New Insights on Preventing Child Marriage

A Global Analysis of Factors and Programs

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Executive Summary

The international community and U.S. government are increasingly concerned about the prevalence of child marriage and its toll on girls in developing countries (UNICEF 2005; Save the Children 2004; Mathur, Greene and Malhotra 2003). One in seven girls in the developing world marries before 15 (Population Council 2006).[1] Nearly half of the 331 million girls in developing countries are expected to marry by their 20th birthday. At this rate, 100 million more girls—or 25,000 more girls every day—will become child brides in the next decade (Bruce and Clark 2004).

Current literature on child marriage has primarily examined the prevalence, consequences and reported reasons for early marriage. Much less has been analyzed about the risk and protective factors that may be associated with child marriage. Also, little is known about the range of existing programs addressing child marriage, and what does and does not work in preventing early marriage.

The work presented here investigates two key questions:

- What factors are associated with risk of or protection against child marriage, and ultimately could be the focus of prevention efforts?
- What are the current programmatic approaches to prevent child marriage in developing countries, and are these programs effective?

This report is for policy-makers and development practitioners working on or planning a future program to prevent child marriage. New insights on risk and protective factors will help program designers find points of intervention to prevent child marriage. The program scan offers a better understanding of what programs currently exist and how to expand efforts.

[1] This statistic excludes China.

Summary of Findings

Potential risk and protective factors for child marriage were analyzed for the 20 countries with the highest child marriage prevalence ("hotspot" countries), using Demographic and Health Surveys (DHS) data. Findings and recommendations from this analysis include the following:

- Four of 12 factors analyzed in this study were found to be strongly associated with child marriage: (1) education of girls, (2) age gap, (3) region, and (4) wealth.
- Girls' education is the most important factor associated with age at marriage. Secondary education specifically emerges as the factor most strongly associated with reduced prevalence of child marriage, but primary education was the most important for younger girls, many of whom marry at an early age. Therefore, promotion of education at all levels is an effective way to address child marriage.
- Age gap, or the age difference between husbands and wives, also is strongly associated with child marriage. While the precise nature of this relationship is unknown, education and awareness-raising on the negative outcomes often associated with age gap, such as domestic violence, could help minimize this phenomenon.
- Some regions within countries have much higher rates of child marriage and require focused attention from intervention efforts.
- Economic status of the households in which girls live is also an important influence on age at marriage. Prevention efforts could address this by increasing girls' ability to generate income, by helping families offset the costs of postponing marriage, and by changing local norms on bride price and dowry.
- Different factors are associated with the marriage of younger girls at the "tipping point" age—the age at which child marriage prevalence in a country starts to increase markedly (usually 13 or 14). Programs seeking to prevent marriage when it first becomes a serious problem should target and tailor efforts to young girls approaching the "tipping point" age.

Existing programs on child marriage were identified through a Web-based search and analyzed for their content. This program scan found the following:

- Child marriage programs are few and more programs are needed where prevalence is highest.
- Efforts to reduce child marriage span a range of sectors (such as education, health, legal, policy and economic) and approaches (such as community sensitization, awareness-raising and life-skills education). However, communication and collaboration among programs is limited, hindering the ability to share lessons learned.
- Monitoring and evaluation, a valuable tool for determining best practices and identifying effective programs for scaling up, is rare among child marriage programs.
- The unique health, social, educational and economic needs of married girls are underserved by existing child marriage programs.

Though this report is a strong start, an expanded program scan is needed to better capture the true number of programs addressing child marriage and to evaluate whether and why they are effective.

1. Introduction

One in seven girls in the developing world marries before 15 (Population Council 2006).[2] Nearly half of the 331 million girls in developing countries are expected to marry by their 20th birthday. At this rate, 100 million more girls—or 25,000 more girls every day—will become child brides in the next decade (Bruce and Clark 2004).

The U.S. government and international community increasingly are concerned about the prevalence of child marriage and its toll on girls in developing countries (UNICEF 2005; Save the Children 2004; Mathur, Greene and Malhotra 2003). In response to congressional interest, the U.S. Agency for International Development (USAID) sought to learn more about the extent and effectiveness of current development efforts to reduce the prevalence of child marriage.

The Interagency Gender Working Group (IGWG) at USAID—a network of non-governmental organizations and cooperating agencies working with USAID to promote gender equity in population, health and nutrition programs—found that although child marriage is closely related to other development efforts, the issue is not being addressed systematically within USAID programs. USAID country mission and cooperating agency staff could describe only a few activities that addressed child marriage either directly or indirectly in their programs. Furthermore, these activities are confined to only a few countries and implementing partners. Field staff also acknowledged that child marriage undermines other development efforts, and a number of staff provided thoughtful and strategic ideas for addressing child marriage through existing efforts.

IGWG commissioned this research to learn more about child marriage and programs working to curtail the practice.

[2] This statistic excludes China.

Current literature on child marriage is focused primarily on examining the prevalence, consequences and reasons reported by parents for early marriage. Much less is known about the actual risk factors for child marriage, what may serve to protect girls from marrying too young, and how most effectively to change the social acceptance of early marriage.[3] Identifying these factors would bolster efforts to design targeted interventions that prevent child marriage. A better understanding of risk and protective factors and social norms also could inform program designs to mitigate these risks and strengthen protective factors or create them where they do not exist.

The work presented here investigates two key questions:

- What factors could be tracked and used to decrease risk of, or increase protection against, child marriage and ultimately could be targeted for prevention efforts?
- What are the current programmatic approaches to prevent child marriage in developing countries, and are these programs effective?

This report answers these questions in two ways: (1) by analyzing data from Demographic and Health Surveys (DHS) to determine possible risk and protective factors for child marriage; and (2) by conducting a program scan to see how child marriage is addressed and to glean insights on program strengths.

The report is organized as follows. Section 2 provides a review of the literature on child marriage. Section 3 uses data from Demographic and Health Surveys (DHS) to determine countries with the highest prevalence of child marriage worldwide and to examine factors associated with early age at first marriage both at the country level and within the highest prevalence regions of these countries. Section 4 offers insight into current programmatic approaches revealed through a Web-based program scan. Finally, Section 5 provides program and policy recommendations for preventing child marriage.

The authors believe the information in this report will be useful for policy-makers and development practitioners working on or planning a future program to prevent child marriage. New insights on risk and protective factors will help program designers find points of intervention, while the program scan offers a better understanding of what is being done on the ground. The authors hope that this work will lead to additional investments in innovative approaches to reduce child marriage.

[3] Risk factors are associated with earlier age at marriage or increased prevalence of child marriage, while protective factors are associated with later age at marriage or decreased prevalence of child marriage. This report distinguishes between factors that are known to cause risk of child marriage or protect against it (poverty and education) and those that are only associated with child marriage but may have the potential to influence it.

2. Review of the Literature

The literature on child marriage has grown significantly in the last decade. Earlier research focused primarily on child marriage prevalence and consequences. Newer literature is beginning to explore factors that may help prevent child marriage, but is limited primarily to education and economic status and their known influences on child marriage. The research presented in this report examines these and other possible risk and protective factors for early marriage. Researchers for this report sought to include, but did not find, literature summarizing or analyzing program experience to delay marriage.

2.1 Prevalence

According to Demographic and Health Surveys (DHS), which provide much of the current country-level child marriage data, child marriage is most common in the world's poorest countries. The highest rates are in sub-Saharan Africa and South Asia as well as parts of Latin America and the Caribbean (ICRW 2006; NRC/IOM 2005). A UNICEF study found that 48 percent of women between 15 and 24 were married before 18 in South Asia. Prevalence is 42 percent in Africa (UNICEF 2005), and more than 60 percent in some parts of East and West Africa (IPPF and UNFPA 2006). In Latin America and the Caribbean, prevalence is 29 percent, though some individual countries have much higher rates (UNICEF 2005). Child marriage also is common in the Middle East, where nearly half of girls younger than 18 in Yemen and Palestine are married (IPPF and UNFPA 2006).

The median age at marriage is rising around the world, including in developing countries (NRC/IOM 2005). In sub-Saharan Africa, for example, 21 of 30 countries have seen an increase in the national age at marriage over the past several decades (Westoff 2003). This trend is largely attributed to the increase of girls' educational attainment and the increased participation of women in the labor force

(NRC/IOM 2005; Mathur, Greene and Malhotra 2003; United Nations 1987). This increase in the age at marriage is occurring slowly and unevenly within countries, however, and many girls are missed by this trend.

2.2 Negative Consequences

Child marriage not only is recognized as a human rights violation but also as a barrier to development. Considerable evidence shows that the negative consequences of child marriage are numerous and especially harmful for girls, their children and their communities. As described below, these consequences include poorer health outcomes for young mothers and their children as well as higher risk of HIV, and higher experiences of violence and abuse among girls married before age 18. Evidence also suggests early marriage results in lower levels of education and persistent poverty among girls.

2.2.1 Maternal Health

Studies show a strong association between child marriage and early childbirth, partly because girls are pressured to prove their fertility soon after marrying and they have little access to information on reproductive health or ability to influence decision making on family planning (Mathur, Greene and Malhotra 2003; Blesdoe and Cohen 1993; Mensch, Bruce and Greene 1998; Malhotra et al. 2003). One-third of women in developing countries give birth before 20; in West Africa, as much as 55 percent of women give birth before 20 (Save the Children 2004).

Women who bear children at a young age may face serious health consequences. Young mothers experience higher rates of maternal mortality and higher risk of obstructed labor and pregnancy-induced hypertension because their bodies are unprepared for childbirth (Save the Children 2004; Mathur, Greene and Malhotra 2003). Girls between 10 and 14 are five times more likely than women ages 20 to 24 to die in pregnancy and childbirth (UNFPA and the University of Aberdeen 2004). Girls ages 15 to 19 are twice as likely as older women to die from childbirth and pregnancy, making pregnancy the leading cause of death in poor countries for this age group (Save the Children 2004). In Mali, for example, the maternal mortality ratio is 178 for every 100,000 live births of women ages 15 to 19, compared to only 32 for women ages 20 to 24 (FCI and the Safe Motherhood Inter-Agency Group 1998; CDC 2002).

Girls who have babies also have a high risk of suffering from obstetric fistula, a condition in which the vagina, bladder and/or rectum tear during childbirth and, if left untreated, causes lifelong leakage of urine and feces (UNFPA and EngenderHealth 2003). Two million women suffer from obstetric fistula worldwide, and an additional 50,000 to 100,000 new cases develop annually among girls (Murray and Lopez 1998).

Child marriage also exposes young married girls to a greater risk of HIV infection. A study in Kenya and Zambia found that 15- to 19-year-old married girls were 75 percent more likely to have HIV than sexually active, unmarried girls. Married girls

may be more vulnerable to HIV infection because they have little option to change their sexual behavior even with knowledge about HIV (Clark 2004). Child brides also have less access to quality health care services and information compared to girls who marry when they are older (Mathur, Greene and Malhotra 2003; Mensch, Bruce and Green 1998; Singh and Samara 1996).

2.2.2 **Infant Health**

The children of teen mothers experience serious health consequences as well. A child born to a teen mother is twice as likely to die before the age of 1 as the child of a woman in her 20s. Currently, 1 million infants of young mothers die every year worldwide as a result of pregnancy and childbirth-related causes. If they survive, these infants tend to have higher rates of low birth weight, premature birth and infant mortality than those born to older mothers (Save the Children 2004). After birth, infants of teen mothers are more likely than infants born to older mothers to have poorer health care and inadequate nutrition as a result of their young mothers' poor feeding behavior (Save the Children 2004; Kurz 1997).

2.2.3 **Education and Economic Status**

Child marriage is associated with lower education and economic status of girls.[4] Child brides are less able than older or unmarried girls to access schooling and income-generating opportunities or to benefit from education or economic development programs. Girls already in school are often forced to terminate their education when they marry early (Save the Children 2004). Limited mobility, household responsibilities, pregnancy and raising children, and other social restrictions for married girls prevent them from taking advantage of education or work opportunities (Mathur, Greene and Malhotra 2003).

Early childbearing and motherhood, which usually accompanies early marriage, also is associated with lower levels of education and higher rates of poverty (Singh and Samara 1996; Mensch, Bruce and Greene 1998). Opportunities for young mothers to continue their education or to work often are limited because they have little access to resources, and are responsible for childrearing and household tasks (Save the Children 2004). Thus, early childbearing, as well as early marriage, tends to preclude further education and reinforce poverty.

2.2.4 **Domestic Violence and Decision Making**

Girls who are married young often lack status and power within their marriages and households, and so are more likely to experience domestic violence, sexual abuse, and isolation from family and community (UNICEF 2005; Jenson and Thornton 2003). A survey in India found that girls who married before 18 reported experiencing physical violence twice as often as girls who married at a later age; younger married girls reported experiencing sexual violence three times more often (ICRW 2005). Girls who marry young are also more likely to believe violence is justified

[4] Discussion of education and economic status as protective factors can be found in Section 2.3.

(UNICEF 2005; Jenson and Thornton 2003). A Kenya study found that 36 percent of girls who married before 18 believe that men are justified in beating their wives, compared to 20 percent of those who married at a later age (UNICEF 2005).

Lower status in the home also leaves married girls with less ability to influence decisions about their own lives (ICRW 2005; UNICEF 2005). Women who married as children are more likely to have partners who have the final say on household decisions, including their visits to family or friends, their health, their ability to work, large and small household purchases, and contraception (UNICEF 2005).

2.3 Risk and Protective Factors

The literature indicates that both income-earning activities and education protect girls by delaying marriage, especially of poor girls living in rural areas most at risk of child marriage (UNICEF 2005, Jenson and Thornton 2003). Evidence is scarce, however, on whether other factors are risks for or protect against child marriage.

2.3.1 Economic Status

The literature in this section shows that poverty increases risk for child marriage, and that income-generating activities for young women are protective.

Research shows that the poorest countries have the highest child marriage rates. Child marriage is concentrated in the poorest countries, with the lowest gross domestic product countries tending to have the highest child marriage prevalence rates (ICRW 2006).

