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ALLIANCE FOR REPRODUCTIVE, MATERNAL, AND NEWBORN HEALTH

# The case for investing in research to increase access to and use of contraception among adolescents

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## **About the Alliance for Reproductive, Maternal, and Newborn Health**

The Alliance for Reproductive, Maternal, and Newborn Health is a strategic partnership among four core international development organizations: the US Agency for International Development (USAID), the UK's Department for International Development (DFID), the Australian Department of Foreign Affairs and Trade (DFAT), and the Bill & Melinda Gates Foundation. Together, these partners are working collectively at both the global and country levels to ensure the most effective and efficient use of existing resources to accelerate progress in averting unintended pregnancies and reducing maternal and neonatal mortality.

## **About this document**

In December 2012, the Alliance co-hosted a donor meeting on research gaps in family planning, and a subgroup formed at the meeting identified the need for this business case analysis. The Alliance commissioned Drs. Margaret E. Greene and Thomas Merrick to author this report, which is available online at [www.path.org/publications/detail.php?i=2538](http://www.path.org/publications/detail.php?i=2538). The executive summary exists as a separate policy brief that was reviewed and edited under the direction of Judith Frye Helzner and Linda Sussman and that is available online at [www.path.org/publications/detail.php?i=2518](http://www.path.org/publications/detail.php?i=2518). Both the full report and the policy brief were produced with editorial and graphic design support from the Creative Partners for Programs team at PATH.

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# Executive summary

## Overview

Worldwide, more than 46,000 adolescent girls give birth each day. Childbirth in this age group is associated with many negative social and health outcomes, including elevated maternal and newborn death rates.

The health and well-being of adolescents and their future children is critical to the economic fortunes of developing countries. Early and closely spaced pregnancies contribute to school dropout and limit the economic opportunities of young people. A key strategy to expand those opportunities is to improve access to contraceptives and address the social and economic conditions that lead to early and closely spaced childbearing.

This document describes why governments and donors should invest now in research to help determine and implement the most effective and efficient ways to enable adolescents to access and use contraception. Growing evidence suggests that the long-term economic and health benefits of increasing contraceptive access will far outweigh the costs, and the costs of inaction are high.

## Cost and consequences of pregnancy and childbirth among adolescents

Worldwide, about 1 in 6 people is an adolescent. This equals 1.2 billion people between the ages of 10 and 19—comparable to the population of India.

Adolescents have specific needs that set them apart from children and adults. Research on how best to meet those needs with age-appropriate interventions is key to helping them realize their full potential as adults and to maximizing their future contributions to their families and communities.

Pregnancy and childbirth among adolescents are major global health concerns. Nearly 1 in 5 adolescent girls in developing countries becomes pregnant before age 18. Young women 15 to 19 years old give birth to 16 million children each year, and another million babies are born to girls under age 15. Childbirth at such an early age has many negative consequences for both mothers and their children:

- **Reduced earnings potential.** Women who were mothers at a very young age have lower rates of participation in the labor force, difficulty finding employment, and lower earnings. Their children typically have reduced earning potential. This can perpetuate the cycle of poverty from generation to generation.
- **Poor educational performance.** Both young mothers and their children tend to have fewer years of education and lower school performance.
- **Illness or death.** Adolescent girls are at increased risk of illness and death from complications of pregnancy and childbirth, and mortality rates are four times as high in poor countries as in rich countries. In addition, their children have increased risk of neonatal mortality (the younger the mother, the higher the mortality rate), malnutrition, and impaired cognitive ability.

As highlighted in a 2014 World Health Organization report on adolescent health, the world has made progress since 2000 in addressing adolescent pregnancy. For example, pregnancy rates have declined among adolescents in a number of countries. Also, deaths due to complications of pregnancy and childbirth among adolescents have dropped significantly during the past decade, particularly in regions where maternal mortality rates are highest, including Africa and Southeast Asia. Nevertheless, maternal mortality still ranks second among causes of death among older adolescent girls globally, and about 1 in 20 girls aged 15 to 19 currently gives birth each year—representing 11 percent of all births.

## Previous research on contraceptive use by adolescents

Most sexually active adolescent girls in developing countries do not use contraception. Recent data from several countries in sub-Saharan Africa show that only a third of unmarried, sexually active girls 15 to 19 years old are using contraception, with most of the others indicating an unmet need for methods to delay or space pregnancy. Among married adolescent girls 15 to 19 years old, unmet need for contraception has been estimated at 62 percent in Ghana, 57 percent in Haiti, and 42 percent in Nepal. The data clearly show a gap between the reproductive intentions of adolescent girls—whether married or unmarried—and their use of contraception.

Enabling the use of contraception can reduce the number of adolescent girls who become pregnant. This will not only improve the health and well-being of these young women and the children they may eventually have but also contribute to potential economic benefits (see text box).

## The case for additional research

Although we have evidence that helping adolescents delay and space pregnancy by increasing access to and use of contraception will lead to many health, social, and economic benefits, more research is needed to determine where, when, and how to intervene for the greatest impact at the lowest cost.

### **Growing evidence on economic benefits**

To justify increased investment in improving access to contraception among adolescents, policymakers and donors would like to have firm research data showing that each dollar invested leads to a specific amount of cost savings and increased productivity in a country. Much stronger research is needed, however, to build a solid economic case for investing in interventions. The studies highlighted below illustrate ongoing efforts to build the research base and are based on modeling assumptions that require further validation.

Several studies have estimated the economic benefits of increasing use of contraception among sexually active youth in developing countries. A World Bank study, for example, calculated that if all 200,000 adolescent mothers in Kenya had completed secondary school and were employed instead of having children so early, the cumulative effect would be to add US\$3.4 billion to Kenya's gross income every year—an amount equivalent to the entire Kenyan construction sector. The same study noted that the lifetime opportunity cost related to adolescent pregnancy—measured by the young mother's forgone annual income over her lifetime—ranged from 1 percent of annual gross domestic product in China to 26 percent in Nigeria, 27 percent in Malawi, and 30 percent in Uganda.

A modeling exercise using data from Uganda suggested that this country could potentially save \$3 for every dollar it spends on family planning for adolescents, representing a combination of health costs saved and societal benefits, such as productivity increases. Also, the researchers estimated that it would cost only \$3.47 million annually to meet the country's unmet need for contraception among girls 15 to 19 years of age.

Reasons for governments and donors to invest in research and evaluation concerning the use of contraception by adolescents include:

- **Making the money count.** There are important gaps in the evidence on what works, what does not, and why. By knowing the most effective and efficient approaches to avoiding unintended pregnancy among adolescents, we can strategically direct limited resources and maximize the return on investment—choosing to monitor, scale up, and learn from proven approaches rather than repeating programs that do not work well. By enabling targeted investment, this research will contribute to health and economic benefits.
- **Supporting global health priorities and adolescents’ rights.** Nations have committed to expanding access to contraceptives as part of their work to address global health priorities, such as those announced as part of Millennium Development Goal 5 in 2000 and at the 2012 London Summit on Family Planning and through the resulting FP2020 global partnership (see [www.familyplanning2020.org](http://www.familyplanning2020.org)). Greater attention to adolescents—a group that has long been ignored—will help the international community and individual nations meet goals for health and development. It will also address the long-standing neglect of adolescents’ rights and help adolescents reach their full potential as adults.
- **Recognizing the unique, crucial role of governments and donors.** The research and subsequent interventions will have broad benefits for adolescents, children, families, communities, and nations. Governments and donors (including private foundations) are the most capable and appropriate agents to invest in generating the evidence needed to contribute to these societal impacts.

## Specific research needs

Although existing data vividly demonstrate the consequences of lack of contraceptive use among adolescents, little is known about what makes program and policy interventions successful and, therefore, what recommendations will best serve governments and donors interested in helping adolescents meet their contraceptive needs. To develop the most informed approaches, research investments should consider the following:

- **Segmenting the market of adolescents.** Adolescents are an extremely diverse group, and research must reflect this diversity to ensure interventions effectively address a variety of economic and social factors. Systematic data are needed on unmarried girls, including those under age 15; on young married couples who may feel pressured to have children; on adolescent mothers who want to delay subsequent births after the birth of their first child; on boys and their role in preventing unintended pregnancy; and on the link between poverty and contraceptive access. Research must also account for regional differences and for institutional contexts and requirements.
- **Delving more deeply into promising interventions.** Previous research has provided evidence on which interventions are working well and which ones are not. For example, cash transfers and other financial incentives have proved effective in motivating positive reproductive health behaviors in a variety of settings and warrant more attention. Some abstinence-only programs have actually resulted in an increased risk of pregnancy. Research is needed to better understand the effectiveness of interventions, including how faithfully the implementation followed the original plans, the capacity of the staff, and the challenges in the particular setting. Flexible, sufficient funding for implementation research enables the use of data for ongoing monitoring and program adjustments.

- **Facilitating the translation of research into programs.** Interventions that prove successful still need strong policies and systems to put them into action. Research is needed to understand the factors that promote or inhibit scale-up of successful pilot programs, to develop indicators assessing achievement of policy commitments, and to better calculate the costs and benefits of investing in programs to meet adolescents' contraceptive needs. Knowing what does not work and avoiding wasted resources is also critical. For example, although recent research found multiple studies demonstrating that services delivered through multipurpose youth centers are neither effective nor cost-effective, this conclusion is not well known, and such centers continue to be funded. Existing research findings, both positive and negative, need to be used to inform decision-making while additional program research is carried out.

## The case for investing now

Worldwide, nearly 2,000 adolescent girls give birth every hour, with adverse health consequences for both the young mothers and their children. The more we invest in research to increase access to and use of contraception, the better we can help to reduce maternal and neonatal deaths and other adverse health and social effects associated with early and closely spaced childbearing.

In addition, as fertility rates fall around the world, countries have the potential to experience rapid economic growth provided that their burgeoning youth populations are educated and employed. Early childbearing undermines countries' investments in education and labor force expansion and reduces their potential to realize the promise of this "demographic dividend," as recently highlighted in the United Nations Population Fund's *State of World Population 2014*.

By investing in research and in programs proven to be effective to facilitate informed choice and increase use of contraception, governments and donors can pave the way for a brighter future for young people, their children, and their communities. Growing evidence suggests that the benefits of investment outweigh the costs. The time to invest is now.

# Introduction

## The problem

Most developing countries are in some stage of transition from high to low fertility. This transition creates a bulge in the youth population as the large number of people born during a period of high fertility are followed by smaller cohorts.

This youth bulge creates both challenges and opportunities for developing countries. If these young adults can be adequately educated and then employed, countries may experience a demographic dividend in the form of higher productivity and economic growth. As these young people mature into adulthood, their productivity will support both younger and older generations (Bloom et al 2002).

One driver of the demographic dividend is increased participation of women in the paid economy. Early marriage and early childbearing, however, can undermine or even erase this dividend through their detrimental effects on the health, education, and earning potential of young mothers and their children.

Recent research has enhanced our understanding of the negative effects of early pregnancy and childbearing on the lives of young women. Although in some places early pregnancy may be desirable as a means to confer status and confirm a young woman's fertility, the available research makes it clear that early pregnancy and childbearing are a hindrance to girls and a lasting handicap to their children. Much less is known about the impact of early or unintended parenthood on boys, but the limited evidence available indicates that effects are negative. These effects on the lives of young women and men sharpen the need to support their right to choose whether and when to have children.

Our knowledge of what is required to increase adolescents' access to and use of contraception has also expanded. This is complicated, however, by the fact that findings from intervention research always reflect the realities of the specific settings in which programs are implemented, making it more difficult to replicate successful programs elsewhere. Moreover, adolescent sexual and reproductive health among the unmarried is often a sensitive and highly politicized topic, creating opposition to interventions. Meanwhile, the needs of married adolescents are often overlooked or ignored. We see opposition to or neglect of contraceptive needs among adolescents in many settings, despite evidence on the needs of adolescents, the importance of investing in reducing unmet need, and experience with how best to make these investments.

Countries have a narrow window of opportunity to capitalize on the youth bulge. Without prompt investment to delay early pregnancy and childbearing, educate girls, and remove obstacles to girls' fuller participation in the economy, countries and their youth populations will suffer. We need a stronger evidence base on the costs and benefits of these investments at the country level to persuade governments and donors to support these vital interventions.

This document outlines an emerging roadmap for investment in research on access to and use of contraception among adolescents and the reasons why donors and governments should support this effort. It poses specific research questions that can contribute to the effort to decrease unmet need for contraception among adolescents, taking into account the geographic and demographic focus that



would best achieve the goals of Family Planning 2020 (FP2020), an international effort to provide contraceptive access to 120 million more women and girls by 2020.

Within the constraints imposed by the rather weak data on adolescents in general, on the unmarried, and on boys, this document focuses explicitly on issues influencing access to and use of contraceptives among adolescents, drawing on recent literature. The analysis reflects how gender inequality limits and shapes adolescent girls' access to contraception and explores the experiences of various adolescent populations in accessing contraception.

## Three related strands of inquiry

Making a case for investing in research on adolescents' access to and use of contraceptives requires three closely related strands of inquiry, which provide the foundation for this document:

- a. *A synthesis of existing social science research on the conditions faced by young people and the consequences of unmet need for contraception and of early childbearing for them and their children.* This research makes it possible to establish the potential impact of decreasing unmet need on adolescents, on the communities in which they live, and on society as a whole (for example, how reductions in unmet need might affect a country's chances of realizing its demographic dividend).

In 2010, the authors of this report conducted a comprehensive review of the microeconomic literature on the impact of poor reproductive health as measured in part by early, ill-timed, or unwanted pregnancy (Greene and Merrick 2010). We noted the growing body of evidence at the individual level on the connections between adolescents' sexual and reproductive health choices and their schooling, economic productivity, and children's lives. We have taken special care in this report to identify and include the sparse literature on the impact of early and unintended pregnancy on boys' and men's lives and to discuss unmet need and costs to more effectively take all of these factors into account. Our synthesis of research based on micro-data is supplemented with a look at some of the macro-level research, including research on the demographic dividend.

- b. *A review of intervention research to determine the effectiveness and costs of efforts to increase adolescents' access to and use of contraception, with a goal of identifying the most promising interventions for potential scale-up.* This review includes interventions on both the supply side (such as improved services for adolescents and actions in other sectors that affect supply) and the demand side (including behavior-change interventions, cash transfers, community mobilization, and advocacy). As with the social science review, it is important to take context into account in understanding the effectiveness of interventions, the strength of support systems for young mothers, and other resources that are available to young people, all of which vary by setting.
- c. *A case for investing in research that builds on these syntheses and develops a roadmap to guide further research.* The roadmap includes a conceptual framework for investment, indicates knowledge gaps, identifies key questions, and suggests appropriate analytical approaches for answering these questions. Together, these analyses make it possible to generate a case study that demonstrates the impact of investing to increase adolescent access to and use of contraception.

This report includes a case study of Uganda that explores in practical terms the implications of the literature that we already know: contraceptive information and services can contribute to economic growth and equity by keeping adolescents healthy and productive, facilitating their study and work,

allowing parents to achieve the family size they desire, and reducing public expenditures on education, health care, and other social services.

## Foundational data on adolescent marriage, fertility, and contraceptive use

The United Nations Population Fund's (UNFPA's) State of World Population (SOWP) report on early childbearing estimates that 19 percent of young women in developing countries become pregnant before they are 18 years old (UNFPA 2013). This adds up to 7.3 million girls under age 18 giving birth every year. (Note: The data are collected retrospectively by asking women 20 to 24 years old whether they had children at these earlier ages.)

An estimated 82 million girls currently 10 to 17 years of age will be married by the time they are 18. In a review of Demographic and Health Survey (DHS) Program data for 12 countries, Rani and Lule (2004) reported that in most countries young women from the poorest households are more likely than those from the richest to be married and have at least one child by age 18.

A background paper for the SOWP 2013 (Loaiza and Liang 2013) assembled data on marriage, fertility, and family planning for girls 15 to 19 by the main UNFPA regions. The percentages of those currently married ranged from 5 percent in East Asia and the Pacific to 28 percent in West and Central Africa. Averages for South Asia and sub-Saharan Africa were well above those for other regions. Adolescent birth rates were also higher for these two regions.

Table 1 shows the total demand in various regions between 1998 and 2011 for family planning among young women aged 15 to 19, which is the sum of actual contraceptive prevalence and unmet need for contraception. Unmet need is highest in Latin America and the Caribbean (LAC) and Eastern/Southern Africa, though the two regions show markedly different demand (much higher in LAC than in Africa).

**Table 1.** Distribution of young women 15 to 19 years old by marital status, adolescent birth rate, total demand for contraception, contraceptive prevalence, and unmet need for contraception, by region, 1998–2011.

UNFPA region	Girls aged 15–19			Total demand for contraception (%)	Contraceptive prevalence (%)	Unmet need for contraception (%)
	Currently married (%)	Single/other (%)	Adolescent birth rate			
Eastern Europe and Central Asia	8.7	91.3	31	46	31	15
Latin America and the Caribbean	12.0	88.0	84	77	51	26
Arab States	12.5	87.5	50	34	21	13
Asia and the Pacific	15.2	84.8	80	46	23	23
East Asia and the Pacific	5.0	95.0	50	53	38	15
South Asia	24.9	75.1	88	45	21	25
Sub-Saharan Africa	23.6	76.4	120	37	13	24
Eastern and Southern Africa	19.2	80.8	112	48	22	26
West and Central Africa	28.0	72.0	129	30	7	23
Developing countries	15.8	84.2	85	45	22	23
Source: Loaiza and Liang (2012) using UNFPA’s MDG5b+Info database with data from DHS and MICS studies ( <a href="http://www.devinfo.org/mdg5b">www.devinfo.org/mdg5b</a> ). Estimates for distribution of girls aged 15 to 19 by marital status are based on United Nations Population Division, 2010 and 2012.						

A recent analysis of contraceptive use among young women 15 to 24 years old analyzes the factors associated with unmet need and the levels and trends in the components of unmet need (age at marriage, fertility preferences, and use of contraception) (MacQuarrie 2014). The analysis shows that:

- Total demand for contraception is high, at about 90 percent in all regions. Also, there is great variation in the proportion of women whose demand for contraception is satisfied. This figure ranges from 52 percent in West and Central Africa to 84 percent in Eastern Europe.
- Unmet need is higher among unmarried young women than among their married peers, and it is highest in West and Central Africa, at around 40 percent. “By and large, unmarried, sexually active women age 15–24 simply do not want to become pregnant at the present time.... Demand has remained steady, and high, over time” (MacQuarrie 2014: 2).
- Very few young married women use contraception. Unmet need has declined among young married women in 51 of 61 countries for which data were analyzed, except in West and Central Africa, where six countries show an increase in unmet need. Among young married women, unmet need is highest among the youngest (aged 15 and 16) and declines with age in most places. It is higher in rural areas than in urban areas for both married and unmarried young women. The disadvantage conferred by rural residence is most intense in Africa and Latin America and the Caribbean. Unmarried *urban* youth face the greatest disadvantage in Eastern Europe.
- Unmet need increases sharply with parity, with the largest differences observed between childless young women and those with one child.

The total number of young women with an unmet need for contraception is high: an estimated 33 million women ages 15 to 24 in 61 study countries. Nearly two-thirds (21 million) live in one of the ten

Asian countries in the study (Bangladesh, Cambodia, India, Indonesia, Maldives, Nepal, Pakistan, Philippines, Timor-Leste, and Vietnam) (MacQuarrie 2014).

A recent analysis of the association between girls' socio-economic characteristics on adolescent childbearing showed that adolescent birth rates were much higher for those in the lowest wealth quintiles, those who were least educated, and those who were rural residents (Loaiza and Liang 2013: 22). When the researchers compared surveys completed during the past decade, the socio-economic differentials persisted and in some instances actually widened over time.

Blanc and Way (1998) reported a widening gap between age at first intercourse and age at marriage, both of which rose during the 1990s. They noted that contraceptive use among sexually active, unmarried adolescents was higher in sub-Saharan Africa than in Latin America and the Caribbean. Because of country-by-country variation in these patterns, they recommend country-level analyses of patterns of exposure to pregnancy risk by age. In a review of data for more than 40 countries, Blanc and colleagues (2009) found substantial levels of sexual activity and contraceptive use among unmarried adolescent girls in developing countries and noted an upward shift that was greater for sexual activity than for contraceptive use. They also found that in many countries the proportion of unmarried, sexually active women was rising. When they compared data for 15 to 19 year-olds to those for women 20 to 49, they found that contraceptive use was lower (though increasing) for younger women and that contraceptive failure and discontinuation rates were consistently higher for the younger women across a broad range of countries for which data were available.

## The importance of developing a business case for research on adolescent access to and use of contraception

Investing in research on access to and use of contraceptives by adolescents is crucial for a number of reasons:

- **Programs and policies should be based on solid evidence of problems and what works to address them.** Strong evidence on interventions in various settings is needed to guide investments in programs.
- **Solid research is essential for disseminating what has worked and what has not across diverse cultural settings.** The social determinants of early pregnancy, childbearing, and contraceptive use are specific to each culture and context. Research needs to be conducted in a broader range of settings to ensure the appropriate adaptation of models to the specific circumstances of diverse populations of adolescents. Rigorous studies of programs to increase adolescent access to contraception are needed so the lessons learned can be applied in other settings, where relevant.
- **Adolescents are extremely diverse in terms of their age, marital status, place of residence, school status, and more.** Research findings, particularly about programs that successfully increase contraceptive access among adolescents, must be adapted to reflect this diversity.
- **The underlying problem of gender inequality complicates our understanding of the problems and what to do about them in the arena of adolescent access to contraception.** The realities of gender inequality and its impact on adolescent access to and use of contraception introduce a broader social dimension into the analysis of research needs.

