

**UNWANTED FERTILITY IN LATIN AMERICA:
HISTORICAL TRENDS, RECENT PATTERNS**

John B. Casterline *

Jennifer Adams Mendoza **

22 April 2009

* Professor of Sociology, Ohio State University, Columbus, Ohio 43210
casterline.10@sociology.osu.edu

** PhD student in Sociology, Ohio State University, Columbus, Ohio, 43210

Paper for presentation at the annual meeting of the Population Association of America, Detroit, 30 April – 2 May 2008. Partial support for this research was provided by an award to the Initiative in Population Research at Ohio State from the National Institute of Child Health and Development (R21-HD47943). The authors thank Suzana Cavenaghi for assistance with access to data.

UNWANTED FERTILITY IN LATIN AMERICA: HISTORICAL TRENDS, RECENT PATTERNS

ABSTRACT

This paper offers an overview of levels and trends in unwanted fertility in Latin America (including the Caribbean), based on national demographic surveys conducted from the mid-1970s to the present. We present estimates on a per child basis (percentage of births unwanted) and a per woman basis (unwanted births per woman, i.e. unwanted fertility rate). We apply to 58 WFS, DHS, and RHS surveys the estimation method recently proposed by Casterline and el-Zeini (2007); this method typically yields higher estimates of unwanted fertility than other available estimators. The contribution of this paper is to offer a portrait of unwanted fertility in the region that is revised, updated, and relatively comprehensive. There is considerable inter-country variability, but a summary of the general pattern is as follows. In the period since 2000, roughly one-third of births are unwanted, ranging from a low of 20% (Paraguay) to a high in excess of 60% (Bolivia), and women experience on average about one unwanted birth during their reproductive career (synthetic cohort estimates), ranging from a low of 0.75 to a high of 2.6 unwanted births per woman. If these estimates are combined with Guttmacher estimates of induced abortion, the implication is that 1.5 – 2.0 unwanted pregnancies per woman is a common experience in the region (or, from a pregnancy perspective, about one-half of pregnancies unwanted). Our historical analysis indicates that the percentage of births unwanted has declined more slowly than the unwanted fertility rate. The fertility decline experienced throughout the region in recent decades has consisted of different mixes of declines in wanted and unwanted fertility, no pattern predominates. Strikingly, wanted fertility in the recent period falls below replacement level (two births per woman) in almost all countries in the region, and below 1.5 births per woman in a substantial minority of countries.

UNWANTED FERTILITY IN LATIN AMERICA: HISTORICAL TRENDS, RECENT PATTERNS

I. Introduction

There are multiple motivations for demographers' continuing efforts to generate accurate estimates of the incidence of unwanted births (defined here as births not wanted at the time of conception). Prevention of unwanted births has long been a fundamental justification for investment of public and private resources in family planning services. Where reduction in population growth rates is a policy goal, the prevention of unwanted births can be a cost-effective step towards attainment of this goal, since unwanted births are assumed to be less costly to avert. The prevention of unwanted births also closes the gap between reproductive aspirations and outcomes, a worthy public policy goal in its own right. Finally, unwanted births are thought to carry distinctive and substantial costs (Gipson *et al.* 2008). These costs can consist of disadvantage suffered by the unwanted child – in health, in early childhood development, and in later social and economic opportunity – and of damage to the welfare of siblings, parents, and communities. The detrimental repercussions of unwanted childbearing are presumed to be multifaceted and potentially long-term.

This paper examines the current (and past) level of unwanted fertility in Latin America, as well as the contribution of changes in unwanted fertility to the substantial decline in fertility in the region that have occurred in the period from the 1970s to the present. The estimates of the incidence of unwanted births presented here have been calculated using a recently-developed method (Casterline and el-Zeini 2007) that we believe offers more valid estimates than the methods employed in past research on unwanted fertility in the region. We have also striven to maximize historical and cross-national coverage, analyzing surveys conducted as part of three major multi-national survey programs: World Fertility Survey [WFS], Demographic and Health Surveys [DHS], and Reproductive Health Surveys [RHS].