It is also most common among the poorest households. In a study of women ages 20 to 24 in 49 countries, child marriage was most common among the poorest 20 percent of households in every country. A girl from the poorest household in Senegal, for example, is more than four times as likely to marry before age 18 as a girl in the richest household (UNICEF 2005). In Nigeria, 80 percent of the poorest girls marry before the age of 18, compared to 22 percent of the richest girls (UNFPA 2003).

Poverty leads to a higher prevalence of child marriage because poor families feel they have fewer resources and incentives to invest in alternative options for girls (Mathur, Greene and Malhotra 2003). Many families say they marry their daughters early because girls are an economic burden that can be relieved through marriage. Additionally, in many countries, poor families reap economic benefits from dowry or bride wealth by marrying girls at younger ages (Berhane-Selaisse 1993; Tufts University Feinstein International Famine Center 2004; Mathur, Greene and Malhotra 2003; Ensminger and Knight 1997). Moreover, poverty not only contributes to increasing risk of early marriage, but also increases the likelihood that a girl will give birth at a young age, as child brides tend to have children early (Save the Children 2004).

Income generation, on the other hand, tends to protect girls from early marriage because families may be more willing to delay marriage when a girl is earning income (Jejeebhoy 1995; United Nations 1987). For example, only 31 percent of girls who left rural communities to work in the garment industry in Bangladesh married by 18, compared to 71 percent of girls who stayed home in these same communities (Amin, Diamond, Naved and Newby 1998; United Nations 1987).

2.3.2 **Education**

Similar to economic status, no or low educational status is a risk factor for child marriage, and higher educational status is protective. The focus here is on education as a protective factor. Studies strongly show that higher levels of schooling for girls decrease their risk of child marriage (NRC/IOM 2005; UNICEF 2005). Girls with eight or more years of education are less likely to marry young than girls with zero to three years of school (NRC/IOM 2005). But even low levels of education can protect against early marriage. In a study of 42 countries, women between the ages of 20 and 24 who attended primary school were less likely to marry by 18 than women without a primary education. In Senegal, for instance, 20 percent of women with a primary school education married before 18, compared to 36 percent without a primary school education. The study found similar results for secondary education. For example, in Tanzania, women who attended secondary school were 92 percent less likely to be married before age 18 than women who attended only primary school (UNICEF 2005).

Education is widely credited as the most significant factor for delaying girls' age at marriage (Mathur, Greene and Malhotra 2003; United Nations Commission on Population and Development 2002). Over the last several decades, parents have come to value education for their children, and to be willing to postpone the marriages of their daughters so they can attain a higher education level (Schuler et al. 2006). It is thought that education enhances girls' autonomy, giving them negotiation skills in choosing a partner and influencing the timing of marriage (Lloyd and Mensch 1999; NRC/IOM 2005). Education also is believed to increase girls' aspirations and extend the process of finding a suitable marriage partner (Lloyd and Mensch 1999).

2.3.3 **Other Potential Risk and Protective Factors**

Though poverty and education have been well-investigated, evidence is scarce for other possible risk or protective factors that might help policy-makers and program practitioners target new efforts to prevent child marriage. Research on current programs addressing child marriage—where they are and whether they are effective—is also limited.

Age Gap

Research shows that girls who marry before 18 are more likely to be married to much older men (Mensch 1986; Mensch, Bruce and Greene 1998; NRC/IOM 2005). Significant spousal age gaps initially may appear inherent to the practice of child marriage because girls are younger when they marry as children than as

women. But the age gap between partners in fact occurs not only because girls are younger, but also because men who marry child brides are more likely to be older than men who marry adult women (NRC/IOM 2005). Though age gap and early marriage are strongly associated, the nature of this association is not understood.

Age gap is regarded as a measure of equity between a woman and her partner. A smaller age gap indicates a higher status level for women (Amin and Cain 1997). Girls with much older husbands are less able to negotiate or make household decisions due to their lower status, which is a result of their younger age (NRC/IOM 2005). This lower status, in turn, increases the likelihood that they will experience domestic violence and abuse (Kishor and Johnson 2004). Literature on the age gap between unmarried girls and older partners explains similar power dynamics that limit girls' ability to negotiate (Luke and Kurz 2002).

The largest age gaps between spouses in the world are found in sub-Saharan Africa and the Middle East. In central and western Africa, one-third of young women in first marriages report that their partner is 11 or more years older than themselves (NRC/IOM 2005).

Further research on age gap is needed. Whether early marriage is a consequence or predictor of early marriage is not understood. It also is unclear how decisions about spouse selection are made, particularly how a woman's higher level of bargaining power with a man closer to her own age is weighed with the financial security of an older man.

Polygyny

Polygyny, a union in which a husband has multiple wives, is strongly associated with age gap (NRC/IOM 2005; UNICEF 2005) because a husband's age is higher with each additional marriage. Countries with high rates of polygyny, such as those in West Africa, also have the highest age gaps in the world. This relationship may exist because men who marry multiple women must acquire bride wealth before each marriage (NRC/IOM 2005). For the girl's family, the related financial benefits and social prestige of polygyny are often deemed more important than the disadvantages of marrying the girl at a young age to a much older man (Blanc and Gage 2000). The combined association of age gap and polygyny with early marriage requires further study.

Regional Factors within Countries

Though data is available on the variation of child marriage prevalence within countries, the literature appears to provide no evidence on whether or how regional differences within countries are associated with child marriage. This area of study is new and requires investigation.

More is known about the association between an urban or rural residence and age at marriage. The literature indicates that living in rural areas increases the likelihood of marrying early. Girls in rural residences are more likely to marry 1.5 years younger than girls in urban areas (Westoff 2003).

Natal Family Characteristics

Evidence is inadequate on the effect of a girl's natal family[5] circumstances and a community's marriage customs and practices on age at marriage. The literature recognizes that a range of factors affect natal home decision making on when and whom a girl marries. What remains unclear is what these factors are and how they are associated with age at marriage (NRC/IOM 2005). Researchers speculate that these decisions are based on economic gains from marriage, including bride wealth, dowry and removal of a family's financial responsibility toward a girl; cultural norms related to marriage and gender roles; social status gained from marriage; perceived protection of girls from rape and disease via marriage; available education and income-generating opportunities for girls; age gap; polygyny; and wife ranking in a polygynous household (NRC/IOM 2005; Mathur, Greene and Malhotra 2003). Some of these indicators are difficult to measure quantitatively. Qualitative research could deepen our understanding, but is currently limited. Literature is also scarce on the relationship between age at marriage and other natal home characteristics, including childhood place of residence, number of siblings, religion, ethnicity, socioeconomic status of the natal family and education of parents. A better understanding of these factors could explain which parents make decisions to marry their daughters early, and provide a basis for further research on how and why these decisions are reached.

Existing Programs

Because the causes of child marriage are complex, varied and often interlinked, another way to understand and address the issue is by examining existing efforts that address child marriage both at the policy and program level. Though individual program examples often are cited, the literature lacks evidence of current practices working to increase the age at marriage, including where programs are and what approaches are being used, particularly in high prevalence countries. Recent literature calls for filling this gap so best practices can be created, scaled up and replicated (NRC/IOM 2005).

2.4 Conclusion

Most research on child marriage has focused on the prevalence and consequences of marrying young. Much less is understood about risk and protective factors for child marriage, which would provide important, evidence-based points for policy and program intervention. Also scarce is documentation on the current range and type of programmatic efforts by which best practices can be created, scaled up and replicated. This report aims to contribute actionable information on risk and protective factors for child marriage and on existing programs to combat it.

[5] Birth family.

3. Analysis of Demographic and Health Surveys (DHS) Data

3.1 Methodology

This analysis investigates possible risk and protective factors for early age at marriage. Understanding these factors may provide intervention points for policymakers and development practitioners to change the course of a girl's future by delaying age at marriage and thus the negative consequences of marrying early.

The analysis used datasets available from Demographic and Health Surveys (DHS), which carries out nationally representative household surveys that help governments and other interested parties monitor the population and health situation within countries. Standardized questionnaires allow for a fairly straightforward comparison of a range of indicators across countries. The analysis reported here examines data from a women's questionnaire, which includes interviews with all women ages 15 to 49 who either resided in the household or visited the household the night before the survey was conducted in each country. However, DHS does not provide data on all countries in which child marriage is highly prevalent, such as some countries in the Middle East and Latin America, nor does it have data on all factors that may be associated with child marriage. Thus this analysis is limited to countries, survey years and indicators available from DHS.[6]

The analysis considered factors associated with child marriage in 19 of the top 20 countries[7] with the highest prevalence that were identified through 145 DHS surveys representing 68 countries. These 20 "hotspot" countries (Table 3.1) were determined by examining data on women ages 20 to 24 who married before 18.

[6] Further information on individual surveys discussed in this report can be found at www.measuredhs.com.

[7] Because permission to access the Eritrea dataset was not obtained, the analysis results in this report do not include Eritrea.

This ranking of hotspot countries is based on the most current year that survey information was available for each country.

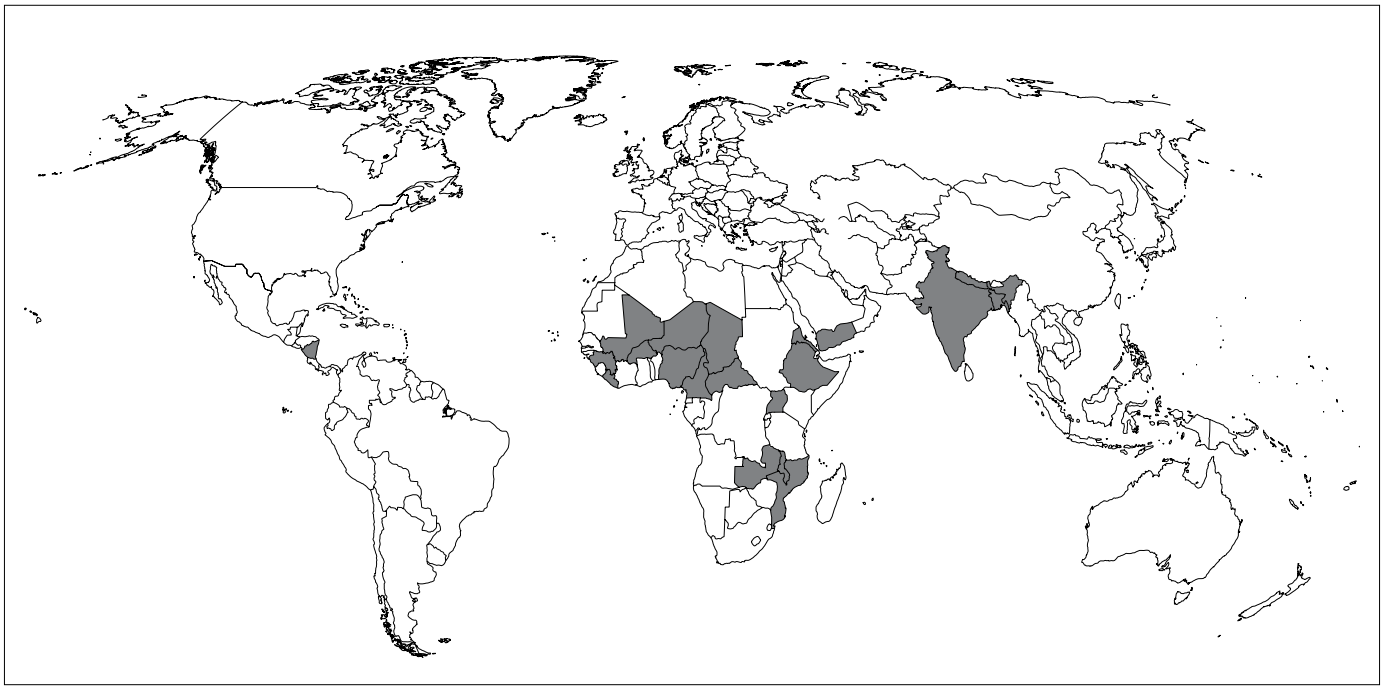
Table 3.1: **Top 20 "Hotspot" Countries for Child Marriage**

Rank	Country	% Women Married < 18
1	Niger (1998)	76.6
2	Chad (2004)	71.5
3	Bangladesh (2004)	68.7
4	Mali (2001)	65.4
5	Guinea (1999)	64.5
6	CAR (1994/95)	57.0
7	Nepal (2001)	56.1
8	Mozambique (2003)	55.9
9	Uganda (2000/01)	54.1
10	Burkina Faso (2003)	51.9
11	India (1998/99)	50.0
12	Ethiopia (2000)	49.1
13	Liberia (1986)	48.4
13	Yemen (1997)	48.4
15	Cameroon (2004)	47.2
16	Eritrea (2002)	47.0
17	Malawi (2000)	46.9
18	Nicaragua (2001)	43.3
18	Nigeria (2003)	43.3
20	Zambia (2001/02)	42.1

Source: ICRW analysis using MEASURE DHS STATcompiler. From http://www.measuredhs.com. Jan. 20, 2006.

Fifteen of the hotspot countries were in sub-Saharan Africa, three in South Asia, one in Central America and one in the Middle East (Figure 3.1). In sub-Saharan Africa, eight countries have more than 50 percent of women experiencing child marriage; five of these countries are in West Africa.

Figure 3.1: **Top 20 Countries with Highest Prevalence of Child Marriage**



3.1.1 Empirical Strategy

The analysis sought to determine what factors might increase the risk of or serve as protection against child marriage in hotspot countries. That is, what household, individual and community characteristics are associated with increased or decreased age at marriage in these countries?

