through mobile outreach	<p>National-level data were not available to support this parameter.</p> <p>Data are available from Reach Health outreach efforts occurring in FY2019, which geographically covered Zamboanga City, Zamboanga del Norte, Zamboanga del Sur, Bukidnon, Davao City, South Cotabato, and General Santos City. We therefore are assuming that exposure (the number of WRA reached through mobile outreach out of the number of WRA eligible) in these geographic areas is representative of national exposure.</p> <p>The denominator representing WRA eligible includes all WRA in these geographic areas.</p>	<p>Reach Health FY19 Annual Report, 2019.^a</p> <p>Republic of the Philippines, Philippines Statistics Authority, 2002.²⁷</p>	<p><u>Numerator</u>: A total of 1,473 clients were provided information on FP-MNH (including FP counseling) in Reach Health outreach activities in underserved communities in Zamboanga City, Zamboanga del Norte, Zamboanga del Sur, Bukidnon, Davao City, South Cotabato, and General Santos City.</p> <p><u>Denominator</u>: The projected 2018 population of WRA in Zamboanga City, Zamboanga del Norte, Zamboanga del Sur, Bukidnon, Davao City, South Cotabato, and General Santos City: 407,527 estimated WRA eligible for outreach (Pulled data on total population from the 2015 Census in each area, and multiplied by 25.854% to obtain estimate WRA in each area. 33,806 + 8,293 + 222,810 + 86,056 + 51,725 + 1,236 + 3,602 = 407,572)</p> <p><u>Parameter value</u>: = 1,473 reached / 407,527 eligible WRA = 0.36%</p>	0.40%
		Success	Among WRA exposed to FP outreach activities, the	<p>National-level data were not available to support this parameter.</p> <p>We are assuming that the Reach</p>	<p>Reach Health FY19 Annual Report, 2019.^a</p>	A total of 1,473 clients were provided information on FP-MNH (including FP counseling) in Reach Health outreach activities in underserved communities in	77.00%

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
			proportion who are served and accept a FP method.	Health outreach success rates in FY19 are consistent with other years and would remain consistent even if the program is expanded to other geographic areas.		Zamboanga City, Zamboanga del Norte, Zamboanga del Sur, Bukidnon, Davao City, South Cotabato, and General Santos City. Among these 1,473 clients, 1,134 clients (77%) were provided with various FP services for the fiscal year (PSI = 968, pills = 101, injectable = 37, condoms = 13, IUD = 11, and LAM = 4).	
		Cost	The amount (2018 Php) per WRA reached with mobile outreach services	Reach Health costing data were only available for the amount spent on commodities, which would overlap with how the commodity costs are calculated in the model. Therefore, we did not use this to calculate cost per person exposed to intervention. Instead, we used the cost of “transportation and per diems; hiring of vehicle (FP unit)” from the National FP Costed Implementation Plan as a proxy. Therefore, we are assuming that the cost to support a team providing monitoring and mentoring of FP coordinators is comparable to the cost to support a team conducting mobile outreach activities. Despite knowing that SBCC intervention costs can vary significantly by setting, we are assuming that the figures averaging the cost from 53 unique studies in a range of countries is similar to what the per person cost of the Usapan intervention is in the Philippines.	Philippines National FP Program Costed Implementation Plan (CIP), 2017-2020. ¹¹ Reach Health FY19 Annual Report, 2019. ^a	<u>Numerator</u> : Philippines CIP lists 633,600 Php was spent on transportation/per diem and hiring a vehicle for the FP unit. <u>Denominator</u> : A total of 1,473 clients were provided information on FP-MNH (including FP counseling) in Reach Health outreach activities in underserved communities in Zamboanga City, Zamboanga del Norte, Zamboanga del Sur, Bukidnon, Davao City, South Cotabato, and General Santos City. <u>Parameter value</u> : = 633,600 Php / 1,473 WRA = 430.14 Php / woman exposed.	430.14 Php
Increase the proportion	Women visiting	Exposure	The proportion of	Data are not available representing the proportion of trained providers	Reach Health Baseline Data, 2019. ^a	The weighted average of private hospitals and private LICs in the	68.00%

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
of private sector providers trained in FP service provision	facilities with a provider trained in FPCBT1 will increase the likelihood of receiving FP counseling and/or a method during their visit.		private facilities with a provider trained in FP competency-based training (FPCBT1)	that consult with their clients on FP, or whether a person interested in FP will be able to meet with a provider trained to provide these services. Therefore, we are assuming that women visiting facilities with a provider trained in FPCBT1 have the potential to be exposed to FP during their visit. This assumes that trained providers are consulting on FP with their clients interested in FP. National-level data are not available for this parameter, so we are using Reach Health baseline (2018) data. We are assuming that the areas in which these data were collected (private hospitals and clinics) are representative of nationwide trends.		Philippines with a trained provider in FPCBT1 = 68.0% Private Hospitals: 67 with trained provider /249 total (26.9%) Private Clinics: 437 with trained provider /492 total (88.8%)	
	This intervention only impacts WRA who are at risk of pregnancy and seek care at private facilities (based on NDHS).	Success	Among WRA who visit a private facility with a provider trained in FPCBT1, the proportion who are served and accept a FP method.	Due to unavailability of data representing the percent of WRA who were served and accepted a method at a private facility from a provider trained in FPCBT1, Bayes' theorem was used to estimate the success rate. To use Bayes' Theorem to calculate this parameter, we used the percent of women who use any method (NDHS); the percent of private facilities with a provider trained in FPCBT1 (5th Annual Report RPRH); and among women who use a method, the percent that obtain from the private sector (POPCOM).	Assumption based on Bayes Theorem and the following sources: <ul style="list-style-type: none"> Survey on Family Planning, Awareness of POPCOM, and Most Important Problem of Women Today, 2020.²³ Philippines NDHS, 2018.² Reach Health Baseline Data, 2019.^a 	Bayes' Theorem is $P(\text{uses} \text{location}) = [P(\text{location} \text{uses}) * P(\text{location})] / P(\text{uses})$ $P(\text{location} \text{uses}) = \text{POPCOM Social Weather Survey (Chart 8)}$ lists 29% of females who have used or are presently using any FP methods get them from pharmacies (26%) and private clinics (3%). $P(\text{location}) = \text{Exposure (see above):}$ 68.0% of private facilities have a trained provider in FPCBT1 $P(\text{uses}) = 33.6\%$ of women use any method. Philippines NDHS (Table 7.3) <u>Parameter value:</u> = $[29\% * 68\%] / 33.6\%$ = 58.7%	58.70%

