June 2012

Adding It Up: Costs and Benefits of Contraceptive Services
Estimates for 2012

Susheela Singh and Jacqueline E. Darroch

HIGHLIGHTS

- In 2012, an estimated 645 million women in the developing world were using modern methods—42 million more than in 2008. About half of this increase was due to population growth.
- The proportion of married women using modern contraceptives in the developing world as a whole barely changed between 2008 (56%) and 2012 (57%). Larger-than-average increases were seen in Eastern Africa and Southeast Asia, but there was no increase in Western Africa and Middle Africa.
- The number of women who have an unmet need for modern contraception in 2012 is 222 million. This number declined slightly between 2008 and 2012 in the developing world overall, but increased in some subregions, as well as in the 69 poorest countries.
- Contraceptive care in 2012 will cost $4.0 billion in the developing world. To fully meet the existing need for modern contraceptive methods of all women in the developing world would cost $8.1 billion per year.
- Current contraceptive use will prevent 218 million unintended pregnancies in developing countries in 2012, and, in turn, will avert 55 million unplanned births, 138 million abortions (of which 40 million are unsafe), 25 million miscarriages and 118,000 maternal deaths.
- Serving all women in developing countries who currently have an unmet need for modern methods would prevent an additional 54 million unintended pregnancies, including 21 million unplanned births, 26 million abortions (of which 16 million would be unsafe) and seven million miscarriages; this would also prevent 79,000 maternal deaths and 1.1 million infant deaths.
- Special attention is needed to ensure that the contraceptive needs of vulnerable groups such as unmarried young women, poor women and rural women are met and that inequities in knowledge and access are reduced.
- Improving services for current users and adequately meeting the needs of all women who currently need but are not using modern contraceptives will require increased financial commitment from governments and other stakeholders, as well as changes to a range of laws, policies, factors related to service provision and practices that significantly impede access to and use of contraceptive services.

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Context and Goal of this Report

Growing concerns about inadequate progress in advancing maternal and reproductive health over the last two decades have sparked a number of efforts, now underway, to increase attention, support and resources for family planning in developing countries. Some key examples of these efforts are the HandtoHand Campaign; the Alliance for Reproductive, Maternal and Newborn Health; the Partnership for Maternal, Newborn and Child Health; Women Deliver; activities to monitor relevant milestones for global development and poverty alleviation (ICPD+20 and the MDG+15); initiatives by donor agencies and foundations, and the 2012 London Summit on Family Planning.[1–7] One goal that these initiatives have in common is to increase access to contraceptive services and thereby better serve women who want to delay or stop childbearing, because doing so will reduce unintended pregnancy, help women and couples attain their desired family size and better time their pregnancies, and prevent many deaths and disabilities related to pregnancy.[8] In addition to these short-term health benefits, increased prevention of unintended pregnancies would have broader, longer-term benefits for women, families and society, ranging from increased education for women and better child health to greater family savings, lower rates of population growth and stronger national economies.[9,10]

A 2009 study, *Adding It Up: The Costs and Benefits of Investing in Family Planning and Maternal and Newborn Health*, highlighted these issues by quantifying the number of women with an unmet need for modern contraceptive services—215 million women in the developing world in 2008.[11] This study also estimated the costs and benefits of addressing unmet need for contraceptive services. With these estimates in mind, some initiatives have set goals to increase the number of women using modern methods in certain groups of focus countries. The United Nations' Every Woman Every Child initiative and others are currently assessing progress toward meeting women's contraceptive needs, as well as the additional efforts needed to continue improving access to modern family planning services, and some countries have set their own goals for specific increases in the numbers of new contraceptive users.[12]

These initiatives have generally set their goals in terms of expected increases in the number of users of modern methods because this is a direct and straightforward indicator that typically increases in response to interventions. For example, the London Summit on Family Planning is launching an effort to make modern contraceptive services available to an additional 120 million women in the world's poorest 69 countries by 2020.[13] An underlying goal of these initiatives is to also reduce the number of women who have an unmet need for modern methods. However, this indicator is less often used to measure progress because unmet need may increase—even as the number of modern method users rises—in response to couples' increasing desire for smaller families and better control over the timing of pregnancy.

This report presents new 2012 estimates of the numbers and proportions of women in the developing world using modern methods and in need of modern contraception, as well as the cost and impact of meeting this need.* The 2012 *Adding It Up* estimates are comparable to those from the 2009 report and will therefore enable us to assess progress between 2008 and 2012. The estimates presented here incorporate the most recent available survey data on need for and use of contraception and updated 2012 estimates of the direct costs of providing contraceptive services. They also draw on updated estimates of pregnancies and maternal deaths. In some cases, where more recent information is not available, we draw on measures from the 2009 analysis—the most important such instance being estimates of program and systems costs (see Appendix, pages 19–22, for more detail).

We present estimates in this report for all developing countries (as defined by the United Nations Statistics Division), for the three major regions (Asia, Africa, and Latin America and the Caribbean), for 14 subregions and for the 69 poorest countries in the developing world (Appendix Table 1, page 23).[14,15] The goal of this report is to inform the decisions and activities of donors, developing country governments and advocates aimed at improving and expanding access to contraceptive services for all women and couples in developing countries.

*We plan to publish a more comprehensive set of estimates, including other sexual and reproductive health services, in early 2014.

Need for and Use of Modern Contraceptives

The widespread shift in the developing world from large families to smaller families is arguably one of the most important social transformations of the 20th century, and it parallels a similar transition that took place in the developed world much earlier and at a much slower pace.[16,17] Starting from an average of more than five children per family in the 1970s, couples in the developing world had about 2.5 children on average in the decade 1994–2005, although the range across countries has remained very wide.[18]

While many factors have had a role in this transformation in childbearing, one of the main mechanisms through which smaller family size has been achieved is the increased use of contraception, made available through public sector family planning programs, nongovernmental organizations and the private sector, including clinics and pharmacies.[19–22] Compilations of data by the United Nations show that the use of modern contraceptive methods by married women* aged 15–49 in the developing world rose from negligible levels in the 1960s to an estimated 47% in 1990 and 55% in 2000[23] and has since stabilized, remaining at this level in 2009.[24] At the same time, the motivation to have small families and to better time births remains strong and is increasing in many parts of the developing world.[25] Other worldwide trends, such as increasing levels of sexual activity among young, unmarried women—related to a rising age at marriage[26] —imply a growing need for effective contraception among the unmarried. In this chapter we discuss the current situation and recent trends in regard to existing needs and the use of modern contraception.

Need for contraceptive services

While the large majority of women are sexually active for much of their reproductive years, most want only a few children. To achieve their desired family size and avoid unintended pregnancies, they will spend most of this time in need of contraception (see box). In 2012, of the 1,520 million women of reproductive age in the developing world, 57%, or an estimated 867 million, are in need of contraception.[27] Most of these women are using a modern contraceptive method (645 million), but a significant minority are not, and these women have an unmet need for modern contraception (222 million; Figure 1).

Another 653 million women—43% of all women of reproductive age—do not currently need contraception.[27] More than half of these women (24% of all women of reproductive age) are unmarried and not sexually active;† the remaining women have recently had an intended birth, are currently pregnant with an intended pregnancy or want to be pregnant soon (11%), or are sexually active but are infecund (8%). As women's contraceptive needs and

Defining the need for modern contraception

- Women of reproductive age (15–49) are considered to be **in need of contraception** if they are using contraceptives—modern or traditional—or are using no method but are married or are unmarried and sexually active (i.e., had had sex in the three months prior to being surveyed), are fecund and do not want a child soon (in the next two years) or at all; identify their current pregnancy as unintended; or are experiencing postpartum amenorrhea after an unintended pregnancy.
- Women in need who are not currently using a modern contraceptive method—that is, women who use no method or a traditional method—are considered to have an **unmet need for modern methods**. Women who use traditional methods are included as having unmet need for modern contraception because the methods they are using are more likely to fail than modern methods. **Modern methods** include male and female sterilization, IUDs, implants, injectables, pills, male condoms and other supply methods, such as spermicides and female condoms. **Traditional methods** mainly include withdrawal and periodic abstinence.

*In this report, "married women" refers to those who are legally married, cohabiting or in a consensual union. "Formerly married" refers to women who have previously been in a union and were not in union at the time of interview, and "never married" refers to women who have never been in union.

†We consider unmarried women sexually active if they reported having had sex in the three months prior to being surveyed.

life circumstances vary over their reproductive lifespan, women will move between needing and not needing contraception, and many will move between using modern methods and having unmet need. The current estimates presented here represent a snapshot of the status of all women in developing countries in 2012.

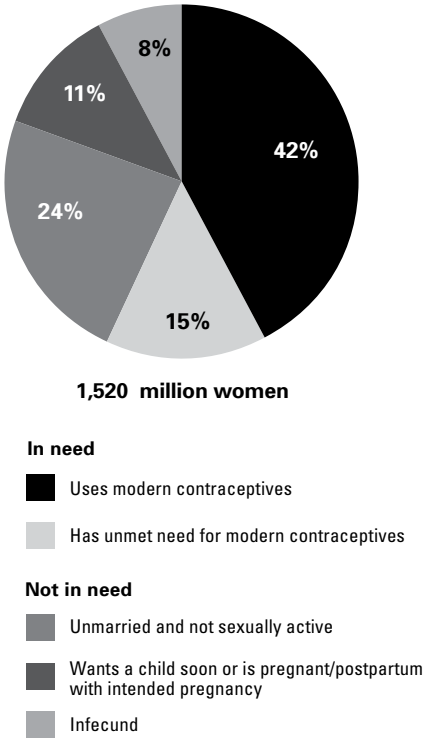
Use of modern contraceptive methods

Of the 645 million women in the developing world using modern methods of contraception in 2012, the large majority are married (596 million), an estimated 20 million have previously been married, and 29 million have never been married (data not shown).[27] We focus on modern contraceptive methods because of their higher effectiveness in preventing pregnancy, compared with traditional methods, such as withdrawal and periodic abstinence.

In 2012 in the developing world, modern methods are used by 57% of married women (on whom data are more complete and arguably better reported, compared with other groups; Table 1, page 6).[27] The level of use is higher in some subregions (an estimated 88% in Eastern Asia and 70% in South America), and lower than average in others (17% in Sub-Saharan Africa, 34% in Western Asia and 46% in South Asia). In the 69 poorest countries in the world, 40% of married women are using modern methods in 2012.