Demographers and public health researchers have long been aware of the relatively high levels of unintended pregnancy and unwanted birth in the Latin America and Caribbean region. An early multi-country study is Westoff's (1981) six-country WFS analysis, in which Colombia and especially Peru stand out as having high unwanted fertility as compared to three Asian countries. In many subsequent multi-country studies, Peru, and to a lesser extent Colombia, have been identified as having distinctively high unwanted fertility (Blanc 1982, Bongaarts and Lightbourne 1996, Westoff and Moreno 1996, Bongaarts 1997, Adetunji 1998). Analyses of DHS data have also pointed to high

unwanted fertility in Bolivia (Westoff and Moreno 1996). Research that has taken a more global perspective has consistently concluded that the Latin American region experiences the highest rate of unwanted fertility (e.g. Bongaarts 1997, Adetunji 1998). Research in the 1980s and 1990s also concluded that unwanted fertility was on the rise in Latin America, and might well continue to rise, as a consequence of declines in the number of children desired (Westoff 1981, Blanc 1982, Bongaarts 1997). Hakkert (2001) reviews this past research and presents a thorough and revealing analysis of eight DHS surveys conducted in the mid- and late-1990s. Hakkert considers levels and trends in unwanted fertility and the correlates of unwanted fertility, while also being attentive to methodological issues. As such his piece is far more ambitious than our paper, although Hakkert's research is now a bit dated.

Unwanted birth – the focus of this paper -- is one of three components of unintended pregnancy, the other two being induced abortion and mistimed birth. Each of these components is of concern in its own right, for shared and component-specific reasons. All three can impact maternal and child health, with the impact possibly long-term (for the woman and, except for induced abortions, for the child). The social and economic consequences of unwanted births are in all likelihood substantially larger than the analogous consequences of the other two types of pregnancies. And unwanted births are distinctive in their effect on levels of fertility (and thereby population growth rates): unwanted births raise fertility rates, whereas mistimed births have minimal effect on fertility rates and induced abortions lower fertility rates. Therefore, while a comprehensive analysis of unintended pregnancy would encompass all three components, there are compelling reasons for examining each component separately. (While the empirical analysis in this paper is confined to unwanted births, in our discussion in the final section we cite estimates of levels of induced abortion in the region.)

II. Method and Data

II.a. Method

Estimating the incidence of unwanted fertility is intrinsically a challenging task. At issue is the couples' desires at the time of conception, but it is not practical to design data collection for national populations that ensures that interviews are conducted proximate in time to all (or even most) conceptions. Hence classification of births as wanted or unwanted will unavoidably depend on fertility desires measured prospectively or retrospectively, with the risk that the desires are not stable or, in the case of retrospective recall, incorrectly remembered. Adding to the challenge is the emotional sensitivity of the topic: respondents may feel that declaring a child "unwanted" is a violation of social or religious norms.

There are two widely-used methodologies for estimating the level of unwanted fertility, another method that has received little use, and the recently developed methodology that is applied in this paper. The first method is retrospective direct inquiry, in which respondents are asked birth-by-birth about wantedness at the time of conception. The usual questionnaire item, asked of births during the previous three to five years, reads,

“At the time you became pregnant with <name>, did you want to become pregnant then, did you want to wait until later, or did not want (more) children at all?”

The chief virtue of this approach is that, in contrast to the other three methods, the variable of interest is directly measured, i.e. desires at the time of conception. However, it is now well-established that respondents are averse to reporting recent births (most of which will be living children) as "unwanted" (Bankole and Westoff 1998, Williams and Abma 2000). Hence estimates produced by this method are known to be downwardly biased, and to a substantial extent in most settings. For this reason, while the DHS collects this information, DHS reports do not use this information for the purpose of estimating wanted and unwanted fertility rates.

Instead the DHS uses the second method, popularized by Lightbourne (1985), which relies on a comparison of the respondent's ideal number of children and the number of living children at the time of conception. The DHS wording of the key item is,

“If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?”