- **Strong evidence can overcome the politics surrounding contraceptive access and use among adolescents.** Given the virtually universal discomfort with adolescent sexual activity and the precise ways in which it is managed, the evidence must always be relevant to cultural settings, targeted to specific activities and populations, and recent. Divergence from these requirements could provide an excuse to discount the evidence on adolescent access to contraception.
- **Strong research and detailed evidence are needed to successfully scale up any intervention.** This evidence can guide decisions around the inclusion of specific programmatic activities, how activities are tailored to specific populations, in what sequences they are offered, and so on. In short, the intervention research required to justify the short-term costs of scale-up needs to be rock solid and very detailed.

Failure to meet the sexual and reproductive health needs of the largest-ever generation of adolescents will have lasting negative effects. As a recent analysis by the World Health Organization (2014) highlights, health events during adolescence have an impact throughout one's life.

Although existing research provides a view into contraceptive needs among adolescents, this picture is incomplete. Surveys in many countries do not include unmarried adolescents, the youngest adolescents are not surveyed, and virtually no surveys include adolescent boys. As both the proportions and absolute numbers of adolescents in developing countries continue to increase, changing patterns of sexual initiation, contraceptive use and unmet need for contraception in this age group have taken on increased importance as policy and program issues but are less well understood.

## Cost and consequences of pregnancy and childbirth among adolescents

Recent research has enhanced our understanding of the negative effects of adolescent childbearing on girls' health, schooling, and long-term earning potential. In addition, this evidence sharpens our understanding of the negative effects on the health and development of children born to adolescent girls. The methodological limitations that plagued earlier studies are increasingly being addressed in creative ways by more recent research. Taken as a whole, the research makes it clear that early pregnancy and childbearing harm adolescent girls' health and well-being and create a lasting handicap for their children (see Table A1 in Annex 1 for a summary of the related literature).

Early pregnancy and childbearing are widespread in poor countries and are likely to be both causes and effects of poverty. Lloyd (2005) identified a number ways in which these linkages are manifested:

- Poor health outcomes for the young mother and her child. Challenges include a higher risk of obstetric complications (leading to higher maternal morbidity and mortality), increased risk of abortion and abortion complications (if the abortion is unsafe), low birth weight, and other health problems for newborns.
- Poor educational outcomes for both the mother and her child. Young mothers are more likely to drop out of school, and their children tend to have fewer years of schooling.
- Reduced or altered consumption patterns among the mother's immediate and extended family for rearing the child.

- Lower labor force participation by the young mother, with less opportunity to contribute to household income.
- Reduced acquisition of social capital through reduced community participation and greater chances of divorce or single parenthood.

Most research on the consequences of early childbearing has focused on unmarried girls. In regions where early marriage is prevalent, many of the socioeconomic consequences of early childbearing are coupled with the effects of early marriage, and one finds the evidence on these impacts in the literature on early marriage rather than on early childbearing. This might explain why we found more research on the impact of early childbearing in Latin America, where girls marry later, than in Asia and Africa. A WHO–UNFPA–Population Council report (Haberland et al. 2004) on the consequences of early marriage noted that married girls consistently have less opportunity for education; less household and economic power than older married women; less exposure to modern media and social networks; greater risk of gender-based violence; and greater health risks, particularly when they are poor, exposed to HIV, or having their first child at a young age.

In assessing the evidence on the consequences of early childbearing in developing countries, we focus on three key questions to explore the effects for both girls and boys:

- What are the implications of adolescent girls’ early sexual activity and childbearing for the health of the girls and their children?
- How do girls’ early sexual activity and childbearing affect their schooling and employment prospects and household well-being?
- What do we know about the impact of early, unintended, and unwanted pregnancy on the lives of boys?

Whatever the perceived benefits of early childbearing for girls (and boys), the literature consistently conveys the negative consequences for girls.

## What are the implications of adolescent girls’ early sexual activity and childbearing for the health of the girls and their children?

Early sexual activity can expose girls to coercion, sexually transmitted infections, HIV/AIDS, and unintended and unwanted pregnancy. The conditions of sex reflect gender norms and inequalities, and coercion occurs often in girls’ early sexual relations. Early childbearing is associated with a higher risk of obstetric complications, which can negatively affect the mother’s health in the long run. Where families need to pay for expensive medical care for labor and delivery, the debts they incur can destabilize the household for years.

Zabin and Kiragu (1998: 218) summed up the varied effects of early childbearing on girls’ health and reproductive lives:

Evidence suggests that the health of a young woman who begins motherhood early is placed in jeopardy as the result of factors [such as] her developmental status, her subservient position in society, customs that affect and control her, and her inability to secure adequate prenatal and obstetrical services when she needs them most. In the long run, her situation is aggravated because,

by encountering these health complications early in her reproductive life, the young woman must endure their repercussions over a longer period of time. To the extent that they compromise her ability to rear her children, carry out her daily activities, or continue her education, these problems have profound effects on her family and on the society as a whole.

Children born to very young mothers are themselves vulnerable to health risks. They may weigh less at birth, suffer from poorer health, and face higher rates of mortality throughout childhood and beyond. These children may experience stunting, which can lead to poorer school performance, increase their chances of living in poverty, and even potentially reduce the reproductive capacity of the younger generation. An early start on childbearing also leads to higher lifetime fertility, which itself has long-term effects on the health of household members and on household consumption. A higher household dependency ratio—with more children per adult of working age—can contribute to household poverty.

Maternal health effects: Adolescent mothers aged 15 to 19 are more likely than older mothers to die in childbirth, and very young mothers (aged 14 and under) are at the highest risk (WHO 2006; Jejeebhoy 1998 [for India]). The risk of maternal death during childbirth is two to four times higher for adolescents under age 18 than for women over age 20. Overall maternal mortality rates for adolescents are four times higher in low-income countries than in high-income countries, a difference that is even greater for young women in Africa and South Asia. Maternal mortality is the leading cause of death in low-income countries, followed by suicide, fire, HIV/AIDS and tuberculosis (Patton et al. 2009).

Although a recent study published in *The Lancet* (Nove 2014) indicates that earlier studies may have overstated maternal mortality among adolescents, maternal mortality remains significantly higher among adolescents than among women in their twenties.

One reason for high adolescent maternal mortality in many countries is that young women are less likely to benefit from maternal health care. Research has shown that adolescents below age 19 are significantly less likely to receive skilled antenatal and delivery care and more likely to experience further health problems as a consequence of complications of pregnancy, labor, and delivery (Best 2000). Comparative data on nearly 100,000 births in 15 developing countries showed significantly less use of prenatal and delivery care with a skilled provider among adolescents under age 17 compared to women 19 to 23 years old (Reynolds et al. 2006).

For every young woman who dies in childbirth, WHO estimates that 30 to 50 others are left with an injury, infection, or disease (WHO 2006). Various organizations working to reduce maternal morbidity have conservatively estimated that more than 2 million young women in sub-Saharan Africa and Asia live with untreated obstetric fistula resulting from poorly managed obstructed labor, with an estimated 50,000 to 100,000 new women affected each year (UNFPA 2002). Young age and poor nutrition increase the risk of obstructed labor, and poverty, poor medical care, and residence in a remote area increase the risks of poor outcomes (Upadhyay and Robey 1999).

WHO estimates that 30 to 60 percent of adolescent pregnancies in developing countries end in abortion and that each year at least 2 million young women in these countries undergo unsafe abortions, with consequences such as cervical tearing, perforated uterus, hemorrhage, chronic pelvic infection, infertility, and death (WHO 2004, 2006).

**Child health effects:** A large body of literature documents the increased risk of neonatal and post-neonatal mortality for children of young mothers, who are more likely to have low-birth-weight babies. These risks are explained partially by differences in socioeconomic factors for younger vs. older mothers (including the stigma associated with premarital pregnancy and its effect on access to support) and by a higher incidence of preterm deliveries, low birth weight, and small size of newborns for gestational age (Zabin and Kiragu 1998, Sharma et al. 2008, Phipps et al. 2002, Scholl et al. 1990).

The poor nutrition and health of adolescent mothers and their babies contribute to the intergenerational transmission of poor health. Temin and Levine (2009) have noted that adolescent girls who are stunted due to malnutrition during childhood are more likely to have low-birth-weight and less healthy babies and that anemia in young mothers increases the risks of miscarriage, prematurity, and other maternal and child health problems. In addition, young mothers make less use of health services for themselves and their babies. A review of survey data found that very young mothers were less likely to use antenatal and delivery care and were less likely to have their babies immunized than were women aged 19 to 23 years in several of the 15 countries analyzed (Reynolds et al. 2006). The review called for closer examination of specific country contexts to explain why adolescent mothers were more or less likely to access essential services.

**Reproductive impacts after adolescence:** An adolescent girl who has one early pregnancy is more likely to have subsequent unintended, unwanted, or closely spaced pregnancies. Research on early childbearing in Latin America showed that younger adolescent mothers have shorter intervals until their next pregnancy and have more future births than older adolescent mothers (Buvinic 1998; see also Bumpass et al. 1978, Millman and Hendershot 1980).

**Gender-based violence:** Young women are more likely than older women to experience physical abuse during pregnancy (Parker et al. 1994). WHO data show that between 14 and 50 percent of partnered adolescents reported at least one act of physical or sexual violence by a partner in the past year and that a total of 150 million girls under 18 experienced forced sex or other forms of sexual violence in 2002 (cited in Temin and Levine 2009: 32–33). The power imbalances associated with age differences with spouses place girls who marry early at greater risk of violence from their partner, fueling intergenerational cycles of poverty and gender discrimination (Temin and Levine 2009: 21).

**HIV/AIDS and STIs:** Young women are at two to four times greater risk of HIV infection than are young men of the same age. This disparity is related to physiological, social, and cultural factors (Blanc et al. 2005). Young women account for the largest share of new infections in Africa and other regions. In many settings, girls are at higher risk because they have older partners, often their husbands (Dehne and Reidner 2005: 1).

Teenagers with early sexual debut are more likely to experience nonconsensual sex, more likely to have sex with high-risk partners or multiple partners, and less likely to use barrier methods of contraception that protect against STIs and pregnancy (Best 2000: 4). The link to gender inequality and gender-based violence is clear. In South Africa, girls in communities with greater sexual violence were more likely to be HIV-positive and were less likely to have used a condom at their most recent sexual encounter (Speizer et al. 2009: 431).



## How do girls' early sexual activity and childbearing affect their schooling, employment prospects, and household well-being?

The risks associated with early childbearing go far beyond health. For many girls in developing countries, well-being is compromised by poverty and gender inequality, as manifested by poor education, violence and abuse, unsafe working conditions, limited access to health care, and early marriage (Temin and Levine 2009: 2). Given this context, we find a range of adverse outcomes resulting from early sexual activity, early pregnancy, and early childbearing.

Conversely, an analysis of Demographic Health Survey data has shown that increased educational attainment in sub-Saharan Africa has contributed to a decline in early marriage (Mensch et al. 2005) and that girls who are enrolled in school are less likely than those of the same age who are not enrolled to engage in premarital sex (Blanc et al. 2005). Perhaps one reason the rate of premarital sex has not increased in more countries in the region is that the level of schooling among girls has risen.

Earlier research by the authors (Greene and Merrick, 2005 and 2010) documented evidence on linkages between poor reproductive health outcomes, including early childbearing, and household poverty. A large volume of high-quality research on these intersections has emerged.

Branson et al. (2009a), for example, examined the impact of early childbearing on child outcomes in South Africa. They addressed widely invoked criticisms of research on the impact of adolescent childbearing—omitted variables and selection bias—by carefully constructing a logically similar comparison group.<sup>1</sup> Using the characteristics of adolescent mothers before they gave birth, the authors created a counterfactual group of girls who were similar to the young mothers but gave birth *after* the age of 19. They found that the children of adolescent mothers were significantly more likely to be underweight and stunted, which had especially negative effects on the young mother's ability to continue with her schooling. The authors also pointed out the connections between poor childhood health and poor socioeconomic outcomes in adolescence and adulthood. They emphasized that adolescent childbearing has a strong effect on the future life courses of these children, via its impact on the educational attainment or health of the adolescent parent (Branson et al. 2009b).

**Education effects:** Early pregnancy may limit girls' educational and developmental opportunities as well as their future full participation in society. Young mothers face great challenges in continuing their schooling (in most cases being forced to drop out of school, with few educational alternatives), participating in the workforce, or securing employment and decent wages.

Girls' education offers returns not only for girls themselves but also for their future children, via smaller families, more investments in each child's health and education, and greater earning potential of better-educated girls—leading to breaks in the inter-generational transmission of poverty. Girls' education is a protective factor that helps girls to delay marriage and childbearing, with expanded opportunities for the development of their full potential as citizens and economic agents. School may be the only place where girls can meet women in the workplace and learn that existing gender roles and competencies are changeable (Mensch and Bruce 1998: 167).

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<sup>1</sup> Another methodologically important paper is the recent multi-method analysis on the United States by Kane et al (2013). They find that early childbearing has clear negative effects on schooling and speculate that “variable statistical methods are the likely source of inconsistency in the past.”

Buvinic et al. (2007) observed variations across four countries in the strength of the associations between sexual initiation, adolescent childbearing, and leaving school. Their findings suggest that many contextual factors, including differences in school systems as well as differences in the social meaning and consequences of having premarital sex, could be important in explaining differences across countries.

Most of the evidence on links between childbearing and schooling focuses on the effects of family size and composition on enrollment and completion rates rather than on early childbearing alone. Some studies report that pregnancy contributes to girls' dropping out of school, particularly at the secondary level, but as Eloundou-Enyegue (2004b) reports, secondary school dropouts attributed to pregnancy range between 10 and 20 percent for most countries and are above that for only a few countries. In her 1998 review, Gage was unable to find any studies for sub-Saharan Africa that sorted out the causal relationships between family background, educational attainment, and adolescent pregnancy along the lines of the research that has been done in the United States (Gage 1998: 126).

In many countries, increased educational participation has exposed girls to sexual advances by male teachers, fellow students, and people in the community, including people girls encounter on their way to and from school, putting them at greater risk of becoming pregnant or being infected with a sexually transmitted disease or HIV. However, Mensch and colleagues (2001) found that pregnancy was not the leading reason for dropping out of school (compared to lack of money, poor grades, and other demands placed on them). Yet the cumulative effect of exposure to pregnancy risk over several years and the difficulties girls face in returning to school after a pregnancy increase its negative impact on educational attainment (Meekers 1994, Meekers and Ahmed 1999). Fostering arrangements, which play an important role in the relationship between care for young children and girls' education, may mitigate some of the adverse effects of pregnancy for adolescent mothers who have access to this kind of support system (see Shapiro and Tambashe 2001). Close mentoring with a variety of clinic- and community-based supports has also been shown to improve young first-time mothers' chances of avoiding a next pregnancy and of staying in school (in Jamaica, for example, see Drayton et al. 2000).

Eloundou-Enyegue's analysis of the implications of reducing early fertility for girls' schooling explores the idea that policies to reduce unmet need and thereby unintended pregnancy can have secondary benefits on other development goals. Specifically, he estimates the gender gap in educational attainment as a function of the rate of pregnancy-related dropouts. This enables him to discuss whether fertility reduction policies might contribute to boosting girls' education—and reduce gender inequities in education. He notes that countries have small budgets to spend on large and growing school-aged populations. "Such budget shortfalls put a premium on policy efficiency and warrant a search for indirect policies such as family planning that may improve education outcomes" (Eloundou-Enyegue 2004a: 3).

Building on the findings of Greene and Merrick (2005), researchers at the Center for Global Development compiled an assessment of more recent micro-level research on the impact of adolescent pregnancy on school continuation/dropping out (McQueston et al. 2012). Other than studies based on the Cape Town longitudinal survey in South Africa (Branson et al. 2009a—noted above, and Ranchhod et al. 2011), they found very little research that could support the finding of a causal link between adolescent pregnancy and performance in school. A number of studies found a strong association but without establishing causal links between pregnancy and school performance, leaving us with a mixed picture.

**Earnings, well-being, and life options effects:** Research in Mexico by Buvinic (1998) suggests that early childbearing is associated with negative economic effects, lower monthly earnings for mothers, and lower child nutritional status *among the poor* and not among women who are not poor. She controlled for child's age and mother's socioeconomic level and found the nutritional status of children of adolescent mothers was significantly worse than that of children of older mothers. Among poor adolescent mothers only, education and contributions to household income were associated with improved child health. She concludes that "social policy that expands the educational and income-earning opportunities of poor women could help to contain the intergenerational poverty associated with early childbearing among the poor" (Buvinic 1998: 201). A final important finding of this research in Mexico was the large socioeconomic disadvantage conferred to young mothers who had their first child with biological fathers who were 17 years old or younger rather than with older men (Buvinic 1998: 206), a reflection of the father's ability to support the woman and child.

Buvinic finds that among poor women, even controlling for education, adolescent childbearing is associated with lower earnings. "Poor adolescent mothers seem to work more and earn less than other mothers" (Buvinic 1998: 208). The adult mothers with whom adolescent mothers were compared tend to earn more than younger (less experienced) workers. Still, she concludes, "The Chile study suggests that early childbearing and closely associated factors can have important economic costs, in terms of lower monthly earnings, especially for poor mothers who need those earnings most. Early childbearing seems to entrench women's poverty" (Buvinic 1998: 206).

Household well-being can be affected directly by the costs incurred by early pregnancy. An analysis of abortion in Uganda, for example, found that many unsafe abortions require costly post-abortion care (Sundaram et al. 2013). Adolescents are more likely than adult women to have sought out induced abortions, and they were more likely to have paid more for those services. They are more likely to report more negative effects of spending on abortion for the nutrition and care of their children.

**Aggregate financial and health system effects:** The effects of early pregnancy on adolescents' households have cumulative effects on health systems and economies. To justify increased investment in improving access to contraception among adolescents, policymakers and donors would like to have firm research data showing that each dollar invested leads to a specific amount of cost savings and increased productivity in a country. Much stronger research is needed, however, to build a solid economic case for investing in interventions. The studies highlighted below illustrate ongoing efforts to build the research base and are based on modeling assumptions that require further validation.

A recent World Bank study (Chaaban and Cunningham 2012) employed methodology developed by Maynard and Hoffman for the United States (2008) to measure the lifetime opportunity costs resulting from an adolescent pregnancy in developing countries: "The lifetime opportunity cost related to adolescent pregnancy—measured by the young mother's foregone annual income over her lifetime—ranges from 1 percent of annual GDP in China to 30 percent of annual GDP in Uganda. Malawi and Nigeria also have very high costs, equal to 27 percent and 26 percent of GDP." The dollar amount of the lifetime loss is actually higher in China than in Uganda, Malawi, and Nigeria but represents a lower percentage of overall GDP. The study goes on to calculate the overall economic cost to society related to early childbearing: "Imagine that all 1.6 million adolescent girls in Kenya completed secondary school and that the 220,098 adolescent mothers were employed instead of falling pregnant so early. The cumulative effect could have added US\$3.4 billion [to] Kenya's gross income every year. This is equivalent to the entire Kenyan construction sector."

In Ethiopia, researchers from Ipas and the Guttmacher Institute (Vlassoff et al. 2012) estimated the costs to the health system of providing post-abortion care and found that the annual direct cost nationally ranged from US\$6.5 to \$8.9 million. They concluded that “investing more resources in family planning programs to prevent unwanted pregnancies would be cost-beneficial to the health system”; this result would be enhanced with regard to adolescents, given the significant proportion of unsafe abortions that occur among this age group and the costs of unwanted pregnancies in the lives of adolescent girls (Sundaram et al. 2013).

Although the details of the scientific literature from wealthy countries on the costs of early, unintended pregnancy and the savings associated with reducing unmet need are sometimes of limited application in developing countries, the overall principles apply. Unintended pregnancies in the United States represent a substantial annual cost to taxpayers, ranging from \$9.6 to \$12.6 billion; the estimated savings that would accrue to taxpayers from preventing these pregnancies range from \$4.7 to \$6.2 billion, *not taking into account a number of the public and private costs beyond medical care associated with unintended pregnancy* (Monea and Thomas 2011). Another estimate of the public-sector savings (\$4.3 billion) further notes that in the United States “for every \$1 spent [on family planning], \$4.02 is saved” (Frost et al. 2008).