The outcome variable of interest was age at first marriage. The study only obtained data for women who had completed the survey and who were currently or had ever been in a union (i.e., married, living with someone, widowed, divorced or separated) at the time of the interview. While DHS data generally are available for women ages 15 to 49, the sample was restricted to women between 20 and 24 to capture a more recent account of child marriage. Age at marriage was measured both as a continuous variable and a bivariate variable, comparing women who married before 18 to women who married at 18 or older.[8]

3.1.2 Primary Analysis

Binomial logistic regression was selected as the primary way to test the effect of the independent variables on age at marriage (younger than 18 versus age 18 and older) for a number of reasons. The study used cross-sectional data, did not look at any observations over time, and used explanatory variables that are not normally distributed. Additionally, logistic regression does not assume linearity between dependent and independent variables nor does it assume homoscedas-

[8] Age at marriage is normally distributed in some, but not all "hotspot" countries. Where it was not normal, data were normalized using the square root method, log transformations or area transformations, where appropriate.

ticity. Generally, logistic regression has more flexible requirements suited to the variables of interest. Logistic regression also offers prevalence results with a cut-off age, which is a simple and convenient way to make comparisons both within and across countries, albeit with less statistical power than ordinary least squares (OLS). Results are reported as a ranking of the relative importance of independent variables in explaining the dependent variable.

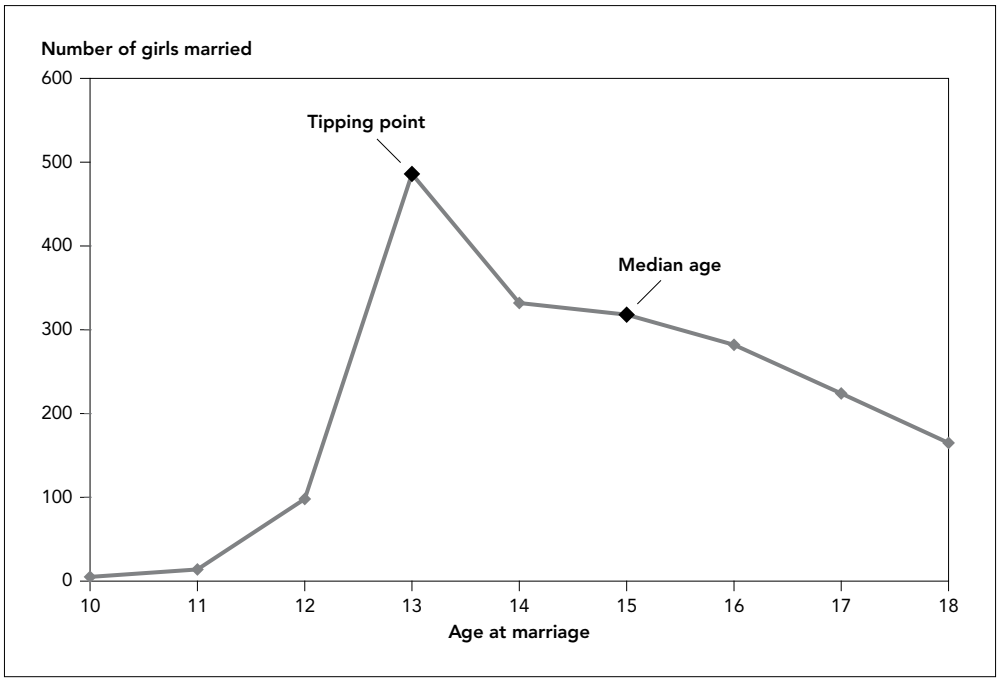
3.1.3 **Secondary Analysis**

The study also used stepwise OLS regression for a multivariate model with age at marriage as a continuous variable. The forward stepwise option, which adds one variable at a time to the model, is useful because it estimates the strength of association with the dependent variable that an independent variable brings to the analysis when added to the regression model. This allowed comparison of results in broad terms to the logistic regression because both methods provide a ranking of the relative importance of the independent variables.[9]

3.1.4 **Tipping Point Analysis**

A third analysis used logistic regression with a cut-off age called the "tipping point." This is the age at which the frequency of child marriage *first* increases significantly in a given country. The regression compared girls who married below the tipping point age with girls who married at or after the tipping point (Figure 3.2).

Figure 3.2: **Tipping Point—Bangladesh (2004)**



Source: ICRW analysis of Demographic and Health Survey (DHS) data
N=1,924

[9] The last step of the forward stepwise model was selected as the final model. However, forward inclusion may miss significant explanatory variables whose relationship with the dependent variable is evident only when other independent variables are controlled.

Figure 3.2 shows the stark contrast between the number of girls who marry at the median age at marriage (age 15) and the tipping point age (age 13), or the age at which the frequency of child marriage first starts increasing significantly in Bangladesh. While 14.4 percent of girls married at 15, significantly more—22.1 percent—married at 13.

An analysis of the tipping point reveals risk and protective factors of child marriage for younger girls who marry well before the median age at marriage, and how these factors differ from those of older girls. This analysis could be useful for programs seeking to prevent child marriage before it first begins to be a significant problem in a country. Table 3.2 compares the median age at marriage to the tipping point age in hotspot countries.

Table 3.2: **Tipping Point Age Versus Median Age at Marriage**

Country	Median age at marriage	Tipping point age at marriage
Mozambique	17	13
India	17	13
Cameroon	17	13
Zambia	17	14
Uganda	17	14
Malawi	17	14
Burkina Faso	17	15
Ethiopia	16	12
Nigeria	16	13
Nicaragua	16	13
Mali	16	13
Liberia	16	13
Yemen	16	14
Nepal	16	14
CAR	16	14
Niger	15	13
Guinea	15	13
Chad	15	13
Bangladesh	15	13

In the tipping point regression analyses, as well as the primary and secondary analyses, variables were examined for problems with multicollinearity, sample size, ratio of cases to variables, missing cases and outliers.[10,11] The linear regressions were further inspected for problems with linearity, heteroscedasticity and normality.[12]

[10] Independent variables were deemed highly collinear to each other if their correlation coefficient was greater than 0.70. In this case, the variable that seemed to be less logically essential to the model was removed. For example, polygyny and wife ranking were always found to be highly collinear. As we were more interested in the association between the natal home decision to marry a girl into a polygynous union and her age at marriage (measured by the variable polygyny) rather than her actual experience in this union (measured by wife ranking), the variable wife ranking was dropped from the model. Also, where type of place of residence was highly collinear with childhood place of residence, the former was kept in the model because reporting of it was more likely to be accurate; it could also serve as a proxy for the latter.

[11] Cases were removed if they had missing values for any variable in the model using pairwise deletion.

[12] Linearity and constant variance were inspected using a plot of residuals against x-values, while normality was examined using histograms.

See Appendix 2 for a comparison of the results by variable for the three regressions.

3.1.5 **Variables and Model**

The study sought to determine what factors were associated with age at marriage across hotspot countries. It also examined how these associations ranked in strength, or whether they were strongly, moderately or not at all correlated with a girl's age at marriage. Table 3.3 defines and describes dependent and independent variables in the model.

Table 3.3: **Dependent and Independent Variables in Model**

Variable	Definition	Description
Dependent Variables		
Age at marriage: bivariate (<18)	Age at first marriage is < 18 or ≥18	Nominal
Age at marriage: continuous	Age at first marriage	Interval-ratio
Age at marriage: bivariate (tipping pt)	Age at first marriage is < tipping pt or ≥ tipping pt	Nominal
Independent Variables		
Wealth Index/Electricity	Wealth in quintiles based on household assets Whether household has electricity	Ordinal Nominal
Education of respondent	Highest education level ever attended: no education, primary, secondary, higher	Ordinal
Education of partner	Highest education level attended by partner: no education, primary, secondary, higher	Ordinal
Age gap	Difference in age between respondent and her partner	Interval-ratio
Polygyny	Whether in a polygynous union	Nominal
Region	Country-specific region of residence	Nominal
Type of place of residence	Urban or rural residence	Nominal
Work prior to marriage[a]	Worked prior to marriage for cash, for free or not at all	Ordinal
Childhood place of residence	Urban or rural residence during childhood	Nominal
Number of siblings	Number of children borne by the respondent's mother, including the respondent	Interval-ratio
Religion	Respondent's religion	Nominal
Ethnicity	Respondent's ethnicity	Nominal

[a] *This indicator is available only for the Yemen dataset.*

Economic status was calculated using a wealth index, an indicator created by DHS that is a composite measure of a household's living standard. This cumulative living standard is based on select assets owned by the household. It uses principal components analysis to generate quintiles—poorest, poorer, middle, richer and richest—that place households on a continuous scale of relative wealth.[13] A wealth index was available in six of the 20 countries. In the remaining 13 countries, whether or not the marital home had electricity was used as a proxy for the wealth index.

[13] From DHS: http://www.measuredhs.com/topics/wealth.cfm

The education variables for the respondent and her partner measured the highest education level attended in four categories: no education, primary, secondary and higher. These were constructed into six dummy variables—primary, secondary and higher education, using 'no education' as a reference—for both the respondent and her partner. This allowed the analysis to specify exactly what level of education might be associated with age at marriage.

The age gap variable was constructed as the age difference between a respondent and her partner. The analysis tests whether the younger age of a girl is associated with a greater difference in age between her and her partner.

The remaining variables—polygyny, region, type of place of residence, work prior to marriage,[14] childhood place of residence, number of other siblings, religion and ethnicity—were constructed as described in Table 3.3.

Some variables that may be associated with age at marriage, such as having a say in spouse selection or the education of girls' parents, were not available for the hotspot countries. Because of the unavailability of data or reasonable proxies, these factors that may affect age at marriage were not controlled for in the model. Additionally, because wife ranking, or the position of a wife among other wives in a polygynous household, was highly correlated with polygyny and had a high number of missing values in every dataset, it was dropped from the analysis.

In sum, the model in this analysis looks at the effect of 12 different factors associated with age at marriage. The model varies slightly by country, depending on the availability and significance of explanatory variables. See Appendix 3 for a list of variables analyzed by country.

3.1.6 **Subnational Analysis**

In hotspot countries where the region variable was significant, further analysis was conducted to determine what factors were associated with child marriage in the region(s) with the highest prevalence. The results of this analysis are provided in Section 3.2.4.

[14] This indicator is available only for the Yemen dataset.

3.2 Findings

For each hotspot country, the study conducted regression analysis of factors associated with child marriage. This section presents findings. First, it offers detailed logistical analysis results[15] from Bangladesh and Mozambique to show how the analyses were conducted by country. These two countries were chosen because they are fairly typical of all hotspot countries. It then provides an overview of all results by factor, describing which factors were associated with child marriage across all hotspot countries. Finally, it discusses each individual factor in more detail. Though the effect of variables on child marriage is described individually, all results are from multivariate models.

3.2.1 Factors Associated with Child Marriage by Country: Bangladesh and Mozambique

At 68.7 percent, Bangladesh has the third highest prevalence of child marriage in the world, the highest rate outside of Africa. Table 3.4 provides results from a logistic regression on associated factors for Bangladesh.

Table 3.4: **Logistic (<18 vs. ≥18) Regression Results for Effect of Associated Factors on Child Marriage in Bangladesh[a,b]**

Variable[c]	Parameter Estimate	Odds Ratio	CI (95%)		P (ChiSq)
			Lower	Upper	
Higher education of respondent	88.986	9.396	1.105	1.360	.000
Age gap	27.550	.926	.900	.953	.000
Secondary education of respondent	20.157	2.017	1.375	2.858	.000
Wealth	14.825	1.226	1.485	2.741	.000
Higher education of partner	13.579	2.141	5.899	14.966	.000
Religion	13.457	1.983	1.199	2.229	.000
Secondary education of partner	9.667	1.635	1.428	3.209	.002
Constant	119.990	.090	–	–	.000

[a] Sample size = 2,104; only includes women who are currently or were ever married or living with someone and who are between the ages of 20 and 24.

[b] –2 Log Likelihood: 1716.546, p<.0001; Nagelkerke R-Squared: .273; Chi-Square statistic (7 DF): 400.740, p<.0001

[c] The following variables are not significant in the model: primary education of the respondent, region, primary education of the partner, type of place of residence, polygyny, ethnicity, childhood place of residence and number of siblings.

In Bangladesh, the post-primary education of a respondent is the most significant factor associated with whether a girl will marry before 18, which corresponds with findings across the hotspot countries. Age gap, wealth, post-primary education of the partner and religion were also significantly associated with age at marriage, similar to other hotspot countries.

Mozambique, which is ranked eighth on the hotspot list, has a child marriage prevalence of 55.9 percent. Table 3.5 illustrates results for Mozambique from a logistic regression on associated factors.

[15] Logistical analysis used the conditional forward stepwise method.

Table 3.5: **Logistic (<18 vs. ≥18) Regression Results for Effect of Associated Factors on Child Marriage in Mozambique[a,b]**

Variable[c]	Parameter Estimate	Odds Ratio	CI (95%)		P (ChiSq)
			Lower	Upper	
Region	75.112	1.184	1.140	1.230	.000
Age gap	5.777	.976	.956	.995	.016
Secondary education of respondent	31.241	3.780	2.371	6.027	.000
Secondary education of partner	7.538	1.569	1.138	2.164	.006
Constant	110.125	.212	–	–	.000

[a] *Sample size = 1,560; only includes women who are currently or were ever married or living with someone, and who are between the ages of 20 and 24.*

[b] *–2 Log Likelihood: 1900.380, p<.0001; Nagelkerke R-Squared: .136; Chi-Square statistic (4 DF): 163.697, p<.0001*

[c] *The following variables are not significant in the model: higher education of the respondent, primary education of the respondent, religion, wealth, higher education of the partner, primary education of the partner, type of place of residence, polygyny, ethnicity, childhood place of residence and number of siblings.*

Region was the most important factor associated with child marriage in Mozambique, which indicates that knowing where child marriage occurs within the country is crucial to addressing the problem. Other significant factors were age gap and the secondary education of both the respondent and her partner. These results are typical of the other hotspot countries.