If this ideal is equal to or less than the number of living children at the time of conception of the birth in question, the birth is classified as unwanted. This method produces higher estimates than the retrospective direct method (Bongaarts 1990, Casterline and El-Zeini 2006), suggestive of its greater validity. But the method has serious shortcomings. For one thing, it relies on a survey item that is known to have low test-retest reliability (see studies cited in Casterline and el-Zeini 2006). Secondly, two response patterns undermine the method: the tendency to report an ideal that is no lower than the number of living children (so-called "rationalization"), and the tendency in some societies to give a non-numeric answer ("up to God"). These two response patterns both lead to downwardly-biased estimates of unwanted fertility. Finally, there are valid reasons for preference to have (or not have) more children to be inconsistent with the ideal number of children (Bongaarts 1990), for example if the household is economically stressed or if sex preferences have not been satisfied after the first few children.

Bongaarts (1990) proposes an aggregate estimator that relies on the prospective preference item,

“Would you like to have (a/another) child, or would you prefer not to have any (more) children?”

This item has been shown to have higher test-retest reliability and higher validity (by several criteria) than other standard fertility attitudinal item (see studies cited in Casterline and el-Zeini 2007).

Bongaarts' method has, curiously, hardly been used in the nearly twenty years since it was proposed. While it would appear to be superior to the two methods described above, it also has significant disadvantages. Perhaps the most important stem from the fact that this is a synthetic cohort approach, i.e. full reproductive careers are inferred from cross-sectional patterns, that is, the method assumes no inter-cohort differences in fertility desires (Hakkert 2001). While Bongaarts proposes a correction for this assumption, it is data-demanding and, moreover, it is not clear that the correction is sufficient.

The final method is the "aggregate prospective" estimator recently introduced by Casterline and El-Zeini (2007). Like Bongaarts' approach, this method relies on the prospective preference item which, as noted above, is known to have relatively high reliability and validity. Casterline and el-Zeini's method is an aggregate method: it does not classify individual births as unwanted or unwanted, rather generates a birth-order-specific estimate of the proportion unwanted, with an estimate of the overall incidence of unwanted births calculated as a weighted average of the order-specific estimates. Unlike Bongaarts' method, this is strictly a period estimator – order-specific prospective preferences at the time of the survey are used to estimate the fraction of births unwanted (by order) in a brief reference period preceding the survey. The data requirements are minimal, little more than prospective preferences at the survey and an accounting of births during the reference period. The basic formula is:

$$u^{p+1} = ({}_1N^p - {}_2V^p) / B^p$$

where

- u^{p+1} proportion of unwanted births in the reference period preceding the survey
- ${}_1N^p$ proportion of women at the beginning of period who do not want another child
- ${}_2V^p$ proportion of women at the survey who do not want another child and did not have a child between the beginning of the reference period and survey
- B^p proportion of women who had a birth in the reference period

And the overall proportion of births unwanted (u) is a weighted sum:

$$u = \sum g^{p+1} u^{p+1}$$

where

- g^{p+1} is the proportion of births in the reference period at order ($p+1$)

Age-specific estimates are calculated on the basis of the order-specific estimates u^{p+1} (i.e. age-by-age, weighted sums of the order-specific proportion unwanted are calculated), and, using these age-specific

estimates, the unwanted total fertility rate (unwanted TFR) is calculated. (See Casterline and el-Zeini (2007) for more details.¹)

The "aggregate prospective" estimator assumes stability in fertility preferences during the reference period (in this application, 36 months). Preferences may be unstable in two directions, i.e. from "want more" to "want no more", and *vice versa*. Of concern is instability among women who have a birth. If women state a preference to have no further births but change their mind before having a next birth, this will lead to upward bias in the estimates of unwanted fertility. If, in contrast, some women who state a preference to have another birth change their mind yet nevertheless have a birth, this will lead to downward bias. We have no empirical evidence on the relative weight of these two countervailing sources of bias, and indeed their relative weight probably varies by time and place. One might speculate that the first is more common, resulting in upwardly-biased estimates of unwanted fertility from the Casterline – el-Zeini aggregate prospective estimator. But in periods of rapid fertility decline, the second source of bias might well dominate, resulting in downwardly-biased estimates of unwanted fertility.