Countries transitioning to lower fertility may benefit from the so-called “demographic dividend”—including more rapid economic growth—provided that they educate and employ their youth population during the transition. Early marriage and childbearing undermines the potential for countries to realize this dividend. Researchers have contrasted the experiences of East Asia and Latin America to demonstrate why East Asia enjoyed a much larger dividend (Jimenez and Murthi 2006). Achieving maximum benefit during the demographic transition hinges upon ensuring an educated, healthy generation of young people poised to contribute maximally to labor force productivity. Reducing rates of early childbearing brings demographic and economic benefits at the country level. Ensuring adolescent contraceptive information and access is part of ensuring investments in girls’ health, education, labor force participation, and household well-being. In countries where overall fertility is declining, early childbearing prolongs the period during which population momentum continues to expand those countries’ populations before growth levels off.

Researchers at the Guttmacher Institute provide periodic summaries of the financial costs and benefits of family planning programs at the global level (Singh and Darroch 2012), and the Futures Group has developed a model to demonstrate the relative costs and benefits of eliminating the unmet need for contraception: <http://www.healthpolicyinitiative.com/index.cfm?ID=publications&get=search>. While neither the Guttmacher Institute nor the Futures Group focus specifically on unmet need for contraception among adolescents, we know that the adolescent share of the total is significant, so it would be very useful to have adolescent-specific estimates along these lines similar to what has been done for the United States and in the World Bank study described above.

## What do we know about the impact of early, unintended, and unwanted pregnancy on the lives of boys?

The answer to this question is, in a nutshell, “not that much.” What we do know draws on research in wealthy countries, from which useful principles emerge. In their extensive review of the social and

economic benefits of American women's ability to determine whether and when to have children, Sonfield et al. (2013) dedicate one paragraph to the impact of contraceptive use on men's education, reflecting the paucity of data on this subject. They cite a historical study of the impact of the contraceptive pill by Hock (2008), who found that young women's use of the pill appears to have increased the likelihood that their *partners* would complete college by about 2.5 percent.

The impact of avoiding or delaying early pregnancy on young men's *physical* health is insignificant. However, delaying and preventing unintended pregnancies and births has an impact on their schooling and employment opportunities and timing. Where a man is obliged to take responsibility for a woman's pregnancy, he may be obliged to leave school to work and support the woman. A responsible father may have to give up opportunities for lucrative employment, accept jobs that are less than ideal, and give up opportunities for career growth and development. At the same time, however, young men, like young women, may derive a number of perceived social benefits from pregnancy and childbearing in the demonstration of their sexual prowess and fertility.

Outside or within marriage, an unintended pregnancy can have an effect on the mental health of both parents, particularly when partners differ in their commitment toward a pregnancy (Leathers and Kelley 2000, Montgomery 1996). Evidence from the United States indicates that disagreement between the parents about whether a pregnancy was intended can affect the health of the infant (Korenman et al. 2002). Research among adults also indicates that the incidence of physical abuse, depression, and other mental health problems is higher among those who experience unintended pregnancies than among those whose pregnancies are intended.

Unintended and unwanted pregnancies can also have intergenerational consequences, particularly for young boys. Evidence from the United States suggests that unwanted pregnancies are often associated with higher levels of marital dissolution, lower household incomes, and a variety of negative psychosocial effects on child development (McLanahan and Sandefur 1994). Evidence from the United States further suggests that a reduction in the number of unwanted births due to stronger abortion laws had a large effect on levels of crime two decades later. Specifically, a 50 percent increase in the ratio of abortions (a good proxy for unwanted births) to live births was associated with an 11 percent decrease in violent crime, 12 percent decrease in murder, and an 8 percent decrease in property crime (Donohue and Levitt 2001).

Three important studies of adolescent fathers using longitudinal data from the United States are very informative. The first, by Fletcher and Wolfe (2011), found that adolescent fatherhood leads to fewer years of schooling and reduces the likelihood that a young man will receive a high school diploma, while increasing the chances he will earn a GED. Adolescent fatherhood also increases early marriage and cohabitation and increases full-time and military employment, but this labor does not translate into short-term increases in income.

These results suggest then that teenage fatherhood likely decreases human capital of the young fathers through the redirection to the military, and experience in the workforce may somewhat counter that influence in the short term. Nevertheless, because this evidence does suggest a longer-term reduction in human capital, these fathers may yet experience longer-term earnings and income differences as they age. Future data collection efforts will be needed to fully characterize these dynamics. Further, this reduction in human capital may also limit opportunities for the child(ren) born to these teenagers and reduce the human capital to the nation as a whole (Fletcher and Wolfe 2011).

Two studies have compared the relative impact of adolescent parenthood on young men and young women. Covington et al. (2011) used the US National Longitudinal Survey of Youth to compare the “schooling penalty” among girls and among boys. They found that “teen mothers had a larger schooling penalty than teen fathers in the earlier cohort, but this difference appears to have diminished over time, with men in the NLSY97 cohort having a larger educational penalty than those from the NLSY79 cohort” (Covington et al. 2011). Basing her research on the US National Education Longitudinal Study, Mollborn (2010) showed the competition between schooling and work, particularly among young parents who were not living with two parents. She found that young men’s engagement as primary caregivers significantly increased their odds of graduating (7.4), and those working at least half-time were less likely to graduate (0.2). “Sixty-one percent of fathers who worked but were not primary caregivers were predicted to graduate by age 26, compared with 97% of those who were nonworking primary caregivers” (Mollborn 2010). These relationships did not hold among young mothers.

### **Research from the United States on adolescent childbearing**

Since the 1980s, adolescent childbearing in the United States has been considered a major social problem. The United States had the highest adolescent pregnancy rate among more developed countries. A National Research Council report titled *Risking the Future* concluded that “women who become parents as teenagers are at greater risk of social and economic disadvantage throughout their lives than those who delay childbearing” (Hayes 1987). By the 1990s, however, this view was being challenged by researchers who argued that earlier research on the consequences of adolescent childbearing was flawed and that the adverse consequences of adolescent childbearing were exaggerated.

The debate on adolescent childbearing in the United States has evolved considerably since Campbell made this sweeping statement in 1968: “When a 16 year old girl has a child... 90 percent of her life’s script is written for her.” In assessing findings drawn from the US National Longitudinal Survey (NLS) of youth, Hoffman (1998) concluded that the socio-economic conditions affecting the life-chances of adolescent mothers had changed substantially in the United States since the 1970s and 1980s, when the adolescents being studied were having their children. Welfare reform, for example, undermined the safety nets that enabled the NLS mothers to catch up with those who delayed childbearing.

In the updated edition of their landmark *Kids Having Kids* study, Hoffman and Maynard (2008) reported that most consequences for adolescent mothers are not monetary and are often not observable for several years following the birth of their first child. They also noted that the adverse consequences for the children of adolescent mothers include living in a single-parent and poorer-quality home, spending more time in child care, being more subject to abuse, and later on being more likely to be incarcerated. These consequences cost taxpayers and society enough to merit policy attention. The book also reviewed intervention research and reported mixed results. The authors recommended looking beyond specific interventions to a range of broader factors, including changing social norms and improved contraceptive services that have contributed to recent declines in adolescent childbearing.

## Summary of the literature on the consequences of early pregnancy and childbearing

The available evidence points to a number of conclusions on the consequences of adolescent pregnancy, childbearing, and unmet need for contraception.

Early childbearing has **numerous negative health consequences for adolescent mothers and their children**. Adolescent mothers are more likely to seek out abortion services and less likely to use prenatal and delivery services. Taken together, these factors contribute to higher mortality and morbidity among adolescents. In addition, children born to adolescent mothers are more likely to be underweight and stunted.

Early pregnancy and childbearing also have **negative effects on schooling**, and as schooling becomes more widespread, the impact of school withdrawal increases. The strong correlations between adolescent childbearing and schooling can be seen across a variety of studies, but the size of the effect varies considerably based on methodology and specific formulation of the research question. Also, contextual factors may mitigate the potentially adverse impact of early marriage and teen pregnancy on school attendance. Although caution is needed in drawing conclusions from the literature, the deleterious effect of early pregnancy and childbearing on schooling likely contributes to poverty among many women.

Early pregnancy and childbearing can also have **negative effects on household well-being**. Although the disadvantages of early parenthood may be transitory and young mothers may overcome them over time, the correlations are measurable and significant. Young women are painfully aware of the consequences of unintended or unwanted pregnancy, and they may incur significant expense to obtain abortions, with implications for their ability to care for their children. The nutritional status of the children of younger mothers is significantly poorer than that of older mothers, even controlling for age of child and socioeconomic status. There are lasting effects on the cognitive ability, test results, and self-esteem of children who are born to adolescent mothers.

Estimates suggest that the lifetime opportunity cost related to adolescent pregnancy (measured as the mother's foregone annual income over her lifetime) can range up to 30 percent of annual gross domestic product. These findings are supported by high-quality studies in the United States showing that early unintended pregnancy is associated with depression and poor mental health; marital conflict, instability, and divorce; and reduced school completion and disadvantage in the labor market. Though the correlations are clear, the causal links are sometimes difficult to establish because research on the effects of adolescent childbearing in poor countries is so limited.

We know little about the **effects on the lives and well-being of adolescent fathers** and their children, but we know enough to see the clear, expected pattern. Data from longitudinal surveys in the United States show some adverse effects for the young fathers of children born to teen mothers. Some research shows that adolescent fatherhood leads to fewer years of schooling and employment choices that do not lead to increases in income over the short term. Some schooling penalty of early parenthood can be measured over time for young men. Although longitudinal surveys are less available in developing countries, they have been a valuable resource in countries such as South Africa and Malawi and should be a focus of research investment.

Evidence from the United States of the **impact on government** spending suggests major cost savings to government by making contraception readily available, accessible, and affordable to girls and women. Effects on government spending have been estimated for the United States using simulation models that could be adapted for developing-country use.

## Previous research on interventions to increase access to and use of contraception

This section reviews existing evidence on programs that might be feasibly scaled up as well as where and with which populations it is best to focus interventions to increase contraceptive use among adolescents. Our analysis takes into account gender inequality and other socio-cultural factors that influence access to and use of contraception. Although this review draws primarily on experiences and research from developing countries, it also incorporates good practices from developed countries that are transferable. Rather than providing a complete inventory of evaluated programs, this section outlines some of the strongest evidence on interventions to enhance adolescent access to and use of contraceptives, with the goal of identifying key research questions.

As UNFPA's 2013 State of World Population (SOWP) noted, "adolescent pregnancy is the result of diverse societal, economic and other forces, [so] preventing it requires multidimensional strategies that are oriented towards girls' empowerment and tailored to particular populations of girls" (UNFPA 2013: 58). This conclusion is echoed in an extensive review of interventions in the United States: "Both the studies of risk and protective factors and the evaluations of programs indicate that no single, simple approach will dramatically reduce adolescent pregnancy and STDs in the United States. While a number of effective programs have been identified, there are no magic bullets" (Kirby 2007). Kirby's review highlights that some determinants are difficult to change and that effective strategies need to address both sexual behaviors (such as use of contraceptives) and broader nonsexual factors, such as community poverty, lack of opportunity, gender inequality, family instability, and the perceived benefits of childbearing

Broadly varied interventions have been undertaken and evaluated in developing countries, and several major reviews of developing-country intervention research have been carried out over the past decade, including a Cochrane review (Oranganje et al. 2009) and a meta-analysis by researchers at the Center for Global Development (McQueston et al. 2012). Also informative are recent assessments of research needs by Hindin et al. (2013), Hindin (in press), and Ali et al. (2013), as well as Chapter 5 of the 2013 SOWP, which reviews a range of intervention experiences (UNFPA 2013). In 2011, the World Health Organization published guidelines that included assessments of the effectiveness of interventions for prevention of early pregnancy and poor reproductive health outcomes (WHO 2011). ICRW (2013) has reviewed the evidence base on adolescent family planning, and Mwaikambo et al. (2011) have reviewed literature on what works in family planning, though the review covers all age groups and not just adolescents.

The intervention literature is large and growing. We draw on the reviews mentioned previously as well as research on individual interventions or clusters of interventions. Some of the reviews are inclusive of a large number of papers on different types of interventions that address specific or multiple outcomes, whereas others (systematic reviews and meta-analyses) are restricted to reports that qualify according



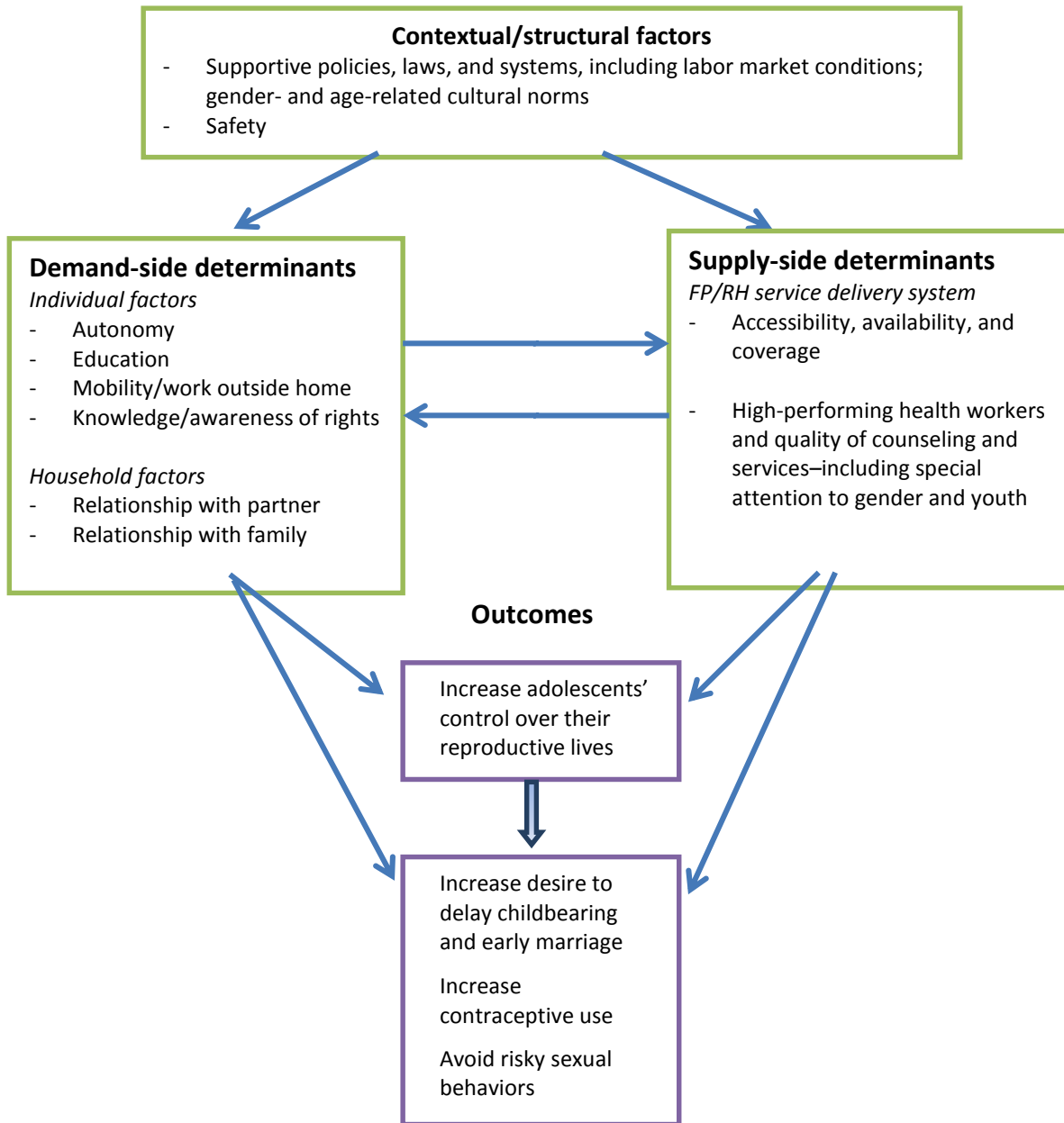
to reviewers' criteria for data quality and analytical rigor. We have chosen to be more inclusive, and this section summarizes findings for a range of interventions. More detail on our findings can be found in Annex 1 Table A2, which includes a column on the range of analytical approaches that we found.

Because the range of interventions is so wide, reviewers have divided their findings into clusters of activities that might influence early childbearing, contraceptive use, and other reproductive health outcomes. These clusters include:

- Changing **contextual and structural** factors, such as educational opportunities, gender relationships, support systems for young mothers, and labor markets.
- Advancing **demand**-side interventions to influence knowledge, attitudes, and choices by adolescents. These include behavior-change interventions (sexuality education, counseling, cash transfers) focused on sexual initiation and risk taking, pregnancy, abortion, and the incidence of sexually transmitted infections, including HIV.
- Expanding the **supply** of services for adolescents, including adolescent-friendly family planning and reproductive health services, school-based programs (including sex education), second-chance programs for young mothers, and postpartum family planning targeted to young first-time mothers.

To help organize research on this broad range of interventions and outcomes addressed in the literature, we have adapted a demand- and supply-side framework developed by Greene et al. (2013) to link interventions to selected reproductive health behaviors and outcomes (see Figure 1). Although demand and supply do not always separate neatly, we find this framework useful for sorting through interventions that affect adolescent childbearing, use of contraception, and sexual behaviors. Building on findings of our earlier work (Greene and Merrick 2005), the framework recognizes the importance of contextual factors. And while the framework was developed with a focus on girls, we have extended it to include boys.

**Figure 1.** Framework for determinants of contraceptive use and other reproductive attitudes/behaviors of adolescents.



**Contextual and structural factors** at the community and societal levels include gender- and age-related cultural norms playing out in ways that influence and constrain the choices of adolescents. Community attitudes toward adolescent sexuality, early marriage, and contraception have an important effect on young people, as adults still exert much control over adolescents. The discussion on individual adolescent decision-making and rights resonates only up to a point because individual rights may be superseded by the needs of the community.

What are expectations regarding the behavior of young women, especially young wives? What are the social rewards for early childbearing? Is it acceptable for young girls to seek out services at reproductive health clinics? Are pregnant girls encouraged to give birth at health facilities? Are young men constrained and pressured by community expectations about sexual relationships, fertility, and childbearing? Is the community a safe place for young women to walk or otherwise get to services? Are young women who succeed in completing secondary school able to get jobs?

The presence of *supportive policies, laws, and systems* forms the backdrop for health services that are accountable to the people who use them. A legal framework that facilitates redress when people register complaints about the health system is essential for ensuring the quality of that system. Likewise, a framework that ensures every person's right to services, without requiring special permissions of other family members, can facilitate the use of services and a sense of entitlement on the part of young clients. Additional policy interventions could affect behaviors and outcomes. These include interventions that loosen age or parental-consent restrictions on adolescents' access to services and school policies on expulsion of pregnant students or their return to school after giving birth to a child. As shown in Figure 1, contextual factors may influence the strength and direction of both demand- and supply-side factors.

**On the demand side**, adolescents are influenced by their own *individual characteristics*. These characteristics include their autonomy (capacity to make decisions and take actions on their own), access to money, mobility (ability to go places they choose, work outside the home), education (which translates into greater knowledge and power in the household and labor market, among other things), and awareness of rights (i.e., of what they *should* be able to do).

At the *household level*, young people's relationships with sexual partners and family members are important determinants of demand. Can young girls discuss their desires for childbearing and spacing of pregnancies with their partners? Are they encouraged to express their views and permitted to act on their preferences? Are they subject to violence at the hands of their partners or other family members? How important and present are adult family members? To what extent are adolescents' relationships with family members supportive or controlling?

Individual and household-level factors influence the supply of family planning services as well as demand, shaping assumptions about which services should be available and for whom, whether or not providers judge their young clients, regulations regarding spousal consent to sterilization, and so on. Providers' attitudes reflect their community and cultural origins.

**On the supply side**, access to services, quality of care, and the costs of care for those at the bottom of the income scale are key influences on reproductive health. Factors relating to family planning and reproductive health care can be thought of in two major clusters. The first cluster is the accessibility, availability, and coverage of services. Given the obstacles that young people, especially young women, face in accessing services, special attention is needed to ensure that reproductive health, maternal and child health, and family planning services reflect the needs of adolescents.

The quality of the services and counseling provided by health care workers is also critical. Young people will be less likely to come to a clinic and continue using family planning services if their preferences are not prioritized and they are not treated with respect. Ensuring gender-sensitive and youth-friendly services requires solid training across the clinic and outreach staff at both the pre-service and in-service levels, as well as a health system-wide commitment to overcoming youth- and gender-related discrimination.

As Figure 1 shows, both demand-side and supply-side determinants influence the intermediate outcome of increasing girls' control over their reproductive lives, which some researchers refer to as "agency." Girls' increased control over their reproductive lives plays out in three ultimate outcomes: increasing girls' desire and ability to delay childbearing and early marriage; increasing contraceptive use; and reducing risky sexual activities.

On the demand side, education stands out as one of the most important individual characteristics that influence early childbearing. As Duflo et al. (2012) have noted, "Once one leaves school, sex and marriage are expected." Efforts to increase girls' access to and retention in school and to improve the quality of girls' education are taking a variety of forms.

The discussion below covers a broad range of interventions to improve girls'—and sometimes boys'—ability to make decisions about their reproductive lives. Some of these interventions address girls' gender disadvantage. But as Askew and Brady have noted, "Evidence of the effectiveness of interventions that reduce early marriage, reduce unmarried girls' exposure to unwanted and coerced sex, and empower women to meet their reproductive intentions is largely non-existent" (2012: 19). The categories of interventions covered here are delaying early marriage, youth-friendly services, peer education, social marketing and communications, conditional cash transfers, support for girls' school attendance, youth development, and combined approaches.