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
		Cost	The amount (2018 Php) per WRA exposed to FP counseling by a trained provider in private facility	<p>Data from the National FP Costed Implementation Plan likely isn't truly representative of the total amount of support the DOH provides to improve private sector provision, as it represents the amount spent on grants for FP services to special groups (i.e., CSOs, private sector). However, this is the best parameter among available data.</p> <p>For the denominator, we need to estimate the number of WRA seeking care at private facilities with a trained provider in FPCBT1. We used NDHS data representing the proportion of WRA who seek medical advice or treatment from private facilities in the 30 days prior to interview. Therefore, we are assuming that WRA seek FP counseling from private facilities at same frequency they seek general medical advice or treatment. Further, we assume that all WRA seek care, therefore this proportion is consistent across populations. Lastly, we assume that the exposure variable (the proportion of private facilities with a trained provider) is accurate.</p>	<p>Philippines National FP Program Costed Implementation Plan (CIP), 2017-2020.¹¹</p> <p>Philippines NDHS, 2018.²</p>	<p><u>Numerator</u>: The Philippines DOH spent 357,000,000 Php on grants for FP services to special groups (i.e., CSOs, private sector) in 2018.</p> <p><u>Denominator</u>: Among females who sought advice or treatment in the 30 days prior to survey, 37.7% visited a private medical facility first. Multiplied by the total number of women of reproductive age in the Philippines (27,449,067, Philippine Statistics Authority), for a total of 10,348,298 WRA going to private facilities. Of these, the number being exposed to FP (based on exposure variable of 68.0% private facilities with a trained provider in FPCBT1) is $10,348,298 * 0.68 = 7,036,843$ WRA theoretically capable of being exposed to providers in private facilities trained in FPCBT1.</p> <p><u>Parameter value</u>: $= 357,000,000 \text{ Php} / 7,036,843 = 50.73 \text{ Php per woman exposed to the intervention}$</p>	50.73 Php
Conduct a Mass Media Campaign via Television	This intervention only impacts WRA at risk of pregnancy who seek care	Exposure	The proportion of WRA exposed to FP messages on television	The mass media campaign in this source was television only and conducted in 2000, and the study was conducted only among married women. However, it is Philippines-specific, and preferable to other potential sources. We are assuming that all women will respond in the	Kincaid & Do, 2006. ²⁸	<p>Among 1,253 married WRA ages 15-49 in the Philippines included in the study sample, 20.5% had no recall of any television campaign messages.</p> <p><u>Parameter value</u>: $= 100 - 20.5 = 79.5\%$</p>	79.50%

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
	(based on NDHS).			same way as married women, and that the data are consistent with 2018.			
		Success	Percentage point increase in contraceptive use, comparing those exposed to television mass media campaigns vs. those not exposed.	The mass media campaign in this source was television only and conducted in 2000, and the study was conducted only among married women. However, it is Philippines-specific, and preferable to other potential sources. We are assuming that all women will respond in the same way as married women, and that the data are consistent with 2018.	Kincaid & Do, 2006. ²⁸	Among 1,253 married WRA ages 15-49 in the Philippines included in the study sample, 41.4 % of respondents in the treatment group (with high recall of television campaign messages) used modern contraceptives after the campaign compared 35% of respondents in the matched control group (with low or no recall). This was a statistically significant percentage point increase (absolute difference) in modern contraceptive use 6.4 points (Z=2.575, p<.05). <u>Parameter value:</u> = 41.4-35 = 6.4%	6.40%
		Cost	The amount (2018 Php) per WRA being exposed to FP messages on television.	The total television campaign cost includes the costs for design, pretesting, production, and broadcasting. The source calculated the cost per women exposed in 2018 USD, and the Reach Health team converted to 2018 Php.	Rosen et al., 2019. ²⁹ Kincaid & Do, 2006. ²⁸	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. Converted to 2018 USD (CPI 2017 = 111.47, CPI 2018 = 117.27 with base years 2012). 2018 Php/USD rate = 52.64. <u>Parameter value:</u> = Cost per person in 2018 Php = 0.1052*52.64 = 5.54 Php	5.54 Php
Increase the proportion of eligible participants in Usapan demand generation intervention	This intervention only impacts WRA at risk of pregnancy who seek care (based on NDHS).	Exposure	Among eligible WRA, the proportion participating in Usapan events	National-level data were not available to support this parameter. Data are available from Reach Health Usapan efforts occurring in FY2019, which geographically covered Zamboanga City, Zamboanga del Norte, Zamboanga del Sur, Bukidnon, Davao City, South Cotabato, and	Reach Health FY19 Annual Report, 2019. ^a Republic of the Philippines, Philippines Statistics Authority, 2002. ²⁷	<u>Numerator:</u> For the year, Reach Health had a total of 1,450 Usapan participants in FY19. Usapan activities occurred in underserved communities in the following areas: Zamboanga City, Zamboanga del Norte, Zamboanga del Sur, Bukidnon, Davao City, South Cotabato, and General Santos City.	0.40%

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
				<p>General Santos City. We therefore are assuming that exposure (the number of WRA reached through Usapan out of the number of WRA eligible) in these geographic areas is representative of national exposure.</p> <p>The denominator representing WRA eligible includes all WRA in these geographic areas, because even WRA not at risk of pregnancy would still theoretically be eligible to participate in an Usapan information session.</p>		<p><u>Denominator:</u> The projected 2018 population of WRA in Zamboanga City, Zamboanga del Norte, Zamboanga del Sur, Bukidnon, Davao City, South Cotabato, and General Santos City: 407,527 estimated WRA eligible for outreach</p> <p><u>Parameter value:</u> = 1,450 Usapan participants / 407,527 eligible WRA = 0.36%</p>	
		Success	Among WRA exposed to FP Usapan events, the proportion who are served and accept a FP method.	<p>National-level data were not available to support this parameter.</p> <p>We are assuming that the Reach Health outreach success rates in FY19 are consistent with other years and would remain consistent even if the program is expanded to other geographic areas.</p>	Reach Health FY19 Annual Report, 2019. ^a	For the year, Reach Health had a total of 1,450 Usapan participants in FY19. Usapan activities occurred in underserved communities in the following areas: Zamboanga City, Zamboanga del Norte, Zamboanga del Sur, Bukidnon, Davao City, South Cotabato, and General Santos City. Of these, 1,220 participants were provided services, with a conversion rate of 84%.	84%
		Cost	The amount (2018 Php) per WRA participating in Usapan events.	<p>Philippines-specific data were not available to support this parameter.</p> <p>Despite knowing that SBCC intervention costs can vary significantly by setting, we are assuming that the figures averaging the cost from 53 unique studies in a range of countries is similar to what the per person cost of the Usapan intervention is in the Philippines.</p>	Rosen et al., 2019. ²⁹	<p>Drawing on 53 unique studies from a range of countries and a variety of interventions, the analysis found that group interpersonal communication interventions cost \$6.92 per person reached.</p> <p>Converted to 2018 USD (CPI 2017 = 111.47, CPI 2018 = 117.27 with base years 2012). 2018 Php/USD rate = 52.64.</p> <p><u>Parameter value:</u> = Cost per person in 2018 Php = \$7.28*52.64 = 383.22 Php</p>	383 Php
Increase Proportion of	Facilities with a provider trained in	Exposure	The proportion of all facilities	It's reasonable to assume that adolescent health-friendly FP services are available at a facility	Philippines Department of Health, 2018. ¹⁵	Weighted average of public and private facilities in the Philippines with a provider trained in FPCBT1 = 42.2%.	42.20%