As expected, the aggregate prospective estimator produces higher estimates of unwanted fertility than the "Lightbourne method" (comparison of ideal and living children) that has been the primary method employed by demographers in recent years. (This is the method used for published DHS estimates.) Among the 58 surveys analyzed in this paper, on average the aggregate prospective estimate of the percentage of recent births unwanted is 16 percentage points higher (difference in medians) than the Lightbourne estimate, a substantial average difference.²

A final point concerns the interpretation of the wanted and unwanted TFRs that are presented later in this paper. As Hakkert (2001) observes, these TFRs are hybrid measures, a combination of preferences and fertility outcomes. They certainly do not purely reflect fertility desires. This is most clearly the case with the wanted TFR – some women do not have children they wish to have, for whatever reasons, and therefore fall short of their desired number. Therefore ordinarily desired fertility (usually unobserved) will exceed the wanted TFR. In contrast, the unwanted TFR represents the quantity of interest, the problems concern the determination of what fraction of births are unwanted. The reader is directed to Hakkert (2001) for a thorough and very insightful evaluation of the strengths and weaknesses of alternative estimators of wanted and unwanted fertility based on the standard battery of demographic survey items.

¹ A program in Stata for applying the Casterline – el-Zeini estimator to DHS and WFS data is available from the first author.

² This comparison is complicated by the non-comparability across surveys in the measurement of the ideal number of children. Not all survey questionnaires included a fully appropriate item.

II.b. Data

Our ambition is to provide a comprehensive picture of levels and trends in unwanted fertility in the Latin American region, including the Caribbean, for the period from the onset of fertility decline to the present. This ambition is incompletely realized in this conference paper, but to our knowledge we offer the largest coverage across time and country of any research to date. In future work we hope to enlarge our analysis by adding surveys from the 1960s. But because the survey record from the 1960s is spotty, and because some Latin American fertility declines started before the 1960s (i.e. the southern cone countries), unfortunately the picture will remain incomplete.

We analyze survey data collected under three survey programs: the World Fertility Survey [WFS], the Demographic and Health Surveys [DHS], and the Reproductive Health Surveys [RHS]. This paper presents findings for countries that have at least one survey since 1990 -- thirteen countries and fifty-eight surveys in total. Table 1 shows the surveys analyzed in this paper, by country, year, and survey program.

A few comments on the country coverage:

- The countries of the southern cone (Argentina, Chile, Uruguay) are entirely missing from this analysis. The omission of Argentina is of particular concern, given its demographic weight.
- Mexico is omitted, a significant omission given that Mexico is the second most populous country in the region. We have access to a WFS survey (1976) and a DHS survey (1987). In future work, we hope to make use of more recent Mexican surveys.
- We include Costa Rica (surveys in 1976 and 1993) in some of the analysis, despite the absence of a recent survey.
- Several countries with WFS surveys (including Venezuela and Panama) are excluded because there has been no subsequent DHS or RHS survey since 1990.
- We are rather arbitrary in our inclusion of Caribbean countries, presenting estimates in this paper only for the Dominican Republic and Haiti. The justification for their inclusion is that both countries offer a time-series of surveys from the 1970s to the present.

As just noted, two Caribbean countries are included in this analysis. Rather than continually refer to "Latin America and the Caribbean" in the text, we use "Latin America" as a short-hand label.

The WFS and DHS surveys are relatively standardized across countries, although there are differences in the core questionnaires that are relevant to research on unwanted fertility. Specifically: (1) The ideal number of children item in the WFS did not contain the prefatory clause "If you could go back to the time you did not have any children . . .", a difference that is thought to result in higher ideal numbers in the WFS. (2) The WFS and DHS-I did not usually ask the retrospective child wantedness questions that became standard in later DHS phases.