Between 2008 and 2012, the number of modern method users increased by 42 million in the developing world as a whole, an average annual increase of roughly 10 million users.[27,28] In comparison, between 2003 and 2008, the number of modern method users rose by almost 100 million in developing countries, from 504 million to 603 million, an annual increase of 20 million users (not shown).[28] The increase between 2008 and 2012 was partly due to population growth (52%), and partly to the small increase in the contraceptive prevalence rate (48%). For example, the proportion of currently married women in the developing world using modern methods barely changed between 2008 (56%) and 2012 (57%).[27] Stabilization in the level of modern contraceptive use in recent years has been reported elsewhere for some countries, and is consistent with these updated aggregate estimates.[29] Despite overall stabilization, there have been some important changes within regions. More substantial increases in modern method prevalence rates among married women were seen in Eastern Africa (from 20% in 2008 to 27% in 2012) and in Southeast Asia (from 50% to 56%).[27] Notably, there was no increase in Western Africa and Middle Africa, areas where modern contraceptive use continues to be very low. In these subregions, health systems are especially weak and mortality rates very high, and the need for comprehensive care that includes contraceptive, maternal, infant and child health services—relevant for all countries—is particularly great.

FIGURE 1. More than half of all reproductive-age women in developing countries are in need of modern contraceptives.



Source: reference 27

These different regional trends are illustrated by some country examples (Figure 2, page 7).[30–35] Ethiopia, Malawi and Rwanda saw substantial increases, while India, Nepal, Nigeria, Pakistan and Zimbabwe witnessed less change in recent years. All countries that have experienced little recent growth in contraceptive prevalence need attention, but the situation of countries such as Nigeria and Pakistan, where change is slow and modern method use is very low, requires particularly careful examination to determine how to meet existing contraceptive needs.

Never-married women make up a large and important group that accounts for 26% of all women aged 15–49 in the developing world in 2012 and comprises mostly adolescents and young adult women aged 15–24.[27] There has been a steady long-term trend toward increased levels of sexual activity among these women due to a combination of factors: the declining age of menarche, the rising age at marriage and changing societal values.[26] When

TABLE 1. Number of women aged 15–49 using modern contraceptive methods and proportion of married women aged 15–49 using modern methods and annual percent change, by region and subregion of the developing world and for the 69 poorest countries, 2008 and 2012.

Region and subregion	Among all women aged 15–49, number using modern methods (millions)			Among married women aged 15–49 % using modern methods		
	2008	2012	Annual % change	2008	2012	Annual % change
Developing world	603	645	1.7	56	57	0.4
Africa	46	51	2.7	23	24	0.2
Sub-Saharan Africa*	31	36	4.2	17	17	0.7
Eastern Africa	12	17	11.7	20	27	8.6
Middle Africa	2	2	1.9	7	7	0.7
Southern Africa	7	9	5.8	54	58	1.9
Western Africa	6	7	2.8	9	9	–0.3
Northern Africa	19	16	–3.9	55	45	–4.8
Asia	485	514	1.5	62	62	0.3
Eastern Asia	261	267	0.5	89	88	–0.2
Central Asia	6	6	–1.2	51	52	0.3
South Asia	153	163	1.8	45	46	0.3
Southeast Asia	51	64	6.6	50	56	2.8
Western Asia	13	14	1.0	34	34	0.2
Oceania	1	1	–7.3	45	30	–8.4
Latin America & the Caribbean	72	80	2.6	64	67	1.4
Caribbean	5	5	–1.3	56	56	0.1
Central America	17	17	1.2	60	64	1.7
South America	51	58	3.4	66	70	1.4
69 poorest countries†	229	252	2.6	39	40	0.7

*Sub-Saharan Africa includes Sudan and South Sudan, both of which are in the Northern Africa region. †An analysis for the London Summit on Family Planning, projecting the percentage of women using modern methods based on the linear rate of change between the two most recent surveys, estimated that 258 million women in the 69 poorest countries were using modern methods in 2012, six million more than the 252 million shown here, which is based on the most recent information available without projection.

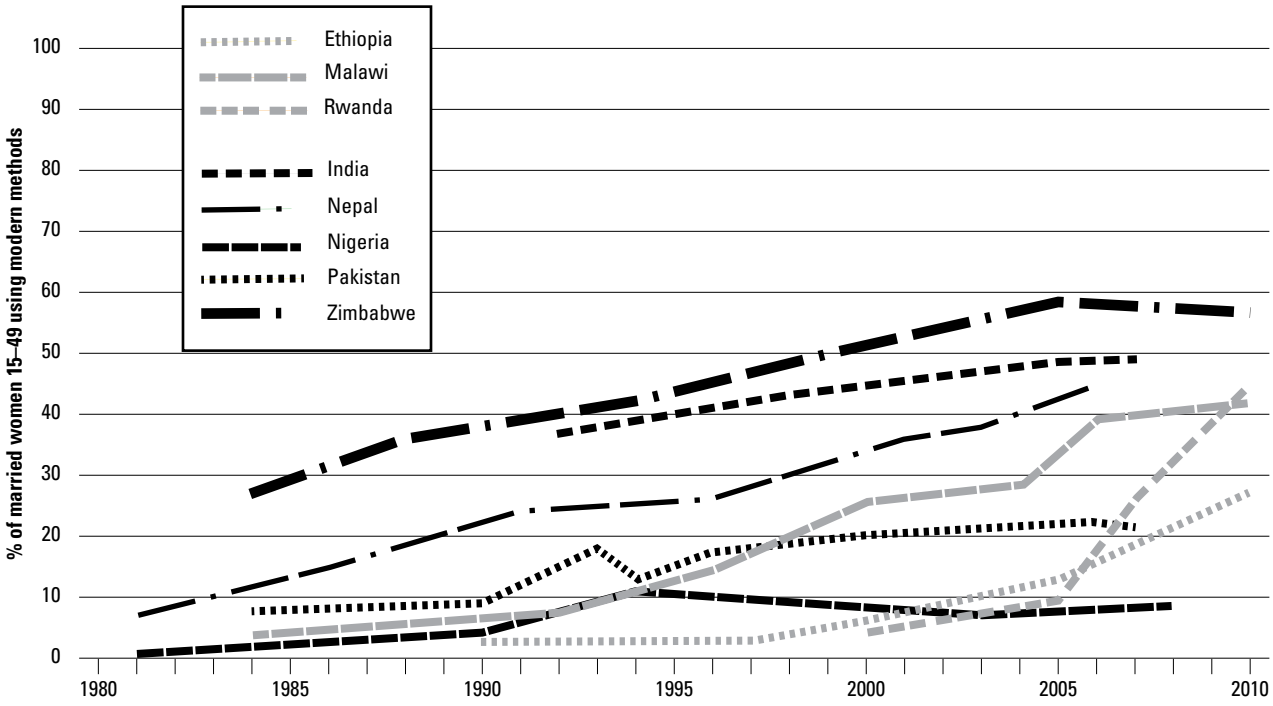
Sources: 2008—Reference 11; 2012—reference 27.

they become sexually active, young never-married women face much greater difficulties in obtaining contraceptives than do married women, in large part because of the stigma attached to being sexually active before marriage. Information on the level of and trends in contraceptive use among never-married sexually active women is thus of great relevance for policymakers and program planners.

However, data on the sexual and reproductive behavior of never-married women are limited (especially in Asia and Northern Africa), and underreporting of sexual activity and contraceptive use is likely high in these regions. In Sub-Saharan Africa and Latin America and the Caribbean, data on unmarried women are more plentiful and of better quality than in other regions, although underreporting may still be significant. Because of these constraints, we supplemented available national survey data with estimates from subnational studies in Asia and Northern Africa to estimate that 52 million never-married women in the developing world as a whole are sexually active and in need of contraceptives to prevent pregnancy in 2012.[27] About 56% of never-married women in need are using modern contraceptive methods, with some variation across regions: 49% in Asia, 55% in Sub-Saharan Africa and 69% in Latin America and the Caribbean; and in the 69 poorest countries, the equivalent proportion is 41% (not shown).

The disadvantage that never-married women have in obtaining contraceptives is apparent in the following statistics: In the developing world as a whole, among women in need of contraceptives, use of modern methods is 20 percentage points lower among never-married women than among married women (not shown).[27] In Asia, this difference is 31 percentage points; in Latin America and the Caribbean, it is 10; and in the 69 poorest countries, it is 20 percentage points. The situation is reversed in Sub-Saharan Africa, where the proportion of never-married women in need using modern contraceptives is 19 percentage points higher than among their married counterparts, an indication of the strength of motivation of

FIGURE 2. Some countries have seen rapid increases in contraceptive prevalence since 2000, while others have seen little improvement.



Source: references 30–35.

unmarried women to avoid childbearing before marriage and HIV/STI infection, as the condom is the predominant method used by never married women in this region.

Unmet need for modern methods of contraception

Women and their partners who are able to have a child but are not using contraceptives or are using a traditional method have much higher chances of having an unintended pregnancy than those who use modern methods. As a result, unmet need for modern methods is a key indicator of the burden of unfulfilled demand for contraceptive services (see box, page 4). In 2012, an estimated 222 million women in the developing world have an unmet need for modern contraception.[27] Comparable estimates were calculated for 2008 and 2012, applying the recently released revised methodology[36] for calculating unmet need to both years (see Appendix, pages 20–21).*

Although increases in the use of modern contraceptives will reduce the number of women with unmet need in the long term, this number may increase in the short run because of population growth and because the proportion of women and couples who want smaller families and greater control over the timing of births continues to grow. Our updated estimates show that the number of developing world women with an unmet need for modern contraception declined slightly between 2008 and 2012, from 226 million (using the revised methodology) to 222 million (Table 2, page 8).[27,†] However, the number of women with an unmet need for modern contraception increased in most of Africa and in some subregions of Asia and Latin America and the Caribbean. Unmet need for modern contraception in the 69 poorest countries—which account for 73% of all unmet need in the developing world—also increased, from 153 to 162 million women in 2008–2012.

The proportion of married women with unmet need for modern contraception is 18% in the developing world as a whole, but is much higher than average (30–37%) in Western Africa, Middle Africa, Eastern Africa and Western Asia, and is somewhat higher than average (22–24%) in South Asia and the Caribbean (Figure 3).[27] In general, among subregions, use of modern contraceptive methods

*Although the calculation methodology was revised, the concept remains the same.