## Delaying marriage and sexual debut

Marriage is a critical divide for girls in developing countries. Adolescent pregnancy in many of those countries occurs within child marriage, or marriage that takes place before age 18. This "neglected majority" of married children (Haberland and Chong 2004) has recently received a great deal of attention, with the allocation of new resources and the refocusing of existing resources on the issue of child marriage. Keeping girls in school and supporting them in making healthy decisions about their lives are important influences on age at marriage. Laws and policies need to be implemented while working with communities to change their attitudes and norms (Das Gupta et al. 2008).

Although almost all countries have established some legal minimum age for marriage, the laws often remain unenforced, particularly in sub-Saharan Africa, the Middle East, and South Asia. In India, which has criminalized child marriage, only 11 people were actually convicted of perpetuating child marriage in 2010 (UNFPA 2013, UNICEF 2011). Thus, legal activism is necessary but not sufficient for ending this practice.

Intense, recent interest in child marriage has driven varied attempts to reduce the practice and mitigate its effects on young women. Because of the weakness of legal sanctions on child marriage, other approaches are being tried, including keeping girls in school and working with community members to change norms around early marriage and childbearing. Most programs working to end child marriage have been inadequately evaluated, however (Greene 2014). One review has classified evaluated program strategies for preventing child marriage into five categories (Lee-Rife et al. 2012), reflecting programs that:

- *Empower girls at risk for early marriage with information, skills, safe spaces, and support networks.* These programs have sought to reduce girls' social isolation and prepare them to act on the choices

they must make in life. An example is the Maharashtra Life Skills Program in India, which met with girls for one hour each weekday over one year, teaching them about social institutions, life skills, and health, including child health and nutrition (Pande et al. 2006).

- *Enhance girls' access to school and improve the quality of their education.* High-quality schooling provides a viable alternative to early marriage for some girls by providing them with social networks and raising their expectations for their own lives. Weak schools can contribute to some parents' view that marriage is the best place for their young daughters. The expectation that girls will marry early undermines the commitment to schooling. The two-year Ishraq program in Egypt prepares out-of-school girls for re-entry into the formal school system, teaching literacy and numeracy, life skills and sports (Brady et al. 2007).
- *Offer economic support and incentives for girls and families.* Economic training, support, and sometimes incentives that address families' economic reasons for marrying their daughters early provide alternatives to marriage and increase the value of girls to their families of origin. One example is BerhaneHewan in Ethiopia, which provided families with a goat as long as their daughters remained in the program and remained unmarried until age 18 (Karei and Erulkar 2010). Another example is the Zomba cash transfer program in Malawi, which found *unconditional* cash transfers to be more effective in delaying marriage than *conditional* transfers (Baird et al. 2009).
- *Educate and mobilize parents and community members.* By educating and mobilizing parents and communities to change social norms relating to expectations of girls and their marriage prospects, some programs hope to delay the age of marriage. In Senegal, Tostan has implemented long-term, informal community education and awareness-raising that has led to community mobilization, sometimes around public declarations against harmful practices such as female genital cutting and early marriage (Diop et al. 2004).
- *Foster an enabling legal and policy framework.* Most countries, even those with high levels of child marriage, have established legal minimum ages at marriage. Policy advocacy to clarify, strengthen, and enforce such laws is needed. In Afghanistan, for example, the Community-based Rural Livelihoods Program has convened groups of women to mobilize for action on local issues of gender inequality and strengthened local *shura* councils to respond to problems including child marriage (Gandhi and Krijnen 2006).

A review of efforts to mitigate the effects of child marriage on childbearing looked at the opportunity to increase contraceptive use to delay the second pregnancy among adolescent first-time mothers (Greene et al. 2013). These efforts were focused largely in the United States and emphasized mentoring and educational supports. Focusing on the second birth offers an important opportunity to increase adolescent contraceptive use in developing countries.

## Youth-friendly services

The African Youth Alliance study surveyed youth in Ghana, Tanzania, and Uganda to further develop youth-friendly services. All three countries saw mixed results regarding reported use of contraception. Contraceptive use was significantly higher for females and males exposed to the intervention than for unexposed females in Tanzania. In Ghana and Uganda, however, use of contraception was higher only for females exposed to the intervention and not for males and unexposed females (Daniels 2007, Williams et al. 2007, Pathfinder 2005, John Snow International 2007).

A systematic literature review by Denno and colleagues (2012) showed that the most effective out-of-facility approaches to reaching youth with services include condom distribution via street outreach and promotion of over-the-counter access to emergency contraception. (Unfortunately, the “HIV-ification” of condoms has made condoms less attractive for pregnancy prevention because of their association with HIV and lack of trust in sexual relationships.) In their literature review, Denno et al. (2013) found that more research needs to be done to determine whether training health care workers and making facilities more youth-friendly is an effective way to improve adolescent sexual and reproductive health (ASRH). Evidence was strong for programs using a combination of interventions, including those that increased community approval of ASRH services.

A study in Zimbabwe found a significant increase in reported contraceptive-seeking behavior and a reduction in reported pregnancies as a result of an intervention to improve access to and quality of ASRH services (Cowan et al. 2010). Integrating services into school settings can be an important way of making them friendly to young people. A comparative study of two schools’ youth health services showed the school that referred students for hormonal contraceptive services had a higher pregnancy rate than the school with on-site services (Smith et al. 2011). One programmatic evaluation of youth-friendly services found that over five years the cost savings for preventing unintended pregnancy was greatest among adolescent girls, with a saving of \$17.23 for every \$1 spent on contraception for young women 14 to 19 years old (Eisenberg et al. 2013).

The review by McQueston et al. (2012) at the Center for Global Development included seven assessments of interventions that tailored existing reproductive health programs to meet the needs of adolescents. Two of them—an assessment by Kanesathasan et al. (2008) of a large-scale adolescent program in India and one by Bhuiya et al. (2004) of adolescent-friendly services in Bangladesh—had positive effects on contraceptive awareness/knowledge, with Kanesathasan et al. also showing increased contraceptive use among married adolescents. Portner et al. (2011) reported an actual decrease in the number of children born, though the studied program in Ethiopia was not specifically designed for adolescents. All of the studies involved multiple types of interventions and outcomes, so it is difficult to disentangle the impact of a specific type of intervention on a specific outcome.

An additional area of intervention that has recently received attention is finding ways to normalize adolescent access to services, much as services for young children are normalized. This “puberty checkup” model is currently being tested in Rwanda, via the government’s 12+ program being implemented with support from the UK Department for International Development and GirlHub.

## Interventions related to schooling

Researchers have examined a wide range of school-based programs aimed at reducing adolescent pregnancy. The CGD review included nine school-based programs, including two that provided abstinence-only education. The programs addressed a range of outcomes, including reproductive knowledge and attitudes about contraceptive use, avoidance of pregnancy and early marriage, and risk avoidance. Most of the studies reported positive impacts on these outcomes, though with the caveat that the effects tended to taper off with time.

The CGD researchers noted that their review screened studies for analytical rigor and was thus limited to 21 studies published after 2000. They covered only a fraction of the broad range of research on interventions and outcomes that have been undertaken (McQueston et al. 2012: 43). They also noted

that the broad range of outcomes and combinations of interventions made comparison of results difficult. They found that most interventions that attempted to increase cognitive indicators related to reproductive health had positive effects, at least in the short run. The evidence on more basic outcome indicators, such as sexual activity, pregnancies, and births, was less likely to be significant.

The CGD researchers found that 12 programs using a wide range of interventions to improve contraceptive use generally had positive results, as did three studies that sought to influence marriage-related indicators. They also noted Duflo's finding (2011) that programs that reduce barriers to school attendance (provision of free uniforms, for example) may more effectively reduce adolescent fertility than provision of sexuality education as part of the curriculum.

The authors of the Cochrane review (Oringanje et al. 2009) examined randomized control trials evaluating any intervention to improve knowledge and attitudes relating to the risk of unintended pregnancy, delay initiation of sexual activity, and encourage consistent use of contraception among adolescents aged 10 to 19 years. They concluded that programs that concurrently apply multiple interventions (education, skill building, and contraceptive promotion) could reduce unmet need and unintended and unwanted pregnancies among adolescents but that promotion of contraceptives alone did not appear to reduce risk. They urged caution in interpreting their results because of the methodological deficiencies they found even in the carefully selected trials they examined.

Efforts to increase girls' access to schooling and to improve the quality of girls' education are taking a variety of forms. These include scholarships, stipends, cash transfers, and the recruitment and training of female teachers (Lloyd 2009, Biddlecom et al. 2007, Baird et al. 2009, Arends-Kuenning and Amin 2000). School enrollment has a protective value in that school girls are seen as children and not of marriageable age (Marcus and Page 2013). Paying for school uniforms can reduce dropout rates, reduce adolescent marriage, and reduce childbearing (Duflo et al. 2006). The quality of schooling also matters: if education fails to prepare girls for jobs and participation in civil society, it may not delay marriage and childbearing (Schurmann 2009). Subsidized childcare may facilitate girls' schooling (Glick and Sahn 2000). In South Africa, however, Lam et al. (2009) found that when girls stay in school and interact extensively with older male students who have repeated grades, they have a statistically significant earlier sexual debut and increased age gap with their first partner.

Girls need the flexibility to return to school if they become pregnant or leave school for other reasons (Jimenez and Murthi 2006, Greene et al. 2002). One study in Pakistan on scholarships for girls found that although girls with more schooling did not delay their marriages or first births, they were more likely to use contraception and delay second births (Alam et al. 2010).

Sexuality education of any type has been found to delay sexual debut for adolescents, and those who learn about abstinence *and* contraception, especially females, are significantly more likely to use contraception at sexual debut (Lindberg and Maddow-Zimet 2012). Results show that abstinence-only programs do not stop or delay adolescents from having sex and can put them at greater risk of pregnancy and sexually transmitted infections if information about contraception is not provided. In a UNESCO-commissioned review of global studies evaluating comprehensive programs, nearly all programs increased knowledge and two-thirds positively affected behavior, with delays in sexual debut, reduced frequency of sex and number of partners, and increased condom or contraceptive use. The same study also found that these programs are cost-effective (Boonstra 2011).

An evaluation of Nigeria's Comprehensive Sexuality Education Program identified key elements for scale-up. These elements included consensus about program components, implementation of each program component by an organization with expertise in that specific area, strong political leadership and advocacy by nongovernmental organizations, community mobilization, sound program management and constant monitoring, regular evaluation, and accountability (Huaynoca et al. 2013). Enrollment rates in secondary schools, where sexuality education is most likely to be imparted, are still low in many places, however.

## Peer education

Peer education programs have had mixed results. A study to evaluate a government-led peer education program in South Africa found the program did not delay age at sexual debut, but the authors noted "sub-optimal" conditions in program implementation and suggested that peer education approaches require consistent monitoring and evaluation for efficacy (Mason-Jones et al. 2011).

High school respondents from a Canadian peer education intervention demonstrated improvements in their attitudes, personal beliefs, and perceived behavioral control with self-protective behaviors, such as postponing sexual debut and condom use (Caron et al. 2004). Also, peer educator involvement in designing the intervention was linked to improvements in program outcomes. Compared to sexuality education by teachers, peer-led education was not found to decrease teenage abortions but may have decreased live births. Researchers have encouraged further research on peer-led sex education because students prefer it to teacher-led approaches (Stephenson et al. 2008). Most peer-led interventions have at least improved knowledge, attitudes, and intentions (Kim and Free 2008).

## Youth development and life skills

Workforce opportunities for girls can contribute greatly to delaying marriage and shifting gender norms (Amin et al. 1998). Girls often leave school unprepared for work or cannot translate educational accomplishments into remunerative jobs. Programs should help girls manage traditional gender expectations, negotiate the school-to-work transition, and play a role in the identification and promotion of safer and more accommodating workplaces than currently exist (Buvinic et al. 2007). Subsidized childcare may make it possible for young women to work, particularly in formal jobs (Ruel et al. 2006). The World Bank's Adolescent Girls Initiative works with the private sector to provide vocational training and employment opportunities for girls, but these interventions need to be evaluated and scaled up (Taliento 2009).

Programs in Latin America promote women's equal access to vocational training, especially in non-traditional skills, and provide stipends for childcare, thus increasing their employability and earnings. This model may have limited replicability in other developing countries, however, because women in these programs in Latin America have easier access to education and employment compared to women in other low- and middle-income countries, and these countries already have the institutional infrastructure to provide training (Katz 2008).

Programs that reinforce social supports for adolescent girls take a variety of forms. Old-age pensions to grandparents caring for grandchildren may ultimately benefit girls in areas ranging from overall anthropometric measures to increased school attainment (Duflo 2003, Carvalho 2008). The creation of



girl-only safe spaces has helped to transform girls' self-concepts; provide social support, financial literacy, and financial services; create new opportunity structures; ensure continuing education; and reduce HIV infection and other negative outcomes while improving reproductive health outcomes (Bruce and Bongaarts 2009, Bruce and Hallman 2008).

UNFPA's *State of the World's Population* 2012 report on early childbearing noted that although many governments have invested in programs to enable adolescents to prevent pregnancy, few have invested in systems and services that support girls who have become pregnant or had a child. Greene et al. (2013) reviewed programs in the United States and developing countries that sought to increase the desire to delay further childbearing, increase contraceptive use, and increase birth intervals among young mothers. They identified a number of promising interventions and suggested a "mix and match" strategy of combining interventions where effective prevention methods are used and tailored to specific epidemiological and cultural contexts.

## Social marketing and communications

In Ethiopia, Gage (2009) found that the more people heard messages discouraging early marriage, the less supportive they were of early marriage; also, in urban settings, roughly 25% of child marriages were stopped in program areas. In Bihar, India, an assessment of a reproductive health communications program for adolescents reported an increased age at marriage and first birth (Daniel et al. 2008).

A review of programs implemented in Cameroon, Madagascar, and Rwanda to prevent STIs, HIV/AIDS, and unplanned pregnancies among adolescents used social and commercial marketing and interpersonal approaches to encourage protective behavior (Neukom and Ashford 2003). In Cameroon, for those exposed to the program, knowledge of how to use and where to buy condoms increased among both sexes, and reported use of condoms increased for young men. In Rwanda, young people exposed to the program were more likely to believe condoms are an effective way to prevent HIV/AIDS, to believe their friends and family support condom use, to know where to get and how to use condoms, and to use HIV counseling and testing services. In Madagascar, the number of youth seeking sexual and reproductive health services at youth-friendly clinics increased significantly.

## Cash transfers and stipends

Around the world, cash transfers and vouchers designed to alter a variety of behaviors and outcomes are gaining credibility. Cash benefit programs in Brazil and Mexico designed to improve health and education indicators have been hugely successful (Lindert et al. 2007, Barrientos and DeJong 2004). They have helped girls overcome gender disadvantage in school (Merrick and Greene 2007) and may even help delay marriage (Merrick 2008, Baird et al. 2011).

The CGD review (McQuestion et al. 2012) identified four evaluations of the effects of cash transfers on adolescent fertility and related outcomes. The researchers reported that cash transfers had the greatest impact on marriage-related indicators, noting that the transfers worked as an incentive to stay in school and increase financial independence, both of which could have reduced adolescent marriage.

Findings from Mexico's *Progres-Oportunidades* program, a nationwide antipoverty intervention aiming to improve education and health through cash transfers, showed a significant effect in delaying young

women's sexual debut (Gulemetova-Swan 2009). Enrollment rates were higher for children (especially girls) in *Oportunidades* (the *Progresa* follow-on) program areas, and there was a slight increase in the number of years of schooling they received. A potential side effect of the program was on fertility, because parents could use the cash transfers to subsidize the cost of their child's schooling, but the author found no evidence of this (Schultz 2004).

A recent study of the *Oportunidades* program found no direct impact on pregnancy and contraceptive use among young rural women, though the program may have had an indirect effect via other variables, such as education (Darney et al. 2013). The mixed results suggest that the design of transfer programs may be important for achieving outcomes. Cash payments made directly to girls rather than to their parents had the greatest impact on reducing adolescent pregnancy and HIV in Malawi's Zomba program (Baird et al. 2009).

Other studies have assessed the impact of cash incentives for girls to stay in school and a community mobilization component to influence young men's HIV-related behaviors, including condom use, in South Africa (Dow 2010, Thirumurthy 2010). In India, payments were made through "investment" programs to discourage a preference for sons and encourage the care and education of daughters. One program improved the sex ratio of surviving children and increased investments in girls' human capital and health, but it did not increase school attendance (Sinha and Yoong 2009). This program, in Haryana State, has been evaluated by the International Center for Research on Women by tracking a cohort of the beneficiaries, approaching age 18, who were to receive bonds set aside for them at birth (Nanda 2013).

## Reviews of combined interventions

Reviewers have noted that many factors influence adolescent reproductive health behaviors/outcomes and have called for multipronged interventions to change them. Identifying the specific elements of multifaceted programs that have had the strongest effect is often difficult but necessary to sort out which interventions are more effective to make such programs more cost-effective.

The literature shows that family planning programs need to address supply, enabling environment, and demand components to be effective. More than 700 international family planning professionals identified ten elements for successful programs: (1) supportive policies; (2) evidence-based programming; (3) strong leadership and good management; (4) effective communication strategies; (5) contraceptive security; (6) well-trained and high-performing staff; (7) client-centered care; (8) easy access to services; (9) affordable services; and (10) appropriate integration of services (Jacobstein et al. 2013: S12). But which are most important with adolescents of varied profiles? And in resource-poor settings, which should programs focus on? Research can help answer these questions.

## Common threads: Summary of our knowledge of interventions to increase contraceptive access and uptake

What does this information on these varied areas of research tell us about what works and what does not? What are the gaps in our knowledge, and how should we focus future research investments?

**Youth-friendly services** have proven effective in some settings, but results are mixed in others. Most programs attempt to make their services more youth-friendly through a combination of interventions, including training of providers, educating consumers, and improving the accessibility of services. Researchers need to focus on the specific approaches used to make services more youth-friendly and on how they are implemented, particularly in reducing barriers that keep young people from using services.

**School-based programs** have been very effective in some settings but have likewise shown mixed effects in others. Most involve a range of interventions (sexuality education, teacher training, services for students). More evidence is needed to sort out the effects of specific kinds of interventions and to determine the contextual factors that influence success in implementation.

**Peer education** has been used as a behavior change tool in a variety of settings but with mixed results. More attention needs to be paid to how peer education programs are designed and implemented and to the contextual factors that influence their effectiveness.

**Youth development/life skills** programs have multiple benefits, including improved sexual and reproductive health outcomes, depending on the context and how programs are implemented. Given the social and cultural obstacles to young people's sexual and reproductive health, these broader programs should continue to be a focus of study.

**Social marketing and behavior-change communication** interventions have been effective in motivating early use of condoms and contraceptives but with less impact on effective use and continuation. Research can contribute to exploring the content and delivery mechanisms that would strengthen young people's commitment to these choices.

Growing evidence demonstrates the effectiveness of **cash transfers and other financial incentives** in motivating changes in reproductive health-related behaviors in a variety of settings. Attention needs to be paid to the specific behaviors that are targeted and how incentives to change them are implemented. In Malawi, for example, *unconditional* cash transfers to *girls* proved to be more effective than *conditional* transfers to their *parents*.

Many reviewers have noted that varied factors influence adolescent reproductive health behaviors/outcomes and have called for **multipronged interventions** to change them. Identifying the specific elements of multifaceted programs that had the strongest effect is often difficult but necessary to sort out which interventions are more effective to make such programs more cost-effective.

Given the large numbers of adolescents worldwide, there is a great need to build on our growing knowledge of what works and **take programs to scale**. We have learned, for example, that peer education approaches require consistent monitoring and evaluation to ensure they are having the desired effect. There is a need for more research to show that effective interventions can be brought to scale—and what is required to expand them.

The research suggests that multifaceted programs that combine a mix of interventions are more effective than standalone programs—except for cash transfers. The research does not, however, sort out which components are making the most difference and what they cost—both critical to making the business case and using this information to inform and motivate public officials to invest in these programs.

Evaluations based on more rigorous analytical approaches (experimental designs and randomized trials) tell us *whether* an intervention worked but less about *why* it worked. For example, was the way an intervention was implemented or the context in which it was implemented critical to success or failure? Such information is important for guiding scale-up of successful pilot programs and replicating them in other settings.

There are still data gaps, particularly in regard to reproductive behaviors and contraceptive use among younger girls who are not married. Surveys often do not include them. Also, some of the work that has been done to make the case for expanding family planning for women of all ages needs to be targeted to those under 20 years of age. It would be extremely desirable and advantageous to have analyses specific to adolescents that are along the lines of the Futures Group's scenarios on family planning or the Guttmacher Institute's work on contraception.

## Key considerations for the business case for investing in additional research

### Overview

Although we have evidence that helping adolescents delay and space pregnancy by increasing access to and use of contraception will lead to many health, social, and economic benefits, more research is needed to determine where, when, and how to intervene for the greatest impact at the lowest cost.