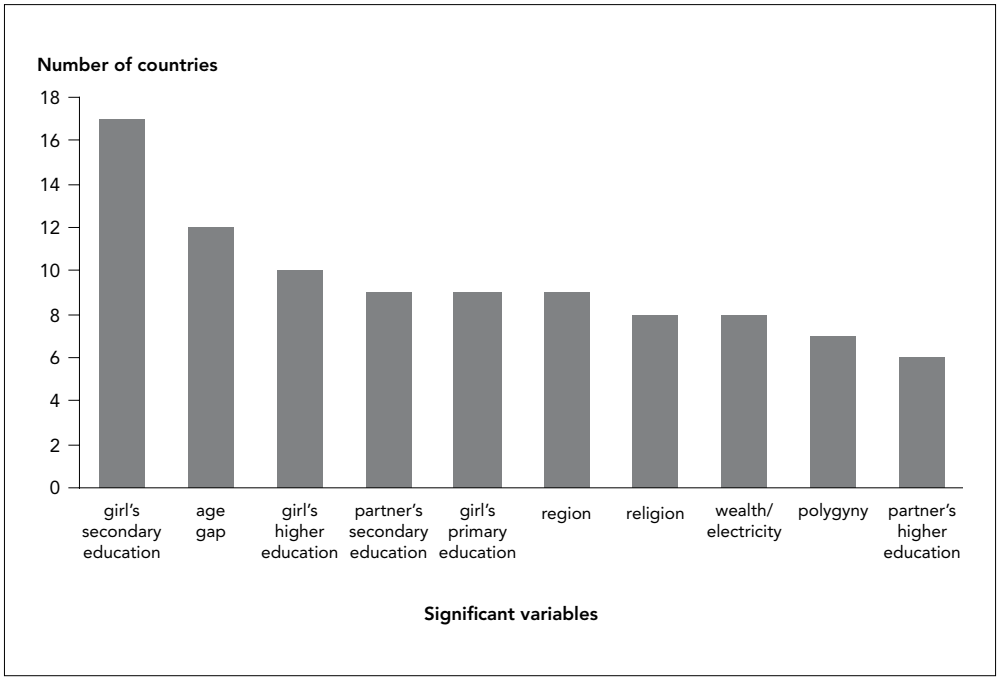
3.2.2 Major Associated Factors Across Countries

Analysis results showed a set of factors explaining child marriage across hotspot countries. These results were categorized based on the number of countries in which they were significant and their relative level of significance.[16] The factors, in order of significance, were: (1) education of girls, (2) age gap, (3) region, (4) wealth, (5) religion, (6) education of the partner (secondary and higher) and (7) polygyny. Figure 3.3 shows the number of countries in which each of these variables is statistically significant. For example, secondary education of the respondent is significant in 17 of the hotspot countries, age gap in 12, and higher education of the respondent in 10.

The remaining independent variables in the model—type of place of residence, childhood place of residence, ethnicity and number of siblings—were either not found to be significant or significant only in a few countries.

[16] Relative level of significance was determined using R-squares for variables with a $p < .05$ associated with its regression coefficient. The logistic regressions used Nagelkerke R-squares, which measured goodness of fit of the models and were typically low in these analyses, ranging from 1 to 30.5 percent and averaging 12.7 percent. This was expected because age at marriage is influenced by a wide range of factors, a large number of which were not available for these analyses. However, the model correctly predicted a sizeable percent of age at marriage in Nigeria (30.5 percent), Bangladesh (27.3 percent), India (26.4 percent), Cameroon (18.9 percent), Niger (18.5 percent), Malawi (16 percent) and Mozambique (13.6 percent). R-squares in this range are typical for similar analyses (see S. Agarwal, Discrimination from Conception to Childhood: A Study of Girl Child in Rural Haryana, India, 2005; R. Quinlan, Gender and Risk in a Matrifocal Caribbean Community: A View from Behavioral Ecology, 2006; G. Groenewold et al., Gender and the Role of Men in Reproductive Health: Applications in studies on HIV sexual-risk in Zambia, safe motherhood in Nepal, 2004). Thus, though the models in this study cannot claim to provide the whole picture on early marriage, they provide some critical insight on predicting its likelihood in many cases.

Figure 3.3: **Strength of Associated Factors by Country Using Logistic (<18 vs. ≥18) Regression**



Education of Girls

Higher levels of education are more important for older girls in delaying age at marriage. But for girls who are around the tipping point age, primary education is a stronger influence on whether she will marry at this younger age.

Using logistic regression (age 18), girls' education was the most important factor associated with girls marrying before 18. Across the hotspot countries, secondary education was a significant factor in 17 countries, higher education in 10 countries and primary education in nine countries.

Comparing results on education across the three analyses shows that the logistic and the linear regression results for marriage before 18 were similar to each other. However, the tipping point logistic regression results are different, which would be expected for factors associated with marriage occurring at a much earlier age. For example, secondary education is significant in 17 countries with the former two regressions, but only in seven with the tipping point regression. Higher education showed a similar difference between the logistic and linear regressions on the one hand and the tipping point regression on the other. However, the difference between results was more subtle with primary education: Logistic, linear and tipping point regression results showed significance in nine, 11 and eight countries respectively. Comparing the top three most significant factors for each country tells a similar story for these three levels of education (see Appendix 2).

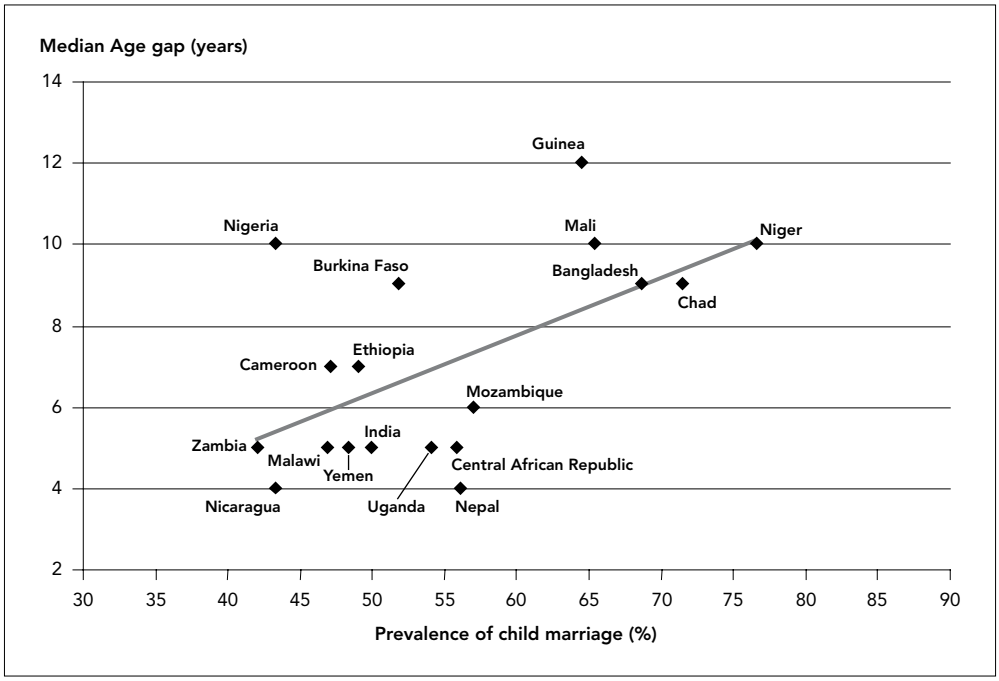
These differences indicate that higher levels of education are more important for older rather than younger girls in delaying age at marriage.[17] That is, post-primary rather than primary education can help older girls marry at 18 or later. But for girls who are around the tipping point age, primary education is a stronger influence on whether she will marry at this younger age.

[17] Education is widely recognized as the most common intervention for postponing marriage, so it is discussed here as a protective factor. However, truncated education, in some circumstances, can be the consequence of an early marriage.

Age Gap

Age gap between girls and their spouses was the second most important factor found to be associated with whether a girl would marry at a young age. That is, a large age difference between a girl and her partner was strongly associated with child marriage, whereas girls marrying at 18 or older had smaller differences in age with their husbands. In countries where age gap is prevalent, younger brides tend to have much older husbands. Figure 3.4 illustrates this tendency across hotspot countries, showing how prevalence increases as median age gap increases.

Figure 3.4: **Age Gap Between Spouses by Prevalence of Child Marriage Across Hotspot Countries**



In countries where age gap is prevalent, younger brides tend to have much older husbands.

Age gap was a significant factor for child marriage in 12 countries, both with logistic and linear regression. Importantly, it was also significant in eight countries using the tipping point logistic regression. This indicates that age gap is an important factor for both younger and older girls.

Some hotspot countries, particularly in West Africa and Bangladesh, were also found to have large median age gaps. Dramatic age gap ranges appeared in nearly all of the countries. Women from 10 countries reported that their partners were as much as 70 years older than themselves.

Table 3.6: **Median Age Gap and Age Gap Ranges by Country**

Country	Median Age Gap	Highest Age Gap
Guinea	12	78
Niger	10	78
Mali	10	77
Nigeria	10	57
Chad	9	75
Burkina Faso	9	72
Bangladesh	9	50
Cameroon	7	59
Ethiopia	7	45
CAR	6	78
Uganda	5	78
India	5	78
Malawi	5	78
Yemen	5	73
Mozambique	5	52
Zambia	5	42
Nicaragua	4	51
Nepal	4	23
Liberia*	–	–

** Data on age gap not available for Liberia.*

Region

Regional differences were, for the most part, either the most important factor associated with child marriage in a country, or not important at all. Region was significant in nine of the hotspot countries using logistic regression and the *most* significant factor in seven of these countries. Similarly, it was the most important factor in four of the five countries in which it was significant with the tipping point logistic regression. This all-or-nothing feature of regional differences indicates that, when significant, understanding where high levels of child marriage occur within a country and targeting these areas is crucial. Further analysis on high prevalence regions is presented in section 3.2.4, "Results at the Subnational Level."

Economic Status

Economic status is an important influence on age at marriage for both younger and older girls.

Economic status is an important influence on age at marriage for both younger and older girls. The wealth variable, and the variable electricity where wealth was unavailable, was significant in eight, 11 and five of the hotspot countries using the logistic, linear and tipping point logistic regressions, respectively. Similar to the region variable, its significance tended to be all or nothing. That is, in logistic regressions, it was either one of the two most important factors associated with child marriage in a country, or it was much less significant.

Surprisingly, the analysis for some countries indicated that wealth was not a significant factor. This may be because poverty is not as strong a variable as other indicators for some countries. Also, this model may have underestimated the strength of wealth's association with child marriage in several ways. First, wealth and electric-

ity are only proxies for, but not perfect measurements of, poverty and economic status. A different measurement may have produced a stronger relationship with age at marriage. Also, in countries where it was the second most important factor, it was preceded only by the region variable, pointing to the fact that, though not highly multicollinear, wealth and region co-vary. Thus, the effect of wealth on age at marriage may have been captured by region as well as education and place of residence.

Religion

Religion was significant in eight countries both with logistic and linear regression, and it was significant in five countries using the tipping point regression. However, the analysis found that no one religious affiliation was associated with child marriage across countries. That is, a variety of religions were associated with high prevalence of child marriage, depending on the country. Table 3.7 shows how important religion was for each country in which it was significant by providing its ranking among all significant variables, as well as religious affiliations by country.

Table3.7: **Significance of Religion on Child Marriage by Country and Religious Affiliation**

Country	Rank of significance	Religious affiliations
Chad	1	Muslim/Non-Muslim
Malawi	1	Catholic/Church of Central Africa, Presbyterian/ Anglican/Seventh Day Advent-Baptist/Other Christian/ Muslim/No religion/Other
Cameroon	2	Catholic/Protestant/Muslim/Animist/Other/No Religion/New Religions
Nigeria	2	Catholic/Protestant/Other Christian/Islam/Traditionalist/Other
Burkina Faso	3	Muslim/Non-Muslim
Ethiopia	3	Orthodox/Muslim/Protestant/Other
India	5	Hindu/Non-Hindu
Bangladesh	6	Muslim/Non-Muslim

Results indicate that targeting a particular religion across countries is not an effective way to address early marriage.

These results indicate that targeting a particular religion across countries is not an effective way to address early marriage. In countries where religion was significant, further analyses are needed to better understand the relationship between religion and age at marriage.

Post-primary Education of the Partner

Though the post-primary education of partners influences age at marriage, it is less significant than other factors, such as the education of a girl. The secondary education of a partner is significant in nine and seven countries using logistic and linear regressions, respectively, and in six and eight countries for higher education of a partner. These variables are not highly ranked and not among the most important factors in any country. Also, secondary and higher education of the partner are significant in only a few countries with the tipping point regression, indicating that

addressing the post-primary education of partners is unlikely to have a major effect on younger girls' likelihood of marrying early.

Polygyny

Analysis results vary greatly by regression type for polygyny. Though results for linear regression are usually similar to those for logistic regression, polygyny is an exception. It is significant in seven countries in linear regression, but only once in logistic regression with age 18, and in three countries with the tipping point regression. This difference between the two logistic regressions may indicate that polygyny is a more important factor for girls who marry at a much younger age. That is, the younger a girl is married, the more likely she is to have a husband with multiple wives. Interestingly, wherever polygyny is significant, age gap is not, signifying that polygyny may be capturing the variance of age gap in these countries. In other words, age gap and polygyny are so closely associated that the significance of either in a country may actually represent a combination of both.

3.2.3 **Minor Variables**

Primary school education of a partner, the respondent's childhood and current place of residence (urban versus rural), ethnicity, and number of siblings were significant in only a few countries and then only at low levels. The effects of these variables may have been captured by other variables or may not be strongly associated with age at marriage.

Working prior to marriage was not found to be a significant factor for age at marriage, though data for this indicator was only available in Yemen.

3.2.4 **Results at the Subnational Level**

Understanding child marriage at the country level is not enough. Prevention efforts must recognize regional differences because prevalence and factors associated with child marriage may vary within a country.

The analysis looked within each hotspot country to determine where the highest levels occur and whether these regional differences are statistically significant. Where the national-level analyses found region to be significant, further analyses examined the factors associated with early age at marriage at the subnational level.

Table 3.8 shows the nine hotspot countries where regional differences are significant.