†The number of women with unmet need for modern methods in 2008 was previously estimated to be 215 million (see reference 11). We revised this estimate by applying the new unmet need calculation methodology (discussed in the Appendix), which resulted in a revised estimate of 226 million women in 2008.

TABLE 2. Number of women with unmet need for modern methods and proportion with unmet need for modern methods among all women in need of modern contraception, by region and subregion of the developing world and for the 69 lowest-income countries, 2008 and 2012.

Region and subregion	Women 15–49 with unmet need for modern methods (millions)			% of women 15–49 in need of contraception who have unmet need for modern methods		
	2008*	2012	Annual % change	2008*	2012	Annual % change
Developing world	226	222	–0.5	27	26	–1.5
Africa	55	58	1.6	54	53	–0.5
Sub–Saharan Africa†	50	53	1.6	62	60	–0.9
Eastern Africa	19	20	0.4	63	54	–3.5
Middle Africa	10	10	1.3	82	81	–0.1
Southern Africa	2	2	–6.2	25	17	–8.1
Western Africa	18	19	2.6	74	74	0.0
Northern Africa	6	8	5.8	25	32	7.8
Asia	147	140	–1.1	23	21	–1.9
Eastern Asia	24	16	–7.8	8	6	–7.7
Central Asia	3	2	–3.1	30	28	–1.4
South Asia	79	83	1.1	34	34	–0.4
Southeast Asia	25	25	–0.6	33	28	–4.2
Western Asia	15	14	–2.8	54	50	–1.8
Oceania	<1	1	2.1	39	49	6.8
Latin America & the Caribbean	24	23	–1.4	25	22	–2.8
Caribbean	2	2	–2.4	31	30	–0.8
Central America	5	5	1.3	23	23	0.0
South America	17	16	–2.0	25	21	–3.8
69 poorest countries‡	153	162	1.5	40	39	–0.6

*Revised from prior estimates (see references 11 and 28) using new specifications for calculating unmet need. †Sub–Saharan Africa includes Sudan and South Sudan, both of which are in the Northern Africa region. ‡An estimate of the number of women with unmet need for modern methods in the 69 poorest countries consistent with the London Summit on Family Planning projected number of 258 million women using modern methods (see footnote, Table 1) would be 160 million, compared with the 162 million shown in the table, which is based on the most recent available information.

Sources: 2008 and 2012—reference 27.

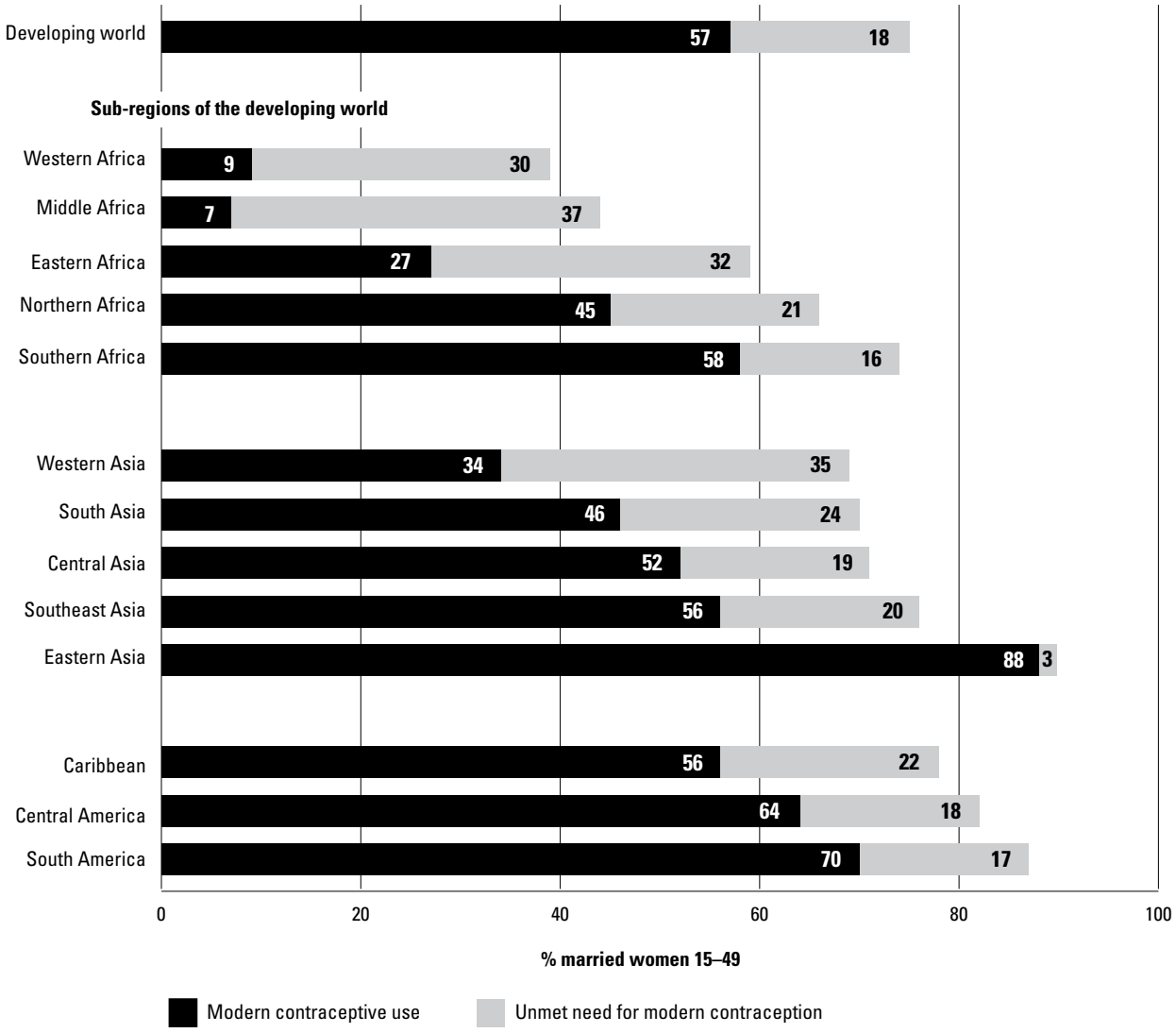
is higher where unmet need is lower.

The small overall decline in unmet need for modern methods is more impressive than it appears at first glance, given an increase in the number of women who want to avoid pregnancy, from 829 million in 2008 to 867 million in 2012.[27] In the developing world as a whole, the proportion of women in need with an unmet need for modern methods declined by 1.7 percentage points, from 27.2% to 25.5%, between 2008 and 2012; the annual rate of decline was 1.5%. The annual rate of decline was above average in Eastern Africa, Southern Africa, Eastern Asia, Southeast Asia and South America (ranging from –3.5% to –8.6%, Table 2). Declines were much less than average in South Asia (–0.4%) and in the 69 poorest countries (–0.6%). There was essentially no change in Middle Africa, Western Africa and Central America. Unmet need increased in Northern Africa and Oceania—regions where better data for 2012 may underlie this unexpected trend.

The need to improve modern method use

It is understandable that the level of unmet need for modern contraceptives generates so much attention, since nonuse and traditional method use put women and their partners at highest risk of unintended pregnancy, and since the measure has, in some form, long been included in national surveys and reports. However, measuring contraceptive prevalence alone (whether or not women or their partners are using a modern method) does not capture all the barriers that underlie non-use of contraception, incorrect use and discontinuing use—all of which can result in unintended pregnancy. Some women may not use contraception and some current users of modern methods may stop use, even though they do not want to become pregnant, for a number of reasons, including having concerns about health and side effects, perceiving that they are not at risk of pregnancy, facing opposition from their partners or others, having inadequate knowledge about

FIGURE 3. There are large variations in married women's level of unmet need for and use of modern contraception among subregions of the developing world in 2012.



Source: reference 27.

methods and having problems getting supplies (due to factors such as distance, cost, stock-outs and inconvenient hours).[37] In addition, they may use their method inconsistently or incorrectly because of inadequate counseling or information, because using the method is inconvenient or because of the type of relationship they have.[38,39] Switching methods may be difficult, for example, if a woman's provider does not offer other methods or is unwilling to facilitate the process of switching methods, or if preferred methods are too expensive or are unavailable locally.

Improving the quality of information and services offered to contraceptive clients would likely improve effectiveness of use. This could be achieved by providing a broad choice of methods, continuous supplies, counseling and education regarding side effects and health concerns, and training providers to help women switch methods upon request.[40] Meeting the needs of unmarried women, particularly young never-married women, requires innovative efforts, including improving the information and services targeted to this group, offering a wide selection of appropriate methods that respond to unmarried women's sometimes sporadic contraceptive needs, and implementing broad public education campaigns to reduce stigma around unmarried women's sexual activity and to change providers' attitudes toward this group.

Costs and Benefits of Meeting the Need For Modern Contraception

There are important cost implications to providing contraceptive services to the increasing number of women needing modern contraceptives and to offering comprehensive, high-quality services to all users. At the same time, money spent on contraceptive services to help women avoid unintended pregnancies has large health, social and economic benefits for women, families and society, and results in net savings to the health care system.

In this chapter we present estimates for 2012 of the cost of providing contraceptive services and commodities to women who are currently using modern methods, as well as of the potential costs of improving services to better meet current users' needs and providing modern methods to women with unmet need. Our estimates include both direct costs (of commodities, supplies and labor), as well as indirect costs (program and systems costs to maintain and strengthen existing health systems' capacity to provide contraceptive services to new and current users). Program and systems costs go toward a wide range of activities that are necessary for providing contraceptive services: program management, supervision, training of personnel, health education, monitoring and evaluation, advocacy, building and maintaining information systems and commodity supply systems, and maintaining and expanding the physical capacity of health facilities. Some of these reflect ongoing activities to support services, such as program management and personnel supervision; others reflect one-time investments to increase system capacity to provide care, such as building information and commodity supply systems.