Reasons for governments and donors to invest in research and evaluation concerning the use of contraception by adolescents include:

- **Making the money count.** There are important gaps in the evidence on what works, what does not, and why. By knowing the most effective and efficient approaches to avoiding unintended pregnancy among adolescents, decision-makers can strategically direct limited resources and maximize the return on investment—choosing to monitor, scale up, and learn from proven approaches rather than repeating programs that do not work well. By enabling targeted investment, this research will contribute to health and economic benefits.
- **Supporting global health priorities and adolescents' rights.** Nations have committed to expanding access to contraceptives as part of their work to address global health priorities, such as those announced as part of Millennium Development Goal 5 in 2000 and at the 2012 London Summit on Family Planning and through the resulting FP2020 global partnership (see [www.familyplanning2020.org](http://www.familyplanning2020.org)). Greater attention to adolescents—a group that has long been ignored—will help the international community and individual nations meet goals for health and development. It will also address the long-standing neglect of adolescents' rights and help adolescents reach their full potential as adults.
- **Recognizing the unique, crucial role of governments and donors.** The research and subsequent interventions will have broad benefits for adolescents, children, families, communities, and nations. Governments and donors (including private foundations) are the most capable and appropriate agents to invest in generating the evidence needed to contribute to these societal impacts.

## Making the money count

Donors and governments are motivated in different ways by the **costs** of adolescent unmet need, pregnancy, and childbearing and the benefits, including the cost **savings** that could accrue by addressing the problem. The costs include those that governments must incur for the health and development of adolescent parents and their children. These costs extend into the future in the form of young people's lost opportunities due to ill health, leaving school, parenting responsibilities, and so on. The consequences go beyond the health sector and into education and labor force participation. If donors and governments do not contribute to increasing adolescent access to contraception and delaying childbearing or improving birth spacing now, this missed opportunity figures into the costs as well.

Research is needed to document and project the costs countries pay for early, unintended, and unwanted childbearing. The existing evidence from diverse settings on the costs of adolescent unmet need, pregnancy, and childbearing and the potential savings that would be unleashed by providing contraception is reasonably strong. Gaps exist in specific areas of impact and in specific cultural settings, however, particularly on the conditions that shape adolescent sexual activity and contraceptive use.

Research can also contribute to projecting the lifelong impact of adolescents' use of contraception and delayed childbearing and how these actions positively affect their education, health, and employment opportunities. The demographic dividend is an opportunity that many countries can and urgently *should* seize now, depending on the relative proportion of their population that is now in adolescence or soon will be. Investing in contraception is an important part of seizing this opportunity. The clearer the research base for making this case, the more certain it is that governments and donors will invest in adolescent access to contraception and will reap the longer-term benefits of this investment.

The mandate for this investment in research at a national and global level is sharpened by the very large and growing numbers of adolescents—72 million more are projected by 2025—and the lasting impact this generation will have. Population momentum is by far the largest driver of global population growth. Extending the length of future generations (by delaying marriage and first pregnancy), increasing intervals between pregnancies, and reducing the total number of births for each generation are essential for addressing population momentum. Strengthening and expanding adolescent access to family planning information and contraception is essential for accomplishing those goals.

Strategic investment is needed. Using funds wisely requires spending them on programs with real impact. Resources can be conserved by tracking programs' impact through competent monitoring and evaluation and through the replication of good models we know work. For the great majority of settings, we do not have the kind of data on the social determinants of adolescent sexual activity and contraceptive use needed to structure the best programs. These gaps reflect the need for investment in research in varied settings on the circumstances of diverse groups of adolescents and for ongoing monitoring when replicating "evidence-based" practices in new settings.

## Supporting global health priorities and adolescents' rights

An obligation to deliver on commitments made by international agreements and national laws and policies is an important incentive for some donors and governments. Laws and policies in most countries already extend contraceptive access to many adolescents, certainly older ones and those who are

married. Although ministries of health may be convinced of the wisdom of increasing adolescent access to contraception, the broader case needs to be made in many countries to ministries of education, labor, and finance. Research on the cross-sectoral benefits of increased adolescent use of contraception could help drive the advocacy required to ensure this commitment is realized.

The growing commitment to universal health coverage in many countries is increasing the likelihood that research will translate into better adolescent access to contraception. In many cases, countries have already been persuaded of the wisdom and cost-effectiveness of providing preventive care in a variety of areas, including reproductive and maternal health. Additional evidence on the contraceptive needs of adolescents, the services to address them, and the potential returns on these services will accelerate a process that is already under way. Adolescents are a key population for prevention efforts to fulfill a country's public health mandate and reduce long-term demands on the health system.

Another incentive for investing in research is to generate additional guidance for interventions at the policy and program levels. Where commitments exist and efforts are already under way, solid evidence on the conditions of adolescents' lives and the interventions that can improve their access to contraception provides support and drives the expansion of programs that work. A solid evidence base clarifies the best programs for investment, enables cost-effective resource allocation across programs, and informs policy.

There are increasingly vocal calls for a reliance on "plausibility" rather than "probability" designs in public health research (Askew and Brady 2012), with the purpose of "generating evidence that is of acceptable quality to decision-makers and can be used to make strong recommendations" (Bosch-Capblanch 2011, Victora et al. 2004). A variety of types of evidence facilitate the translation of that evidence into policies and programs (Bosch-Capblanch 2011, Lavis et al. 2012). And translating the research into policy decisions requires integrating it with other kinds of information needed to make decisions about the health system in a given setting (Bosch-Capblanch 2011).

By ensuring evidence on the specific settings, subpopulations, and interventions of interest, research on adolescent access to contraception can overcome the sense that a specific setting is unique as an obstacle to translating evidence into programs and policies. Political—and personal—reticence about adolescent sexual activity undermines the use and sometimes even acknowledgment of research findings. One expression of this reticence is "national exceptionalism," the view that the cultural realities in country X are so distinctive that even strong evidence from elsewhere in the region of the *need* to invest in adolescent access to contraception and of *how* to invest is not sufficiently specific to country X. This position drives the need for more intervention research in a great number of settings.

Another important incentive for funding research on adolescents is to contribute to recognizing the rights of this special age group. Adolescent access to contraception receives scant attention in many settings.

Many donors and governments are concerned with the fulfillment of human rights and may be motivated by the possibility of putting evidence in place to move the world toward recognizing adolescents' rights to contraception. The rights of adolescents conferred by international agreements and national laws and policies are systematically violated in many ways, including the common denial of access to contraception. The adverse consequences are extensive. Sex is often riskier for adolescents than for adults, and the lack of access to contraception exacerbates that risk and increases the need for post-coital methods. The denial of adolescents' rights compounds the high-risk conditions under which

they are often having sex: without information concerning sexual and reproductive health, access to services, or even control over the terms of their sexual relationships. By reinforcing evidence on the costs of this lack of access and the savings associated with addressing it, research can contribute to the greater recognition of the citizenship, rights, health, and well-being of adolescents.

The politics and moralizing associated with sexual activity among young people means that policies and programs are often not based on evidence. In addition, the neglect of adolescents' needs and rights is sometimes justified out of deference to adult prerogatives, including parental rights. These motivations are *not* based in the evidence and undermine the translation of research into action.

An emphasis on adolescents' access to sexual and reproductive health services is also consonant with the increasing emphasis on equity in global discourse. Health equity was reflected in the Millennium Development Goals and is emerging as a key principle of the post-2015 sustainable development framework.

## Recognizing the unique, crucial role of governments and donors

Public-sector investment is called for when the public costs or benefits of a good, such as public education or health care, exceed the private costs/benefits of the good. These differences in costs/benefits are externalities. The public sector can also invest when a good is public or shared; individuals cannot be kept from using these goods, and one person's use does not prevent another person's use (national defense, clean air, public parks).

Although contraceptives are not a public good (when one person consumes a birth control pill, another person cannot), public funding of contraception generates positive externalities and responds to the lack of markets to serve poor people at an affordable cost. *Information* about contraceptives and *research* on reproductive health behaviors *are* public goods because one person's use of the information does not prevent someone else from using it.

Economists have identified several criteria for having the public sector rather than the private sector pay for a good. The most common criterion is the existence of externalities—when the public costs or benefits exceed the private costs/benefits. An example of an externality in health is flu shots: society benefits over and above what an individual might pay for a shot because flu epidemics harm economic productivity.

We turn to governments when markets fail and large sectors of the population are excluded from goods and services available to others. This is the case with adolescents and their limited access to contraceptive information and services. Research is an important public good that can drive investment in this area with such enormous positive externalities.

## The importance of investing *now*

The **youth bulge and potential demographic dividend** provide an important rationale for investing *now* in research to help reduce fertility and rapid population growth. The potential for generating a demographic dividend requires timely and strategic research on adolescents and their access to and use of contraception.

In addition, important global events and institutions have recently highlighted the need for investing now in research on adolescent access to contraception. For example, the International Family Planning Summit held in London in July 2012 catalyzed high levels of political interest and financial commitment from governments and donors around the world. The international community subsequently committed to providing contraceptive access to 120 million more women and girls by 2020 through **FP2020**, a global partnership working across government, civil society, multilateral organizations, donors, the private sector, and the research and development community (see [www.familyplanning2020.org](http://www.familyplanning2020.org)).

Key to this business case is the fact that FP2020 works largely through the sharing of knowledge and expectations regarding family planning. The materials the partnership disseminates are designed to assist countries both in establishing the rationale for investing in adolescents and in providing guidance on successful policy and programmatic approaches. The FP2020 network will share guidance on investing in adolescent access to contraception and may influence investment in numerous countries as part of achieving FP2020 targets. The partnership has motivated countries to develop detailed national family planning strategies with associated budgets. FP2020's measurement and evaluation framework provides a system for identifying and collecting data on indicators that measure the extent to which family planning programs are implemented in accordance with human rights principles. This is fundamental to ensuring that research on adolescent unmet need will be translated into action.

At the same time, the board of the Partnership for Maternal, Newborn and Child Health (PMNCH) has recognized the need for increased investment in adolescent health. It has endorsed recommendations by the expert working group to increase global prioritization of adolescent health through advocacy campaigns and other global-level campaigns and initiatives of the post-2015 development agenda. In the future, the PMNCH secretariat will focus on the following activities:

- Making adolescents a priority in the post-2015 sustainable development discussions in global and regional high-level fora.
- Promoting accountability for adolescent health through the Millennium Development Goals Countdown and 2014 reports.
- Increasing the representation of youth in PMNCH working groups and the Partners Forum.

The agreed conclusions on the elimination of all forms of violence against women and girls from the Commission on the Status of Women (57th session, March 2013) reference the conditions needed to support healthy sexuality, including the need to:

Promote and protect the human rights of all women, including their right to have control over and decide freely and responsibly on matters related to their sexuality, including sexual and reproductive health, free of coercion, discrimination and violence; and adopt and accelerate the implementation of laws, policies and programmes which protect and enable the enjoyment of all human rights and fundamental freedoms, including their reproductive rights in accordance with the Programme of Action of the International Conference on Population and Development, the Beijing Platform for Action and their review outcomes.

Finally, UNFPA and the Government of Indonesia recently hosted a Global Youth Forum from which very strong recommendations emerged on rights and participation. The call for transparency and investment



included a call for “universal access to a basic package of youth-friendly services.... As part of this basic package, governments must provide comprehensive sexual and reproductive health services” (UNFPA 2013).

## Specific research needs

Donors and governments have an opportunity to expand their investments in research that will ultimately improve the effectiveness, scale-up, and expansion of proven and promising programs for increasing adolescents’ access to contraception. Increased funding for research on adolescent access to contraception will ideally be targeted to areas where specific research gaps exist: by population, areas of intervention, and the sorts of savings and costing information needed to translate intervention research into policy.

### **A snapshot of the current state of research**

With current data, we can describe the situation of *some* adolescents in regard to sexual and reproductive health.

With our models, we can estimate the impact of increased use of contraception among adolescents in regard to birth rates, child survival, and other outcome variables.

We are starting to understand the enormous cost savings associated with this investment but need to learn more in developing countries.

With current data, we have a few strong leads on key intervention areas.

We need to learn more about how to translate our knowledge into large-scale policies and programs to bring about impact at scale.

More research focus is needed on the immediate and longer-term consequences of early marriage and childbearing for young people and their children, including effects on school attendance and work inside and outside the home. It will be important to track the experiences of young mothers over time rather than rely on a one-time view of their individual characteristics. This approach should recognize the importance of context and the likelihood that early childbearing may hold some women back when most are receiving more education and the economic benefits of education are increasing.

The recommendations in the following section are structured around three key topic areas: (1) neglected populations of adolescents; (2) promising areas of intervention; and (3) information that contributes to use of research in a given setting.

## Neglected populations of adolescents

Adolescents are an extremely diverse group, and research should reflect this diversity. A nuanced understanding of the social determinants of unmet need, contraceptive use, and childbearing in specific settings is needed to generate effective interventions.

Most of the evidence on the impact of childbearing on the health, education, and well-being of women and their children relates to *all* women of reproductive age rather than to younger mothers. Table 2 shows the various populations of adolescents and the extent to which we have data on the circumstances of their lives.

**Table 2.** Amount of available data on adolescent subpopulations.

<b>Amount of data by subpopulation</b>			
<i>Darker shading = more data</i>			
		Married	Unmarried
Girls	10-14		
	15-19		
Boys	10-14		
	15-19	*	
* Data on married boys from Demographic and Health Surveys.			

### *Unmarried girls*

The Demographic and Health Survey (DHS) provides extensive social science data but does not provide a full understanding of unmet need among some key populations, including married and unmarried adolescents (Askew and Brady 2012). For many years, the data available on 15- to 19-year-olds were largely limited to married girls. In recent years, however, the inadequacy of this approach has become widely recognized (SOWP 2012). Consequently, the Guttmacher Institute's calculations in *Adding It Up* on what it would take to meet the contraceptive needs of the world's girls and women have recently taken into account sexually active unmarried adolescents in this age range. Given what we know about global trends in marriage—it is happening later, is becoming somewhat less universal, and is ever more likely to end in divorce (Ortega Osona 2012)—we must systematically collect data on the experiences of *unmarried* adolescents and adults.

### *Adolescent mothers*

Adolescent mothers have often been neglected in efforts to increase contraceptive use. Focusing on delaying second births among young mothers, especially those who are married, offers an important opportunity to increase adolescent contraceptive use in developing countries.

### *Very young adolescents (10 to 14 years old)*

We have virtually no data on 10- to 14-year-olds, making it difficult to talk about modeling "adolescent" access to contraception. Buvinic and colleagues (2013) engaged in the Data 2X project have highlighted the lack of health-related information on adolescent girls, particularly at the younger ages.

### *Adolescent boys*

We know virtually nothing about boys in relation to sexual and reproductive health issues, and they make up half of all adolescents. Their sidelining in the family planning field reflects assumptions regarding their age and gender (Greene and Biddlecom 2000). Because we haven't collected data on boys, our assumptions about gender and girls' and women's control over contraceptive use shape and limit our understanding of gendered patterns and preferences in contraceptive use.

### *Adolescents by wealth status*

Little research has looked at impacts of unmet need by wealth status, which would provide insight into the experiences of poor women and help to separate the effects of education from those of wealth.

### *Geographically diverse settings*

We previously described the problem of national exceptionalism and the mandate it potentially establishes to conduct research on many subpopulations in every setting. Yet a balance needs to be struck. On the one hand, because social determinants are so specific to contexts and populations, situation-specific analyses should be undertaken to generate evidence for guiding rights-based policy/program development in all countries (Ortayli and Malarcher 2010, Askew and Brady 2012). On the other hand, extensive investments in research have generated a substantial body of evidence, some of which is context-specific but much of which can be generalized across social contexts and health systems (Jacobstein et al. 2013, cited in Askew and Brady 2012). The specificities of the diverse adolescent populations *and* the political requirements of that setting must be taken into consideration in deciding where to invest in research and which research questions to prioritize.

Across all of these groups, gaps exist in our knowledge of the consequences for girls and boys *in developing countries*. Although the evidence on health impacts is quite solid, it will be important to conduct additional research on the causal relationships between pregnancy/childbearing and schooling; on the relationship between these reproductive experiences and household well-being; and on their impact on future work and income. In addition, more research is needed on the impact of early pregnancy and childbearing on government spending, a key issue for policy commitments. The importance of determining causality means there is a special need to enhance and expand upon sources of longitudinal data on adolescents in developing countries.

### **Promising areas of intervention**

A number of programmatic areas for intervention show promise and could be enhanced with better research on specific aspects of the programs. In the area of youth-friendly services, for instance, researchers need to focus on the specific approaches needed to make services more youth friendly and on how they are implemented, particularly as they reduce barriers that keep young people from using services.

Where school-based services are concerned, more evidence is needed to identify the specific intervention elements that make a difference. It's also important to determine the contextual factors that influence success in implementation.

The mixed findings on peer education programs call for increased attention to how these programs are designed and implemented, as well as to contextual factors that influence their effectiveness.

The analysis has highlighted the potential contributions of youth development/life skills and non-sexual health development programs for youth. These programs can have multiple benefits, including improved sexual and reproductive health outcomes, depending on the context and how they are implemented. Given the social and cultural obstacles to young people's sexual and reproductive health, these broader programs should continue to be studied. One approach to expanding what we know about the effects of these non-health-sector programs is to add indicators on early marriage, pregnancy, or use of contraception to program evaluations.

WHO (2011) has recommended additional research on non-health interventions to prevent unintended and unwanted pregnancy. This research should assess the impact of improving access to education on age at marriage. It should determine the effect of formal and nonformal education on adolescent pregnancy prevention. It should assess the feasibility and long-term impact of providing economic incentives to girls and their families to delay sexual debut and age at marriage. Research should also focus on determining the effect of school-retention interventions (e.g., conditional or unconditional cash-transfer interventions) on delaying pregnancy. Taken together, these research investments would go a long way toward expanding our understanding of how to create the valued, respected alternative life course that seems so important to delaying marriage and childbearing.

Social marketing and behavior-change communication interventions have been effective in motivating uptake of condoms and contraceptives but have had less impact on effective use and continuation. Research can contribute to exploring the content and delivery mechanisms that would strengthen young people's commitment to these choices.

Cash transfers and other financial incentives have motivated changes in reproductive health-related behaviors in a variety of settings. Attention needs to be paid to the specific behaviors that are targeted and how incentives to change them are implemented. To what extent is behavioral change without normative change acceptable and sustainable?

Multipronged interventions to change behavior relating to contraceptive use may be effective, but identifying the specific elements of these programs that have the strongest effect is often difficult. This is essential information for sorting out which interventions are more effective to make programs more cost-effective. As the collective wisdom of many professionals working to increasing contraceptive use has confirmed, family planning programs should consider supply, enabling environment, and demand components to be effective (Jacobstein et al. 2013: S12). Among the ten elements that international family planning professionals have identified as key to successful programs, which are most important with adolescents of varied profiles? And in resource-poor settings, which should programs focus on? Research can help answer these questions.

### **Methodologies to prospectively evaluate structural interventions to reduce inequities and vulnerability**

Given the importance of gender, age, and other inequalities in determining girls' and boys' access to contraception—and the extent to which these inequalities are now referenced in the literature—we know that structural interventions are especially important. As a recent analysis of programs aiming to delay child marriage has found, there is a need to investigate the factors that make it possible for young women to pursue an alternative life course, one that does not involve early sex, pregnancy, and

marriage (Greene 2014). To what extent have programs offered respected, viable alternatives to early marriage and childbearing?

A host of social determinants influence demand for and use of contraception, and a number of them are especially influential in developing countries. These factors include girls' and women's social status and decision-making power, level of education, marital status, economic status, age, place of residence, and experience of violence (Askew and Brady 2012). Because social determinants are deeply context- and population-dependent, the evidence must be generated for all countries (Ortayli and Malarcher 2010). As we know, evidence of the effectiveness of interventions to reduce early marriage, reduce unmarried girls' exposure to unwanted and coerced sex, and empower women to adhere to their reproductive intentions is largely nonexistent. Evidence is also needed on "gendered" interventions that enable more positive and balanced interactions by girls and women with their partners, families, and communities (Askew and Brady 2012).

### **Research that contributes to translating research into programs**

Translating research into sound policy and action requires that the research be rigorous enough to pass muster in the scientific community. Much of the evidence reviewed in this report provides a sound basis for policy and action, but more research is needed. The translation process is complicated by the cultural and political sensitivity of reproductive health interventions for adolescents and by unsupportive politics surrounding adolescent access to contraception and other reproductive health interventions.

However successful we are in mapping out the problems, consequences, and plan of action in a given setting, there may well be difficulties in implementing the plan. Understanding how to work in such contexts represents another knowledge gap. We need examples of settings in which research has successfully been translated into investments and the conditions that had to be in place for that to happen, and we need to better understand the conditions that have to be in place for research utilization to take place.

#### *Research to support taking programs to scale*

There is a great need to build on our growing knowledge of what works and how to take successful programs to scale. Scaling up programs requires strong data on intervention components and the institutional and service-delivery factors that will ensure success in implementation, particularly when we learn that interventions work in some settings but not others. Being able to say that an intervention *caused* a specific outcome increases the likelihood that the evidence will be translated into a replication or scale-up. Thus an additional strong recommendation emerging from this business case is the need to invest in strong intervention research that includes pre- and post-testing and comparison groups.