In contrast to the WFS and DHS surveys, the questionnaires for the fifteen RHS surveys (conducted with technical assistance from the U.S. Centers for Disease Control) differ considerably from country to country, particularly in their fertility attitudinal items. For this analysis we have constructed extract files in which we attempted, within the constraints of the RHS questionnaires, to mimic the crucial DHS variables. In every survey we were able to construct a prospective preference variable that, in our judgment, is comparable to the WFS and DHS variables. This has not been feasible for ideal number of children nor retrospective child wantedness. Fortunately our preferred estimator of unwanted fertility – the aggregate prospective estimator -- requires the prospective preference item. The greater variation in questionnaire design among RHS surveys threatens the validity of our comparative analysis. Offsetting this threat is the expanded coverage offered by the RHS, in particular Ecuador and Paraguay in South America and El Salvador, Guatemala, Honduras, and Nicaragua in Central America.

We generate estimates, using the aggregate prospective method, for births occurring in the thirty-six months preceding the survey (excluding births in the month of interview). The estimates include births to never-in-union women but exclude births before age 15 (a very small fraction of total births in all countries).

We do not carry out data quality assessment, rather assume that the measurement of the required variables (fertility preferences, dates of recent births) is comparable across countries.

III. Findings

All the estimates discussed in this section are listed in the Appendix.

III.a. Recent levels of unwanted fertility

We begin by examining the evidence of recent levels of unwanted fertility, as estimated from data in the most recent survey conducted since 2000 (twelve countries).

The fraction of births unwanted is shown in Figure 1. This fraction varies widely within the region, from a high of roughly sixty percent in Bolivia (2003 DHS) to a low of about twenty percent in Paraguay (2004 RHS). A rather high incidence of unwanted births is the common pattern: in only three of the twelve countries does the percentage of births unwanted fall below thirty (Dominican Republic (28%), Nicaragua (27%), and Paraguay (20%)), whereas over forty percent of births are unwanted in five countries (Bolivia (63%), Brazil (41%), Colombia (41%), Haiti (44%), and Peru (46%)). That is, a substantial fraction of births throughout the region are unwanted at the time of conception. The

estimates suggest that the incidence is especially high in the Andean countries (Bolivia, Peru), but also in the markedly different social and demographic settings of Brazil and Haiti.

In reviewing past literature in Section I, we noted that historically Latin America has experienced high unwanted fertility as compared to other regions. This remains the case. The median percentages of births unwanted for the most recent survey since 2000, by region, are as follows:

<u>Region</u>	Median Percentage <u>Unwanted</u>	Number <u>Countries</u>
Latin America & Caribbean	37 %	12
Sub-Saharan Africa	21 %	27
North Africa & West Asia	31 %	4
South & Southeast Asia	34 %	8

Estimates of the unwanted Total Fertility Rate are shown in Figure 2. These can be interpreted as the number of unwanted births women would have, on average, over the course of their reproductive careers if the age-specific rates of unwanted fertility observed in the thirty-six month reference period prevailed throughout their reproductive years. Most striking are the very high rates in Bolivia and Haiti, more than two births per woman (note also the rate in Guatemala of more than 1.5 births per woman). Although these are exceptional cases, the rate exceeds one birth per woman in eight of the twelve countries; those under one birth per woman are the Dominican Republic (0.7), El Salvador (0.9), Nicaragua (0.8), and Paraguay (0.7). Levels of contraceptive sterilization are relatively high in these countries, except for Paraguay, and undoubtedly this is an important proximate cause of their relatively low unwanted fertility rates. The unwanted TFR for nine of the twelve countries falls between 0.7 and 1.4; thus one could say, speaking in most general terms, that the common regional experience in this recent period has been roughly one unwanted birth per woman.

It follows that unwanted fertility contributes substantially to the overall level of fertility in the region. This is confirmed in Figure 3, which shows the TFR as the sum of its two components (wanted and unwanted TFR). On average (median) the unwanted TFR constitutes 41 percent of the TFR in these twelve countries. Only in Paraguay does the unwanted TFR make up less than 30 percent of the TFR, and in Bolivia and Haiti more than one-half of the TFR is due to unwanted fertility.