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
Adolescent-Friendly Health Facilities	<p>Family Planning Competency-Based Training (FPCBT) can be deemed “adolescent-friendly”.</p> <p>Adolescents visiting facilities with a provider trained in FPCBT1 will increase the likelihood of receiving FP counseling and/or a method during their visit.</p> <p>This intervention only impacts female adolescents at risk of pregnancy.</p>		(public & private) with a provider trained in FPCBT1.	<p>when Family Planning Competency-Based Training (FPCBT) has been completed by providers. One of the core elements of the training is to provide respectful and dignified care for clients, which includes adolescents. Moreover, the FPCBT training supports FP counseling and informed choice across a range of FP methods, both short term and long term, be provided for all clients desiring a method. Further, there is no specific training for adolescent family planning service delivery at health facilities. Interventions no longer focus on providing friendly corners for adolescents, but rather better understanding their chosen/designated safe spaces and bringing services to them to the extent possible.</p> <p>We are therefore using the weighted average of exposure parameters for the following interventions to represent the proportion of public and private facilities in the Philippines that are adolescent-friendly: -->Increase the proportion of public sector providers trained in FP service provision -->Increase the proportion of private sector providers trained in FP service provision</p>	Reach Health Baseline Data, 2019. ^a	<p>There are 778 (45.36%) government facilities with trained public providers on FP Competency-based Training (FPCBT1) having a total of 13,551 public practitioners in all.</p> <p>Private Hospitals: 67 with trained provider /249 total (26.9%)</p> <p>Private Clinics: 437 with trained provider /492 total (88.8%)</p>	
		Success	Percentage point increase in modern contraceptive	<p>Philippines-specific data were not available to support this parameter.</p> <p>We are assuming that the figures</p>	Williams et al., 2007. ³⁰	Average 16.3 percentage point increase in contraceptive use comparing female youth ages 17-22 exposed to the African Youth Alliance Program (Ghana,	16.30%

Intervention	Intervention Assumptions	Parameter	Definition	Parameter Assumptions / Limitations	Sources	Source Definition, Calculation, & Value	Model Parameter Value
			use at last sex, comparing female youth exposed to adolescent SRH intervention vs. those not exposed.	from Ghana, Tanzania, and Uganda representing the success of adolescent sexual and reproductive health services are congruent with the success of having a provider in the Philippines trained in FPCBT1.		<p>Tanzania, Uganda) vs. those not exposed.</p> <p>Ghana: 49% of females in intervention reported modern contraceptive use at last sex compared to 42% in unexposed group. Difference between exposed/unexposed was statistically significant (value = 49-42 = 7).</p> <p>Tanzania: 64% of females in intervention reported modern contraceptive use at last sex compared to 39% in unexposed group. Difference between exposed/unexposed was statistically significant (value = 64-39 = 25).</p> <p>Uganda: 59% of females in intervention reported modern contraceptive use at last sex compared to 42% in unexposed group. Difference between exposed/unexposed was statistically significant (value = 59-42 = 17).</p>	
		Cost	The amount (2018 Php) per adolescent woman (15-19) exposed to FP counseling by a trained provider in a public or private facility.	As the proportion of facilities (public & private) with trained provider in FPCBT1 is used as a proxy to designate a facility as adolescent friendly, we averaged the costs from the following interventions: -->Increase the proportion of public sector providers trained in FP service provision -->Increase the proportion of private sector providers trained in FP service provision	<p>Philippines National FP Program Costed Implementation Plan (CIP), 2017-2020.¹¹</p> <p>Philippines Department of Health, 2018.¹⁵</p> <p>Philippines NDHS, 2018.²</p>	<p><u>Public:</u> (See cost parameter for training public sector providers) 243,758,000 Php / 4,233,305 = 57.58 Php per woman exposed in public facilities.</p> <p><u>Private:</u> (See above cost parameter for training private sector providers) 357,000,000 Php / 7,036,843 = 50.73 Php per woman exposed in private facilities</p> <p><u>Parameter value:</u> = (57.58 + 50.73) / 2 = 54.155</p>	54.16 Php

^aNot publicly available, but can be available upon request.

D.2. Method Distribution

RACE-FP uses method distributions to allocate end users due to each intervention in the scenario section of the calibration tool. We were able to collect distribution data for two of our interventions, “Increase the proportion of eligible WRA reached through mobile outreach” and “Increase the proportion of eligible participants in Usapan demand generation intervention.” As data were predominantly not available to demonstrate method distribution for each intervention, we used NDHS data from Table 7.8: Source of Modern Contraceptive Methods to estimate distributions. NDHS Table 7.8 provides the percentage distribution of modern contraceptive users aged 15-49 by source of method (setting). Additionally, Table 7.8 provides the total number of women using each method included in the table which we use to calculate the number of women who use each method at each setting among survey respondents. Modern contraceptives included are sterilization, IUD, injectables, implants, oral contraceptives, and male condoms. Settings including were grouped into Public Sector ex-BHW, BHW, Private Sector, and Overall. We use the number of women using each method at each setting to estimate a distribution of methods at each location. Lastly, we created an Adolescents distribution using the Overall group but calculated it ignoring sterilization users as we assume adolescents will not be sterilized. As with baseline intervention parameters, the user can input alternative method distribution for an intervention in the scenario builder.

We used the Overall distribution for the “Increase proportion of women receiving PNC within 2 days of delivery” and “Conduct a Mass Media Campaign via Television” interventions, the Public Sector ex-BHW distribution for the “Increase the proportion of public sector providers trained in FP service provision (FPCBT1)” intervention, BHW distribution for the “Increase the proportion of registered BHWs who provide FP information, referrals, and/or services” intervention, Private Sector distribution for the “Increase the proportion of private sector providers trained in FP service provision” intervention, and lastly the Adolescents distribution for the “Increase Proportion of Adolescent-Friendly Health Facilities” intervention.

Data used to calculate most intervention contraceptive method distributions did not contain LAM or modern natural family planning data; therefore, most of RACE-FP interventions by default will not allocate users to those methods and may be underestimating LAM and MNFP users in the scenario run.

Table D.2. Intervention Method Distribution

Objective	Intervention	Sterilization (BTL)	Lactational Amenorrhea (LAM)	Modern Natural FP (MNFP)	Oral Contraceptive	Injectables	IUD	Implants	Male Condom	Total	Assumptions and Calculation	Source
Improve PPFP	Increase proportion of women receiving PNC within 2 days of delivery	19.50%	0.00%	0.00%	51.90%	12.40%	8.80%	2.80%	4.50%	100%	Used the Overall group to calculate the method distribution based on the number of users of each method at all locations.	Based on NDHS Data Table 7.8
Improve Public Sector Provision	Increase the proportion of public sector providers trained in FP service provision (FPCBT1)	51.90%	0.00%	0.00%	13.10%	12.30%	18.20%	3.80%	0.70%	100%	Used the Public Sector ex-BHW group to calculate the method distribution based on the number of users of each method at public sector facilities, such as government hospitals and rural/urban health centers.	Based on NDHS Data Table 7.8
	Increase the proportion of registered BHWs who provide FP information, referrals, and/or services	0.00%	0.00%	0.00%	52.30%	29.90%	9.70%	3.90%	4.30%	100%	Used the BHW group to calculate the method distribution based on the number of users of each method at Barangay health stations, supply/service	Based on NDHS Data Table 7.8