#### *Research on strategies for advocacy and accountability*

Increasing adolescent access to contraception often comes with controversy. The gap between policy commitments and actual program implementation is often wide. Adolescents are voiceless for the same reasons they may be excluded from accessing contraceptive services: by virtue of their age, gender, or low social standing, they are likely to have difficulty in advocating on their own behalf. This requires strategic advocacy on their behalf and accountability that engages them, members of their families and communities, and the institutions meant to serve them. What do we know about the processes that

make it possible for adolescents and those who care about them to translate their sense of entitlement into actions that hold the institutions that serve adolescents accountable?

Another strong theme running throughout this review is the need for effective program models to be adapted to diverse cultural settings. This is possible only with solid research that makes analysis of program components possible.

Buvinic and colleagues (2013) have emphasized the need to collect data on health conditions that are shaped by society rather than biology. “Dedicated surveys covering multiple dimensions of adolescent girls’ lives, with prospective panels of girls in different age cohorts that are followed over time, are highly desirable to fill policy data gaps on adolescent girls’ well-being” (Buvinic et al. 2013: 25). Though determining causality calls for longitudinal data, the Demographic and Health Surveys, from which most evidence on social determinants is drawn, are cross-sectional.

### *Research on costs and benefits*

The costs associated with unmet need for contraception and with childbearing among adolescents and the costs of related interventions are key inputs needed to make a business case for interventions. Thus research to determine those costs (if not already well documented) is key to making the business case for research on these outcomes. Our review of existing research on unmet need for contraception, on childbearing among adolescents, and on interventions finds very limited evidence on costs, especially in developing countries. More evidence exists for the United States, and approaches taken in the United States are potentially useful guides to what might be done in developing countries.

One study of developing countries (Chaaban and Cunningham 2011) drew upon estimates of the contribution of girls’ schooling to their potential productivity later in life to determine the impact on national gross domestic product (GDP) from the loss of schooling caused by early childbearing. Estimated reductions in GDP ranged from only 1 percent in China to 31 percent in Uganda.

US researchers (Maynard and Hoffman 2008, in *Kids Having Kids*) presented an analytical approach to this task that employed direct estimates of a range of public expenditure categories. The categories included public assistance in cash, food stamps, medical care, and employment support, along with estimates of lost productivity and costs of child care and incarceration. This effort was intended to guide advocates at the state level in their documentation of the costs associated with early childbearing. Another recent study estimated the costs to US taxpayers of covering medical care for unintended pregnancy (Monea and Thomas 2011). In addition, Frost and colleagues (2008) estimated the *savings* per dollar invested in contraceptive access in the United States, stating that, “public expenditures for family planning care not only help women to achieve their childbearing goals, but they also save public dollars: Our calculations indicate that for every \$1 spent, \$4.02 is saved” (Frost et al. 2008: 92).

Because developing countries offer little or no public assistance to adolescent mothers beyond medical services, and because other costs may be mitigated through practices such as fostering, nonmedical aspects of the US approach have limited applicability in poor countries.

Little or no information exists on the costs of interventions to prevent early childbearing or reduce unmet need for contraception in poor countries. The Futures Group has developed a methodology for demonstrating the costs and benefits of reducing unmet need among women of all childbearing age groups (for a summary, see Godbole and Smith 2012). Their methodology includes estimates of the cost

of meeting unmet need as well as the cost savings from reduced public expenditures on health, education, water, and sanitation that could be associated with prevention of unintended and unwanted pregnancies. The methodology involves some rather heroic assumptions about these linkages but is a potentially useful tool for making the case for investments in interventions to reduce adolescents' unmet need for contraception.

Researchers at the Guttmacher Institute have developed a methodology for determining the costs and benefits of investing in interventions to meet unmet need for contraception for women in all childbearing age groups. Their *Adding it Up* reports (for example, Singh and Darroch 2012) present detailed data on the costs of providing contraceptives at the global level as well as estimates of how meeting unmet need could reduce costs associated with unintended and unwanted pregnancies, abortions, and maternal deaths resulting from failure to meet unmet need. The report provides data on major regions of the developing world as well as information on data availability for some countries. Other Guttmacher researchers have carried out country-level studies on specific aspects of this topic. One example is calculating the costs for individuals and households associated with unintended and unwanted pregnancies ending in abortion in Uganda (Sundaram et al. 2013).

Given what we know about the effectiveness of more general demonstrations of the comparative costs and benefits of investments in family planning, it would be very helpful to have country-level models that focus on early childbearing. Annex 2 reviews available information that might be used to develop a full-blown case study for Uganda. Chaaban and Cunningham (2011) found that the lifetime "teen childbearing tax" resulting from the lost productivity of young Ugandan women who married and started childbearing early amounted to 31 percent of per capita GDP.

In their research on Uganda, Babigumira and colleagues (2012) calculated the costs of family planning relative to costs associated with a higher number of pregnancies, abortions, deliveries, and stillbirths. They concluded that an expanded family planning program would be highly cost-effective.

More work is needed to combine the various pieces of evidence into an effective demonstration model. Better data are needed on interventions with the potential to make an impact in Uganda and on what they would cost. Annex 2 provides additional discussion of this potential and what could be done to realize it.

Although our review found very limited evidence on costs to address unmet need for adolescent contraception, especially in developing countries, combining models prepared for developed countries with demographic and health systems data from developing countries provides useful information about projected costs. For example, we projected an additional cost of US\$3.47 million annually to satisfy the unmet need of women 15 to 19 years old in Uganda. Costing research from the Futures Group and Guttmacher Institute has suggested a three-dollar savings for every dollar spent on family planning (Futures Group 2009, Vlassoff et al. 2009). These groups prepared a detailed methodological appendix that might guide other country-level efforts.

Calculations of the costs and benefits of investing in programs to meet unmet contraceptive needs of adolescents (as well as to delay early marriage) would provide advocates for these programs with a useful tool to persuade governments and donors to invest in them. Because there has been little quantification of the economic costs and benefits of such programs in developing countries, one of our recommendations is to fund research to address this gap.

Based on the Uganda data, our quick calculation of the cost of meeting unmet need for contraceptives among adolescents is very low compared to estimates for all women of reproductive age. Given the importance of non-health-related factors in the sexual and reproductive lives of adolescents, a full simulation would have to look at the costs of other (non-family planning) interventions as well as health interventions, and it would have to examine the benefits in areas beyond health, including gains in education and productivity. The available evidence suggests that the relatively modest investments in adolescent contraceptive access would produce an even greater return in terms of the savings, because of the serious and disruptive effects of early childbearing on adolescents (Gipson et al. 2008, Malarcher et al. 2011). Thus, another contribution of the research is to convey the implications of this work for sectors other than health and its lasting impact on the realization of a future demographic dividend. Pregnancy and childbearing in adolescence affect young people their whole lives, and it is important to convey how that happens, what can be done to mitigate any harmful impacts, and how choosing to use contraception can have positive reverberations throughout people's lives.

## Summary of the business case

This business case describes the economic and social returns of investing in research to improve adolescents' access to contraceptive information and services, identifies potential strategies for translating findings into policy and program change at the national and global levels, and lays out key areas in which the investment should be focused.

We have outlined three key reasons for governments and donors to invest in research on adolescent access to and use of contraception:

- Making the money count.
- Supporting global health priorities and adolescents' rights.
- Recognizing the unique, crucial role of governments and donors in regard to research as an important public good that can drive investment in this area.

The timing of this research investment is key: it needs to happen now to take advantage of opportunities to achieve the demographic dividend in many settings.

The business case also lays out an emerging road map for investing in research on adolescent contraceptive access and use and offers recommendations for investment. The research gaps we have identified can be classified by study population, areas of intervention, and the sorts of systems, savings, and costing information needed to translate intervention research into policy.

## Discussion and conclusion

This document has described what we know about contraceptive use among adolescents in developing countries; the research on the consequences of unmet need and early pregnancy; and the effectiveness of interventions to address unmet need, increase contraceptive use, and reduce pregnancy.

The data on adolescents in developing countries have been collected in ways that limit our understanding of some subgroups. It is disappointing, though not surprising, to consider that we have virtually no data on adolescents 10 to 14 years old. This makes it difficult to talk about modeling



“adolescent” access to contraception. The data are especially sparse on socially excluded groups, including unmarried adolescent mothers in places where unwed motherhood is stigmatized, adolescents living with HIV in Africa, and rural girls and boys.

We know little about boys in relation to sexual and reproductive health, and they make up half of all adolescents. And because we haven’t collected data on boys, we are limited in our understanding of gendered patterns and preferences in contraceptive use. The role of boys and young men in pregnancy prevention for their own sake and for the sake of their partners is a promising area for research.

Evidence on the health consequences of early childbearing in developing countries is stronger than that in other areas because research findings are based on clinical data as well as data from cross-sectional surveys. Evidence of the effects on schooling is mixed because causal links are more difficult to establish and contextual factors may influence the impact of teen pregnancy on school attendance. Contextual factors such as the level of poverty, support systems for young mothers, and educational policies concerning school attendance by pregnant adolescents often confound conclusions about the effects of adolescent pregnancy and childbearing.

Existing evidence on the effects of early marriage and childbearing on individual and household well-being in developing countries is scant and has significant methodological and data limitations. Taken together, however, the research on adolescent unmet need, pregnancy, and childbearing consistently shows negative consequences, even when adolescents themselves perceive benefits of becoming parents at an early age. We clearly need more longitudinal data on the experiences of adolescents and their life trajectories to speak more confidently about the causal relationships regarding early childbearing, health, school attendance, the well-being of children, and future earnings.

And what do we know about interventions to increase adolescent access to and use of contraceptive information and services?

As we become better at modeling the situation of adolescents and the impact of their increased use of contraception, we are still somewhat inhibited in taking action on policies and programs: the most significant gaps in our knowledge are in how to spend money in ways we know will bring about the hoped-for impact. This weakness in our knowledge is especially serious given that we want to disseminate models for adaptation in diverse cultural settings. This is possible only with solid research that makes analysis of program components possible and provides detail about why activities have an effect. As we have shown, in a number of specific areas, promising evidence calls for greater investment and would likely lead to greater impact.

Within intervention research, we know the least about the impact of programs aiming to address structural factors impeding access to contraception. These factors include social norms, gender inequalities, and lack of access to resources.

The problem of violence and coerced sex among adolescents, like child marriage, has recently received a great deal of attention. WHO has suggested that engaging men and boys to alter harmful gender norms and normative behaviors is key to preventing coerced sex (WHO 2013). WHO has also highlighted the need for research into the formulation, implementation, and monitoring of laws and policies to determine their effectiveness for preventing coerced sex.

What information do we need to translate research into action on behalf of adolescents? We know enough to take action in some areas, and to call for research to reinforce our clarity in others. Cost information on interventions is limited, and we need more information to compare the costs and benefits of programs to ensure their replication and expansion. There are likely some unanticipated savings to be gained from investing in adolescent contraceptive use, and research is needed to show the way on this front. Some of the consequences research, for example, suggests that indirect policies such as increasing adolescent access to contraception may improve education outcomes.

The available costing data are unequivocal, but their application to developing countries is limited. One investment priority is therefore the development of a few concrete sets of estimates of the savings to developing-country governments of investing in adolescent access to contraception. More evidence on the economic costs of failing to invest in programs to delay marriage and childbearing is needed. We need a stronger evidence base on the costs and benefits of these investments at the country level to convince uninterested or reluctant governments and donors to make them. This information should be very useful to ministers of finance as they prioritize investments in various sectors.

Strengthening the research base on investing in adolescent contraceptive access and use requires directing a spotlight to the causal relationships and the mandate for investing in research. We have some data on some adolescents, and we can model the impact of their increased use of contraception on their childbearing and future lives. We do *not* know as much, however, about the impact of interventions and therefore precisely what to recommend programmatically to governments and donors. Investing in research in this area is an essential form of advocacy that is urgently needed. The diversity of adolescents, the social and cultural obstacles to addressing their needs related to sexual and reproductive health, and the politics that dilute the proper use of evidence—all require closer attention.

Arraying the evidence and making the case for the cost-effectiveness of investing in research on adolescent access to contraception is necessary but not sufficient for building a complete business case. We also need information on specific contexts to ensure the successful integration of research findings into planning, policy and programs, particularly those that might be implemented at a large scale. Contextual factors of concern include the strength of the health system, political commitment, and other social challenges and opportunities that may affect the environment for investing in adolescent sexual and reproductive health.

Why should donors invest—and convince others to invest—in research on adolescents’ access to and use of contraception?

This research will help the world reduce costs associated with early pregnancy and childbearing and help to achieve the greatest future return on adolescents’ social capital. Failure to invest in efforts to delay early marriage and childbearing, educate girls, and remove obstacles to their full participation in the economy will cost them and their countries dearly. In contrast, investing in increasing access to and use of contraceptives will have positive ripples throughout the lives of adolescents, including improved outcomes in educational attainment, household well-being, future earnings, and reduced government spending.

Research on adolescent access to contraceptive information and services will also support the achievement of global health goals. These goals that have been established by many international agreements and national laws and policies.

This research will also help to increase recognition of adolescents' human rights. Donors who are motivated by a concern for rights recognize and appreciate the centrality of adolescent access to contraceptive information and services to the realization of their rights across the spectrum of their lives.

This research will address gaping holes in our understanding of the problems and solutions. Increasing commitment to research will drive a greater understanding of the challenges faced by adolescents, including those created by their families and communities. And it will generate the evidence on which more cost-effective programs can be based to reduce unmet need and allow adolescents to fulfill their reproductive intentions.

This research is an important public good that can drive investment in areas with positive externalities. It can contribute to greater understanding of and response to the inequalities faced by diverse adolescents. And the positive effects of this research and subsequent interventions will benefit adolescents, their children, families, communities, and nations.

The world stands to gain considerably from investing in research that helps to reduce and mitigate the risks of early sexual activity and childbearing. Rather than taking early pregnancy and childbearing for granted, governments have an opportunity to invest in increasing adolescents' access to contraceptive information and services. Investing in research that will help to back this up will provide evidence to protect many other areas of adolescents' lives: their schooling, health, earning capacity, and health and well-being of their children. The payoff in improved prospects for families of healthy, educated girls and boys will make these investments an overwhelmingly good buy.

## Annex 1. Summary of research on consequences of early childbearing and on related interventions

Tables A1 and A2 summarize research findings on consequences of and interventions for early childbearing and pregnancy. The last column in each table is labeled “Type of evidence” because the tables report findings from a range of research approaches, including sample surveys, clinical records, cross-country comparisons, and randomized control trials (RCTs). Our report attempts to be inclusive of a range of data sources. It is important to recognize that the robustness of evidence varies according to the research methods being referenced. Sample surveys such as Demographic and Health Surveys (DHS) are useful sources because of their focus on family planning and reproductive health, the number of surveys that have been carried out, and their comparability. For intervention research, individual sample surveys can spot associations between variables but cannot establish causality.

For causality, before and after surveys, particularly longitudinal surveys that interview the same respondents, are more helpful. Quasi-experimental design studies and RCTs are often considered the “gold standard” for identifying causal impacts, but they have important limitations. They require careful measurement of treatment and control groups that are alike in all respects except exposure to the treatment. This makes them expensive and time consuming. Further, keeping the control group isolated from the treatment group is often difficult, as news of effective treatment may travel from site to site and result in crossover effects. “Treatment” is also more complex in social research than it is in biomedical research because the treatment in social research (behavior change interventions) may have multiple dimensions that are not all measured.

Context affects outcomes, and while an RCT can tell us that an intervention works in one context but not in another, it cannot tell us *why*. So while RCTs play an important role in research on the effectiveness of interventions, other approaches are also needed. Researchers who study the implementation of interventions have employed a number of tools including an approach that was earlier labeled “operations research” and is now called “implementation research.”

We also draw upon national-level and cross-country reviews of various types of evidence. These reviews can be more or less systematic in assessing the robustness of the evidence they report. Systematic reviews such as World Health Organization (WHO) Cochrane Reviews and the meta-analyses we have quoted in the paper screen reports on the basis of their analytical approaches and data quality and report findings from the studies that pass. The number of studies that they include is therefore limited; our review is more inclusive. Although Tables A1 and A2 are not meta-analyses, we do report findings from meta-analyses as well as RCTs/quasi-experimental designs, sample surveys, clinical reports, and reviews that do not screen evidence for robustness. For this reason, we include the last column of the table as a guide to the different types of evidence being reported.

**Table A1.** Summary of research findings on effects of early childbearing.

Location and approach	Citation	Findings	Type of evidence
a. Health consequences of early childbearing: Stronger findings on health impacts from research based on clinical record compared to findings from cross-sectional survey data			
Global review	Geoghegan, Save the Children, 2004	Girls in their teens in poor countries are twice as likely to die from pregnancy- or childbirth-related causes compared with older women, while girls aged 14 and below face even higher risk. Children born to young mothers are more likely to be born prematurely and at low birth weights, more likely to die in the first year of life, less likely to receive adequate nourishment and health care and a good education, and more likely to be poor throughout life.	Cross-country review of survey data
DHS data for 15 developing countries	Reynolds, Wong et al. 2003	Data on nearly 100,000 births in 15 developing countries showed significantly less use of prenatal and delivery care with a skilled provider among adolescents under age 17 compared to 19- to 23-year-olds.	Cross-country review of survey data
India review	Jejeebhoy 1998	Adolescent mothers are more likely to suffer higher perinatal and neonatal mortality; levels of anemia and complications of pregnancy are higher, and they are less likely to obtain antenatal care and trained attendance at delivery than older mothers.	Clinical records
Africa review	Zabin and Kiragu 1998	Because of their physiological and social immaturity, the risks of pregnancy-related death and disability are more pronounced for teenage mothers.	Clinical records
Global review	Upadhyay and Robey 1999	Young women who become pregnant are at risk of obstructed labor if they have not grown to their full height or pelvic size. They are also more likely to suffer from eclampsia, which threatens them and their babies.	Clinical records
Global review of pregnancy outcome data	WHO 2004 and 2006	30 to 60 percent of adolescent pregnancies end in abortion, and each year at least 2 million young women in developing countries undergo unsafe abortions, with consequences such as cervical tearing, perforated uterus, hemorrhage, chronic pelvic infection, infertility, and death.	Cross-country review
Global review of mortality data	WHO 2006	Adolescent mothers aged 15 to 19 are more likely than older mothers to die in childbirth, and very young mothers (aged 14 and under) are at the highest risk. The risk of maternal death during childbirth is two to four times higher for adolescents under age 18 as compared to women over age 20. Overall mortality rates for adolescents are four times higher in low-income countries than in high-income countries, a difference that is even greater for young women in Africa and South Asia.	Cross-country review
South Africa panel study	Branson et al. 2009a	Children of adolescent mothers are significantly more likely to be underweight and stunted. Having a child, particularly a less healthy child, affects a young woman's ability to continue with her schooling. Early childbearing has a sharply negative effect on child health outcomes.	RCT

b. Effects on schooling: Findings are mixed because causal links are more difficult to establish, and contextual factors often mitigate the potentially adverse impact of early marriage and teen pregnancy on school attendance			
Comparative DHS data	Meekers 1994	The rise of primary and secondary schooling and the expulsion of pregnant girls from school mean that unmarried young women have much more to lose if they become pregnant. An analysis of DHS data shows that over 40 percent of births to teenage mothers in Botswana, Ghana, Kenya, Liberia, and Togo were unwanted. The percentage unhappy with the timing of the first birth is higher for teenage mothers than for those starting childbearing later.	Multiple DHS surveys
Botswana survey data	Meekers and Ahmed 1999	The cumulative effect of exposure to this risk over several years and the difficulties girls face in returning to school after a pregnancy increase its negative impact on educational attainment.	Cross-sectional survey
Cameroon survey data	Eloundou-Enyegue 2004	Payoffs to reducing unintended pregnancy are greater when early pregnancy rates are higher, where equity in <i>primary</i> education is being achieved, and when unintended pregnancies lead more unequivocally to dropping out of school. The study found that lack of money was the dominant cause of school dropout (33 percent), followed by poor grades (20 percent), and pregnancies (16 percent).	Cross-sectional survey
Global review	Geoghegan, Save the Children, 2004	Early childbearing not only disrupts school but ruptures girls' connections with mentoring adults and peers who could provide linkages to useful information and institutions.	Cross-country review of surveys
Review of survey research in Chile, Barbados, Guatemala, and Mexico	Buvinic 1998	"Early childbearing seems to entrench women's poverty" (p. 206). "[F]or poor women . . . adolescent motherhood is associated with lower earnings, even after controlling for mothers' educational level" (p. 206). Younger adolescent mothers earn significantly less than older adolescent mothers. In all four countries, adolescent mothers are more likely to live in poverty even after controlling for the mother's education and socioeconomic status as a child.	Cross-sectional surveys
Meta-analysis of research on causal links	McQueston et al. 2012	Clearly, there are strong correlations between adolescent fertility, childbearing, and education across studies. However, the effect size varies considerably based on the methodology and specific formulation of the research question, and it remains tenuous to draw causal conclusions from the existing literature.	Meta-analysis
South Africa panel study	Branson et al. 2009b	Strength of findings linked to racial groups. Colored young adults born to teen mothers are found to be at risk of poorer educational and home environment outcomes. Children born to teen mothers are more likely to live in households with a resident alcoholic and to fear physical abuse during childhood than their younger siblings/cousins. Results do not hold for black and white groups.	RCT
United States National Longitudinal Study	Kane et al. 2013	Adolescent mothers face various disadvantages in educational attainment, but to what extent is this association causal? Estimated effects and magnitude vary considerably. Using four statistical strategies, the authors demonstrate the negative effects of early childbearing on	Longitudinal study