III.b. Trends in unwanted fertility and the Latin American fertility decline

Trends in both the percentage of births unwanted and the unwanted TFR are shown in Figures 4a–4c. These figures are a bit confusing because of the different scales for the percentage of births unwanted (solid line and left-hand scale) and the unwanted TFR (dashed line and right-hand scale). But this

layout has the advantage of facilitating comparison of the pair of trends in each country. Note that there is no necessary association between the two trends; for example, when fertility declines the unwanted TFR may also decline despite stability or even increase in the percentage of births unwanted.

A variety of patterns of reproductive change are evident in Figures 4a–4c. The most common pattern is decline in both the percentage of births unwanted and the unwanted TFR. This is the pattern in five of the six South America countries – Bolivia, Colombia, Ecuador, Paraguay (comparing most recent two surveys) and Peru, with Brazil standing as the exception (Figure 4a). It is also the pattern in three of the five Central American countries – El Salvador, Guatemala, and Nicaragua, although in the first two countries the declines are slight (Figure 4b). And this pattern occurs to a dramatic extent in the Dominican Republic, and there is some indication that this is the emerging pattern in Haiti (Figure 4c).

But the preceding summary gives an exaggerated impression of the extent to which the two variables march together. Another salient feature of Figures 4a–4c is the slower pace of decline in the percent of births unwanted. This observation applies to Bolivia, Colombia, Peru, El Salvador, Dominican Republic, and Haiti. In the three South American countries, the percentage of births unwanted has remained relatively stable while the unwanted fertility rate has fallen by at least one birth per woman (and nearly two births per woman in Peru).

From the standpoint of women and households, it is probably of more importance that the rate of unwanted childbearing (i.e. births per woman) declines: everything else being equal, as the volume of unwanted births declines, the social and economic costs should ease. And these individual- and household-level gains probably aggregate up to societal gains, not to mention further macro returns from lower fertility and slower population growth. But from the standpoint of children, the fact that the fraction of births unwanted hardly declines is of some concern. That is, from a birth cohort perspective, the prevalence of unwantedness (at conception) has been relatively fixed in these countries over the past few decades (with, to be sure, some notable exceptions, namely Dominican Republic, Nicaragua, Peru). Furthermore, the societal context has been far from stable, rather has been quite dynamic, including economic changes that have placed a higher premium on educational credentials and on women working away from the home. These changes may have increased the costs of unwanted childbearing. Hence it is altogether possible that, despite the lower rates of unwanted fertility in the recent period, the individual- and societal-level impact of unwanted fertility matches or even exceeds the impact of the higher rates in the past.

A final question about trends concerns the relative contribution of declines in wanted and unwanted fertility to the overall fertility decline. This question is addressed in Figures 5a-5c and Table 2. Evidently these Latin American declines have been produced by different mixes of declines in the

two components. The decomposition in Table 2 makes this point most clearly: The fraction of the overall fertility decline due to declines in unwanted fertility has ranged from a high of 90 percent in Nicaragua (where wanted fertility has remained rather stable at two births per woman from the early 1990s to the present) to a low of 14 percent in Haiti (where unwanted fertility has remained over two births per woman from the late-1970s to the present, although there are indications of recent decline). The relative contributions of declines in wanted and unwanted fertility vary so much as to resist any generalization. In attempting to perceive common patterns across countries in Figures 5a-5c and Table 2, it should be kept in mind that the time-period encompassed differs considerably from country-to-country: in some countries the period is no more than two decades, while in other countries only the most recent 15 years or so is examined. Were the equivalent analysis to be performed in all countries on the entire period of fertility decline, it is possible that a discrete number of common patterns might emerge.

III.c. Current levels of wanted fertility and the future course of Latin American fertility

While the focus of this research is unwanted fertility, estimates of wanted fertility are a by-product, and these are of interest in their own right. The wanted TFRs for the most recent survey since 2000 are shown in Figure 6. These are the total number of births women would have, on average, if unwanted fertility were entirely eliminated. To reiterate, this is a synthetic cohort estimate based on fertility rates in the three years preceding the survey. And it should not be viewed as a measure of desired fertility, because wanted fertility reflects in part the failure to have desired births.