Table 3.8: **Are Regional Differences within Countries Significant?**

Yes, Regional Differences	No, Prevalence Consistent Across Regions
Country	*Country*
Burkina Faso	Bangladesh
Ethiopia	Cameroon
India	Central African Republic
Mali	Chad
Mozambique	Guinea
Nepal	Liberia
Nicaragua	Malawi
Uganda	Niger
Zambia	Nigeria
	Yemen

For countries with regional differences, Table 3.9 lists the subnational regions that have the highest prevalence of child marriage for each country, as well as associated factors for age at marriage in these regions.

Table 3.9: **Subnational Regions with High Prevalence of Child Marriage and their Associated Factors**

Country High prevalence regions	Regional median age at marriage	Significant Variables		
		Logistic (18< vs. >18) regression	Logistic (tipping point) regression	Linear regression
Burkina Faso North and East (Sahel, Centre-Nord, Est)	17	• childhood residence • religion	• age gap • ethnicity	• ethnicity • childhood residence • partner's secondary education
Ethiopia Amhara, Tigray, Afar and Benshangul (Ben-Gumuz)	15	• region • religion • age gap • girl's secondary education	• religion • ethnicity • girl's secondary education	• religion • ethnicity • girl's secondary education • age gap
India Madhya Pradesh, Andhra Pradesh, Rajasthan, Bihar and Uttar Pradesh	16	• girl's higher education • girl's secondary education • age gap • partner's primary education • religion • wealth / electricity • partner's secondary education • partner's higher education • type of residence • region • girl's primary education	• girl's secondary education • age gap • girl's higher education • girl's primary education • partner's secondary education • religion • partner's higher education • partner's primary education • type of residence	• girl's higher education • girl's secondary education • age gap • type of residence • girl's primary education • partner's higher education • religion • partner's secondary education
Mali Western Region excluding Bamako (Kayes, Koulikoro)	15	• partner's secondary education	None	• girl's secondary education • age gap • partner's secondary education

Country High prevalence regions	Regional median age at marriage	Significant Variables		
		Logistic (18< vs. >18) regression	Logistic (tipping point) regression	Linear regression
Mozambique North East (Nampula, Cabo Delgado, Zambezia, Niassa)	16	• girl's secondary education	• age gap • girl's primary education	• girl's secondary education
Nepal Far-western	16	• girl's secondary education • electricity • partner's secondary education • ethnicity	None	• girl's secondary education • ethnicity • higher education • age gap
Nicaragua East and Southeast (Atlantico Sur, Rivas, Atlantico Norte, Chontales, Granada, Rio San Juan)	16	• girl's higher education • girl's secondary education • age gap • girl's primary education	• girl's secondary education • girl's primary education • partner's primary education • girl's higher education	• girl's secondary education • girl's higher education • age gap • girl's primary education • partner's higher education • childhood residence
Uganda Northern and Eastern Regions	15	• girl's secondary education	None	• girl's secondary education • girl's higher education
Zambia Central and North East (Central, Eastern, Northern, Luapula and Copperbelt regions)	15	• girl's primary education • age gap	• girl's primary education • partner's primary education	• girl's higher education • girl's primary education • current type of residence • age gap

Factors associated with child marriage may be different at the country versus regional level.

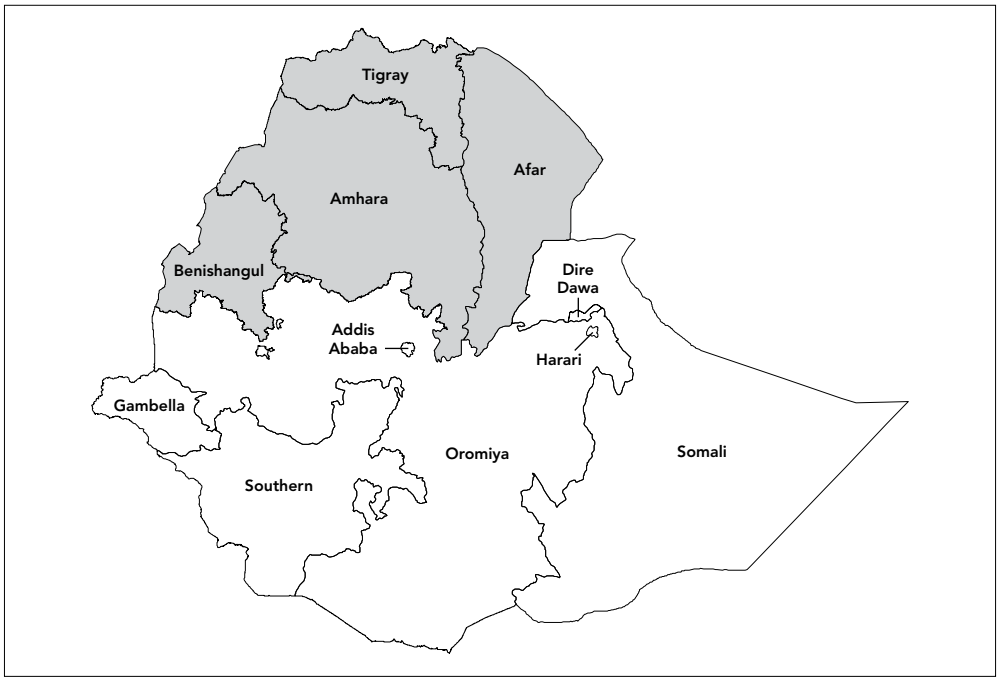
Comparing factors associated with early marriage across countries versus within a country provides some insight into how high prevalence regions match up against the country as a whole. For example, subnational results for countries where region is significant tend to mirror the most important factors at the national level, such as post-primary education for older girls and primary education for younger girls. But the subnational analysis tends to lose other factors, such as age gap, which was significant at the national level in four of the countries but at the sub-national level in only one of the countries. Similarly, all three of the countries in which wealth was significant at the national level did not find it significant at the subnational level. Finally, higher education, both of the respondent and her partner, was significant at the national level in four and two countries, respectively. Nicaragua was the only country where higher education, for respondents only, was significant at the subnational level.

To explore these findings further, regional differences are examined in detail for two countries: Ethiopia and India. Both countries had large differences in child marriage prevalence within the country, and analysis results showed region as an important factor associated with age at marriage. Both also illustrate that there can be important differences between associated factors at the country level and those at the subnational level.

Ethiopia

In Ethiopia, 48 percent of child marriage occurs in the northern regions of the country, with prevalence in Amhara at 90 percent, Tigray at 82 percent, Afar at 77 percent and Benishangul (Ben-Gumuz) at 75 percent.

Figure 3.5: **Regions with High Child Marriage Prevalence, Ethiopia**



Analysis results revealed that regional differences were highly associated with the age at which a girl married.

Table 3.10: **Logistic (<18 vs. ≥18) Regression Results for Effect of Associated Factors on Child Marriage in Ethiopia[a]**

Variable[b,c]	Parameter Estimate	Odds Ratio	CI (95%)		P (ChiSq)
			Lower	Upper	
Region	32.478	1.079	1.051	1.108	.000
Religion	24.443	1.394	.954	.993	.000
Age gap	7.089	.973	1.222	1.590	.008
Secondary education of respondent	16.920	2.190	1.507	3.182	.000
Constant	80.856	.282	–	–	.000

[a] *Sample size = 1,636; only includes women who are currently or were ever married or living with someone, and who are between the ages of 20 and 24.*

[b] *–2 Log Likelihood: 1994.433, p<.0001; Nagelkerke R-Squared: .100; Chi-Square statistic (4 DF): 123.507, p<.0001*

[c] *The following variables are not significant in the model: type of place of residence, number of siblings, polygyny, primary education of the respondent, higher education of the respondent, primary education of the partner, secondary education of the partner and higher education of the partner.*

Further analysis of the northern regions indicates that secondary education, religion, age gap and ethnicity are important factors for when a girl will marry. This holds true across the three types of regressions, with the exception of age gap, which is not significant for the tipping point logistic regression. These results point to ethnicity as an additional significant factor in the northern regions, an important distinction in understanding child marriage within the northern regions versus the country as a whole.

India

Five states in India have the highest prevalence of child marriage: Madhya Pradesh at 73 percent, Andhra Pradesh at 71 percent, Rajasthan at 68 percent, Bihar at 67 percent and Uttar Pradesh at 64 percent.

Figure 3.6: **Regions with High Child Marriage Prevalence, India**

Logistic regression using a cut-off age of 18 showed that region is a significant factor associated with age at marriage.

Table 3.11: **Logistic (<18 vs. ≥18) Regression Results for Effect of Associated Factors on Child Marriage in India[a]**

Variable[b,c]	Parameter Estimate	Odds Ratio	CI (95 %)		P (ChiSq)
			Lower	Upper	
Higher education of the respondent	777.434	16.182	13.306	19.680	.006
Secondary education of the respondent	733.550	3.679	3.348	4.042	.000
Age gap	125.514	.949	.941	.958	.000
Primary education of the respondent	97.551	1.662	1.503	1.839	.000
Religion	55.921	1.391	1.276	1.517	.000
Wealth/electricity	51.432	1.350	1.243	1.465	.000
Secondary education of the partner	43.538	1.414	1.276	1.567	.000
Higher education of the partner	28.258	1.433	1.255	1.636	.000
Type of place of residence	18.831	.825	.756	.900	.000
Region	7.701	1.006	1.002	1.011	.000
Primary education of partner	5.810	1.158	1.028	1.306	.016
Constant	55.572	.442	–	–	.000

[a] *Sample size = 15,387; only includes women who are currently or were ever married or living with someone, and who are between the ages of 20 and 24.*

[b] *–2 Log Likelihood: 17,854.897, p<.0001; Nagelkerke R-Squared: .264; Chi-Square statistic (11 DF): 3393.981, p<.0001*

[c] *The ethnicity variable was not significant in the model.*

Andhra Pradesh was dropped from the subnational analysis to examine an area known as the BIMARU region, which includes Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh. This region has many similar development characteristics across states and is considered the least developed in the country on many criteria.

An analysis of the BIMARU region showed that, across all three regression types, the post-primary education of the respondent, type of place of residence, age gap, religion, post-primary education of the partner and primary education of the respondent were all significant factors associated with child marriage. The primary education of the partner was significant only in the tipping point logistic regression.

These results are very similar to the national analysis, with one exception: While electricity, as a proxy for wealth or socioeconomic status, was a factor of age at marriage at the national level, it is not significant in the BIMARU region.

There may be several explanations for this difference. Electricity may not serve as a good proxy for wealth, or the effect of wealth may have been captured by other variables. It is also possible that there may be lower variation in socioeconomic status in this region, or perhaps wealth may not be a factor for when a girl will marry in the BIMARU states.

3.3 Conclusion

An analysis of hotspot countries indicates that certain factors—secondary and primary education, age gap, economic status, and region—are strongly associated with child marriage, and may be key areas to target prevention efforts. Secondary and primary education were found to have the strongest association with age at marriage, indicating that education at all levels could help both older and younger girls reach 18 before marrying. Age gap had the second strongest association, suggesting the need to help discourage the practice of marrying young girls to much older men. Similarly, the strong association between child marriage and economic status indicates that increasing wealth and addressing poverty may change norms and decision making about a girl's age at marriage. Finally, the strong association between region and child marriage may indicate that high prevalence regions are where social norms perpetuating child marriage are the most entrenched.

Secondary and primary education, age gap, economic status, and region are strongly associated with child marriage, and may be key areas to target prevention efforts.

Though religion as a whole was found to be associated with age at marriage in several countries, further analysis showed that no one religion had this association across all countries. Also, while polygyny was associated with child marriage, a better understanding of this relationship, and the combined effect of age gap and polygyny on age at marriage, is needed.

Other variables examined—education of partner, the respondent's childhood and current place of residence, ethnicity and number of siblings—were significant in only a few countries.

4. Scan of Programs

A number of nongovernmental and community organizations are working to decrease child marriage prevalence in their communities, but little is known about what type of work that is taking place and where; what gaps are and are not being filled by this work; and which approaches are feasible, effective and efficient. This information is necessary to best determine how to focus new efforts, which best practices can be scaled up or replicated, and which groups and regions to target.

4.1 Methodology

ICRW conducted a global program scan including programs that directly or indirectly address child marriage. *Direct* refers to programs that measure child marriage prevalence or median age at marriage as an outcome, while *indirect* refers to programs that found evidence of a decline in child marriage as a result of work on other issues.

The program scan was conducted only on the Internet. The scan used more than 35 keywords and combinations of keywords in search engines, including but not limited to reproductive health; circumcision (FGM/FGC); fistula; HIV/AIDS; early childbearing; maternal mortality; adolescents; education; policy; law; poverty; rural-urban; rights; women's status; domestic violence; intimate partner violence; age gap; polygyny; and wife ranking.

Searches also targeted regions, with keywords including Afghanistan, Africa, Asia, Bangladesh, Egypt, Ethiopia, India, Latin America and Middle East. The scan also includes programs listed on the Web sites of organizations known to work on child marriage. Finally, the scan includes searches of online journals, publications and books for further references to child marriage-related programs.

Because the program scan is Internet-based and searched only for programs written in English, it excludes programs without a Web presence or those that did not turn up in keyword searches. That is, the scan likely missed programs that are small and have limited resources. The scan also is limited to groups that relate their efforts to child marriage outcomes, missing those that may be influencing rates of child marriage but not describing it as an outcome. For example, maternal health programs may provide services to married adolescents but often do not measure or report this as work with child brides.

Despite these limitations, the search provides important information on areas where child marriage is being addressed, the range of sectors addressing it and the programmatic approaches being used. The scan also offers some insight on gaps not being met by these programs and approaches. In particular, analysis of the program scan sought answers to the following questions:

- Where are child marriage programs?
- How are programs categorized?
- Who are programs targeting?
- Are programs reducing child marriage?
- What lessons can be drawn from existing programs?

These questions were answered by categorizing programs in a given topic and looking for gaps within that topic.

Finally, to corroborate these results, we consulted child marriage experts with extensive knowledge of existing programs to determine how accurately the scan captured the number and types of programs currently in operation. They also helped fill in gaps where the scan missed areas of work.

4.2 Findings

4.2.1 Where are Child Marriage Programs?

There is a clear need to harmonize programs working to reduce child marriage with the countries most in need.