Objective	Intervention	Sterilization (BTL)	Lactational Amenorrhea (LAM)	Modern Natural FP (MNFP)	Oral Contraceptive	Injectables	IUD	Implants	Male Condom	Total	Assumptions and Calculation	Source
											points, and health workers.	
	Increase the proportion of eligible WRA reached through mobile outreach	0.00%	0.40%	0.00%	8.90%	3.30%	1.00%	85.40%	1.10%	100%	Assuming that the method distribution as documented by the Reach Health team in the 2018 annual report reflects that of all mobile outreach activities.	Based on Reach Health Data, 2018 Annual Report
Improve Private Sector Provision	Increase the proportion of private sector providers trained in FP service provision	61.80%	0.00%	0.00%	7.10%	9.00%	12.60%	9.10%	0.30%	100%	Used the Private Sector group to calculate the method distribution based on the number of users of each method at private sector locations, primarily private hospitals, doctors, and NGOs.	Based on NDHS Data Table 7.8
Improve demand for FP	Conduct a Mass Media Campaign via Television	19.50%	0.00%	0.00%	51.90%	12.40%	8.80%	2.80%	4.50%	100%	Used the Overall group to calculate the method distribution based on the number of users of each method at all locations.	Based on NDHS Data Table 7.8

Objective	Intervention	Sterilization (BTL)	Lactational Amenorrhea (LAM)	Modern Natural FP (MNFP)	Oral Contraceptive	Injectables	IUD	Implants	Male Condom	Total	Assumptions and Calculation	Source
	Increase the proportion of eligible participants in Usapan demand generation intervention	0.00%	0.40%	0.00%	8.90%	3.30%	1.00%	85.40%	1.10%	100%	Assuming that Usapan method distribution reflects mobile outreach method distribution, as these interventions are similar and no data are available for Usapan.	Assumption based on Reach Health data from the 2018 annual report reflecting mobile outreach method distribution.
	Increase Proportion of Adolescent-Friendly Health Facilities	0.00%	0.00%	0.00%	64.52%	15.47%	10.90%	3.48%	5.65%	100%	Used the Adolescents group to calculate the method distribution based on the number of users of each method at all locations assuming that sterilization is 0.0% among adolescents.	Based on NDHS Data Table 7.8, assumptions.

D.3. Intervention Population Adjustments

Interventions in RACE-FP are applied to a specific population based on the source data used for the intervention’s exposure, success, and distribution parameters. Table D.3 details the applicable population for each intervention. The number of new users from each intervention are added into the calibration process as described in Supplement B2: Contraceptive Utilization.

Table D.3. Intervention Population Adjustments

Intervention	Applicable Population	Population Adjustment
Increase the proportion of women receiving PNC within 2 days of delivery	WRA who have recently given birth	The number of WRA not covered by a continuing contraceptive method multiplied by the percentage of women who gave birth in the last 6 months.
Increase the proportion of public sector providers trained in FP service provision	WRA at risk who seek care at a public facility	The number of WRA not pregnant or trying to conceive, not in menopause, and not covered by a continuing contraceptive method. Multiplied by the percent who seek care at any facility which is multiplied by the percentage who seek care at a public facility among those that seek care at any facility.
Increase the proportion of registered BHWs who provide FP information, referrals, and/or services	WRA at risk who seek care from BHW or at a BHS.	The number of WRA not pregnant or trying to conceive, not in menopause, and not covered by a continuing contraceptive method. Multiplied by the percent who seek care at any facility which is multiplied by the percentage who seek care with BHS or BHW among those that seek care at any facility
Increase the proportion of eligible WRA reached through mobile outreach	WRA at risk who seek care at mobile clinics.	The number of WRA not pregnant or trying to conceive, not in menopause, and not covered by a continuing contraceptive method. Multiplied by the percent who seek care at any facility which is multiplied by the percentage who seek care at mobile clinics among those that seek care at any facility.
Increase the proportion of private sector providers trained in FP service provision	WRA at risk who seek care at a private facility.	The number of WRA not pregnant or trying to conceive, not in menopause, and not covered by a continuing contraceptive method. Multiplied by the percent who seek care at any facility which is multiplied by the percentage who seek care at a private facility among those that seek care at any facility
Conduct a Mass Media Campaign via Television	All WRA who could begin using a FP method.	The number of WRA not pregnant or trying to conceive, not in menopause, and not covered by a continuing contraceptive method.
Increase the proportion of eligible participants in Usapan demand generation	WRA at risk that may seek care and could begin using a FP method.	The number of WRA not pregnant or trying to conceive, not in menopause, and not covered by a continuing contraceptive method. Multiplied by the percent who seek care at any facility.
Increase Proportion of Adolescent-Friendly Health Facilities	Adolescents at risk who may seek care and could begin using a FP method.	Only applies to adolescents in the model. Applicable population starts with the number of adolescents not pregnant or trying to conceive and not covered by a continuing contraceptive method. Multiplied by the percent who seek care at any facility.

Supplement E. RACE-FP Outcomes

The tables below list the definitions, calculations, assumptions, limitations, and source data used for each indicator presented in the Results for RACE-FP. Table E.1 lists FP Outcomes (note, all values are calculated from multiple areas of the model that each have their own source data). Table E.2 lists MNH Outcomes. Table E.3 lists Cost Outcomes (for additional detail on contraceptive commodity cost calculations, assumptions, and sources, please see Supplement C: Contraceptive Commodity Costs).

Table E.1. FP Outcomes Included in RACE-FP

Indicator	Definition	Calculation	Assumptions & Limitations	Source
Number of users in current time period	Number of users protected by a method acquired in the modeled time period. This includes all users minus LARCs users that are still protected from starting in a prior time period.	LAM users + TFP users + new sterilizations + MNFP users + oral contraceptive users + injectable users + IUD users + implant users + male condom users (primary method) + new modern method users	The model aims to take a “snapshot” of the population during the modeled year. Not all users will start and finish using a method exactly within the modeled year, but we assume the cross-section of users represents the population on average.	Calculated.
Number WRA with met need	Number of current contraceptive users and users covered by a LARC method (IUD and implants) and sterilization before the modeled time period. Does not include abstinence.	# of users in modeled time period + continuing sterilization users + continuing IUD users + continuing implant users.	In the scenario run, continuing users are not able to be impacted by interventions.	Calculated.
Number WRA with unmet need	Number of WRA at risk of pregnancy AND do not want to become pregnant AND not using any FP method.	# WRA at risk of pregnancy who do not want to become pregnant and are not using a modern method + # WRA at risk of pregnancy who do not want to become pregnant and are not using a traditional (low efficacy) method	Assume abstinence “users” have no need rather than unmet need and are therefore not included.	Calculated.
Modern contraceptive prevalence rate (mCPR)	Proportion of WRA who use modern contraceptive methods. ^a	(Met need – TFP users) / women of reproductive age.	Includes current contraceptive users and those covered by LARC or sterilization from previous time period. In the scenario run, continuing users are not able to be impacted by interventions.	Calculated.