In ten of the twelve countries – Guatemala and Paraguay are the exceptions – the wanted TFR is less than replacement-level, i.e. less than two births per woman. Indeed, in four countries the wanted TFR is less than 1.5 births per woman: Brazil, Bolivia, Colombia, and Peru. Moreover, it is evident from Figure 5a that, according to our estimates, rather low levels of wanted fertility have characterized these South American countries for several decades, in the cases of Colombia and Peru as far back as the mid-1970s. Perhaps most surprising are the low levels of wanted fertility in Bolivia and Peru in the past when their overall TFRs exceeded four births per woman and when social and economic conditions were relatively undeveloped. There appears to be an anti-natalism in these Andean societies that is rather deeply rooted.³

What are the implications of the estimates in Figure 6 for levels of fertility in the region in the future? As evident in Figure 3, at present the overall TFR – the sum of wanted and unwanted fertility --

³ A separate analysis of the Peruvian surveys limited to the Sierra region -- which resembles Bolivia in its social, cultural, and economic features -- also reveals consistently low wanted TFRs since the 1980s.

exceeds two births per woman in all countries included this analysis. A future with no unwanted fertility is implausible -- in no society has unwanted fertility been entirely absent. And, indeed, from the record of the past three decades one could infer that Latin American societies are especially susceptible to unwanted fertility, for whatever mix of reasons. Having said this, if one anticipates more perfect birth control in the future and consequent reductions in unwanted fertility – certainly a desirable outcome on social and public health grounds – then from the estimates in Figure 6 one could reasonably posit that post-transition rates of fertility in the region will generally lie below replacement level (i.e. less than two births per woman).

IV. Summary and Concluding Comments

This is a study of reproductive change that takes advantage of the large number of national demographic surveys conducted during the past four decades in Latin America and the Caribbean. We give special attention to the most recent decade, but also examine trends since the mid-1970s as a backdrop. The historical analysis provides the context for consideration of recent estimates, and also yields some insights about the nature of fertility decline in the region. It is our intention to expand on the analysis in this paper, possibly adding other surveys from the more distant past (e.g. the CELADE surveys of the 1960s) to provide a more complete portrait of the Latin American fertility decline.

Our focus in this paper has been unwanted fertility, viewed both from a child perspective (percentage of births unwanted) and from a woman perspective (rate per woman). Those familiar with the demography of the region will not be surprised that we estimate high rates of unwanted fertility in the region even in the recent period – high according to absolute standards (roughly one unwanted birth per woman on average, and well in excess of this rate in some countries) and high as compared to the incidence of unwanted births in other major regions. This is a familiar outcome -- survey data as far back as the 1970s indicated that rates of unwanted fertility were relatively high in Latin America, and evidently the region has maintained this standing up to the present.

This is not to say that trends in unwanted fertility are not also apparent. While the fraction of births unwanted remains rather stable in most of the countries examined (typically around 30%-40% of births), the unwanted fertility rate – the number of unwanted births per woman -- has fallen substantially in most countries. Whether the individual and societal costs of unwanted childbearing have declined by an equivalent amount cannot be assumed. One could reasonably surmise that per child costs of unwanted fertility are higher now than in the past.

As noted at the outset, unwanted birth is one of three components of unintended pregnancy, the other two being induced abortion and mistimed birth. Induced abortion rates are notoriously difficult to estimate accurately. Perhaps the most trustworthy and cross-nationally comparable estimates have been generated by researchers at the Guttmacher Institute (Sedgh *et al.* 2007). Their most recent estimates are centered on 2003, and are as follows:

	Abortion Rate (per 1000 women)	Abortion Ratio (per 100 births)
South America	33	38
Central America	25	26
Caribbean	35	42

Multiplying the abortion rates by twenty-five (an approximation of the number of years in an average reproductive career) yields a lifetime average number of abortions ranging from 0.6 per woman (Central America) to 0.9 per woman (Caribbean). If these are added to the unwanted TFRs shown in Figure 2, most of which approach or exceed 1.0 per woman, the conclusion is that lifetime exposure to recent rates would result in a general experience in the region of 1.5 – 2.0 unwanted pregnancies per woman, a remarkably high rate. Alternatively, considering this on a per child basis, if one were to take the regional median of 37 unwanted births per 100 births (see Appendix and text table earlier in this paper) and use Guttmacher's South American abortion ratio of 38 abortions per 100 births, the two combined imply 54 unwanted pregnancies per 100 pregnancies.⁴ That is, one-half or more of pregnancies unwanted – resulting either in an induced abortion or an unwanted birth – would appear to be a common experience in the region. This is stark evidence of large discrepancy between reproductive aspirations and achievements.