All components of direct costs were newly estimated for 2012 (see Appendix, pages 21–22). Lacking updated studies on program and systems costs, and also recognizing that investments in scaling up the capacity of health systems in the developing world have been relatively small over the past few years, we have chosen to use the 2008 United Nations Population Fund (UNFPA) program and systems rates for current users in 2012 and the higher 2009 rates to estimate the indirect costs of meeting all existing unmet need and improving services for current users.[41] This is the same approach that was used in the prior *Adding It Up* report. Information available on trends in donor funds spent on family planning supports our decision to use these rates. Available data show a relatively small increase in donor support between 2005 and 2008 (from $501 million to $572 million), and a larger increase between 2008 and 2010 (from $572 million to an estimated $882 million).[42] The International Conference on Population and Development assumed that one-third of total sexual and reproductive health costs would come from international donors and two-thirds from domestic public and private sources. However, the 2010 level of donor support falls far short of the estimated one-third of the overall costs of serving current users ($1.32 billion). Moreover, the gap is even greater in terms of fulfilling the expected donor share of meeting all need for modern contraceptives in the developing world ($2.69 billion). The size of the donor funding gap (and the likelihood that the gap in country government funding is also very large) indicates that investments to scale up capacity to provide contraceptive services and information and to improve the quality of contraceptive care have been inadequate to meet the total need for modern contraceptive care in the developing world. We recognize that even using the 2009 indirect cost ratios would not cover all need for service improvements and expansion, since the UNFPA estimates assumed health system scale-up investments above the ongoing level of indirect funding would extend over the years 2009–2015.*

We first present the costs of providing services to women who are using modern methods in 2012. We then discuss an alternative scenario, in which all women who currently have unmet need would also use modern methods. We present estimates of the one-year costs in 2012 U.S. dollars of each of these two scenarios. We also provide updated estimates of the immediate health benefits accruing from contraceptive use through the pre-

*The cost estimates presented in this report differ from those estimated for the London Summit on Family Planning for a number of reasons. The most important reasons are: differences in direct cost data used; differences in assumptions regarding program and systems costs; use of average annual cost per woman year of use vs. the Summit's cumulative costs over the full eight-year period (based on full cash outlays per new user); and the countries included in the costing estimates (all developing countries vs.the 69 poorest countries (reference 13).

vention of unintended pregnancies (estimated as the sum of unplanned births, induced abortions and miscarriages, including stillbirths), unsafe abortions, and maternal, newborn and later infant deaths.* Contraceptives have other health benefits—for example, hormonal methods help to prevent endometrial and ovarian cancer, as well as reduce irregular periods and menstrual cramping; the depot medroxyprogesterone acetate injectable reduces sickle cell pain crises; and condoms prevent HIV and other sexually transmitted infections—as well as broader social and economic benefits for women, families and society, that are not measured here.[10,43–46]

Direct costs of providing modern contraceptives

Modern contraceptive methods vary in terms of their service delivery requirements. Some methods require contraceptive commodities (IUDs, implants, injectables, pills and condoms); some require other supplies for insertion and removal (IUDs and implants), for provision (injectables) and for surgical procedures (sterilization). Personnel are needed to do counseling, clinical care, method provision and follow-up.

Average direct costs to provide one year of method use are highest for hormonal methods—implants ($7.75), injectables ($8.61) and pills ($7.26)—with the commodities themselves accounting for most of the cost (Table 3, page 12).[47] Permanent male and female sterilization and the IUD have the lowest annual costs when total method costs are divided by the average number of years users are covered by these methods.† Annual average direct costs for male condoms fall between these method groups, at $4.17 per year.

Regional differences in commodity costs primarily reflect variation in the specific methods offered; for example, levonorgestrel-releasing IUDs, which are currently much more expensive than copper-bearing IUDs, make up greater proportions of IUDs provided by international donors for Latin America and the Caribbean than for Africa and Asia, so IUD costs overall are higher in Latin America and the Caribbean. Labor costs also vary by country, even though the analysis assumed no differences in the amount of time needed to provide each method. Supply costs are similar from region to region because available unit cost data covered all developing countries, without variation by country or region; however, costs are not identical because supply needs differ within some method categories (such as one-month vs. three-month injectables), because the average length of method use varies (for IUDs, implants and sterilization) and because the proportion of women using specific types of a particular method varies from country to country.

Costs of contraceptive services for current users in 2012

The total cost of contraceptive services for the 645 million current users of modern methods in the developing world in 2012 is estimated to be $4.0 billion per year.[47] Direct costs account for $2.0 billion, comprising the costs of commodities and supplies ($1.2 billion) and labor ($0.7 billion; Table 4, page 13 and Figure 4, page 14).[47] Program and systems costs in 2012 are estimated to be $2.0 billion for all current users in the developing world and include expenses related to contraceptive provision in general, rather than the specific methods. These range from staff supervision and training, family planning education and advocacy, to the construction of facilities, development of logistics systems and management.

The average annual cost per user in 2012 across all modern method users in the developing world is an estimated $6.15, including both direct and indirect costs.[47] The cost per user in 2008 was somewhat lower, at $5.13 (not shown)—partly because of inflation and better data on commodity costs in 2012, but also possibly because of some shift toward more expensive methods; however, the proportional breakdown by cost component in 2008 is similar to that in 2012. In 2012, the average cost of serving modern method users is less in Asia ($4.35 per user) than in the developing world as a whole, and the average cost per user in Africa and Latin America and the Caribbean is about double the overall average or higher ($11.26 and $14.46 per user, respectively).

Variations in population size, contraceptive method mix and prevalence, and per-user costs together account for the different regional shares of total costs: Asia accounts for $2.2 billion, more than half of the total cost of contraceptive services in the developing world in 2012 (56%, compared with 29% spent in Latin America and the Caribbean and 15% spent in Africa); the 69 poorest countries account for 36% of total costs (not shown).[47]

*We did not make new estimates of pregnancy-related disability (DALYs) that would be averted by full use of modern contraception because work to prepare updated disability estimates is ongoing (source: Global Burden of Diseases, Injuries, and Risk Factors 2010 Study, <http://www.healthmetricsandevaluation.org/research/project/global-burden-diseases-injuries-and-risk-factors-2010-study>, accessed May 24, 2012).

†All cost estimates presented in the report include the cost for one year of contraceptive use; annual cost for methods that provide protection for more than one year are obtained by dividing the total cost of that method by the average number of years it is likely to be used.

TABLE 3. Average annual direct costs (in 2012 U.S. dollars) of modern contraceptive services,* by region and type of cost, according to method, 2012

Region and type of cost	Female sterilization	Male sterilization	IUD	Implant	Injectable	Pill	Condom
Total direct costs							
All developing countries	$1.78	$0.78	$0.77	$7.75	$8.61	$7.26	$4.17
Africa	$2.79	$1.59	$1.01	$7.74	$9.14	$8.72	$4.15
Asia	$1.58	$0.70	$0.63	$7.86	$6.64	$5.74	$3.98
Latin America & the Caribbean	$3.02	$1.34	$3.80	$7.35	$14.58	$10.16	$4.94
Commodities†							
All developing countries	na	na	$0.17	$6.73	$5.02	$4.93	$2.72
Africa	na	na	$0.12	$6.82	$4.90	$5.95	$2.43
Asia	na	na	$0.07	$6.91	$4.20	$4.07	$2.84
Latin America & the Caribbean	na	na	$2.28	$5.86	$8.25	$6.41	$2.35
Supplies‡							
All developing countries	$1.01	$0.31	$0.14	$0.16	$0.63	na	na
Africa	$1.13	$0.32	$0.14	$0.16	$0.59	na	na
Asia	$1.00	$0.31	$0.14	$0.17	$0.58	na	na
Latin America & the Caribbean	$1.13	$0.32	$0.15	$0.13	$0.90	na	na
Labor§							
All developing countries	$0.76	$0.46	$0.46	$0.86	$2.96	$2.33	$1.45
Africa	$1.66	$1.27	$0.74	$0.76	$3.65	$2.77	$1.72
Asia	$0.59	$0.39	$0.41	$0.78	$1.86	$1.67	$1.14
Latin America & the Caribbean	$1.89	$1.02	$1.37	$1.36	$5.44	$3.75	$2.59

*Costs are weighted by the country-specific numbers of current users of each method in 2012, distributed across specific types within each method category based on the distribution of contraceptives reported in the Reproductive Health Interchange for the country in 2009–2011. Method costs for permanent and long-acting methods are converted to annual costs by dividing total costs by the expected average number of years of use, based on USAID conversion factors: Copper IUD, 4.6 years of use; levonorgestrel IUD, 3.3 years; Implanon implant, 2.5 years; Sino-Implant, 3.2 years; Jadelle implant, 3.8 years; and sterilization, 13 years in Bangladesh, India and Pakistan and 10 years in other developing countries (source: USAID, Couple Years of Protection (CYP), no date, <http://www.usaid.gov/our_work/global_health/pop/techareas/cyp.html>, accessed May 6, 2012). †We assumed users need an annual average of four three-month injections, 13 one-month injections, 14 pill cycles or 77 condoms. ‡Supplies include gloves, antiseptic, local anaesthesia, syringes, sutures and dressings. §Labor (community health worker, nurse/midwife, general physician, obstetrician) costs include counseling on family planning, STI/HIV prevention and gender-based violence; physical exams; contraceptive procedures; and follow-up and resupply visits.

Source: reference 47.

Cost of providing high-quality modern contraceptive services to all in need

In projecting what the costs would be to meet all need for modern contraception, we include in the estimated total the cost of expanding the capacity of health systems to provide contraceptive services to more users, as well as the cost of improving the quality of contraceptive care for all who need it—both current users and women who have an unmet need. To estimate the costs of this full-needs-met scenario, we draw on an estimated level of program and systems costs that is higher than the current-scenario level.[41] For the developing world as a whole, program and systems costs are currently estimated to be 50% of total costs, and for the full-needs-met scenario they would rise to 63%. In the full-needs-met scenario, we assume that some of the additional program and systems investments would also improve the quality of care for those currently using modern methods.