of Adolescent Health		schooling and make an important methodological contribution: “Based on the range of estimated effects observed in our study, we speculate that variable statistical methods are the likely source of inconsistency in the past.” They recommend the use of multiple methods to generate future findings.	
Cross-country study of early marriage in Africa	Omoeva and Hatch 2014	Although married girls make up a relatively small portion of the population of the region, their marital status trumps every other characteristic in their background that has been shown to determine school participation for the population at large.	Merged DHS surveys
c. Effects on household well-being: Causal links are difficult to establish because research on the effects of teen childbearing in poor countries is limited.			
Uganda prospective survey of 1,228 women admitted to one of 27 facilities for post-abortion care	Sundaram et al. 2013	Ugandan women and their households spend substantial funds on unsafe abortion and related care. The study includes all women, but those classified as having had an induced abortion were significantly more likely to be adolescents, unmarried, and attending school. Women under age 20, childless, unmarried, or attending school paid more for unsafe abortions than older women. Younger women reported significantly more negative consequences for their children (missed meals, missed school) than older women, but less loss of productivity, probably because they were less likely to be working.	Facility-based records
Santiago, Chile, survey of adolescent mothers	Buvinic 1998	Disadvantages of early parenthood may be transitory and young mothers may overcome them over time; negative outcomes of early childbearing may result from associated conditions such as poverty, and these women may fare poorly even if they delay childbearing.	Cross-sectional survey
Mexico survey of adolescent mothers	Buvinic 1998	Even when a child’s age and mother’s socioeconomic level were controlled for, the nutritional status of the children of younger childbearers was significantly poorer than that of older childbearers. Lower monthly earnings for mothers and lower child nutritional status result <i>among the poor</i> and not among all adolescent mothers.	Cross-sectional survey
Global review	Temin and Levine 2009	For many girls in developing countries, well-being is compromised by poverty and gender inequality, as manifested by poor education, violence, abuse, unsafe working conditions, limited access to health care, and early marriage.	Cross-country review
Cross-national: Opportunity Costs of Teen Childbearing	Chaaban and Cunningham 2012	The lifetime opportunity cost related to adolescent pregnancy—measured by the young mother’s forgone annual income over her lifetime—ranges from 1 percent of annual GDP in China to 30 percent of annual GDP in Uganda. Malawi and Nigeria also have very high costs, equal to 27 and 26 percent of GDP, respectively.	Multi-country simulation models
Comprehensive review of 60 US studies	Sonfield et al. 2013	A combined review of 60 high-quality studies finds early unintended pregnancy in the United States associated with: <ul style="list-style-type: none"> <li>• Depression and poor mental health.</li> <li>• Marital conflict and instability; divorce.</li> <li>• Reduced school completion.</li> <li>• Disadvantage in the labor market.</li> </ul>	Meta-analysis

		<ul style="list-style-type: none"> <li>• Lasting effects on children’s cognitive ability, test results, and self-esteem.</li> </ul>	
d. Effects on government spending in the United States have been estimated using simulation models that could be adapted for developing-country use			
Impact on taxpayer spending	Monea and Thomas 2011	Unintended pregnancies in the United States represent a substantial annual cost to taxpayers, as calculated in this study, in the range of \$9.6 billion to \$12.6 billion. The estimated savings that would accrue to taxpayers by preventing unintended pregnancies range from \$4.7 billion to \$6.2 billion for medical expenses associated with the pregnancy. Importantly, these estimates do not reflect a number of other public and private costs associated with unintended pregnancy, such as those related to lower educational attainment, labor force participation, and children’s success in school and work, as well as the children’s higher likelihood of future delinquent or criminal behavior.	Simulation modeling
Potential savings of investing in publicly funded contraception	Frost et al. 2008	The study estimates the number of unintended pregnancies prevented by all US publicly funded family planning clinics in 2004 (1.4 million pregnancies nationally, of which 290,000 would have been among teenagers aged 15 to 19). It compared the actual costs of providing these services (\$1.4 billion) with the anticipated public-sector costs for maternity and infant care among the Medicaid-eligible women whose births were averted (\$5.7 billion) to calculate net public-sector savings (\$4.3 billion). They conclude, “Public expenditures for family planning care not only help women to achieve their childbearing goals, but they also save public dollars: our calculations indicate that for every \$1.00 spent, \$4.02 is saved.”	Simulation modeling
e. Effects on the lives and well-being of adolescent fathers and their children—data from longitudinal surveys in the United States show some adverse effects for the young fathers of children born to teen mothers. Longitudinal surveys are less available in developing countries but have been a valuable resource in some countries, including South Africa and Malawi			
United States	Donohue and Levitt 2001	The reduction in the number of unwanted births due to more permissive abortion laws had a significant effect on levels of crime two decades later: specifically, a 50 percent increase in the ratio of abortions (a good proxy for unwanted births) to live births is associated with an 11 percent decrease in violent crime, 12 percent decrease in murder, and 8 percent decrease in property crime.	Simulations
United States	Fletcher and Wolfe 2011	The authors find that adolescent fatherhood leads to fewer years of schooling, a decrease in the chances a young man will receive a high school diploma, and an increase in the chances he will earn a General Educational Development credential. Adolescent fatherhood also increases early marriage, cohabitation, and full-time and military employment, but this labor does not translate into short-term increases in income.	Longitudinal data
United States, National Longitudinal Survey of Youth (NLSY)	Covington et al. 2011	They find that “teen mothers had a larger schooling penalty than teen fathers in the earlier cohort, but this difference appears to have diminished over time, with men in the NLSY97 cohort having a larger educational penalty than those from the NLSY79 cohort.”	Longitudinal data



United States, National Education Longitudinal Study (NELS)	Mollborn 2010	Research based on the US NELS showed the competition between schooling and work, particularly among young parents who were not living with two parents. Young men's engagement as primary caregivers significantly increased their odds of graduating (7.4); those working at least half-time were less likely to graduate (0.2).	Longitudinal data
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**Table A2.** Interventions to delay early childbearing.

Location & Approach	Citation	Findings	Type of Evidence
Youth-friendly services have proved to be effective in some settings, but results are mixed in others. Most programs employ a combination of interventions (training of providers, consumer education, improvements in accessibility of services). Researchers need to focus on the specific approaches used to make services more youth friendly and on how they are implemented, particularly in reducing barriers that keep young people from using services.			
Population-based surveys collecting baseline and endline data in Bangladesh	Bhuiya et al. 2004	The intervention was carried out with in and out of school youth, connecting them with youth-friendly services, where their knowledge of contraceptives and health risks of early pregnancy improved. It also increased their favorable attitudes to use of condoms by married and unmarried adolescents and youth friendly services, and increased male use of condoms.	Quasi-experimental design study
Global systematic literature review of effective non-facility-based ASRHS	Denno et al. 2012	The most effective out-of-facility approaches to reach youth with reproductive health services included condom distribution via street outreach and promotion of over-the-counter access to emergency contraception. Youth centers are not advisable.	Cross-country review
Cluster randomized trial of community services in Zimbabwe	Cowan et al. 2010	The study found significant results of slight increase in reported contraception seeking behavior and reduction in reported pregnancies as a result of the intervention to improve access and quality of ASRH services.	Randomized trial
Evaluation of Integral Support Program for the Pregnant Teen (ISPPT) in Brazil	Sant'Anna et al. 2007	This study consisted of meetings attended by adolescents during pregnancy and conducted by a multidisciplinary team that discussed family planning, self-esteem, motivation to continue education and/or work and mother-child relationships. One year after birth, the program showed positive results for the human development impact on the adolescent mothers, as well as on their health and that of their children.	Year-long longitudinal survey, no control
Review of evidence on effective youth-friendly health services	Tylee et al. 2007	The authors suggest further incorporation of the WHO framework into health programs for youth, more research on the effect of screening and counseling services on young people's health and taking into account population-based initiatives, socioeconomic factors and political conditions.	Cross-country review
Systematic review of effectiveness of youth centers SRH services in LMICs	Zuurmond et al. 2012	The evidence revealed that young men in school or college—older than the target age group—were more likely to use youth centers. On-site service users were more likely to be young women, also older than the target. Overall, uptake of services was low, bringing to attention the cost-effectiveness of such services.	Cross-country review
Review of effectiveness of interventions providing ASRH services	Kesterton and Cabral de Mello 2010	Strong, rigorous evidence is lacking for interventions that increase demand and community support for ASRH services. Multi-component approaches such as linking school education programs with youth friendly services, life skills and social marketing may increase uptake of services; support of community gatekeepers is also integral.	Cross-country review
Global Review	Oringanje et al. 2009	A combination of multiple interventions: education, skill building and contraceptive education/promotion lowered the rate of unintended adolescent pregnancy. Interventions	Cochrane Review

		included health education or counseling only, health education plus skills-building, health education plus contraception education, contraception education and distribution, faith-based group or individual counseling. Results showed that combining interventions lowered the unintended pregnancy rate among adolescents.	
Cross-sectional data to evaluate family planning program in Ethiopia	Portner et al. 2011	Evidence from fieldwork revealed that accessibility and receptiveness to family planning are key since access to family planning was statistically significant at reducing fertility among women with no schooling.	Cross-sectional survey
Program evaluation	Eisenberg et al. 2013	The study features two strong programmatic evaluations, one of which found that over five years the cost savings in preventing unintended pregnancy was greatest among adolescent mothers at a savings of \$17.23 for every \$1 spent on contraception for 14-19 year old women.	Cohort study
Youth-Friendly Clinics in South Africa	Byker 2014	Preliminary results from a study of clinics certified as youth-friendly show that women who lived within 5km of a clinic when they were 12-17 years old are significantly less likely to experience a birth before the age of 18.	Linked survey, census and administrative records
Global review of evidence on reducing burden of unintended pregnancies	Mulligan et al. 2010	Hormonal contraception is nearly 100% effective at reducing unwanted pregnancies and long acting/permanent methods, such as intrauterine devices, are the most effective. More systematic reviews of interventions to reduce barriers to these services, especially for adolescents, need to be completed. In addition to political support for family planning and integrating services, it is also key to stimulate demand for these services, moving away from simply providing information to encouraging behavior change. Access to safe abortion also is associated with improved sexual and reproductive health: six years after South Africa eased its abortion law, deaths caused by unsafe abortions fell by more than 50% (p. 10).	Cross-country review
School-based programs show strong positive effects in some settings but have mixed effects in others. Most involve a range of interventions (sexuality education, teacher training, services for students). More evidence is needed to sort out the effects of the specific kinds of interventions that are employed and on the contextual factors that influence implementation.			
Global Review	Oringanje et al. 2009	A combination of multiple interventions: education, skill building and contraceptive education/promotion lowered the rate of unintended adolescent pregnancy. Interventions included health education or counseling only, health education plus skills-building, health education plus contraception education, contraception education and distribution, faith-based group or individual counseling. Results showed that combining interventions lowered the unintended pregnancy rate among adolescents.	Cochrane Review
Systematic Review of interventions in low and middle-income countries	McQueston et al. 2012	School-based, health-counseling and cash transfers showed success at reducing adolescent fertility. Interventions addressing cognitive indicators related to reproductive health (attitude/knowledge) on abstinence/contraception/reproductive ideals showed significant results, at least in short term, but it is unknown if this leads to behavior change.	Meta-Analysis

Survey of in-school adolescents in Kenya	Duflo et al. 2012	An education subsidy and an HIV education program, each conducted separately, significantly reduced teenage pregnancy.	RCT
Evaluation of school-based interventions in Kenya	Duflo et al. 2006	Reducing the cost of education and providing free uniforms helped girls remain in school (2.5 times less likely to drop out than girls in non-participating schools) and delay childbearing (1.5 times less likely to start childbearing and 1.4 times less likely to be married). Teacher training did not affect the incidence of teen childbearing. One year after intervention of informing girls about HIV infection rates among older men were 65% less likely to become pregnant by adult partners. Among girls exposed to information on the risks, childbearing rates decreased by 32%.	RCT
Reviews national survey data from 12-19 year old adolescents in Burkina Faso, Ghana, Malawi and Uganda	Biddlecom et al. 2007	For effective ASRH programs, include comprehensive school-based sex education, strengthen the health care system, encourage use of modern contraception and make condoms widely available, provide adolescents with specific information and skills, start interventions <i>before</i> adolescents start to have sex and involve the community.	Cross-country review
Analysis of the Female Secondary School Stipend Project (FSP) in Bangladesh	Schurmann 2009	Little evidence that stipends improve the status, quality of life and opportunities for women and adolescent girls, and do not provide quality education to girls. Data suggests FSSP increased secondary school enrollment.	Country-level review
Data analysis of survey of young adults in Cape Town	Lam et al. 2009	The interaction of older students who have repeated grades with younger students had a statistically significant effect on the sexual debut of adolescent girls and increased the age gap with their first partner, thus complicating the approach of keeping girls in school.	Panel survey
Evaluation of Female Secondary School Stipend Project - Pakistan	Alam et al. 2011	In stipend districts, four years after implementation, girls remained in school longer, and were more likely to attend high school. First pregnancy was not delayed, but <i>second</i> pregnancy was, indicating contraceptive use and lower fertility among more educated girls once they had fulfilled requirement of first birth.	Before-after surveys
Evaluation of school-based sex education program in Brazil	Andrade et al. 2009	This school-based sex education program was integrated in four public schools to change adolescents' sexual behavior by educating them on safe practices and sexuality. Pre- and post-tests revealed the program's success in doubling consistent condom use with casual partners and increasing use of modern contraceptives during last intercourse; it did not increase sexual activity. The authors note factors leading to the success of this program correlate to characteristics of other effective programs, such as duration of more than 14 months, using interactive activities, open communication about sexuality, proper training of school teachers and emphasizing the program's values.	Quasi-experimental study
Sexuality education has increased knowledge and awareness about reproductive health in a variety of settings, but the longer-term impacts on behavior are less well documented.			
Systematic Review of interventions in low	McQueston et al. 2012	School-based, health-counseling and cash transfers showed success at reducing adolescent fertility. Interventions addressing cognitive indicators related to reproductive health	Meta-Analysis

and middle-income countries		(attitude/knowledge) on abstinence/contraception/reproductive ideals showed significant results, at least in short term, but it is unknown if this leads to behavior change.	
Survey of in-school adolescents in Kenya	Duflo et al. 2012	An education subsidy and an HIV education program, each conducted separately, significantly reduced teenage pregnancy.	RCT
Intervention research program in India	Pande et al. 2006	Community involvement & mobilization is key to create a supportive environment for youth to access RH, as well as addressing gender, involve men & boys and develop cost-effective strategies. Life skills/youth development increases girls' confidence and their perceived ability to make decisions about childbearing. Young married women's knowledge and use of SRH services increased. Decision makers experienced increased awareness and support for their wives & daughters-in-law's RH needs.	Quasi-experimental study
Population-based surveys collecting baseline and endline data in Bangladesh	Bhuiya et al. 2004	The intervention was carried out with in and out of school youth, connecting them with youth-friendly services, where their knowledge of contraceptives and health risks of early pregnancy improved. It also increased their favorable attitudes to use of condoms by married and unmarried adolescents and youth friendly services, and increased male use of condoms.	Before-After Surveys
Data analysis of national school-based CSE program in Nigeria	Huaynocha et al. 2013	Key elements of scaling up the CSE program were consensus about its components, dividing the program's complex parts among organizations with expertise in that area for implementation, strong political leadership and advocacy by NGOs, community mobilization, sound program management and constant monitoring, evaluation and accountability.	Review of before-after survey reports
Evaluation of Stepping Stones program	Jewkes et al. 2008	Stepping Stones, a behavioral intervention, did not decrease HIV infection rates, its primary objective, but had a positive impact on risk factors for men.	RCT
Evaluation of youth-friendly intervention in Shanghai	Lou et al. 2004	This intervention aimed to increase awareness and provide SRH counseling and services to unmarried youth. After the intervention, more youth reported more regular contraceptive use than those in control. Multifaceted programs providing information, skills, counseling and services can have a positive effect on use of contraception and condoms among unmarried Chinese youth.	Quasi-experimental study
Randomized control trial to test a behavioral intervention to reduce risky sex among adolescents in Mexico	Gallegos et al. 2008	This program sought to decrease unplanned pregnancies and HIV/AIDS in Mexican adolescents through an active learning behavioral intervention. The experimental group showed higher intentions to use condoms and contraceptives than the control group.	RCT
Evaluation of comprehensive sex education program among youth in Thailand	Thato et al. 2008	This study examined a culturally-sensitive comprehensive sex education program among Thai secondary school students aiming to assess their sexual behavior, SRH knowledge and protective behaviors. The results indicate the program's success at increasing participants' intention to refuse sex and sexually active adolescents reported decreased sexual activity. While the program's intent was increased consistent condom use, it did not influence this.	Quasi-experimental study
Description of the implementation and evaluation of the West	Brieger et al. 2001	WAYI aimed to use peer education to improve knowledge of sexuality and reproductive health and to promote protective behaviors and use of contraceptives among sexually active adolescents in Nigeria and Ghana. Results included increased SRH knowledge and effective use of	Quasi-experimental study

African Youth Initiative (WAYI)		contraceptives; however, Nigerian and Ghanaian women often defer to men on RH matters, so additional support may be necessary. Friends were most often listed as the likely source for information and health care workers were the next most likely source of information, providing evidence in support of peer education as one tool for effective SRH education. The authors note that SRH education and services messages need to be differentiated for older, working and/or out-of-school adolescents since they are viewed as more mature, thus their sexual relationships receive more approval and may lead to marriage.	
Evaluation of the impact of a multi-component intervention <a href="#">MEMA kwa Vijana</a> in Tanzania.	Ross et al. 2007	This intervention used community activities, teacher-led, peer-assisted sexual health education in primary school, training and supervision of health workers to provide YFS and peer condom social marketing. There was a significant impact on knowledge, reported attitudes and STI symptoms, but no significant results for biological outcomes.	RCT
Peer education has been employed as a behavior change tool in a variety of settings but with mixed results. Attention needs to be paid to how peer education programs are designed and implemented and to contextual factors that influence their effectiveness.			
Evaluation of DISHA program in India	Kanesathasan et al. 2008	While DISHA's objectives were to delay marriage and childbearing; increase access to family planning and sexual and reproductive health services for married and unmarried youth; provide youth with life skills as an alternative to marriage; and to create an enabling environment for youth sexual and reproductive health services, it also significantly increased use of contraception among youth.	Before-after sample surveys
Evaluation of government-led peer education program in South Africa	Mason-Jones et al. 2011	This peer education program was not found to have positive results in reducing the age of sexual debut, but the authors note "sub-optimal" issues in the implementation of it and suggest that for peer education approaches, consistent monitoring and evaluation for efficacy is necessary, as well as a recognition of barriers.	Quasi-experimental study
Evaluation of school-based curriculum intervention in Quebec, Canada	Caron et al. 2004	The high school respondents of this peer education intervention demonstrated improvements to their attitude, personal beliefs and perceived behavioral control with self-protective behaviors, such as postponing sexual debut and condom use. Also, involvement in designing the intervention by the peer educators (students who were trained in the school curriculum course) showed improvement in their behavior.	RCT
Assessing effectiveness of school-based peer education in the UK	Stephenson et al. 2008	Compared to sex education by teachers, peer-led education was not found to decrease teenage abortions, but may have decreased live births. While the researchers did not find significantly positive results, they encouraged further research on the effectiveness of peer-led sex education approaches since students preferred it to teacher-led approaches.	Review of RCTs
Global review of peer-led adolescent sexual health education	Kim and Free 2008	Most interventions improved knowledge, attitudes and intentions and while some trials had positive results, overall, there was not strong evidence of peer-led education among adolescents.	RCT and quasi RCT