Indicator	Definition	Calculation	Assumptions & Limitations	Source
Unmet need %	Proportion of WRA who are at risk of pregnancy, do not want to become pregnant, and are not using any FP method.	Unmet need / women of reproductive age.	Assume abstinence “users” have no need rather than unmet need and are therefore not included.	Calculated.
Long-acting reversible contraceptive (LARC) users	Number of IUD and Implant users.	IUD users + Implant users	Sterilization is not considered a LARC and is therefore not included.	Calculated.
Proportion of demand satisfied	Current contraceptive use (any method) / [Unmet need + current contraceptive use (any method)]	Met need / (met need + unmet need)	Assume abstinence “users” have no need rather than unmet need and are therefore not included.	Calculated.
Users of Each Contraceptive				
# Users: Sterilization	Number of women sterilized in the modeled time period. Does not include WRA sterilized before modeled time period.	# sterilized at public facilities + # sterilized at private facilities	Assume adolescent sterilization is 0%. Assume sterilization is not available in community settings.	Calculated.
# Users: LAM	Number of WRA using lactational amenorrhea method as their primary method in the modeled time period.	# using LAM at all locations	Data were not available to disaggregate LAM use by setting (public, private, community), therefore, RACE-FP assumes LAM use is consistent across settings.	Calculated.
# Users: Traditional FP (TFP)	Number of WRA using TFP as their primary method in the modeled time period.	# using TFP at all locations	Data were not available to disaggregate TFP use by setting (public, private, community), therefore, RACE-FP assumes TFP is consistent across settings.	Calculated.
# Users: Modern Natural FP (MNFP)	Number of WRA using MNFP as their primary method in the modeled time period.	# using MNFP at public facilities + # using MNFP at private facilities	Based on feedback from Philippines Reach Health colleagues, assume MNFP is not available in community settings.	Calculated.
# Users: Oral contraceptives	Number of WRA using oral contraceptives as their primary method in the modeled time period.	# using oral contraceptives at public facilities + # using oral contraceptives at private facilities + # using oral contraceptives in community settings	Assume oral contraceptives are available in all settings (public, private, community).	Calculated.
# Users: Injectables	Number of WRA using injectables as their primary method in the modeled time period.	# using injectables at public facilities + # using injectables at private facilities + # using	Assume injectables are available in all settings (public, private, community).	Calculated.

Indicator	Definition	Calculation	Assumptions & Limitations	Source
		injectables in community settings		
# Users: IUDs	Number of WRA with an IUD inserted and used as their primary method in the modeled time period. Does not include WRA with an IUD inserted before modeled time period.	# using IUDs at public facilities + # using IUDs at private facilities	Assume IUDs are not available in community settings.	Calculated.
# Users: Implants	Number of WRA with an implant inserted and used as their primary method in the modeled time period. Does not include WRA with an implant inserted before modeled time period.	# using implants at public facilities + # using implants at private facilities	Assume implants are not available in community settings.	Calculated.
# Users: Male Condom - All	Number of WRA using a male condom as their primary OR secondary method in the modeled time period. The number of WRA who use male condoms as a secondary method overlap with one other method.	Among WRA that use male condom as either primary or secondary method: # using male condoms at public facilities + # using male condoms at private facilities + # using male condoms in community settings	Assume male condoms are available at all three delivery locations. Assume male condoms that are used as a secondary method with other commodity modern methods (MNFP, oral contraceptives, injectables, IUDs, implants) are used in the same proportion across these methods. Also includes those not using another primary method.	Calculated.
# Users: Male Condom - Primary	Number of WRA using a male condom as their only method. Does not include those using a male condom as a secondary method.	Among WRA that use male condom as primary method: # using male condoms at public facilities + # using male condoms at private facilities + # using male condoms in community settings	Only counts male condoms used as a primary method.	Calculated.
# Users: New Modern Method (NMM)	Number of WRA using a new modern method as their primary method in the modeled time period.	# using NMM at public facilities + # using NMM at private facilities + # using NMM in community settings	NMM is only available in the scenario run. The # using NMM in each setting depends on the values the user inputs for the "Introduce Modern Method" intervention.	Calculated.

^a Modern contraceptive methods correspond with modern methods as listed in the Philippines NDHS and include: female sterilization, LAM, modern natural FP (e.g., SDM), oral contraceptives, injectables, IUD, implants, and male condom.

Table E.2. MNH Outcomes Included in RACE-FP

Indicator	Definition	Calculation	Assumptions & Limitations	Source
# of unintended pregnancies	Number of unintended pregnancies in the modeled time period among WRA who did not use a method or whose method(s) failed.	(# of women not using a contraceptive + # of women whose contraceptive failed) * pregnancy rate if not planning pregnancy ^a Calculated the # of unintended pregnancies among estimated # of WRA with unmet need using no method / total # of women with unmet need using no method.	Assume the pregnancy rate is consistent among both those whose method failed and those with unmet need. Assume pregnancy rate if not planning pregnancy is constant across ages and geographic areas.	Number of applicable WRA was calculated. Population Council, 2014. ³¹
# of total pregnancies (unintended + intended)	Number of total pregnancies in the modeled time period, both unintended (among WRA whose method(s) failed or did not use a method) and intended (entered time period currently pregnant or successfully conceived within time period).	# of unintended pregnancies + # women currently pregnant + # of women that were trying to conceive and will give birth in the last 3 months of the modeled time period ^b	Assume the probability for conceiving among women ages 20-24 reflects the probability of conceiving among women 15-19 for those intending.	Calculated. Philippines NDHS, 2017. ² Carcio, 1998. ³²
# of unsafe abortions	Number of unintended pregnancies terminated “either by persons lacking necessary skills, or in an environment lacking minimal medical standards or both.” As abortion is not legal in the Philippines, all abortions that occur are assumed to be unsafe.	# of unintended pregnancies * estimated proportion of unintended pregnancies that end in abortion ^c	Assume the proportion of unintended pregnancies that end in abortion is consistent across geographic regions and age groups. Assume intended pregnancies do not result in abortion. Assume the estimated proportion of unintended pregnancies from UNDP SE Asia countries consistent with the proportion in the Philippines.	Riley et al., 2020. ⁸
# of miscarriages	Number of total pregnancies that end in miscarriage (i.e., spontaneous abortion) before the 20th week of pregnancy.	# of total pregnancies (unintended + intended) * probability of spontaneous abortion per 1,000 women ages 15-44 ^d	Assume the probability of spontaneous abortion is consistent across geographic regions and age groups Assume that the probability of spontaneous abortion in the United States in 1980 consistent with the probability in the Philippines.	Hammerslough 1992. ³³

Indicator	Definition	Calculation	Assumptions & Limitations	Source
# of live births	Number of total pregnancies than result in a birth.	# of total pregnancies - # of unsafe abortions - # of miscarriages	Assume parameters used for unsafe abortion and miscarriage appropriately capture all fetal death occurring prior to birth.	Calculated.
# of maternal deaths	Number of live births that result in maternal death.	Maternal mortality ratio * (# of live births / 100,000) ^e	Assume the Philippines maternal mortality ratio is consistent across geographic regions and age groups.	World Bank Health Nutrition and Population Statistics, Philippines, (n.d.). ³⁴
# of stillbirths	Number of live births that result in stillbirth.	Stillbirth rate (per 1,000 total births) * (# of live births / 1,000) ^f	Assume the stillbirth rate is consistent across geographic regions and age groups	World Bank Health Nutrition and Population Statistics, Philippines, (n.d.). ³⁴
# of neonatal deaths	Number of live births that result in neonatal death (within the first 28 days of life).	Neonatal mortality rate (per 1,000 births) * (# of live births / 1,000) ^g	Assuming the neonatal mortality rate is consistent across geographic regions and age groups	World Bank Health Nutrition and Population Statistics, Philippines, (n.d.). ³⁴
Birth rate per 1,000	Ratio of live births per 1,000 WRA ages 15-49.	Number of live births / (# of WRA / 1,000)		Calculated.
# of unintended pregnancies averted from all method use ⁱ	Number of unintended pregnancies averted from all method use. Includes both traditional and modern methods, does not include abstinence.	# WRA in the modeled time period whose contraceptives were effective from all methods except abstinence * pregnancy rate if not planning pregnancy ^a	Assume that among women who use male condoms as a secondary method that their primary method is what is averting pregnancy (not male condoms). I.e., prevention is attributed to the primary method.	Population Council, 2014. ³¹
# of unintended pregnancies averted from modern method use	Number of unintended pregnancies averted from modern method use. Modern methods include sterilization, LAM, MNFP, oral contraceptives, injectables, IUDs, implants, and male condoms.	#WRA in the modeled time period whose contraceptives were effective from modern methods * pregnancy rate if not planning pregnancy ^a	Assume that among women who use male condoms as a secondary method that their primary method is what is averting pregnancy (not male condoms). I.e., prevention is attributed to the primary method.	Population Council, 2014. ³¹