Improvement in the provision of contraceptive care, for those currently using modern methods as well as for potential new users, is essential if all women who are currently in need of modern contraceptives are going to overcome the barriers they face in obtaining and effectively using such methods. Areas in which improvements are needed include: the number and accessibility of sources of modern contraceptive services and supplies; logistics of commodity supplies and the flow of commodities to facilities and community-based providers; choice of methods offered; service affordability; training of health workers and others involved in provision of these services; availability of quality services, including counseling and follow-up (incorporating respect for clients, confidentiality and nonjudgmental attitudes); and information, education and communication programs. There is also need for creative and effective strategies for providing family planning services to women and couples in rural areas, particularly

TABLE 4. Total cost and per-user average cost in the developing world of providing contraceptive services to current modern method users and of providing improved services to all women in need of modern methods, by cost component and major regions, 2012

Cost component	Cost of current use of modern methods	Cost of providing improved services for all women in need of modern methods		
		Current users	Women with unmet need	Total
No. of users (millions)	645	645	222	867
Cost for all users (millions of U.S. dollars)				
Total direct costs	$1,972	$1,972	$978	$2,949
Commodities	$947	$947	$573	$1,520
Supplies	$292	$292	$71	$363
Labor	$733	$733	$334	$1,066
Program and systems costs	$1,994	$3,115	$2,008	$5,122
Total cost by region	$3,966	$5,086	$2,985	$8,072
Africa	$576	$1,404	$1,543	$2,947
Asia	$2,237	$2,456	$1,066	$3,522
Latin America & the Caribbean	$1,152	$1,226	$377	$1,603
69 poorest countries	$1,408	$2,012	$2,088	$4,100
Average cost per user (U.S. dollars)				
Total direct costs	$3.06	$3.06	$4.42	$3.40
Commodities	$1.47	$1.47	$2.59	$1.75
Supplies	$0.45	$0.45	$0.32	$0.42
Labor	$1.14	$1.14	$1.51	$1.23
Program and systems costs	$3.09	$4.83	$9.07	$5.91
Per-user cost by region	$6.15	$7.88	$13.49	$9.31
Africa	$11.26	$27.46	$26.40	$26.90
Asia	$4.35	$4.77	$7.61	$5.38
Latin America & the Caribbean	$14.46	$15.39	$16.51	$15.64
69 poorest countries	$5.58	$7.97	$12.88	$9.89

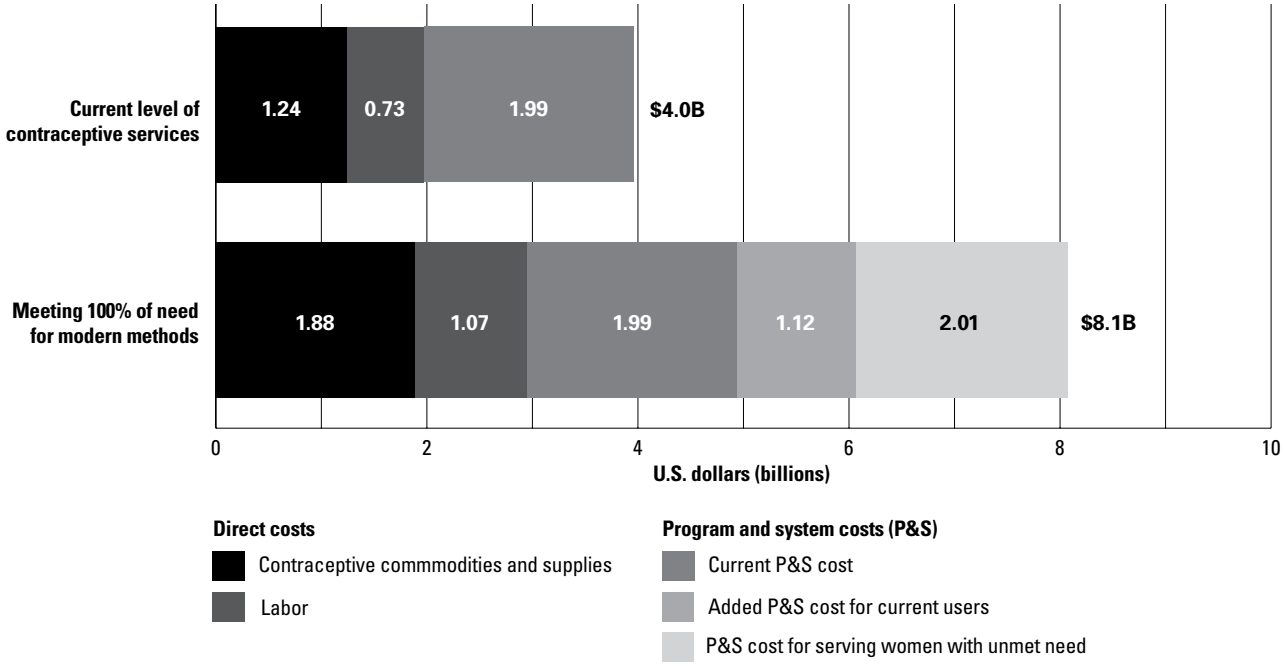
Source: reference 47.

where health facilities are inadequate or nonexistent. Greater efforts to integrate contraceptive care into the provision of related services, such as services addressing maternal health, HIV/AIDS, other STIs and reproductive tract infections—at the facilities where these services are provided—is also an important means of improving contraceptive care.

Improving contraceptive service provision for women who are currently using modern contraceptive methods in the developing world would add $1.1 billion to the current costs of $4.0 billion, for a total of $5.1 billion (Table 4).[47] Providing modern methods of contraception, with improved services, to all women with unmet need in 2012 would cost an estimated $3.0. The total cost of fully meeting the contraceptive needs of all women in the developing world with appropriate services would therefore be $8.1 billion per year. Because unmet need is concentrated in Africa and in low-income countries in other regions, and because program and systems costs are highest in these parts of the world where capacity-building needs are greatest, meeting all need for contraception would result in a large shift in the relative share of total costs among the three major regions: Africa's proportion of total costs would rise from 15% to 36%, Asia's proportion would drop from 56% to 44%, and Latin America and the Caribbean's proportion would drop from 29% to 20% (not shown). The proportion of total costs occurring in the 69 poorest countries would rise from 36% to 51%.

The average cost per user in the developing world as a whole would increase from $6.15 to $9.31, in response to large improvements in service provision.[47] The cost per user would increase by small amounts where systems are already comprehensive and improvements are needed but are not costly: The average annual cost per user would increase from $4.35 to $5.38 in Asia and from $14.46 to $15.64 in Latin America and the Caribbean. Because of the greater needs for system-wide expansion and improvement in Africa, the increase in this region would be much

FIGURE 4. Providing modern contraceptives to all who need them in 2012 would mean increasing current costs by $4.1 billion.



Source: reference 47.

greater (from $11.26 per user for current users to $26.90 per user in the full-needs-met scenario). The average cost in the 69 poorest countries would rise a similar proportion—from $5.58 to $9.89 per user—though the absolute level would remain low because women in South Asia, where average costs are relatively low, comprise more than half of all women in need in the 69 poorest countries.

Reducing unintended pregnancies by providing contraceptive services

We estimate the impact of modern contraceptive use in reducing the number of unintended pregnancies under three service provision scenarios: no modern method use, current levels of modern contraceptive use and full use of modern methods by all women in need (i.e., current users plus those who currently have an unmet need for modern methods). We also estimate how many unintended pregnancies in each scenario would be resolved by abortion, unplanned birth or miscarriage. Unsafe abortions are of particular concern because they involve a particularly high risk for negative consequences.

An estimated 80 million unintended pregnancies will occur in 2012 in the developing world as a result of contraceptive failure and nonuse among women who do not want a pregnancy soon.[48] These unintended pregnancies will result in 30 million unplanned births, 40 million abortions and 10 million miscarriages. The numbers would be much higher, however, if the 645 million women practicing modern contraception in the developing world had used no method of contraception. Compared with this hypothetical no-use scenario, modern method use will prevent 218 million unintended pregnancies in 2012, including 55 million unplanned births, 138 million abortions (of which 40 million would have been unsafe) and 25 million miscarriages.

Most—63 million—of the 80 million unintended pregnancies in developing countries in 2012 will occur among the 222 million women with an unmet need for modern contraception.[27,48] This means that while this group makes up 26% of all women who want to prevent pregnancy, it accounts for 79% of unintended pregnancies (Figure 5).[27,48] If these women were to use the same mix of modern methods as do similar women in their country who currently use modern methods,

- 50 million more women in the developing world would rely on sterilization—48 million women would have a tubal ligation and two million would have partners who have a vasectomy;
- about 32 million more women would use long-acting methods—29 million would use IUDs and three million would use implants;
- 34 million more women would use injectables;

- 54 million more women would use oral contraceptives; and
- 52 million more women would rely on condoms (51 million) or other supply methods (one million) as their primary contraceptive method.

Effectively meeting all need for modern contraception would cause the number of unintended pregnancies to drop by two-thirds, from 80 million to 26 million.[48] The 54 million unintended pregnancies averted would result in

- 26 million fewer abortions (a decline from 40 million to 14 million), including 16 million fewer unsafe abortions;
- 21 million fewer unplanned births (a decline from 30 million to nine million); and
- seven million fewer miscarriages (a drop from 10 million to three million).

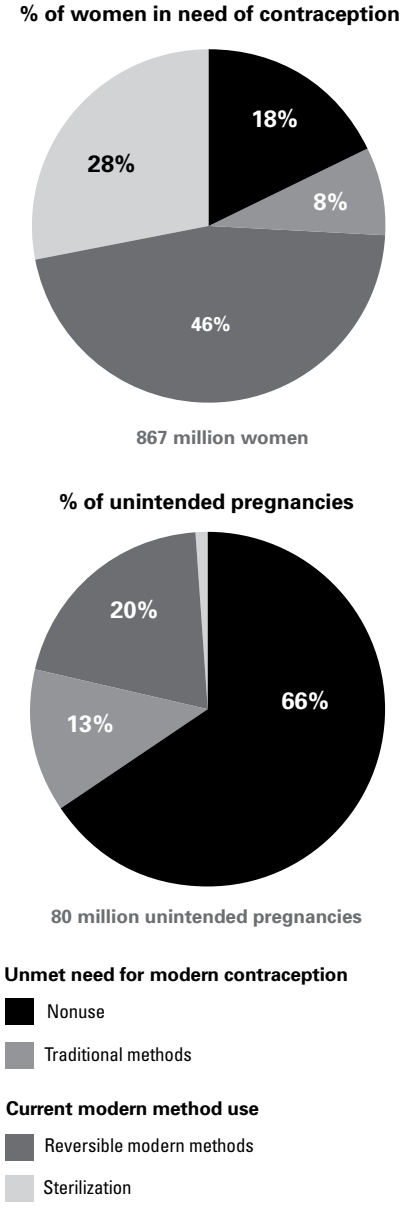
These estimates assume that current levels of contraceptive failure and the present mix of methods used by women in each country, according to their marital and childbearing status, would remain steady in a full-needs-met scenario. However, improvements in the provision and quality of contraceptive services would likely increase these gains by helping more women and couples to use their methods correctly and continuously. In addition, any shift toward more effective modern methods (for example, from the contraceptive pill to the IUD) would also result in a greater reduction in unintended pregnancies.