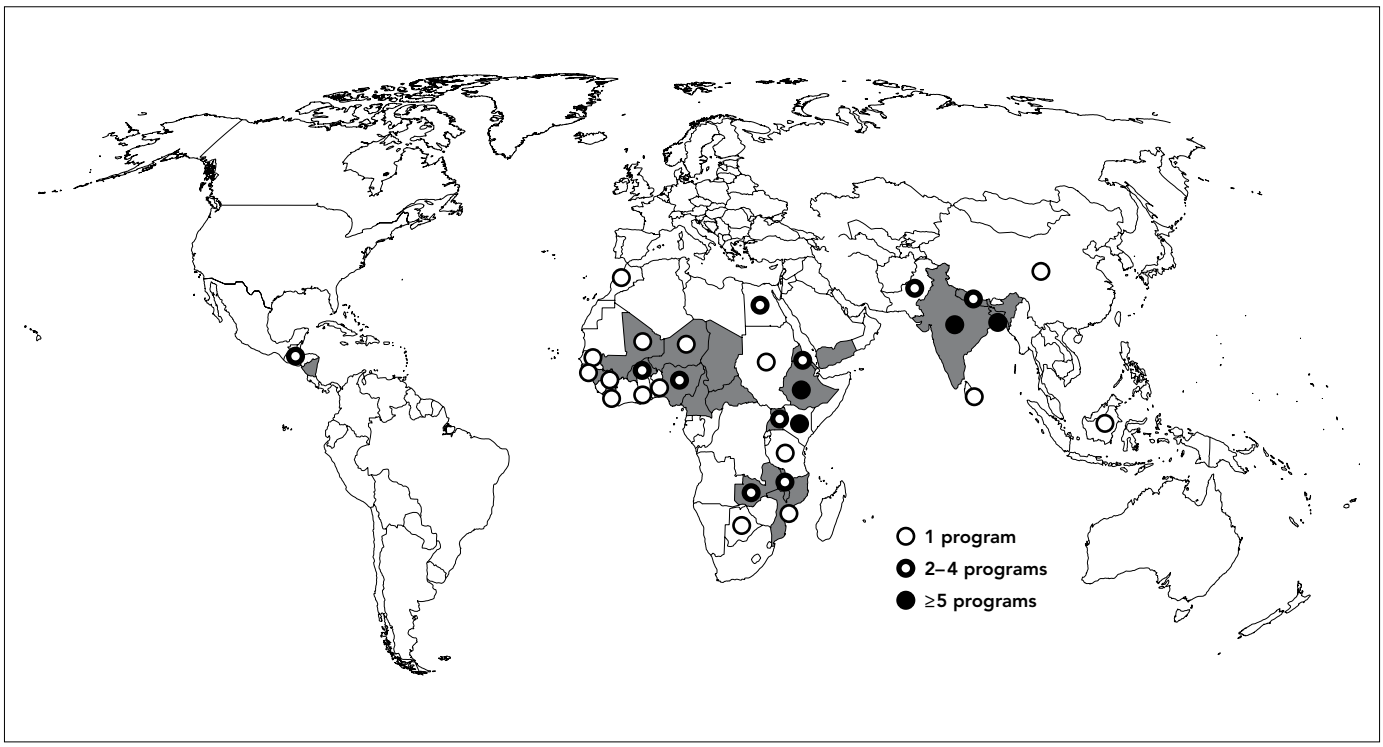
The program scan located a total of 66 programs,[18] some of which operate in multiple countries, either directly or indirectly addressing child marriage. The scan found 49 programs in Africa, 34 in South Asia and four in other areas of the world. In five of the 20 countries with the highest child marriage prevalence—Cameroon, Chad, Central African Republic, Nicaragua and Yemen—no programs were found. In six other hotspot countries—Guinea, Liberia, Mali, Mozambique, Niger, and Zambia—only one program in each country was identified. This finding was particularly striking in the case of Niger, which has the highest prevalence rate in the world at 76.6 percent. (See Figure 4.1 for programs in hotspot countries.)

[18] Program is defined as any effort or component of a larger effort that in some way is reported as addressing the issue of child marriage. Programs may be operated by a formal organization or group of organizations at the local, national or international level.

Of the 30 countries where programs were found, 16 countries had only one program, 10 countries had between two and five programs, and four countries had more than five programs. Although Nicaragua is the only hotspot country in Latin America, the two programs found in Latin America were in Guatemala.

These findings clearly reveal the need to harmonize program work to reduce child marriage with the countries most in need.

Figure 4.1: **Location of Child Marriage Programs by Child Marriage "Hotspot" Countries**



4.2.2 How Are Programs Categorized?

Programs were organized into seven broad categories and 17 subcategories to determine types of child marriage programs and areas addressed. Because many programs are multifaceted, each could be counted in multiple categories or subcategories. This multiple counting explains why percents reported here are greater than 100.

The scan found that most programs are trying to change the underlying social norms that in various ways perpetuate child marriage. Fifty-eight percent of programs educate family and community members, and 42 percent educate girls. The scan found few programs which focus on research or the evaluation of child marriage programs (8 percent), and only one program reported providing services for married girls. Table 4.1 shows programs identified through the scan and organized by categories.

Table 4.1: **Program Scan Results by Subcategories (66 Total Programs)***

Category/Subcategory	No.	%
Education for family & community	**38**	**58**
Community sensitization/awareness raising	32	48
Social marketing/edutainment	13	20
Education for girls	**28**	**42**
Life skills	13	20
Nonformal education	12	18
Livelihood/vocational skills	7	11
Formal education	7	11
Law & Policy	**21**	**32**
Legal mechanisms	10	15
Advocacy	8	12
Community mobilization	6	9
Policy	2	3
Economic opportunities	**9**	**14**
Income generation for girls	5	8
Monetary incentives for families	4	6
Safeguarding rights	**8**	**12**
Shelter/creating safe spaces	4	6
Keeping birth or marriage records	3	5
Other rights (e.g., education)	1	2
Research	**5**	**8**
Services to married girls	**1**	**2**

** Totals exceed 66 programs/100 percent because multifaceted programs are counted in more than one category/sub-category.*

Most programs are trying to change the underlying social norms that in various ways perpetuate child marriage.

Many of the program scan subcategories also seek to change social norms on the practice of child marriage, particularly through behavior change communication (BCC) and community involvement. BCC, a multi-level approach that delivers tailored messages through a variety of communication channels to promote risk-reducing behavior, includes the education of families, communities and girls, as well as law and policy efforts.

Overall, the most common types of child marriage programs are community sensitization and awareness-raising (48 percent of all programs in the scan), followed by life skills education programs[19] (20 percent of all programs in the scan) and social marketing/edutainment (20 percent of all programs in the scan). Though the quantitative analysis in the previous section does not have results on nonformal education[20] because DHS surveys do not collect these data, the program scan shows that 18 percent of programs are nonformal education efforts.[21] Only 5 percent of programs keep birth or marriage records, which are used to enforce child marriage laws and measure child marriage rates; 3 percent develop local policies and

[19] Life skills is defined here as structured lessons that provide practical skills to youth for successful living. These skills may be provided inside or outside of school.

[20] Nonformal education is defined here as instruction that is not obligatory or structured, is participatory and is outside of school.

[21] However, the program scan is unlikely to pick up on formal education (which is available in DHS data) because, though education generally tends to decrease child marriage prevalence, education programs rarely measure this as an outcome.

implement national policies on child marriage at the local level; 2 percent ensure that girls who are pregnant or give birth during their school years continue their education; and 2 percent provide reproductive health services to married girls.

Overall, the range of subcategories points to the various motivations, approaches, sectors and subsectors addressing social norms on child marriage. This finding indicates that child marriage is an important issue for many development areas and offers multiple entry points for building current efforts.

4.2.3 **Who are Programs Targeting?**

Child marriage programs found in the program scan most frequently target families and communities to change child marriage outcomes (73 percent of all programs), while girls are targeted in 55 percent and policy-makers in 21 percent.

Only two programs in the scan targeted married girls, whereas 23 programs (64 percent of all programs that target girls) focused on unmarried girls. Eleven (31 percent) of the programs that are focused on girls targeted both married and unmarried girls. This indicates that married girls are rarely the sole focus of child marriage programs, despite their very different needs and concerns. This may be because most programs in the scan are interested in preventing child marriage, not assisting those who have already experienced it.

Table 4.2: **Programs by Target Audience**

Program Target Group	No.	%
Targeting family and community	**48**	**73**
Targeting girls	**36**	**55**
Only marrieds	2	6
Only unmarrieds	23	64
Both marrieds and unmarrieds	11	31
Targeting policy-makers	**14**	**21**

4.2.4 **Are Programs Reducing Child Marriage?**

The programs scan was unable to answer whether existing programs are in fact reducing the prevalence of child marriage because evaluation results were not available for most of them. Of the 66 programs captured in the scan, reports on results were found in only about 10 percent of programs. Even fewer programs provided information on an evaluation, or how results were determined.

Without evaluation, it is not known whether child marriage programs are effective or if funds are spent efficiently. Program implementers can also use evaluation results to share lessons and create best practices, which can help them reduce child marriage incidence more effectively and strategically.

4.2.5 What Lessons Can be Drawn from Existing Programs?

Six child marriage experts familiar with current programmatic responses were consulted to better understand how accurately the program scan was able to capture what is occurring in the field. These experts provided their impressions on whether the number and types of programs found in the program scan were accurate, as well as where the scan may have missed areas of work on child marriage.

On the types of programs, two experts agreed that not many programs are targeting married girls, and another confirmed that education programs are numerous. One also noted that more income generation programs may be operating in the field than are represented in the scan, suggesting that many microfinance and SME (small and medium scale enterprise) activities are working with women so they can generate income, which helps delay marriage.

More information is needed about the various programmatic efforts to reduce child marriage, and whether they are effective.

Finally, the experts felt more information was needed about the various programmatic efforts to reduce child marriage, and whether they are effective. They confirmed the need for an expanded program scan to provide a systematic review of child marriage programs, and its usefulness to researchers and program implementers.

4.2.6 Examples of Existing Programs

Tostan Taps Tradition to Prevent Child Marriage

Tostan, an international nongovernmental organization based in Senegal, uses a combination of nonformal education and social mobilization to advance its goal of empowering communities and reducing the practices of child marriage and female genital cutting (FGC). Local facilitators teach education sessions which include child marriage-related issues such as sexually transmitted infections, AIDS, birth control and birth spacing. Those who take part in the education program pass on their new knowledge to the rest of the community as well as to other villages through inter-village meetings. Public discussions are held with the community to seek its support in denouncing harmful practices, including early marriage. The program also taps into African tradition—dance, poetry, theater and song—to convey messages and gain the buy-in of stakeholders, including girls who may be targeted for early marriage and people who have influence over those decisions. Tostan's model for peaceful social change is based on the belief that communities themselves must consciously and actively pursue the process of change from within. The program was able to bring about change in knowledge, attitudes and behaviors in 90 intervention villages, and these were reinforced by a public declaration by approximately 300 villages against child marriage and FGC.

Community Mobilization Key to Preventing Child Marriage

In the Aurangabad area of Maharashtra, India, girls typically married early, usually around age 14, and early childbearing followed shortly afterward. The Institute for Health Management, Pachod (IHMP) was concerned with the ill effects this had on girls' empowerment, maternal health, and ultimately family health and well-being. In response, they started year-long life skills programs for unmarried 11–17-year-old girls. IHMP worked closely with parents and leaders, and involved the communities in all aspects of the program. The life skills course included individual projects carried out in the communities, local recruitment of teachers, and regular and planned meetings with parents. In the planning phase, mothers reported that it would be easier for them to overcome the social pressure to get their daughters married early if their daughters were in school. However, formal education beyond the 4th standard was unavailable in the communities, and they welcomed the life skills program as an alternative. After only one year of the program, age at marriage in the area increased from 16 to 17 years (Pande et al. 2006). This increase was a community-level result, not just among girls participating in the life skills classes themselves, a tribute to how the communities as a whole were mobilized to change the social norm around the age at marriage.

'Booking' Practice Substitutes School for Prospective Grooms

In 1999, Christian Children's Fund's (CCF) Margery Kabuya started a program to prevent child marriage among Kenya's Maasai tribe through an approach that taps into Maasai traditions and compensates for the economic incentive of marrying girls. In the Maasai culture, baby girls are promised as wives to men before they are even born—a practice called "booking." The project, called the Naning'oi Girls Boarding School, substitutes the traditional practice of booking girls for marriage with booking them for school instead. Naning'oi works within the framework of the dowry system, where the school represents a man in search of a young bride. Well-respected members of the Maasai community become "suitors" on the school's behalf, offering gifts to a girl's father in exchange for committing to his daughter's attendance at the boarding school. To date, 350 girls are enrolled and more than 500 additional infants and girls have been booked, waiting until they are old enough to attend school.

Local Governance Efforts Prevent Child Marriage

In the Amhara region of Ethiopia, Berhane Hewan, a Population Council project, helps girls avoid early marriage by promoting functional literacy, life skills, reproductive health education and opportunities for saving money. The local Ministry of Youth and Sports staff, which developed this program, felt that efforts to reduce child marriage needed to focus on the economic incentives of marrying girls early. Accordingly, families were assisted financially so they could allow their daughters to participate in girls' groups and remain in school. The project has been enthusiastically embraced by the community, with more than 750 girls currently participating.

4.3 Conclusion

The program scan found few programs overall and few or none in most countries with a high prevalence of child marriage, revealing the need for more programs that target child marriage and better geographic matching of interventions with high prevalence countries, where services are most needed. The scan also suggested that child marriage is an important issue for many development sectors, which offers multiple entry points for building current efforts. However, it also found that programs often work in isolation, indicating a need for better communication to share lessons learned and improve the efficiency of interventions. Additionally, few programs are evaluating the impact of their interventions, suggesting a role for funding program evaluations. Finally, the program scan revealed a need for services for married girls. Programs are mostly focused on prevention and so married girls are largely overlooked, despite their pressing needs and concerns.