Data analysis of survey of young adults in Cape Town	Lam et al. 2009	The interaction of older students who have repeated grades with younger students had a statistically significant effect on the sexual debut of adolescent girls and increased the age gap with their first partner, thus complicating the approach of keeping girls in school.	Panel survey
Evaluation of peer education program <i>Entre Nous Jeunes</i> in Cameroon	Speizer et al. 2001	The study's objective was assessing if exposure over 18 months to peer education increased knowledge and protective behaviors among young people. Exposure to a peer educator had a statistically significant impact on knowledge of modern contraception and STI symptoms, and it increased use of modern contraception.	Quasi-experimental study
Review of peer education interventions in developing countries	Price and Knibbs 2009	The authors discuss the use of peer education approaches as being based more on addressing HIV/AIDS and empowering youth to protect their health, both necessary, than its effectiveness at educating young people. They point out the model's simplified notions of social relations that reinforce gendered power norms and ignore the role of poverty.	Cross country review
Review and synthesis of results from peer education programs in LMICs	Maticka-Tyndale and Barnett 2010	Review results showed peer education programs to positively impact knowledge and condom use, as well as community norms and attitudes. Effects on sexual behaviors, however, were not observed. Factors contributing to peer education programs' success include community involvement, conducting a community needs assessment, peer educator training and development and sustainability.	Meta analysis
Youth development/life skills & non-sexual health development programs for youth have multiple benefits, including improved RH outcomes, depending on the context and how programs were implemented.			
Intervention research program in India	Pande et al. 2006	*Community involvement & mobilization is key to creating a supportive environment for youth to access RH, as well as addressing gender, involve men & boys and develop cost-effective strategies. Life skills/youth development increases girls' confidence and their perceived ability to make decisions about childbearing. Young married women's knowledge and use of SRH services increased. Decision makers experienced increased awareness and support for their wives & daughters-in-laws' RH needs.	Quasi-experimental study
Review of policies and programs promoting labor force participation by women in developing countries	Katz 2008	Programs in Latin America promote women's equal access to vocational training, especially in non-traditional skills, and provide stipends for childcare, thus increasing their employability and earnings. The author notes this model may have limited replicability in other developing countries since women in the Latin American countries with these programs enjoy easier access to education and employment compared to other low and middle-income countries, and these countries already had the institutional infrastructure to provide training.	Cross-country review
Impact evaluation of cash transfer old-age pension program in South Africa	Duflo 2003	Pensions received by women had a significant impact on child nutrition and health as evidenced by the weight for height and height for age of girls; and grandmothers were more likely to invest in children since they will benefit from it longer.	National sample survey
Evaluation of Guatemala's Community Day Care	Ruel and Quisumbing et al. (2006)	The goals of this program were poverty alleviation through providing working parents with low-cost, high-quality childcare as well as promoting community participation in the overall development of children. There were mixed results of the program as service provision was not	Mixed method

(Hogares Comunitarios) program		consistent or adequate, cash transfers were delayed or insufficient, operational problems were frequent, and caretakers felt inadequately trained and remunerated; however, beneficiary parents were very happy with the program. Program benefits include children's developmental and educational outcomes, as well as increasing the chances for participating mothers and the caretakers to attain formal employment and higher incomes.	intervention evaluation
Review presentations	Nanda (2013)	IMPACCT Project Presentation, December 4: <a href="#">Mid-Cycle Results from Child Marriage and Gender Norms Research. USAID</a> . Initial findings of a state-level bond program for families with daughters show greater school attendance and delayed marriage but little change of norms relating to timing of marriage.	Review of evidence
Social marketing and behavior-change communication interventions have been effective in motivating uptake of condoms and contraceptives but with less impact on effective use and continuation.			
Assessment of <a href="#">PRACHAR Project's</a> effect in India	Daniel et al. 2008	Demand for and use of contraception increased, and women receiving intervention were more likely to agree that early childbearing is harmful.	Before-after sample surveys
Examination of the PSI/PMSC Horizon Jeunes social marketing program in Cameroon	Van Rossem and Meekers 2000	This program aimed to improve ASRH in urban Cameroon by targeting them through peer education, clubs, mass media and behavior change communications. From the pre- and post-intervention surveys, results showed the program significantly impacted determinants of protective behavior, increased the proportion of female youth reporting use of oral contraceptives and increased reported use of condoms by young men and women; however condom use was inconsistent.	Before-after sample surveys
Evaluation of 100% Jeune youth social marketing program in Cameroon	Plautz and Meekers 2007	This program's objective was to address high STI/HIV prevalence and unwanted pregnancy rates through mass media and interpersonal communication. 100% Jeune increased condom use, including consistent use with regular partners for both sexes and for males, with casual partners. There was no evidence of increased sexual activity as a result of the program.	Panel Surevy
Program findings from Cameroon, Madagascar and Rwanda	Nuekom and Ashford 2003	The program implemented in Cameroon, Madagascar and Rwanda sought to prevent STIs, HIV/AIDS and unplanned pregnancies among adolescents using social and commercial marketing and interpersonal approaches to encourage protective behavior. In Cameroon, for those exposed to the program, knowledge among both sexes of how to use and where to buy condoms increased, and reported use of condoms increased for young men. In Rwanda, young people were more likely to believe condoms are an effective way to prevent HIV/AIDS, believe their friends and family support condom use, and to know where to get and how to use them. Young people exposed to the program were also more likely to use HIV counseling and testing services. In Madagascar, more youth seeking SRH services at youth-friendly clinics increased significantly.	Cross country review
There is a growing body of evidence on the effectiveness of cash transfers and other financial incentives in motivating changes in reproductive behaviors in a variety of settings. Attention needs to be paid to specific behaviors that are targeted and how incentives to change them are implemented. For example, unconditional cash transfers to girls in Malawi proved to be more effective than conditional transfers to their parents.			



Analysis of the Female Secondary School Stipend Project (FSP) in Bangladesh	Schurmann 2009	Little evidence that stipends improve the status, quality of life and opportunities for women and adolescent girls, and do not provide quality education to girls. Data suggests FSSP increased secondary school enrollment.	Country-level review
Evaluation of Female Secondary School Stipend Project - Pakistan	Alam et al. 2011	In stipend districts, four years after implementation, girls remained in school longer, and were more likely to attend high school. First pregnancy was not delayed, but <i>second</i> pregnancy was, indicating contraceptive use and lower fertility among more educated girls once they had fulfilled requirement of first birth.	Before-after surveys
Assessment of Zomba Cash Transfer Program in Malawi	Baird et al. 2009, Baird et al. 2011	The evidence here is consistent with previous research that schooling delays fertility and marriage. The Conditional Cash Transfer (CCT) intervention was significantly more effective at reducing the dropout rate than the Unconditional Cash Transfer (UCT) intervention, but teen pregnancy and marriage rates were much lower in the UCT than the CCT.	Quasi-experimental study
Analyses of effects of <i>Oportunidades</i> intervention in Mexico	Darney et al. 2013	<i>Oportunidades</i> indirectly influenced fertility among adolescents since exposure to the program encouraged them to remain in school.	Quasi-experimental study
Evaluation of intervention in Tanzania	Dow 2010	Provision of a periodic stipend reduced the incidence of STIs among participants.	RCT
Analysis of evaluation data from <i>Oportunidades</i> in Mexico	Gulemetova -Swan 2009	Findings showed the program, a nationwide antipoverty intervention aiming to improve education and health through cash transfers, to significantly delay young women's sexual debut.	Quasi-experimental study
Data comparison of surveys from <i>Progresa</i>	Merrick 2008	Comparing surveys from 1997, 2000 and 2003 show that <i>Progresa</i> decreased the likelihood that daughters of early-childbearing mothers married early and increased secondary school enrollment. However, in some cases it may have encouraged early marriage by making it possible for young women to move away and start new households.	Quasi-experimental study
Panel data on effects of CCT under <i>Progresa</i> in Mexico	Merrick and Greene 2007	Findings support targeting interventions to disadvantaged groups as there was a strong connection between secondary school enrollment and later childbearing among <i>Progresa</i> participants. The program also improved educational outcomes for poor daughters of early childbearing mothers.	Quasi-experimental study
Analysis of data from communities involved in <i>Progresa</i> in Mexico	Schultz 2004	Enrollment rates were higher for children, especially girls, in <i>Progresa</i> program areas, and there was a slight increase in the number of years of schooling they received. A noted potential side effect of the program is on fertility, since it could be used as a subsidy for parents for the cost of their child's schooling, but the author found no evidence of this.	Quasi-experimental study
Program evaluation of <i>Apni Beri Apna Dhan</i>	Sinha and Yoong 2009	This program provides a financial incentive to parents who have a daughter, one immediate payment and a savings bond to be redeemed on her 18 <sup>th</sup> birthday if she unmarried. Results of the evaluation showed that the program had a positive impact on sex ratios of living children but	Cross-sectional survey

(Our Daughter, Our Wealth) in India		other positive effects, such as desired fertility or having female children were uncertain. However, parents did invest more in their daughters' health and human capital.	
Many reviewers noted that a multiplicity of factors influence adolescent reproductive health behaviors/outcomes and have called for multi-pronged interventions to change them. Identifying the specific elements of multi-faceted programs that had the strongest effect is often difficult, but this research is needed to sort out which interventions are more effective in order to make such programs more cost effective.			
Review of developing country adolescent RH interventions	Speizer et al. 2003	The search yielded a total of 41 evaluation studies in which there was a sufficient scientific basis for making inferences concerning causality, that is, studies in which either an experimental or quasi-experimental study design; also a set of plausible studies that did not meet this standard. Found HIV/AIDS education and peer educators to have positive impact on contraceptive use.	Meta-Analysis
Comparison of intervention survey data from two towns in Shanghai	Tu et al. 2008	This program's aim was to increase knowledge of and access to SRHS among unmarried youth ages 15-24. Results demonstrated a significant increase in frequency of contraception use among respondents from the intervention group during the study period, however, longer-term results were limited. SRH services and education need to be provided on a regular basis.	RCT
Systematic Review of interventions in low- and middle- income countries (LMICs)	McQueston et al. 2012	School-based, health-counseling and cash transfers showed success at reducing adolescent fertility. Interventions addressing cognitive indicators related to reproductive health (attitude/knowledge) on abstinence/contraception/reproductive ideals showed significant results, at least in short term, but it is unknown if this leads to behavior change.	Meta-Analysis
Global Review	Oringanje et al. 2009	A combination of multiple interventions: education, skill building and contraceptive education/promotion lowered the rate of unintended adolescent pregnancy. Interventions included health education or counseling only, health education plus skills-building, health education plus contraception education, contraception education and distribution, faith-based group or individual counseling. Results showed that combining interventions lowered the unintended pregnancy rate among adolescents.	Cochrane Review
Review of 121 interventions in the United States	Kirby 2007	The programs evaluated include curriculum-based sexuality/HIV education programs—two-thirds of which showed positive effects on teen sexual behavior (delayed initiation of sex, increased use of contraception), clinic characteristics and protocols, vocational education, programs for substance abuse, parent programs, community initiatives, school based clinics & condom availability, provision of EC, youth development and video/computer-based instruction. All programs improved teens' protective factors, though showed mixed results on reducing teen pregnancy, childbearing and STDs. Curriculum-based sex and STD/HIV education programs, mother-adolescent programs, clinic protocols and one-on-one programs, multi-component community programs, multi-component programs with Intensive sexuality and Youth Development Components and service learning all showed strong positive effects for on sexual behavior or pregnancy or STD rates.	Review of a broad range of studies in the US
Evaluation of DISHA program in India	Kanesathasan et al. 2008	While DISHA's objectives were to delay marriage and childbearing; increase access to family planning and sexual and reproductive health services for married and unmarried youth; provide youth with life skills as an alternative to marriage; and to create an enabling environment for youth	Before-After Surveys

		sexual and reproductive health services, it also significantly increased use of contraception among youth.	
Analysis of interventions to delay marriage in India	Das Gupta et al. 2008	Keeping girls in school and empowering them is the most important influencer on age at marriage. Laws and policies need to be implemented while working with communities to change their attitudes and norms.	National level review of programs
Evaluation of <i>TOSTAN</i> in Senegal	Faye et al. 2004	Modules covered women's health and human rights, hygiene, problem solving, and increased women's and men's awareness of human rights, gender-based violence, female genital cutting, reproductive health, contraception, child survival and the consequences of FGC. Overall, it improved women's knowledge, among participants and even non-participants. There was a significant decrease in support of FGC for program participants, though 16% did not change their attitude. The reported prevalence of FGC among girls 0-10 decreased among women directly and indirectly exposed to TOSTAN. In <a href="#">UNICEF's 2008 evaluation</a> of the program, some of the results, such as the lower prevalence of marriages under age 15, had faded.	Post program Survey
Global review of effects of "abstinence-only" and comprehensive sexuality education programs	Boonstra 2011	Results show that abstinence-only programs do not stop or delay adolescents from having sex, and can put them at greater risk of pregnancy and STIs if information about contraception was not provided. In a UNESCO-commissioned review of global studies evaluating comprehensive programs, nearly all increased knowledge and two-thirds positively impacted behavior, with delays in sexual debut, reduced frequency of sex and number of partners and increased condom or contraceptive use. The same study also found that these programs are more cost-effective.	Cross-Country Review
Evaluation of early marriage prevention activities in Ethiopia	Gage 2009	National household surveys revealed that the more messages people heard discouraging early marriage, the less supportive they were of it, and in urban settings, roughly 25% of child marriages were stopped in program areas.	National sample survey
Evaluation of program impact in Afghanistan	Gandhi and Krijnen 2006	The Oxfam program was found to improve attitudes and beliefs toward girls' education and to provide a way for women to discuss common concerns.	Document review
Synthesis of global family planning service statistics	Jacobstein et al. 2013	Family planning programs should include supply, enabling environment and demand components to be effective. Over 700 international family planning professionals identified these characteristics for successful programs: "(1) supportive policies; (2) evidence-based programming; (3) strong leadership and good management; (4) effective communication strategies; (5) contraceptive security; (6) well-trained and high-performing staff; (7) client-centered care; (8) easy access to services; (9) affordable services; and (10) appropriate integration of services" (p. S12)	Cross-Country Review
Global review of child marriage prevention programs in low-income countries	Lee-Rife et al. 2012	The evidence indicates that the most effective programs seek to empower girls, provide incentives/economic support to families, educate and mobilize parents and community, improve schooling for girls and promote legal and policy support for ending child marriage.	Cross-Country Review

Comparison of survey data on youth in Ghana, Tanzania and Uganda	Williams et al. 2007, Daniels 2007	African Youth Alliance study. The reported use of contraception was significantly higher for females exposed to the intervention of youth-friendly services in combination with other activities than males and unexposed females.	Sample Surveys
Evaluation of <i>Berhane Hewan</i> Program to address child marriage in Ethiopia	Karei and Erulkar 2010	This intervention used community conversations, economic incentives to parents, group formation with mentors and keeping girls in school (or non-formal education to girls who had not attended school). Among other positive program impacts, family planning use increased in the experimental site.	Quasi-experimental study
Global Research Synthesis of interventions to delay second pregnancies in adolescents	Greene et al. 2013	The most effective “demand-side” programs included close sustained relationships with pregnant teenagers and young mothers, providing them with information about the harms associated with high fertility, building their life skills, social and human capital, providing childcare for those in school or employed, helping them develop and reach their life goals, challenging community gender norms and working with in-laws and husbands on girls’ lack of power in household.	Cross-Country Review
Program evaluation of Ishraq program in Egypt	Brady et al. 2007	<i>Ishraq</i> includes literacy training, life skills and sports activities for girls, using young women trained as mentors and teachers. Girls experienced increased literacy, self-confidence and knowledge of reproductive health issues. They also reported changes in attitude related to traditional gender norms, e.g. the desire to marry later and belief that they have a voice in marital decision-making.	Review of Program Documents
Research review of ASRH evidence and programmatic experiences in LMICs	Chandra-Mouli et al. 2014	In addition to the previously identified factors that promote ASRHR, new research suggests social media and mobile phones may be a new way to increase adolescents’ contraceptive use.	Cross-Country Review
Impact evaluation of an integrated school- and health-clinic-based adolescent reproductive health initiative in Brazil	Magnani et al. 2001	Designed to address the ongoing high adolescent pregnancy and HIV infection rates, the program’s objective was to promote responsible sexual and reproductive health behavior among secondary-school students. The findings suggest the program increased the SRH information provided to students as well as their intention to use public clinic services, but no effect was observed on their sexual behavior or use of contraception or clinics. Females were significantly more likely than the target adolescent population to use clinic services, especially if they had already been pregnant.	Quasi-experimental study
Review of the Kenya Adolescent Reproductive Health Project	Askew et al. 2013	This multi-sectoral project aimed to improve reproductive health knowledge, delay the onset of sexual activity among young adolescents and decrease risky behaviors of sexually active adolescents. Surveys of male and female adolescents, and fathers and mothers were conducted during the project and revealed mixed results among parent-child communication, improved awareness of contraceptives and condoms, STIs and SRH, and possibly reinforced already-existing disapproval for contraception. A combination of school and community-based interventions may have reduced sexual activity for some adolescent participants. Reports of non-consensual first-time sex and pregnancy among unmarried adolescents also decreased.	Before-After Surveys and MIS Data

## Annex 2. Illustrative case example for Uganda

Demonstrating the comparative costs and benefits of programs to prevent adolescent marriage and childbearing can help to secure buy-in by governments and donors for investing in those programs. Earlier in this paper we noted that The Futures Group prepared a series of simulations of costs/benefits of meeting the unmet need for family planning for all women of childbearing age in several countries, including Uganda. We contacted this group about simulations for youths and learned that they had developed a simulation tool called *NewGen* to demonstrate the impact of policy and program actions on adolescent and young adult reproductive health (Futures Group 2002). While we continue to pursue information about this initiative, it is useful to consider what a case example might look like for a specific country.

We have selected Uganda for a number of reasons. Uganda still has high fertility and early marriage, and a number of researchers have already provided bits and pieces of information that might go into a case example. For example, in the "consequences" section of this paper, we noted that Chaaban and Cunningham (2011) had reported that the lifetime "teen childbearing tax" resulting from the lost productivity of young Ugandan women who married and started childbearing early rather than stay in school amounted to 31 percent of per capita GDP. The Futures Group (2009) included Uganda in its series of simulations on meeting unmet need for all women of reproductive age, and Vlassoff et al. at the Guttmacher Institute (2009) made similar calculations specifically for Uganda. We will draw on these calculations below.

What would the picture be if the focus were on young women rather than all women of reproductive age? The most recent United Nations population estimates and projections for Uganda suggest that the number of women aged 15 to 49 in 2015 is 8.934 million, with about 2.222 million, or 25 percent, in ages 15 to 19. Uganda's most recent (2011) Demographic and Health Survey (DHS) found that 24 percent of teenagers had begun childbearing, down from 31 percent in 2001 and 25 percent in 2006. A high proportion of adolescent births (80 percent) in Uganda are for married women. Early marriage is still the norm, with the median age of marriage hovering around 18 (meaning that half of girls marry before age 18). The median age at first sexual intercourse reported by women aged 20 to 24 was 17.5 years.

A DHS review of unmet need for family planning found that the rate in Uganda in 2011 was 31.3 percent for married women and 38.6 percent for the unmarried. In absolute numbers, there were 119,507 married women aged 15 to 19 with an unmet need, along with another 28,739 unmarried women, for a total of 148,246 women. Using Guttmacher estimates of the cost of meeting unmet need in Africa at \$26.40 per person (higher than in other regions because of the greater needs for system-wide expansion and improvement in Africa), it would cost an additional \$3.47 million annually to meet the unmet need of women 15 to 19 years old.

The Futures Group study on the costs versus benefits of meeting unmet need for all women ran simulations over several years. Futures showed a net savings in Uganda of \$91.4 million (\$198.8 million reduction in medical costs versus \$107.4 million in family planning costs) over the period 2007. Vlassoff et al.'s Uganda calculations for Guttmacher predicted a net savings of \$112 million, and \$72 million was the full cost of family planning to meet all unmet need with modern contraception, so the additional cost over the 2008 situation is \$50 million ( $50 = 72 - 22$ , the 2008 baseline). Since maternal and newborn health costs were estimated to fall by \$162 million in the zero-unmet-need scenario, the net saving was

\$112 million (112 = 162 - 50). The researchers noted that there was a three-dollar savings for every dollar spent on family planning. They prepared a detailed methodological appendix that might guide other country-level efforts.

Our back-of-the envelope calculation of the cost of meeting unmet need for contraceptives for adolescents is very low compared to these estimates for all women of reproductive age. A full simulation would have to look at costs of other interventions as well as health and non-health benefits such as the education/productivity gain suggested by the Chaaban and Cunningham exercise. The research suggests, however, that this low cost would produce an even greater return in terms of the savings, because of the serious and disruptive effects of early childbearing on adolescents (Gipson, Koenig and Hindin 2008; Malarcher et al. 2011).

An example of useful simulation work is the paper by Babigumira and colleagues (2012), who created a Markov simulation model to demonstrate the cost-effectiveness of increasing contraceptive coverage for a hypothetical cohort of 15-year old Ugandan girls over their reproductive lifetimes. They calculated the costs of the family planning relative to costs associated with a higher number of pregnancies, abortions, deliveries, stillbirths, etc., and concluded that an expanded family planning program would be highly cost-effective. For a hypothetical cohort of 100,000 15-year-old women, the program would save Uganda \$3.78 million in societal costs or \$4.88 million in expenditures by the Ministry of Health to deal with the adverse impact of the 160,000 extra pregnancies and 113,000 births averted by the program.

All of these approaches require that those preparing and presenting the demonstration models make assumptions about the causal links between early childbearing and adverse health, educational and welfare outcomes that countries seek to avoid by investing in efforts to delay childbearing. As we have seen in reviewing the evidence base, this is not an easy task. But it may be possible to present plausible assumptions about these links so that, if the assumptions are presented honestly, one can make a strong case for investing.

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