Averting deaths

The benefits of practicing contraception are broad, spanning social, economic and health outcomes, and they stem from women's and couples' ability to achieve the smaller families they want, time their pregnancies to fit their lives, and provide their infants with the best chances for health and well-being. If there were at least two years between a birth and a subsequent pregnancy, deaths of children younger than five would fall by 13%; if the gap were three years, such deaths would decrease by 25%.[49] However, given the available data, this report provides updated estimates for only outcomes directly stemming from averting unintended pregnancies—maternal and infant deaths.

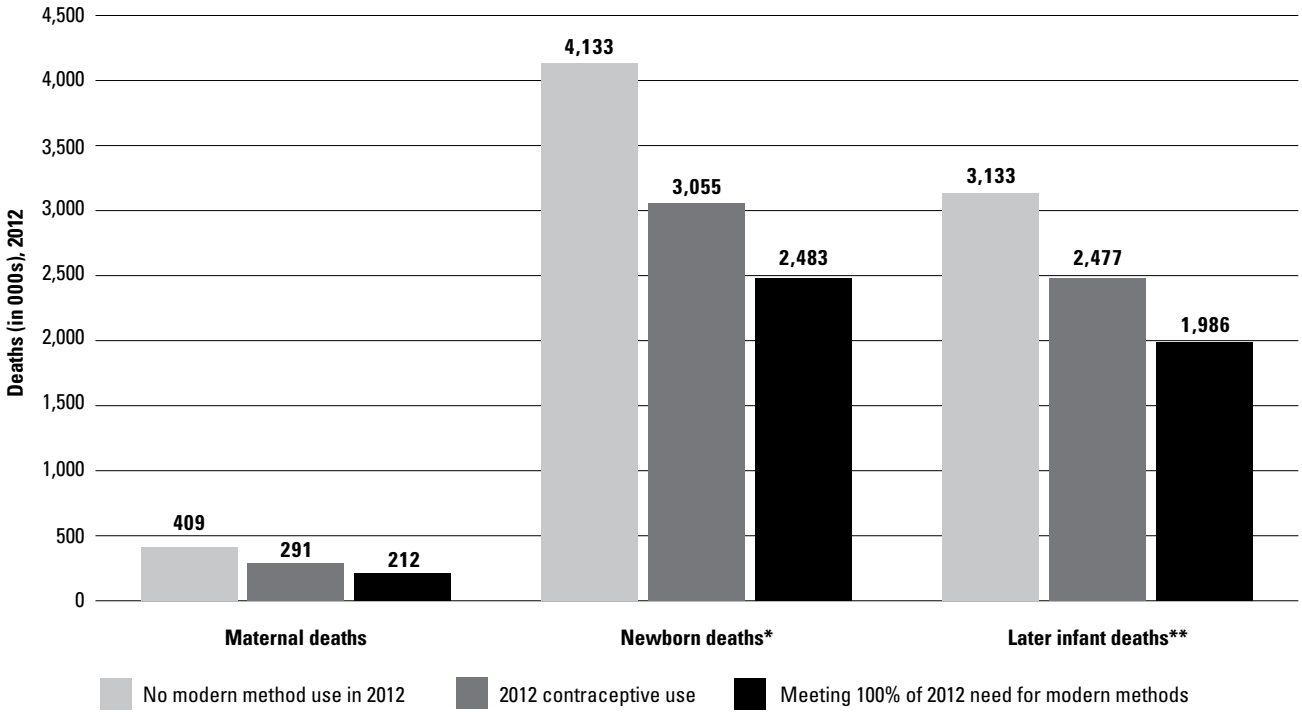
In 2012, an estimated 291,000 women in developing countries will die from pregnancy-related causes; 104,000 of these women will not have wanted to become pregnant (Figure 6, page 16).[50] Use of modern methods in the developing world in 2012 will prevent an estimated 118,000 maternal deaths, compared with a scenario in which no women practice modern contraception. Meeting all current unmet need for modern contraception would reduce pregnancy-related deaths by an additional 79,000. Most of this reduction—a drop of 48,000 maternal deaths—would take place in Sub-Saharan Africa, the region with the highest levels of both maternal mortality and unmet need for modern contraception. Meeting all unmet need for modern contraception in South Asia would result in an estimated drop of 21,000 maternal deaths, influenced by the region's population size and its relatively high levels of maternal mortality and unmet need.

FIGURE 5. Women with unmet need make up 26% of those who want to avoid a pregnancy in 2012, but will account for 79% of unintended pregnancies.



Sources: references 27 and 48.

FIGURE 6. Modern contraceptive use prevents maternal and infant deaths.



*Neonatal (<28 days from birth) **Postneonatal (≥28 days and <one year from birth). *Source:* reference 50.

Of the 121.6 million babies born to women in developing countries in 2012, 3.1 million will die within 28 days of birth (neonatal or newborn deaths) and another 2.5 million will die before age 1 (postneonatal or later infant deaths). Some 0.8 million newborn deaths and 0.6 million later infant deaths will be associated with unintended pregnancies.[50] Modern contraceptive use currently prevents an estimated 1.1 million newborn deaths and 0.7 million later infant deaths, compared with the numbers that would have occurred if no women practiced modern contraception. Compared with 2012 levels, there would be 0.6 million fewer newborn deaths and 0.5 million fewer deaths to older infants if all need for modern methods were met.

Cost-effectiveness of contraceptive services

Taking into account the cost of providing services to all women in need of modern methods in the developing world in 2012 ($8.1 billion) and the number of unintended pregnancies that would be averted as a result of these expenditures (272 million), it would cost an estimated $30 to prevent each unintended pregnancy. In our analysis for 2008, we estimated that each dollar spent to move from current levels of modern method use to the full-needs-met scenario would save $1.40 in the costs of maternal and newborn health care.[11] At that level, $4.0 billion spent in 2012 for current users of modern methods saves roughly $5.6 billion in maternal and newborn health services alone and spending an additional $4.1 billion for modern contraceptive services to meet the need of all women would save roughly $5.7 billion more, for a total of $11.3 billion.

Conclusions and Implications

Meeting the contraceptive needs of women and men hinges on the adequate provision of commodities and high-quality services. This report provides estimates for 2012 of the levels of current use and unmet need for modern contraception in the developing world, and quantifies the costs of providing modern contraceptive care to all who want to avoid pregnancy. Having updated estimates is important for monitoring progress and assessing where there is need to correct course—for example, by increasing efforts overall, increasing support in struggling regions or subregions, or adjusting the goals of policies and programs.

The number of women in the developing world using modern contraceptives has changed little since 2008. Similarly, the number of women with unmet need for modern contraception has plateaued.[27,28] These findings suggest that expanded efforts are needed to increase the pace of progress in improving access to be able to meet women's need for modern methods of contraception in a reasonable time frame. This is especially true for those groups of women who face the greatest barriers in obtaining and effectively using modern contraception. Often, the highest unmet need is found among women who are poor, less educated, unmarried, or living in rural or periurban areas with little access to services, groups for which more intensive outreach and culturally appropriate approaches are needed.[37,51]

To successfully meet women's needs, governments and other stakeholders must address a number of factors, including laws, policies, service provision systems and practices that significantly impede access to and use of contraceptive services. At the program level, improvements in the provision of contraceptive services are needed in a number of areas, including greater efforts to integrate family planning services into the provision of other sexual and reproductive health services, maintaining local supplies of a range of methods, building service provision capacity, improving quality of care and ensuring access to services and supplies. It is important for planners and providers to be aware that, to some degree, unmet need is a moving target—it could increase, even as more women adopt modern contraceptive methods, because fertility preferences continue to evolve toward smaller families and the desire to control the timing of births continues to grow. The need to provide quality services is an ongoing one that must be fully integrated into country policies, budgets, and health and commodity procurement and distribution systems, since each new cohort of women entering reproductive age needs contraceptive information, education, counseling and services.

The widespread need for a better quality of care—including better contraceptive counseling and public education—is evident from studies showing that concerns about health and other side effects of methods, infrequent sex and breast-feeding are the most common reasons women give for nonuse or discontinuation of contraceptives.[37,38,51] Increased attention and support are also needed to develop new contraceptive methods that better meet the needs of women and men in the developing world to ensure that they have access to methods that fit their life circumstances and preferences.[37]

Furthermore, "beyond family planning" interventions are needed to address social factors that inhibit the use of modern contraception. Such barriers include women's low level of decision-making power within the family, differences in fertility preferences between partners, religious beliefs and attitudes opposed to modern contraception (among women and communities), and the stigma attached to sexual activity among unmarried women and their use of contraceptive services. Addressing these types of barriers requires commitment to long-term, extensive interventions, such as providing comprehensive sex education and well-designed, large-scale public education efforts.[52] The heavy reliance on long-acting contraceptives in developing countries raises the need for policymakers and service providers to guard against placing pressure on potential users, ensuring that women and men are offered a range of modern methods and that women using long-acting reversible methods, such as IUDs and implants, have access to nonjudgmental and competent removal services.

Clearly, closing funding gaps is essential if the necessary multifaceted improvements in contraceptive service provision are to be achieved. This report provides updated estimates of the level of funding that is needed to both improve services for current users and adequately meet the needs of all women who currently need but are not

using modern contraceptives. In 2012, the cost of providing contraceptive services and supplies to the 645 million women who are currently using modern methods in the developing world is an estimated $4.0 billion. Providing adequate services for all 867 million women in developing countries who want to avoid a pregnancy in 2012 (both current users and nonusers of modern methods)—a task requiring substantial investment to expand capacity and improve quality of care—would cost $8.1 billion. As is currently the case, the costs of improving contraceptive services and reaching all women who need them would be shared among national governments, donor agencies and households, and would not rest on any single source.