5. Recommendations and Discussion

5.1 Programs, Evaluation and Research

The following recommendations provide new or reinforce existing insights into the best ways to prevent child marriage globally. These recommendations are based on the findings from this analysis of the Demographic and Health Surveys (DHS) datasets and the scan of programs that directly or indirectly address child marriage.

5.1.1 Promote Education and Economic Opportunities for Girls

The DHS analysis shows that girls' education is the most important factor associated with age at marriage. Secondary education specifically emerges as the strongest factor associated with lower rates of child marriage. For preventing the marriage of young girls at the "tipping point" age—the age at which child marriage prevalence in a country starts to increase markedly (usually 13 or 14), the analysis shows that keeping girls in primary school is the most important factor. The best program approach would be to promote all levels of education to ensure both younger and older girls reach 18 before they marry.

The best program approach would be to promote all levels of education to ensure both younger and older girls reach 18 before they marry.

Improving a family's economic status may play a role in reducing child marriage. This means reducing poverty in the long term and, more immediately, providing economic opportunities for unmarried girls after they finish school. A girl's ability to earn income can help alleviate family poverty and provide girls, as well as their families, with the option to delay marriage. Programs and policies also should offset financial incentives for parents to marry daughters at a young age, for example, by making it easier for parents to afford education and by addressing norms on bride price and dowry, which implicitly encourage parents to marry off their young daughters.

5.1.2 Employ Behavior Change Communication and Community Mobilization Techniques to Change Social Norms of Age at Marriage

Behavior change communication (BCC) and community mobilization are an effective set of techniques for promoting social change. The program scan shows that these techniques, which promote community discussion about marriage, are commonly used as a means to influence norms that encourage or condone child marriage. As several of the programs highlight, social norms of age at marriage need to change for the practice and, therefore, the prevalence of child marriage to decrease. As such, BCC and community mobilization should be promoted and employed to both understand and change the social norms that perpetuate child marriage, and to ultimately reduce its practice and prevalence.

5.1.3 Ensure Programs Are Where Child Marriage Is Most Prevalent

Opportunities to share lessons and create best practices can lead to broader, more strategic efforts and help to improve child marriage interventions where the practice is most prevalent.

The program scan shows that existing programs were concentrated in a few countries, and that many high prevalence countries had no programs to reduce child marriage. For instance, Niger has the highest prevalence of child marriage in the world, with more than 76 percent of girls marrying before 18; yet the program scan found only one program in the country. Such findings indicate the need to systematically target programs to hotspot countries, particularly if program resources are limited. It also underscores the need for more collaboration among existing programs. Opportunities to share lessons and create best practices can lead to broader, more strategic efforts and help to improve child marriage interventions where the practice is most prevalent.

The DHS analysis further reveals that some hotspot countries have clearly identified regions in which child marriage is significantly more prevalent. In these countries, such as Ethiopia and India, targeting approaches to the highest prevalence regions should help maximize the efficiency of child marriage prevention efforts.

One caveat, however, is that key factors associated with child marriage at the country level are not necessarily identical to the key factors within a particular region. This was the case in Ethiopia, for instance, where ethnicity was a key factor associated with child marriage in the north, but not in the country as a whole. This suggests that interventions appropriate for a country as a whole may differ from region-specific interventions. Thus, programs designed for a particular region should be tailored to the specific conditions and situation in that region.

5.1.4 **Identify and Evaluate Existing Child Marriage Programs**

The scan of programs that address child marriage yielded only 66 programs worldwide. The information gleaned from this scan is an important first step in gathering quality information on child marriage programs, but it likely underestimates the true number of efforts to reduce child marriage. An expanded program scan that includes a focus on select countries would provide a clearer picture of what is happening on the ground. For example, interviews with a full range of program practitioners, policy-makers and advocates in high prevalence countries could shed light on other successful programs. These also could generate more detailed information on program content and motivation.

The program scan also revealed the need to evaluate child marriage programming. Few programs contained evaluations, making it impossible to know whether specific interventions increased the age at marriage. Funds are well-spent if programs achieve their intended results, and this knowledge can be assessed through evaluations. Ongoing monitoring and evaluation provides important information to help program implementers revise and improve interventions as needed. Furthermore, ICRW research shows that costs of monitoring and evaluation can be contained to 20 percent or less of total program costs.

Monitoring and evaluation skills are not widespread, however. The development of evaluation guidelines that can be applied to a variety of programs, laws and government policies working to reduce the prevalence of child marriage is recommended. Guidelines should be dynamic, flexible and updated with the latest lessons learned for program monitoring and evaluation.

5.1.5 **Conduct Further Research on Age Gap**

The research on child marriage is still relatively new, and several issues demand further study. One area in particular is how the age gap between husbands and wives relates to child marriage. The analysis suggests that spousal age gap is likely to be greater for child brides and is strongly associated with early marriage. Further investigation is needed to explain why families choose or consent to a much older husband for their daughter, and to understand their perceptions of the negative consequences this age gap has for young girls.

Although it is unclear how age gap is associated with age at marriage, or which influences the other, programs can still address age gap by educating families and communities of its likely adverse effects on girls' well-being such as complications related to early pregnancy and childbirth. Interventions also can support efforts that postpone marriage, such as education and employment; women are more likely to marry men closer to their own age when they postpone marriage.

Address the Needs of Married Girls

This report and its recommendations focus on ways to prevent child marriage and reduce its prevalence throughout the developing world. However, until efforts to prevent child marriage are more successful, many girls will continue to be married and bear children while still young, which puts them at greater health risk for complications related to pregnancy and childbirth.

In addition to prevention, therefore, child marriage efforts should promote the following services: family planning services to postpone the first birth and to increase spacing between children, earlier and more frequent use of maternal health services for young brides and their families, and other reproductive health and HIV services for prevention or treatment. Because adolescent girls are less likely than adult women to seek out such services, they require greater encouragement and community support.

Programs also need to help young married women take advantage of education and economic opportunities.

5.2 U.S. Government

The U.S. government, with its strong record in funding international development work and its capacity to influence international policy, has a unique role to play in combating child marriage worldwide. By coordinating efforts among government agencies, helping to build in-country capacity to address child marriage and taking the lead in ensuring that valuable lessons learned from child marriage prevention work are shared as widely as possible, the U.S. government has the potential to be a key player in helping end this practice.

5.2.1 Invest in an Integrated Set of Program and Policy Initiatives

The program scan indicated that efforts to reduce the prevalence of child marriage span a variety of sectors (education, legal, economic, health) and approaches (program, laws and policy; advocacy; and awareness-raising at local and international levels). An integrated effort to address child marriage will improve the efficiency of programs to increase the age at marriage among young and adolescent girls. Relevant U.S. government agencies, initiatives and offices, such as USAID and the State Department's Women's Legal Empowerment Initiative and the Office of International Women's Issues, for example, could invest in an integrated set of child marriage program and policy initiatives to ensure that a range of sectors and approaches are addressed.

Child marriage also could be woven into other sectors within the USAID framework. For example, in the "Foreign Assistance Standardized Program Structure and Definitions," child marriage could be integrated within the Governing Justly and Democratically pillar, in human rights (program element 1.4); within the Investing in People pillar, in maternal and child health (program element 1.6), family planning and reproductive health (element 1.7), basic education (element 2.1); and within the Economic Growth pillar, in microenterprise productivity (element 7.3).

5.2.2 Build In-country Capacity for Conducting Program Evaluations

In-country programs need to invest in their capacity to conduct program evaluations. The U.S. government can help by investing in training and technical assistance to increase the number of in-country professionals who can appropriately monitor and evaluate programs, laws and government policies aimed at reducing child marriage.

5.2.3 Facilitate Cross-communication and Learning

U.S. government agencies with a field presence, such as USAID and the State Department, could create forums and opportunities to share program and advocacy designs, experiences and lessons learned from existing efforts to address child marriage. One way is to feature several long-running programs and advocacy efforts known to have reduced child marriage, such as Tostan from Senegal and the Institute of Health Management, Pachod, from India. Because the scaling up of programs is a relatively high-efficiency, low-cost strategy in program work, discussions on steps for scaling up successful, well-documented child marriage programs should be included from the outset of meetings to share lessons learned and next steps.

In countries where there is interest in combating child marriage, USAID could organize consultations among stakeholders to guide their process of prioritizing child marriage prevention and integrating it into other existing initiatives. The consensus from such consultations should be reflected in annual country operating plans and through investments in program and policy efforts to reduce child marriage.

APPENDIX 1: **Ranking of Countries by Child Marriage Prevalence, Most Recent Year Surveyed**

	Country (Survey Year)	% Women Married <18
1.	Niger (1998)	76.6
2.	Chad (2004)	71.5
3.	Bangladesh (2004)	68.7
4.	Mali (2001)	65.4
5.	Guinea (1999)	64.5
6.	CAR (1994/95)	57.0
7.	Nepal (2001)	56.1
8.	Mozambique (2003)	55.9
9.	Uganda (2000/01)	54.1
10.	Burkina Faso (2003)	51.9
11.	India (1998/99)	50.0
12.	Ethiopia (2000)	49.1
13.	Liberia (1986)	48.4
14.	Yemen (1997)	48.4
15.	Cameroon (2004)	47.2
16.	Eritrea (2002)	47.0
17.	Malawi (2000)	46.9
18.	Nigeria (2003)	43.3
19.	Nicaragua (2001)	43.3
20.	Zambia (2001/02)	42.1
21.	Dominican Republic (2002)	41.2
22.	Tanzania (1999)	39.3
23.	Madagascar (2003/04)	38.8
24.	El Salvador (1985)	37.7
25.	Mauritania (2000/01)	37.2
26.	Benin (2001)	36.7
27.	Senegal (1997)	36.1
28.	Trinidad & Tobago (1987)	34.4
29.	Guatemala (1998/99)	34.3
30.	Gabon (2000)	33.6
31.	Cote d'Ivoire (1998/99)	33.2
32.	Pakistan (1990/91)	31.6
33.	Togo (1998)	30.5
34.	Comoros (1996)	29.7

	Country (Survey Year)	% Women Married <18
35.	Zimbabwe (1999)	28.7
36.	Ghana (2003)	27.9
37.	Mexico (1987)	27.6
38.	Sudan (1990)	26.9
39.	Ecuador (1987)	26.0
40.	Bolivia (2003)	25.8
41.	Cambodia (2000)	24.8
42.	Kenya (2003)	24.6
43.	Indonesia (2002/03)	24.2
44.	Paraguay (1990)	24.2
45.	Haiti (2000)	24.1
46.	Brazil (1996)	23.7
47.	Turkey (1998)	23.0
48.	Kyrgyz Republic (1997)	21.2
49.	Thailand (1987)	20.5
50.	Rwanda (2000)	19.5
51.	Egypt (2000)	19.5
52.	Armenia (2000)	19.1
53.	Columbia (2005)	19.0
54.	Ondo State (1986)	18.8
55.	Peru (2000)	18.7
56.	Burundi (1987)	17.3
57.	Morocco (2003/04)	15.9
58.	Uzbekistan (1996)	15.3
59.	Kazakhstan (1999)	14.4
60.	Philippines (2003)	14.0
61.	Sri Lanka (1987)	13.7
62.	Vietnam (2002)	11.1
63.	Jordan (2002)	11.1
64.	Botswana (1988)	10.0
65.	Namibia (2000)	9.8
66.	Tunisia (1988)	9.7
67.	Turkmenistan (2000)	9.1
68.	South Africa (1998)	7.9

APPENDIX 2: **Raw Data on Significant Variables for Hotspot Countries from DHS Analysis**

Number of hotspot countries in which variables are significant by regression type

Variables	Logistic (<18 vs. ≥18)	Linear Regression	Logistic (<X vs. ≥X) Where X = tipping pt
Secondary education of respondent	17	17	7
Age gap	12	12	8
Higher education of respondent	10	13	3
Region	9	12	5
Primary education of respondent	9	11	8
Secondary education of partner	9	7	4
Wealth/electricity	8	11	5
Religion	8	8	5
Higher education of partner	6	8	1
Polygyny	1	7	3
Childhood place of residence	1	4	1
Primary education of partner	1	4	0
Type of place of residence	1	2	1
Ethnicity	1	2	1
Number of siblings	1	0	0

Frequency of three most significant variables per hotspot country by regression type

Variables	Logistic (<18 vs. ≥18)	Linear Regression	Logistic (<X vs. ≥X) Where X = tipping pt
Age gap	12	5	8
Secondary education of respondent	10	17	6
Region	7	5	5
Wealth/electricity	6	4	4
Religion	6	3	4
Higher education of respondent	5	9	2
Primary education of respondent	5	4	6
Secondary education of partner	1	3	2
Childhood place of residence	1	2	1
Number of siblings	1	0	0
Polygyny	0	3	3
Ethnicity	0	1	1
Higher education of partner	0	0	0
Primary education of partner	0	0	0
Type of place of residence	0	0	0

APPENDIX 3: **All Variables Analyzed for Hotspot Countries from DHS Analysis**

All variables analyzed for each country by type of regression. Significant variables are given in order of significance and noted with an asterisk (*).