Indicator	Definition	Calculation	Assumptions & Limitations	Source
# of unsafe abortions averted from all method use ⁱ	Number of unsafe abortions averted from all method use. Includes both traditional and modern methods, does not include abstinence.	# of unintended pregnancies avoided from all method use * estimated proportion of unintended pregnancies that end in abortion ^c	Assumes that women that had a pregnancy averted (pregnancy that did not occur) would have aborted the pregnancy at the same rate as women that did have a pregnancy occur.	Riley et al., 2020. ⁸
# of unsafe abortions averted from modern method use	Number of unsafe abortions averted from modern method use. Modern methods include sterilization, LAM, MNFP, oral contraceptives, injectables, IUDs, implants, and male condoms.	# of unintended pregnancies avoided from modern method use * estimated proportion of unintended pregnancies that end in abortion ^c	Assumes that women that had a pregnancy averted (pregnancy that did not occur) would have aborted the pregnancy at the same rate as women that did have a pregnancy occur.	Riley et al., 2020. ⁸
# of maternal deaths averted from all method use ^h	Number of maternal deaths averted from all method use. Includes both traditional and modern methods, does not include abstinence.	(# of unintended pregnancies averted from all method use that would have resulted in a live birth) * (Maternal mortality ratio / 100,000) ^e	Assumes that women that had a pregnancy averted (pregnancy that did not occur) would have died from the pregnancy at the same rate as women that did have a pregnancy occur. # of unintended pregnancies averted that would have resulted in a live birth = # of unintended pregnancies averted after subtracting those that would have ended in unsafe abortion or miscarriage	World Bank Health Nutrition and Population Statistics, Philippines, (n.d.). ³⁴
# of maternal deaths averted from modern method use	Number of maternal deaths averted from modern method use. Modern methods include sterilization, LAM, MNFP, oral contraceptives, injectables, IUDs, implants, and male condoms.	(# of unintended pregnancies averted from modern method use that would have resulted in a live birth) * (Maternal mortality ratio / 100,000) ^e	Assumes that women that had a pregnancy averted (pregnancy that did not occur) would have died from the pregnancy at the same rate as women that did have a pregnancy occur. # of unintended pregnancies averted that would have resulted in a live birth = # of unintended pregnancies averted after subtracting those that would have ended in unsafe abortion or miscarriage	World Bank Health Nutrition and Population Statistics, Philippines, (n.d.). ³⁴

^a Pregnancy rate if not planning a pregnancy is 31%. The Step Up Policy Brief cites that, “based on the Adding It Up Methodology, the estimated pregnancy rate among women with unmet need using no method across 148 developing countries is 31%.

^b The number of WRA that were trying to conceive and will give birth in the last 3 months of the modeled time period is calculated by multiplying WRA by (the percent trying to conceive*pregnancy rate if planning a pregnancy*0.25). The percent trying to conceive is 1.4% for adolescents ages 15-19 and 11.2% for adults ages 20-49 (based on Philippines NDHS tables 6.2 and 4.1). The pregnancy rate if planning a pregnancy is based on Carcio,³³ and the values used in the model are 86% among adolescents ages 15-19 and 58% among adults ages 20-49.

^c The estimated proportion of unintended pregnancies that end in abortion comes from Guttmacher’s Adding It Up Methodology report, the estimate for South Eastern Asia for the percent distribution of unintended pregnancies that end in induced abortion (59%). South-Eastern Asia countries include Brunei Darussalam, Cambodia, Indonesia, Lao People’s Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste and Viet Nam.

^d The probability of miscarriage – aka spontaneous abortions – among total pregnancies comes from Hammerslough³⁴ Table 2. The total number of spontaneous abortions in 1980 in the United States is divided by the Total pregnancies to achieve a 18.7% estimated probability of miscarriage given pregnancy.

^e The Philippines maternal mortality ratio is 121.0 per 100,000 live births, from World Bank Health Nutrition and Population Statistics from 2017.

^f The Philippines stillbirth rate is 10.6, from World Bank Health Nutrition and Population Statistics from 2018.

^g The Philippines neonatal mortality rate is 13.6, from World Bank Health Nutrition and Population Statistics from 2018.

^h Averted from all-method use is based on current time period users.

Table E.3. Cost Outcomes Included in RACE-FP

Indicator	Definition	Calculation	Assumptions & Limitations
Contraceptive Cost			
Sterilization	Direct and indirect commodity costs attributable to sterilization in the modeled time period.	Total # sterilized in the modeled time period * sterilization overall cost per person	Costs included are related only to those using sterilization as a primary method in modeled time period only.
LAM	Direct and indirect commodity costs attributable to LAM in the modeled time period.	Total # LAM users in the modeled time period * LAM overall cost per person	Costs included are related only to those using LAM as a primary method in modeled time period only.
TFP	Direct and indirect commodity costs attributable to TFP in the modeled time period.	Total # TFP users in the modeled time period * TFP overall cost per person	Costs included are related only to those using TFP as a primary method in modeled time period only.
MNFP	Direct and indirect commodity costs attributable to MNFP in the modeled time period.	Total # MNFP users in the modeled time period * MNFP overall cost per person	Costs included are related only to those using MNFP as a primary method in modeled time period only.
Oral contraceptives	Direct and indirect commodity costs attributable to oral contraceptives in the modeled time period.	Total # oral contraceptives users in the modeled time period * oral contraceptives overall cost per person	Costs included are related only to those using oral contraceptives as a primary method in modeled time period only.
Injectables	Direct and indirect commodity costs attributable to injectables in the modeled time period.	Total # injectables users in the modeled time period * injectables overall cost per person	Costs included are related only to those using injectables as a primary method in modeled time period only.
IUDs	Direct and indirect commodity costs attributable to IUDs in the modeled time period.	Total # IUD users in the modeled time period * IUD overall cost per person	Costs included are related only to those using IUDs as a primary method in modeled time period only. We assume a 4.6-year CYP and attribute 1/4.6 of the direct commodity costs for the modeled time period.
Implants	Direct and indirect commodity costs attributable to implants in the modeled time period.	Total # implant users in the modeled time period * implant overall cost per person	Costs included are related only to those using implants as a primary method in modeled time period only. We assume a 2.5-year CYP and attribute 1/2.5 of the direct commodity costs for the modeled time period.
Male Condom	Direct and indirect commodity costs attributable to male condoms in the modeled time period.	Total # male condom users in the modeled time period * male condom overall cost per person	Costs included are related to those who use male condoms in the modeled time period as either a primary or secondary method. Therefore, some users will incur costs from their primary method + male condoms as a secondary method.
New modern method	Direct and indirect commodity costs attributable to new modern method introduction in the modeled time period. No	Total # NMM users in the modeled time period * (NMM overall cost per person)	The user controls the unit cost for NMM and indicates whether this method is used with or without male condoms; RACE-FP will adjust cost calculation depending on whether the user indicates overlap with male condoms or not.