It is important for developing country governments to give high priority to providing high-quality contraceptive services and increasing equitable access to these services. Rwanda's rapid progress in recent years in increasing contraceptive use (shown in Figure 2) provides a good example of the difference that can be made by intensive government action to improving access to health care nationally, giving high priority to family planning.[53] Clear government commitment would not only garner the support of key stakeholders within the country but could strengthen and further leverage the contributions of external agencies. Evidence of increased priority could include establishing and funding specific budget lines for contraceptive services or for the broader set of sexual and reproductive health services and ensuring that these methods reach women most in need. The appropriate allocation of human and financial resources within the broader health system is critical to helping women and couples to achieve their reproductive goals, and it is also important for high-ranking government officials to publicly show their support for sexual and reproductive health services and rights.

As additional resources are made available, it will become critical to track progress toward meeting women's contraceptive needs, an essential step to correcting the course of implementation as necessary. It is also essential to ensure accountability in how the resources are used. Tracking and monitoring will require the collection of data from individuals, providers, health facilities and health systems, at the subnational, national, regional and global levels.

For appropriate monitoring to be developed, implemented and maintained over the long term, donors and governments must be willing to invest in baseline data collection and in systems to continue the data collection and analysis processes to ensure adequate provision of quality services.

- Essential indicators at the individual level include the number of women using modern contraceptive methods and the proportion they represent of all women in need, consistency and correctness of use, continuity of use, reasons for unmet need and stopping use, characteristics of users (to ensure that the needs of vulnerable groups such as unmarried young women, poor women and rural women are met and that inequities in knowledge and access are reduced) and satisfaction with the quality of services, including ensuring that all women and men are able to make voluntary choices about family planning.
- To monitor providers and facilities, systematic data collection is needed on indicators such as the number and training of staff, the range of methods offered, the consistency with which a range of contraceptive commodities is supplied and the quality of care.
- At the health systems level, indicators are needed to measure the number and types of service points, the efficiency of systems in managing the provision of a steady and sufficient flow of contraceptive commodities, the level of funding allocated to and spent on contraceptive services, and accountability in the use of funds.

While setting quantitative goals for improved family planning can help provide incentives to achieve goals, policymakers and program administrators need to be alert to how goals are expressed and interpreted throughout the service system, guarding against their use as performance targets that take precedence over providing quality family planning care and promoting voluntary choice by method users.

Moreover, real success should ultimately be measured in terms of important health outcomes, including better birth spacing, reductions in adolescent pregnancy and early childbearing, and reductions in unintended pregnancy and unsafe abortion, leading to improved maternal health and child survival.

The gains that derive from meeting the contraceptive needs of all women in the developing world more than outweigh the financial costs. The large reductions in unintended pregnancies—54 million per year—that would be achieved if women with unmet need used modern contraceptive methods would be accompanied by impressive improvements in women's health, reductions in maternal deaths and savings from reduced costs of maternal and newborn health care. These changes would yield additional gains by enhancing women's status and role in society, and by increasing the economic welfare of households. The new evidence presented in this report will hopefully motivate donors, developing country governments, health care providers and civil society to make much larger contributions toward improving the sexual and reproductive health of women and couples in the developing world.

Appendix: Methodology and Data Sources

This report presents new estimates for developing countries in 2012, building on previous studies that measured unmet need for modern contraception, costs of meeting this need and the health impacts of doing so, for 2003[54,55] and 2008.[11,28]

A comparable methodology is used in all three reports, although most data items have been updated:

- We have applied the most recent available data on the proportions of women aged 15–49 in developing countries who are in need of and are using contraceptives to the population of women aged 15–49 in 2012 to estimate levels of method use and unmet need. (Using the most recent estimates of need and use follows the approach used in the prior *Adding It Up* analyses, as well as those used by the United Nations to estimate worldwide contraceptive use and unmet need.[24])
- Results from other analyses suggest that these estimates provide an accurate picture of the situation in 2012 because very little growth in contraceptive prevalence is projected to have occurred between 2008 and 2012 in developing countries.*
- To estimate method use if women with unmet need for modern contraception in 2012 all used modern methods, we assumed they would take up types of methods in the same proportion as current users in their country with the same marital status and fertility intentions.
- We estimated unintended pregnancies in 2012 as the sum of unplanned births, based on numbers of total births in 2012 and survey information on proportions of births that were unplanned; induced abortions, estimated from 2008 abortion rates applied to the number of women in 2012; and estimates of miscarriages following unintended pregnancies.
- We estimated unintended pregnancies that would be averted if all women with unmet need for modern methods used modern methods by comparing the current number of unintended pregnancies among women with unmet need for modern methods with the number that would occur if new users experienced the same method-specific use-failure rates as current users.
- We distributed the unintended pregnancies averted into unplanned births, abortions and miscarriages based on the 2012 subregional distributions of unintended pregnancies.
- Maternal death estimates were based on revised 2010 levels of total maternal mortality, 2008 estimates of unsafe abortion mortality, and on mortality for safe abortions estimated for 2008 in the *Adding It Up* analysis. Newborn and infant deaths were based on 2010 mortality rates.

Data items that have been updated

- Country-level numbers of women aged 15–49, by marital status, have been updated to 2012.
- More recent survey data on the distributions of women aged 15–49 by need for and use of contraceptive methods than were used for the 2008 estimates for 42 of the 149 developing countries (home to 55% of married women 15–49) are integrated into the updated estimates presented here; in addition, for 50 other countries including 11% of married women, 2012 estimates incorporate survey data for the country itself, while 2008 estimates for these countries were based on subregional averages. Data from the same national surveys were used for 28 countries, including 32% of married women and estimates were made from subregional averages or from

*One analysis projected the number of users of modern methods in 2012 using a linear rate of change between the two most recent surveys for each country, and estimated 660 million women were using modern contraception in 2012, compared with the 645 million women (calculated without projection) that is presented in this report. These estimates are equivalent to 43.5% and 42.5%, respectively, of all women of reproductive age, a relatively small difference of 1.0 percentage points, or 2%.[13] Another analysis projected the modern contraceptive prevalence rate, using a Bayesian hierarchical model, and estimated that 56.4% of currently married women in developing countries were using modern methods in 2012, compared with our estimate of 56.7% without projection. However, differentials between the Bayesian projections and the estimates presented in Table 1 of this report varied by regions (projected MCPR was 3–4 percentage points higher in Africa, South Asia and Southeast Asia; lower in Eastern Asia; and about equal in Latin America and the Caribbean), averaging to a very small net difference (source: United Nations, Department of Economic and Social Affairs, Population Division, *World Contraceptive Use 2012,* New York: United Nations, 2012 (forthcoming)).

similar nearby countries for 29 countries, where 2% of married women live.
- Information from a literature review of subnational studies was used in estimating need for contraception among never-married women in many countries in Asia and Northern Africa where this group is not included in national surveys.
- The revised methodology for the calculation of unmet need has been applied to estimates for 2008 and 2012 (see reference 36), providing comparable estimates for both years and enabling us to analyze trends.
- Recent data were used to estimate unintended pregnancy levels in 2012, outcomes of unintended pregnancies, mortality among women from pregnancy and childbearing, and deaths to newborns (<28 days) and other infant deaths (between 28 days and one year old).
- The direct costs of supplies, commodities and labor needed to provide contraceptive services were newly estimated for 2012.

Geographic regions and the 69 poorest countries

We use the United Nations Statistics Division's geographic definition of the developing world, regions and subregions (Appendix Table 1).[14] The 69 poorest countries in the world are defined as those with a 2010 per capita gross national income less than or equal to US$2,500.[56,57]

In the two earlier *Adding It Up* reports, countries' economic status was defined differently, using the standard World Bank classification of countries by income category. Estimates of countries grouped by the World Bank's categories were based on the most recent data available at the time each *Adding It Up* report was prepared: Data for the 2003 report were from 2001, and those for the 2009 report were from 2007. As a result, estimates by country income category in these two earlier reports are not directly comparable with each other or with estimates for the 69 poorest countries presented in this report, given changes in country income and the fact that the 69 poorest countries include all those classified by the World Bank as low-income economies based on 2010 income, as well as 44 of the 52 countries they classify as lower-middle–income economies. We chose to provide estimates for the 69 poorest countries because this group is a focus of the London Summit on Family Planning.[13]

Numbers of women aged 15–49 by marital status

For each country, the total number of women aged 15–49 in 2012, divided into five-year age-groups, was taken from the United Nations' Population Prospects 2010 Revision.[58] For most countries, the proportions of women who were currently married, formerly married or never married (for each age-group) were taken from a UN compilation of information from national censuses and surveys.[59] These marital-status proportions were assumed to apply to 2012, regardless of the year of the relevant census or survey. Age-specific proportions in each marital status group were applied to 2012 age-specific numbers of women and summed to estimate the total number in each developing country in 2012 of women aged 15–49 who were currently married, formerly married and never married. For countries with more recent survey information than that included in the UN database, proportions of women aged 15–49 by marital status were updated; for the few countries with no available information on marital status, estimates from a nearby country or from the region were used.

Estimates of contraceptive use and unmet need

Estimates of contraceptive use and unmet need principally draw on data from the Demographic and Health Surveys (DHS), supplemented by surveys carried out by the Centers for Disease Control and Prevention (Reproductive Health Surveys, or RHS), United Nations Children's Fund (Multiple Indicator Cluster Surveys, or MICS) and independent national surveys. We used the most recent surveys available as of March 31, 2012 (including preliminary DHS reports available as of that date). We made estimates for missing data items and for countries without data in a number of different ways, using data from nearby countries or from regional averages, and information from earlier surveys containing the missing items.

With one exception, the methodology that was used to develop the 2012 estimates is the same as that used for the 2003 and 2008 *Adding It Up* estimates, generating comparable distributions of women aged 15–49, according to their contraceptive use and the status.[11,28] The one exception is that we use a recently released revised method for calculating unmet need[36] for 2012 estimates for most countries (those based on DHS and MICS, which we calculated directly).

We also updated the 2008 *Adding It Up* estimates that were based on DHS data, using the new method for calculating unmet need for modern methods, to have comparable measures with the updated 2012 estimates. The net effect of the revised definition is to slightly increase the number of women in developing countries in 2008 with unmet need: from 215 million, under the old definition, to 226 million using the new calculation specifications.