	Linear Regression	Logistic (<18 vs. ≥18)	Logistic (<X vs. ≥X) Where X = tipping pt
Bangladesh	H*, S*, A*, W*, RE*, PH*, PS*, C*, PP*, P, R, T	H*, A*, S*, W*, PH*, RE*, PS*, C, PP, P, R, T	S*, A*, RE*, T*, H*, C, P, PP, PS, PH, R, W
Burkina Faso	S*, R*, PS*, PH*, RE*, W*, A, C, PO, ET, H, PP, N, P	R*, W*, RE*, S*, PS*, PH*, C, ET, H, N, PH, PP, P	R*, W*, ET, H, PP, N, PS, PH, C, P, RE, S
Cameroon	W*, S*, P*, H*, RE*, A*, C, PO, PP, N, PS, PH, R, T	W*, RE*, A*, P*, S*, H*, C, PO, N, PS, PH, PP, R, T	S*, P*, A, C, PO, H, PP, N, PS, PH, R, RE, T, W
CAR	A*, S*, C*, N, E, ET, H, PP, PS, PH, PO, P, R, RE	A*, P*, C, N, E, ET, PS, PH, PO, S, H, PP, R, RE	RE*, A*, C, N, E, ET, H, PP, PS, PH, PO, P, R, S,
Chad	R*, S*, RE*, H*, W*, PO*, PP*, P*, A, N, PS, PH	RE*, S*, H*, PO*, A, N, PS, PH, P, PP, R, W	R*, A, H, PP, N, PS, PH, PO, P, RE, S, W
Ethiopia	R*, RE*, S*, A*, H, PP, N, PS, PH, PO, P, T	R*, A*, RE*, S*, N, PS, PH, PO, P, H, PP, T	R*, RE*, S*, A, H, PP, N, PS, PH, PO, P, T
Guinea	E*, S*, PO*, A, H, PP, N, PS, PH, RE, P, R	E*, S, PS, A, N, PH, PO, P, R, RE, H, PP	E*, PO* , A, H, PP, N, PS, PH, P, R, RE, S
India	H*, S*, P*, A*, E*, RE*, T*, PS*, PH*, PP*, R*, ET	H*, S*, A*, P*, RE*, E*, PS*, PH*, T*, R*, PP*, ET	S*, A*, H*, PS*, P*, RE*, E*, ET, PP, PH, R, T
Liberia	S*, PO*, C, P, ET, H, PP, PS, PH, RE	S*, C, P, H, PP, ET, PS, PH, PO, RE	C, P, ET, H, PP, PS, PH, PO, RE, S
Malawi	S*, A*, PS*, RE*, P*, H*, T*, PH*, R, ET, N, E, C, PO, PP	RE*, A*, P*, S*, PS*, R, T, ET, N, E, C, PO, H, PP, PH	A*, P*, S*, PS*, R, T, RE, ET, N, E, C, PO, H, PP, PH
Mali	R*, S*, A*, PS*, RE*, N*, ET, P, H, PP, PH, PO, C, E	R*, A*, N*, S*, PS*, ET, P, H, PE, PH, PO, C, RE, E	A*, P*, R, ET, N, S, H, PE, PS, PH, PO, C, RE, E
Mozambique	R*, S*, PO*, H*, A*, PS*, W, C, N, RE, P, PP, PH	R*, A*, S*, PS*, W, C, N, PO, P, H, PP, PH	R*, W*, A*, P*, C, N, S, H PP, PS, PH
Nepal	H*, S*, A*, P*, R*, PH*, T, R, ET, PO, PP, PS, C, E, RE	R*, A*, S*, H*, PH*, T, R, ET, PO, P, PP, PS, C, E, RE	A*, PS*, R, T, R, ET, PO, P, S, H, PP, PH, C, E, RE
Nicaragua	S*, H*, A*, P*, PH*, R*, T, A, E, C, PP, PS	H*, S*, A*, P*, R*, T, E, C, PP, PS, PH	S*, P*, H*, R, T, A, E, C, PP, PS, PH
Niger	C*, S*, P*, R*, PO*, E*, ET*, A, H, PP, PS, PH	S*, P*, C*, ET*, R, PO, E, A, H, PP, PS, PH	ET*, C*, PO*, S, P, R, E, A, H, PP, PS, PH
Nigeria	S*, H*, RE*, P*, W*, R*, PO*, T, A, C, PP, PS, PH	W*, RE*, P*, S*, H*, PH*, R, T, A, C, PO, PP, PS	W*, RE*, P*, S*, R, T, A, C, PO, H, PP, PS, PH
Uganda	S*, H*, E*, R*, A*, P*, RE, N, PP, PS, PH, C, PO	R*, E*, P*, S*, H*, RE, N, A, PP, PS, PH, C, PO	S*, PO*, R, RE, N, P, H, PP, PS, PH, C
Yemen	S*, H*, PS*, PH*, R*, A*, T, E, PO, C, WO, N, P, PP	A*, S*, H*, PS*, PH*, R, T, E, PO, C, WO, N, P, PP	R*, A*, PS*, PH*, T, E, PO, C, WO, N, P, S, H, PP
Zambia	S*, H*, R*, E*, A*, RE, T, PO, N, PP, PS, PH	R*, E*, A*, P*, H*, PS*, T, PO, RE, N, PP, PH	T*, E*, A*, P*, RE, R, PO, N, H, PP, PS, PH

A = age gap
C = childhood place of residence
E = electricity
ET = ethnicity
H = higher education of respondent
N = number of siblings
PH = partner's higher education
PP = partner's primary education
PS = partner's secondary education
PO = polygyny
P = primary education of respondent
R = region
RE = religion
S = secondary education of respondent
T = type of place of residence
W = wealth
WO = worked before marriage

APPENDIX 4: **Program Scan Matrix on Child Marriage**

A Web-based search of interventions addressing child marriage.[22]

ASIA

1. *A Communication Strategy for the Promotion of Adolescent Reproductive Health*
   Indian Institute of Young Inspirers
   Lucknow, Uttar Pradesh, India (2003-2005)
2. *Action Approach for Reduction of Early Marriage and Early Pregnancy in the State of Rajasthan*
   Mamta Health Institute for Mother and Child
   Rajasthan, India (2002-2005)
3. *Adolescent Development Programme (ADP)*
   BRAC
   Bangladesh (2000-ongoing)
4. *Adolescent Reproductive Health Education (ARHE) Program*
   BRAC
   Bangladesh (1995-ongoing)
5. *Amendments to Child Marriage Restraint Act*
   National Commission for Women
   India (1992-ongoing)
6. *Apni Beti, Apna Dhan (My Daughter, My Pride)*
   Haryana Government
   India (1994-ongoing)
7. *Arrange the Marriage of Your Daughter After 20 Years of Age poster*
   The Government of Nepal, UNFPA
   Nepal (1995)
8. *Basic Life Options*
   Plan International—Nepal
   Nepal
9. *Brothers Join Meena, Pakistan*
   UNICEF, Pakistan Boy Scouts Association
   Pakistan
10. *Development Initiative on Supporting Healthy Adolescents (DISHA)*
    International Center for Research on Women (ICRW)
    Bihar and Jharkhand, India (2003-2005)
11. *Empowerment of Women Research Program*
    Bangladesh Women's Health Coalition, Academy for Educational Development (AED), John Snow International (JSI)
    Bangladesh (2003-2005)
12. *Family Welfare Programme*
    The Tata Iron and Steel Company (TISCO)
    India (1993)
13. *First-time Parents Project*
    Population Council, Child In Need Institute-Kolkata, Deepak Charitable Trust-Vadodara, International Institute for Population Sciences-Mumbai
    India (2003-2005)
14. *Hum Raahi (Come Along With Me) soap opera*
    PCI
    India (1991-1994)
15. *Integration Population Education Programs of Rural Youth in China*
    Food and Agriculture Organization of the United Nations (FAO), Department of Foreign Technical and Economic Cooperation of Dingxi Prefecture, Culture Department of Dingxi Prefecture
    China (1994-1995)
16. *Gender Sensitization Programme*
    Child Survival India
    India
17. *Indonesia's National Marriage Act*
    Government of Indonesia
    Indonesia (1974)
18. *Life Skills Intervention on Age at Marriage in Maharashtra*
    Institute for Health Management, Pachod (IHMP), International Center for Research on Women (ICRW)
    Rural Maharashtra, India (1999-ongoing)
19. *Madakasira project*
    Myrada, Plan International
    India (unknown-2009)
20. *Nepal Adolescent Project (NAP)*
    International Center for Research on Women (ICRW), EngenderHealth, New ERA Ltd., BP Memorial Health Foundation
    Nepal (1998-2003)
21. *PRACHAR Project: Promoting Change in the Reproductive Behavior of Youth*
    Pathfinder International
    Bihar, India (2001-2005)
22. *Reproductive and Sexual Rights of Young People in India*
    The Human Rights Law Network (HRLN) of the Socio Legal Information Centre (SLIC), MacArthur Foundation
    India (2003-ongoing)

[22] Results are from a Web-based scan conducted by ICRW between March 1, 2006 and July 31, 2006. More information on each program, as well as additional programs found after July 2006, can be found at www.icrw.org.

23. *Sri Lanka Child Marriage Legislation*
Government of Sri Lanka
Sri Lanka (1995)

24. *Support Centres for Girl Brides in Burkina Faso*
Pugsada
Burkina Faso (1998)

25. *The Better Life Options Program for Adolescent Boys in India*
The Centre for Development and Population Activities (CEDPA)
India (1999-ongoing)

26. *The Female Secondary School Assistance Project (FSSAP)*
Government of Bangladesh, World Bank
Bangladesh (1993-ongoing)

27. *The Kishori Abhijan project*
UNICEF, BRAC, the Centre for Mass Education in Science (CMES)
Bangladesh (2001-2004)

28. *Transition to Adulthood of Female Garment-factory Workers in Bangladesh*
Sajeda Amin, Ian Diamond, Ruchira T. Naved, and Margaret Newby
Bangladesh (1998)

29. *UP Population Policy 2000*
Government of Uttar Pradesh
India (2000-2016)

30. ——
Plan International
India

31. ——
USAID Bangladesh
Bangladesh

AFRICA

32. *A Community-based Prevention and Response Program for Gender-based Violence*
CARE International—Eritrea, Haben
Gash Barka Zone of Eritrea (2001-2004)

33. Addressing Child Marriage in Northern Nigeria
Population Council, Adolescent Health and Information Projects, Federation of Muslim Women Associations of Nigeria
Northern Nigeria (Nov 2005–Nov 2009)

34. *Basic Education Strategic Objective (BESO II) Community-Government Partnership Program (CGPP)*
World Learning for International Development
Ethiopia (2002-ongoing)

35. *Berhane Hewan*
Population Council, Ethiopian Ministry of Youth and Sports
Rural Amhara region, Ethiopia (December 2004–June 2008)

36. *Christian Children's Fund of Ethiopia program*
Christian Children's Fund (CCF)
Ethiopia (ongoing)

37. *Christian Children's Fund of Uganda program*
Christian Children's Fund (CCF)
Northern Uganda (ongoing)

38. *Christian Children's Fund of Zambia program*
Christian Children's Fund (CCF)
Zambia (ongoing)

39. *Community Action for Girls' Education (CAGE)*
World Learning for International Development (WLID), USAID
Benin (2001-2004)

40. *Egypt's Maqattam garbage settlement*
The Association for the Protection of the Environment (APE)
Egypt (1995)

41. *Family Planning Project—Egypt*
Johns Hopkins Bloomberg School of Public Health's Center for Communication Programs / Health Communication Partnership—Egypt Field Office, The Academy for Educational Development (AED)
Egypt (1988-1993)

42. *Highlighting Marital Risk and Promoting Premarital Voluntary Counseling and Testing in Nyanza*
Population Council, PATH Kenya, Kendu Adventist Hospital
Nyanza Province, Kenya (Aug 2005-July 2008)

43. *Integrated Women's Health and Empowerment Program (IWEP)*
CARE International UK
Gash Barka Zone of Eritrea (2006-2008)

44. *ISHRAQ project*
Save the Children Egypt, Population Council
Egypt (2001-2004)

45. *King of Morocco Calls for Fundamental Reform in Family Law*
Moroccan government
Morocco (2003)

46. *Naningoi Girls' Boarding School*
Christian Children's Fund (CCF)
Kenya (1999-ongoing)

47. *New Horizons Program*
The Centre for Development and Population Activities (CEDPA)
Egypt (1994-2004)

48. *Options Project for Improving the Status of Women*
Family Health Options Kenya (formerly Family Planning Association of Kenya), Plan International Kenya, Programme for Appropriate Technology in Health (PATH)
Kenyan Ministry of Education and Health
Kilifi District, Kenya

49. *Ouagadougou Declaration on Early and Forced Marriage*
Forum on Marriage and the Rights of Women and Girls
Burkina Faso, Ghana, The Gambia, Mali, Nigeria and Sudan (October 2003)

50. *POLICY Project*
The Futures Group, USAID
Malawi (May 2002-Feb 2004)

51. *Preventing Early Marriage in Ethiopia*
Nike Foundation, Population Council, United Nations Foundation, United Nations Population Foundation (UNFPA), the Ethiopian Ministry of Youth Sports and Culture
Ethiopia

52. *Program on the Abandonment of FGC and Early Marriage*
Tostan, Senegal
Senegal (1982-ongoing)

53. *Role of NGOs in Implementing the Beijing Platform for Action (BPFA)*
Coalition of Nigerian NGOs
Nigeria (1995-2005)

54. *Social Mobilization Campaign for Educational Quality (SMC-EQ)*
Creative Centre for Community Mobilisation (CRECCOM), USAID
Malawi (1998-2004)

55. *Tap and Reposition Youth (TRY)*
Population Council , K-Rep Development Agency (KDA)
Nairobi, Kenya (1998–2005)

56. *The Adjibar Safe Motherhood project*
World Vision Ethiopia
Ethiopia

57. *The Mobile School Project*
Oxfam Great Britain, government of Kenya
Kenya

58. *Through Our Eyes Project*
Communication for Change (C4C), American Refugee Committee (ARC)
Guinea and Liberia (early 2006)

59. *Women's and Girl's Empowerment Project*
Pathfinder International
Ethiopia

60. ——
Plan International
Malawi

61. ——
Plan International—Niger
Niger

62. ——
The Addis Ababa Fistula Hospital, the Ethiopian Women Lawyers Association (EWLA)
Ethiopia

63. ——
UNFPA, UNIFEM, UNICEF, the Population Council, International Planned Parenthood Federation
Ethiopia, Bangladesh, India

LATIN AMERICA

64. *Christian Children's Fund of Guatemala program*
Christian Children's Fund (CCF)
Guatemala (ongoing)

65. *Creating Opportunities for Mayan Adolescent Girls*
Population Council
Guatemala (2004-ongoing)

CROSS-REGIONAL

66. *Meena Initiative (South Asia) and the Sara Adolescent Girl Communication Initiative (East and South Africa)*
UNICEF
South Asia and 10 countries in East and South Africa

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