Indicator	Definition	Calculation	Assumptions & Limitations
	new modern method assumed in the baseline.		Depending on the parameter the user inputs into RACE-FP for the NMM cost, indirect costs may not be included as RACE-FP does not automatically provide indirect costs for new modern methods.
Cost summary			
Cost of Contraceptives	Total direct and indirect commodity cost attributable to all methods in the modeled time period.	Sum of the modeled year usage of each method multiplied by their respective unit commodity cost. Including sterilization, LAM, TFP, MNFP, oral contraceptives, injectables, IUDs, implants, male condoms, and NMM if applicable.	Contraceptive costs represent the sum of costs attributable to all commodities used in the modeled region in the modeled time period. No individual entity pays these costs directly as they are borne by the entire health system including public, private, and other payers.
Cost of Intervention	Total costs attributable to all interventions used in the scenario.	# of exposed to intervention * intervention cost per person exposed	No intervention costs are applied in the baseline scenario. Interventions costs consider the increase in exposed WRA from a baseline. With the exception of Reduce Stockouts and Introduce a new modern method, all interventions have a level of baseline usage that is not considered in intervention costs therefore at baseline, intervention costs are zero.
Total Cost	Cost of all contraceptives and interventions	Cost of contraceptives + cost of interventions	Assume that the contraceptive costs and the intervention costs reflect the total cost to the health system.

Supplement F. Model Sensitivity Results

Table F.1 lists the min, max, median, and mean statistics for each indicator included in a probabilistic sensitivity analysis (PSA) in RACE-FP, for all women, adolescents ages 15-19 and adults ages 20-49. In the model, baseline, scenario, and differences are automatically provided; however, we present only the baseline PSA for the purposes of this reference document. The output in Table F.1 below represents a PSA conducted with 500 iterations. For comparison deterministic baseline results, see Table 5. For additional detail on definitions, calculations, assumptions, limitations and source data used for each indicator, please see Supplement E: RACE-FP Outcomes.

Table F.1. Model Sensitivity Output Included in RACE-FP

	All Women - Baseline			
	Min	Max	Median	Mean
Number of users in current time period	7,099,406	7,572,571	7,330,992	7,331,167
Number WRA with met need	8,785,781	9,258,945	9,017,367	9,017,542
Number WRA with unmet need	3,727,868	4,201,033	3,969,447	3,969,272
Modern contraceptive prevalence rate (mCPR)	23.4%	25.1%	24.3%	24.3%
Unmet need %	13.7%	15.4%	14.6%	14.6%
Long-acting reversible contraceptive (LARC) users	194,181	221,350	207,494	207,356
Proportion of demand satisfied	67.7%	71.3%	69.4%	69.4%
Users of Each Contraceptive				
# Users: Sterilization	121,182	143,210	131,636	131,712
# Users: LAM	88,442	88,442	88,442	88,442
# Users: TFP	2,402,697	2,402,697	2,402,697	2,402,697
# Users: MNFP	9,959	9,985	9,972	9,972
# Users: Oral contraceptives	3,254,496	3,748,275	3,510,618	3,510,737
# Users: Injectables	757,238	908,921	836,229	835,419
# Users: IUDs	114,953	140,422	128,072	127,992
# Users: Implants	72,525	85,318	79,299	79,364
# Users: Male Condom - All	284,547	323,310	303,561	303,744
# Users: Male Condom - Primary	129,133	160,343	144,784	144,831
# Users: New Modern Method (NMM)	0	0	0	0
MNH Outcomes				
	All Women - Baseline			
Indicator	Min	Max	Median	Mean
# of unintended pregnancies	1,352,551	1,493,268	1,424,732	1,424,644
# of total pregnancies (unintended + intended)	2,542,047	2,682,764	2,614,228	2,614,140
# of unsafe abortions	798,005	881,028	840,592	840,540
# of miscarriages	475,363	501,677	488,861	488,844
# of live births	1,268,679	1,300,059	1,284,776	1,284,756

# of maternal deaths	1,535	1,573	1,555	1,555
# of stillbirths	13,448	13,781	13,619	13,618
# of neonatal deaths	17,254	17,681	17,473	17,473
Birth rate per 1,000	47	48	47	47
# of unintended pregnancies averted from all method use	2,009,868	2,150,585	2,078,404	2,078,493
# of unintended pregnancies averted from modern method use	1,396,123	1,536,840	1,464,660	1,464,748
# of unsafe abortions averted from all method use	1,185,822	1,268,845	1,226,259	1,226,311
# of unsafe abortions averted from modern method use	823,713	906,736	864,149	864,201
# of maternal deaths averted from all method use	542	580	561	561
# of maternal deaths averted from modern method use	377	415	395	395
Cost Outcomes	All Women - Baseline			
Indicator	Min	Max	Median	Mean
Contraceptive Cost				
Sterilization	\$ 64,491,913	\$ 76,215,106	\$ 70,055,838	\$ 70,096,081
LAM	\$ 10,036,582	\$ 10,036,582	\$ 10,036,582	\$ 10,036,582
TFP	\$ 97,813,795	\$ 97,813,795	\$ 97,813,795	\$ 97,813,795
MNFP	\$ 1,846,341	\$ 1,851,182	\$ 1,848,885	\$ 1,848,868
Oral contraceptives	\$ 1,796,693,846	\$ 2,069,291,962	\$ 1,938,089,453	\$ 1,938,155,562
Injectables	\$ 357,842,108	\$ 429,521,910	\$ 395,170,383	\$ 394,787,506
IUDs	\$ 65,232,853	\$ 79,686,349	\$ 72,677,562	\$ 72,632,425
Implants	\$ 108,394,536	\$ 127,515,594	\$ 118,518,339	\$ 118,616,073
Male Condom	\$ 179,492,435	\$ 203,944,263	\$ 191,486,764	\$ 191,602,125
New modern method	\$ -	\$ -	\$ -	\$ -
Cost summary				
Cost of Contraceptives	\$ 2,770,593,187	\$ 3,034,234,765	\$ 2,894,181,885	\$ 2,895,589,017
Cost of Intervention	\$ -	\$ -	\$ -	\$ -
Total Cost	\$ 2,770,593,187	\$ 3,034,234,765	\$ 2,894,181,885	\$ 2,895,589,017
	Adolescents - Baseline			
	Min	Max	Median	Mean
Number of users in current time period	148,883	155,790	152,830	152,784
Number WRA with met need	166,775	173,682	170,723	170,676
Number WRA with unmet need	149,077	155,984	152,036	152,083
Modern contraceptive prevalence rate (mCPR)	2.6%	2.7%	2.7%	2.7%
Unmet need %	3.0%	3.1%	3.0%	3.0%
Long-acting reversible contraceptive (LARC) users	7,323	7,323	7,323	7,323
Proportion of demand satisfied	51.7%	53.8%	52.9%	52.9%
Users of Each Contraceptive				
# Users: Sterilization	0	0	0	0
# Users: LAM	5,043	5,043	5,043	5,043