Women were classified into three contraceptive and need status groups, as follows:
- using modern methods of contraception—users of male or female sterilization, IUDs, implants, injectables, pills,

male condoms or other supply methods, including spermicides and the female condom;
- not in need of contraception—women who are (a) unmarried and not currently sexually active (in the last three months), (b) infecund, (c) married or unmarried and sexually active, fecund and wanting a child within the next two years, or (d) currently pregnant with an intended pregnancy or postpartum amenorrheic after an intended pregnancy; and
- having unmet need for modern contraceptives—women who (a) are married or are unmarried and had sex in the last three months, and are fecund, but do not want a child soon (i.e., would like to wait two or more years or want no more children) and are not using a modern contraceptive method (i.e., using no method or using a traditional method, such as periodic abstinence or withdrawal*), or (b) are currently pregnant with a mistimed or unwanted pregnancy or are postpartum amenorrheic after such a pregnancy (on the assumption that this cross-sectional proportion, derived from surveys, represents the typical proportion of women who did not want to have a child soon but are currently pregnant or postpartum amenorrheic and who would have been in need of modern methods at some time during a one-year period).

Estimates were calculated separately for currently married, formerly married and never-married women and summed to obtain estimates for all women aged 15–49.

Comprehensiveness of estimates

Population growth is incorporated into the estimates by applying proportions of women using modern methods from the most recent survey that was fielded before the reference year (i.e., before 2008 or 2012) to the number of women of reproductive age in that reference year. Estimates were made for two groups of unmarried women: those who were formerly married and those who were never married. National surveys, such as the DHS, are the sources for estimates of women of all marital status groups in countries in Sub-Saharan Africa and Latin America and the Caribbean. In Asia and Northern Africa, never-married women are often not included in these surveys, and when they are included, they may not be asked questions about sexual activity and contraceptive use; if they are asked these questions, underreporting of these behaviors is likely very high. Estimates of need and contraceptive use for never-married women in most countries in these regions are based on available national surveys with relevant data and on a review of subnational surveys that include never-married women.

Pregnancies by intention status and outcome

We took the number of births in each country in 2012 from United Nations estimates[60] and distributed them into intended and unintended pregnancies using estimates from the 2008 *Adding It Up* analysis of survey data on birth intention status. To estimate pregnancies ending in induced abortion, we calculated subregional abortion rates from 2008 estimates[61] and applied them to subregional numbers of women in 2012. We estimated miscarriages of intended and of unintended pregnancy in the same manner as in prior *Adding It Up* analyses.[28]

Mortality

We based estimates of maternal deaths on the most recently reported levels of total maternal mortality[62,63] and mortality from unsafe abortion,[64] as well as the proportion of abortions performed under unsafe conditions.[65] We assumed that the 2010 country-specific maternal death ratios applied to births in 2012 and that region-specific rates of death from unsafe abortions changed between 2008 and 2010 in the same proportion as overall maternal mortality ratio for the region changed over that period. As we did in the prior *Adding It Up* analysis, we assumed that the mortality rate among women having abortions under safe conditions was two deaths per 100,000 abortions.[28] Using this information, we estimated maternal mortality rates among women whose pregnancies in 2012 ended in birth or miscarriage (whether intended or unintended), in unsafe abortion or in safe abortion. We assumed that the outcomes (distributed into unplanned births, safe abortions, unsafe abortions and miscarriages) of pregnancies averted by current use of modern methods (and by movement of those with unmet need for modern methods in 2012 to modern use) would be similar by country and subregion to the outcome for all unintended pregnancies occurring in 2012.

To estimate deaths to newborns and other infants, we used 2010 country-specific mortality rates.[66] We multiplied these rates times the numbers of births in 2012 to calculate numbers of deaths in 2012.

Cost estimates

Direct costs were estimated for contraceptive commodities, supplies and labor needed for counseling, method provision and supply, follow-up and method removal (where needed). Program and systems costs (also referred to as indirect costs) were calculated as proportion of direct

*Women who use traditional methods are included as having unmet need for modern contraception because the methods they are using are much more likely to fail than modern methods.

costs, based on estimates published by UNFPA, using the same approach as was used for the 2008 estimates. Total costs are the sum of direct and indirect costs. These costs are paid for through a number of sources that vary in importance depending on the country: national government budgets, external agencies and donors, employers (through insurance benefits) and contraceptive users themselves, through contributions to insurance coverage and out-of-pocket payments for services and supplies. We focus on cost estimation because information on actual expenditures and the breakdown by source of payment is not available.

Direct costs. Contraceptive commodity costs were estimated for each country on the basis of average unit costs incurred by donors, as documented in the Reproductive Health Interchange database.[67] Data were extracted for a three-year time period (January 2009–December 2011) to provide sufficient data and were used to calculate unit costs which were translated into country-specific costs for one year of method use.* These were adjusted to 2012 U.S. dollars.[68] Drugs required for male and female sterilization, in 2012 U.S. dollars, were based on the median cost cited in the current Management Sciences for Health's International Drug Price Indicator.[69] Costs for supplies such as gloves, syringes and sutures, in 2012 U.S. dollars, were taken from the current United Nations Children's Fund Supply Catalogue.[70] Data on salaries came from the World Health Organization CHOICE 2005 Database;[71] these cost data were adjusted to country-level values in 2012 U.S. dollars based on the GDP Price Deflator.[68]

Indirect costs. Indirect costs include program management, supervision, personnel training, health education, monitoring and evaluation, advocacy, strengthening of information systems and commodity supply systems, and maintenance and expansion of physical capacity for health facilities.[41] Updated estimates of indirect costs for sexual and reproductive services in the developing world are not available at this time.

We thought it was reasonable to assume that UNFPA's 2008 program and systems percentage (which is lower than its 2009 percentage) applies to cost estimates for the current year (2012). We chose to apply the higher 2009 indirect rates to the future scenario, to account for the cost of building capacity and improving services, necessary to fully meet the needs of all women who need modern contraception.

*Annual costs include the cost of each method for a one-year period of use. For permanent and long-acting methods, using annualized cost is equivalent to spreading the full method costs across average years of use. Over the long run, counting one-tenth of the total cost for 10 women relying on sterilization, for example, is the same as counting the full cost for one woman's sterilization if each year a new woman is sterilized to replace one who moves beyond 10 years of use.

APPENDIX TABLE 1. All countries in the developing world and the 69 poorest countries,* by region and subregion

Region, subregion and country	69 poorest
AFRICA	
Sub-Saharan Africa	
Eastern Africa	
Burundi	X
Comoros	X
Djibouti	X
Eritrea	X
Ethiopia	X
Kenya	X
Madagascar	X
Malawi	X
Mauritius	
Mozambique	X
Réunion†	
Rwanda	X
Somalia	X
Uganda	X
Tanzania	X
Zambia	X
Zimbabwe	X
Middle Africa	
Angola	
Cameroon	X
Central African Republic	X
Chad	X
Congo	X
Dem. Republic of the Congo	X
Equatorial Guinea	
Gabon	
Sao Tome and Principe	X
Southern Africa	
Botswana	
Lesotho	X
Namibia	
South Africa	
Swaziland	
Western Africa	
Benin	X
Burkina Faso	X
Cape Verde‡	
Côte d'Ivoire	X
Gambia	X
Ghana	X
Guinea	X
Guinea-Bissau	X
Liberia	X
Mali	X
Mauritania	X
Niger	X
Nigeria	X
Senegal	X
Sierra Leone	X
Togo	X
Northern Africa	
Algeria	
Egypt	X
Libya	
Morocco	
South Sudan	X
Sudan	X
Tunisia	
Western Sahara	X

Region, subregion and country	69 poorest
ASIA	
Eastern Asia	
China	
China, Hong Kong	
China, Macao	
North Korea	X
Mongolia	X
South Korea	
South Central Asia	
Central Asia	
Kazakhstan	
Kyrgyzstan	X
Tajikistan	X
Turkmenistan	
Uzbekistan	X
South Asia	
Afghanistan	X
Bangladesh	X
Bhutan	X
India	X
Iran	
Maldives	
Nepal	X
Pakistan	X
Sri Lanka	X
Southeast Asia	
Brunei Darussalam	
Cambodia	X
Indonesia	X
Laos	X
Malaysia	
Myanmar	X
Philippines	X
Singapore	
Thailand	
Timor-Leste	X
Vietnam	X
Western Asia	
Armenia	
Azerbaijan	
Bahrain	
Cyprus	
Georgia	
Iraq	X
Israel	
Jordan	
Kuwait	
Lebanon	
Palestinian Territory	X
Oman	
Qatar	
Saudi Arabia	
Syria	
Turkey	
United Arab Emirates	
Yemen	X

Region, subregion and country	69 poorest
LATIN AMERICA AND THE CARIBBEAN	
Caribbean	
Bahamas	
Barbados	
Cuba	
Dominican Republic	
Guadeloupe	
Haiti	X
Jamaica	
Martinique	
Netherlands Antilles	
Puerto Rico	
Saint Lucia	
Saint Vincent and the Grenadines	
Trinidad and Tobago	
U.S. Virgin Islands§	
Central America	
Belize	
Costa Rica	
El Salvador	
Guatemala	
Honduras	X
Mexico	
Nicaragua	X
Panama	
South America	
Argentina	
Bolivia	X
Brazil	
Chile	
Colombia	
Ecuador	
French Guiana**	
Guyana	
Paraguay	
Peru	
Suriname	
Uruguay	
Venezuela	
OCEANIA	
Fed. States of Micronesia††	
Fiji	
French Polynesia	
Guam	
New Caledonia	
Papua New Guinea	X
Samoa	
Solomon Islands	X
Tonga‡‡	
Vanuatu	

Notes: Sub-Saharan Africa includes all countries in Eastern, Middle, Southern and Western Africa, as well as Sudan and South Sudan. *Defined as having a per capita gross national income less than or equal to $2,500 in 2010. †Grouped with Mayotte and Seychelles for many calculations. ‡Grouped with Saint Helena for many of the calculations. §Grouped with Anguilla, Antigua and Barbuda, Aruba, British Virgin Islands, Cayman Islands, Dominica, Grenada, Montserrat, Saint Barthélemy, Saint Kitts and Nevis, Saint Martin (French part), and Turks and Caicos Islands for many of the calculations. **Grouped with Falkland Islands for many of the calculations. ††Grouped with Kirbati, Marshall Islands, Nauru, Northern Mariana Islands and Palau for many of the calculations. ‡‡Grouped with American Samoa, Cook Islands, Niue, Pitcairn, Tokelau, Tuvalu, and Wallis and Futuna Islands for many of the calculations. *Source:* references 14 and 15.

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