# Users: TFP	35,302	35,302	35,302	35,302
# Users: MNFP	0	0	0	0
# Users: Oral contraceptives	66,536	73,863	70,723	70,674
# Users: Injectables	25,216	25,216	25,216	25,216
# Users: IUDs	3,289	3,289	3,289	3,289
# Users: Implants	4,034	4,034	4,034	4,034
# Users: Male Condom - All	15,129	15,129	15,129	15,129
# Users: Male Condom - Primary	9,044	9,463	9,223	9,226
# Users: New Modern Method (NMM)	0	0	0	0
MNH Outcomes	Adolescents - Baseline			
Indicator	Min	Max	Median	Mean
# of unintended pregnancies	49,729	51,781	50,608	50,622
# of total pregnancies (unintended + intended)	211,159	213,211	212,038	212,052
# of unsafe abortions	29,340	30,551	29,859	29,867
# of miscarriages	39,487	39,870	39,651	39,654
# of live births	142,332	142,790	142,528	142,531
# of maternal deaths	172	173	172	172
# of stillbirths	1,509	1,514	1,511	1,511
# of neonatal deaths	1,936	1,942	1,938	1,938
Birth rate per 1,000	28	28	28	28
# of unintended pregnancies averted from all method use	42,728	44,780	43,901	43,887
# of unintended pregnancies averted from modern method use	33,711	35,763	34,883	34,870
# of unsafe abortions averted from all method use	25,210	26,420	25,901	25,893
# of unsafe abortions averted from modern method use	19,889	21,100	20,581	20,573
# of maternal deaths averted from all method use	12	12	12	12
# of maternal deaths averted from modern method use	9	10	9	9
Cost Outcomes	Adolescents - Baseline			
Indicator	Min	Max	Median	Mean
Contraceptive Cost				
Sterilization	\$ -	\$ -	\$ -	\$ -
LAM	\$ 572,300	\$ 572,300	\$ 572,300	\$ 572,300
TFP	\$ 1,437,135	\$ 1,437,135	\$ 1,437,135	\$ 1,437,135
MNFP	\$ -	\$ -	\$ -	\$ -
Oral contraceptives	\$ 36,732,296	\$ 40,777,015	\$ 39,043,891	\$ 39,016,856
Injectables	\$ 11,915,916	\$ 11,915,916	\$ 11,915,916	\$ 11,915,916
IUDs	\$ 1,866,419	\$ 1,866,419	\$ 1,866,419	\$ 1,866,419
Implants	\$ 6,029,880	\$ 6,029,880	\$ 6,029,880	\$ 6,029,880
Male Condom	\$ 9,543,590	\$ 9,543,590	\$ 9,543,590	\$ 9,543,590
New modern method	\$ -	\$ -	\$ -	\$ -

Cost summary				
Cost of Contraceptives	\$ 68,097,536	\$ 72,142,256	\$ 70,409,131	\$ 70,382,097
Cost of Intervention	\$ -	\$ -	\$ -	\$ -
Total Cost	\$ 68,097,536	\$ 72,142,256	\$ 70,409,131	\$ 70,382,097
Adults - Baseline				
	Min	Max	Median	Mean
Number of users in current time period	6,855,181	7,511,849	7,170,960	7,173,506
Number WRA with met need	8,523,663	9,180,332	8,839,442	8,841,989
Number WRA with unmet need	3,483,723	4,140,391	3,824,613	3,822,066
Modern contraceptive prevalence rate (mCPR)	27.7%	30.6%	29.1%	29.1%
Unmet need %	15.7%	18.6%	17.2%	17.2%
Long-acting reversible contraceptive (LARC) users	186,113	215,121	200,151	199,999
Proportion of demand satisfied	67.3%	72.5%	69.8%	69.8%
Users of Each Contraceptive				
# Users: Sterilization	121,807	142,222	131,617	131,565
# Users: LAM	83,399	83,399	83,399	83,399
# Users: TFP	2,367,395	2,367,395	2,367,395	2,367,395
# Users: MNFP	9,960	9,984	9,972	9,972
# Users: Oral contraceptives	3,096,905	3,731,902	3,437,301	3,436,575
# Users: Injectables	727,086	869,330	808,122	808,771
# Users: IUDs	113,660	139,539	125,038	124,962
# Users: Implants	69,896	82,014	75,081	75,037
# Users: Male Condom - All	259,248	308,934	288,693	288,729
# Users: Male Condom - Primary	119,732	148,057	136,273	135,830
# Users: New Modern Method (NMM)	0	0	0	0
MNH Outcomes				
Adults - Baseline				
Indicator	Min	Max	Median	Mean
# of unintended pregnancies	1,274,746	1,469,673	1,376,401	1,375,482
# of total pregnancies (unintended + intended)	2,302,813	2,497,740	2,404,467	2,403,549
# of unsafe abortions	752,100	867,107	812,076	811,535
# of miscarriages	430,626	467,077	449,635	449,464
# of live births	1,120,086	1,163,555	1,142,755	1,142,550
# of maternal deaths	1,355	1,408	1,383	1,382
# of stillbirths	11,873	12,334	12,113	12,111
# of neonatal deaths	15,233	15,824	15,541	15,539
Birth rate per 1,000	50	52	51	51
# of unintended pregnancies averted from all method use	1,938,954	2,133,881	2,032,227	2,033,145
# of unintended pregnancies averted from modern method use	1,334,227	1,529,154	1,427,499	1,428,418
# of unsafe abortions averted from all method use	1,143,983	1,258,990	1,199,014	1,199,556

# of unsafe abortions averted from modern method use	787,194	902,201	842,225	842,766
# of maternal deaths averted from all method use	523	576	548	549
# of maternal deaths averted from modern method use	360	413	385	385
Cost Outcomes	Adults - Baseline			
Indicator	Min	Max	Median	Mean
Contraceptive Cost				
Sterilization	\$ 64,824,558	\$ 75,689,212	\$ 70,045,766	\$ 70,017,672
LAM	\$ 9,464,282	\$ 9,464,282	\$ 9,464,282	\$ 9,464,282
TFP	\$ 96,376,659	\$ 96,376,659	\$ 96,376,659	\$ 96,376,659
MNFP	\$ 1,846,559	\$ 1,851,045	\$ 1,848,889	\$ 1,848,901
Oral contraceptives	\$ 1,709,693,230	\$ 2,060,252,969	\$ 1,897,613,856	\$ 1,897,213,172
Injectables	\$ 343,593,412	\$ 410,812,598	\$ 381,887,995	\$ 382,194,690
IUDs	\$ 64,499,077	\$ 79,184,735	\$ 70,956,071	\$ 70,912,938
Implants	\$ 104,465,557	\$ 122,576,885	\$ 112,214,511	\$ 112,148,937
Male Condom	\$ 163,533,637	\$ 194,875,967	\$ 182,107,415	\$ 182,130,669
New modern method	\$ -	\$ -	\$ -	\$ -
Cost summary				
Cost of Contraceptives	\$ 2,639,359,479	\$ 3,012,909,704	\$ 2,821,151,308	\$ 2,822,307,921
Cost of Intervention	\$ -	\$ -	\$ -	\$ -
Total Cost	\$ 2,639,359,479	\$ 3,012,909,704	\$ 2,821,151,308	\$ 2,822,307,921

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