Our aim in this paper has been to present a revised and up-to-date set of estimates of unwanted fertility for the maximum number of countries in the Latin American and Caribbean region. As such this is a piece of descriptive analysis, for which we do not apologize: good description of demographic realities, especially demographic realities that have major public policy implications, is among the chief responsibilities of the demographic research community. But certainly this analysis should be followed by research on the determinants of unwanted fertility in the region, as well as assessments of policy options for reducing unwanted fertility. If success in reducing unwanted fertility were to lead to a new set of concerns that fertility is too low, then this can be the subject of a different set of research endeavors and public policy evaluations. If sub-replacement fertility is viewed as a societal problem, unwanted fertility should not be the solution.

⁴ Calculated as $(37 + 38) / (100 + 38)$.

References

- Adetunji, Jacob A. 1998. "Unintended Childbearing in Developing Countries: Levels, Trends, and Determinants." *DHS Analytical Reports* No. 8. Calverton, MD: Macro International.
- Bankole, Akinrinola and Charles F. Westoff. 1998. "The consistency and validity of reproductive attitudes: Evidence from Morocco," *Journal of Biosocial Science* 30(4): 439-455.
- Blanc, Ann Klimas. 1982. "Unwanted Fertility in Latin America and the Caribbean." *International Family Planning Perspectives* 8(4): 156-162.
- Bongaarts, John. 1990. "The measurement of wanted fertility." *Population and Development Review* 16(3): 487-506.
- Bongaarts, John. 1997. "Trends in Unwanted Childbearing in the Developing World." *Studies in Family Planning* 28(4): 267-277.
- Bongaarts, John and Robert E. Lightbourne. 1996. "Wanted Fertility in Latin America: Trends and Differentials in Seven Countries." In J.M. Guzman et al. (eds.) The Fertility Transition in Latin America. New York: Oxford University Press.
- Casterline, John B. and Laila O. el-Zeini. 2007. "Estimation of unwanted fertility." *Demography* 44(4): 729-745.
- Gipson, Jessica D., Michael A. Koenig, and Michelle Hindin. 2008. "The effects of unintended pregnancy on health outcomes: a review of the literature." *Studies in Family Planning* 39(1): 18-38.
- Hakkert, Ralph. 2001. "Levels and Determinants of Wanted and Unwanted Fertility in Latin America." Paper presented at the General Conference of the IUSSP, Salvador, Brazil, 18-24 August.
- Lightbourne, Robert E. 1985. "Individual preferences and fertility behaviour." Pp. 165-198 in John Cleland and John Hobcraft (eds) Reproductive Change in Developing Countries: Insights from the World Fertility Survey. Oxford: Oxford University Press.
- Sedgh, Gilda, Stanley Henshaw, Susheela Singh, Elisabeth Ahman and Iqbal H. Shah. 2007. "Induced Abortion: Estimated Rates and Trends Worldwide." *The Lancet* 370: 1338-1345.
- Westoff, Charles F. and Lorenzo Moreno. 1996. "Reproductive Intentions and Fertility in Latin America." In J.M. Guzman et al. (eds.) The Fertility Transition in Latin America. New York: Oxford University Press.
- Westoff, Charles F. 1981. "Unwanted Fertility in Six Developing Countries." *International Family Planning Perspectives* 7(2): 43-52.
- Williams, Lindy and Joyce Abma. 2000. "Birth wantedness reports: A look forward and a look back." *Social Biology* 47(3-4): 147-163.

Table 1. Survey Data Analyzed in the Paper, by Country, Survey Program and Time Period

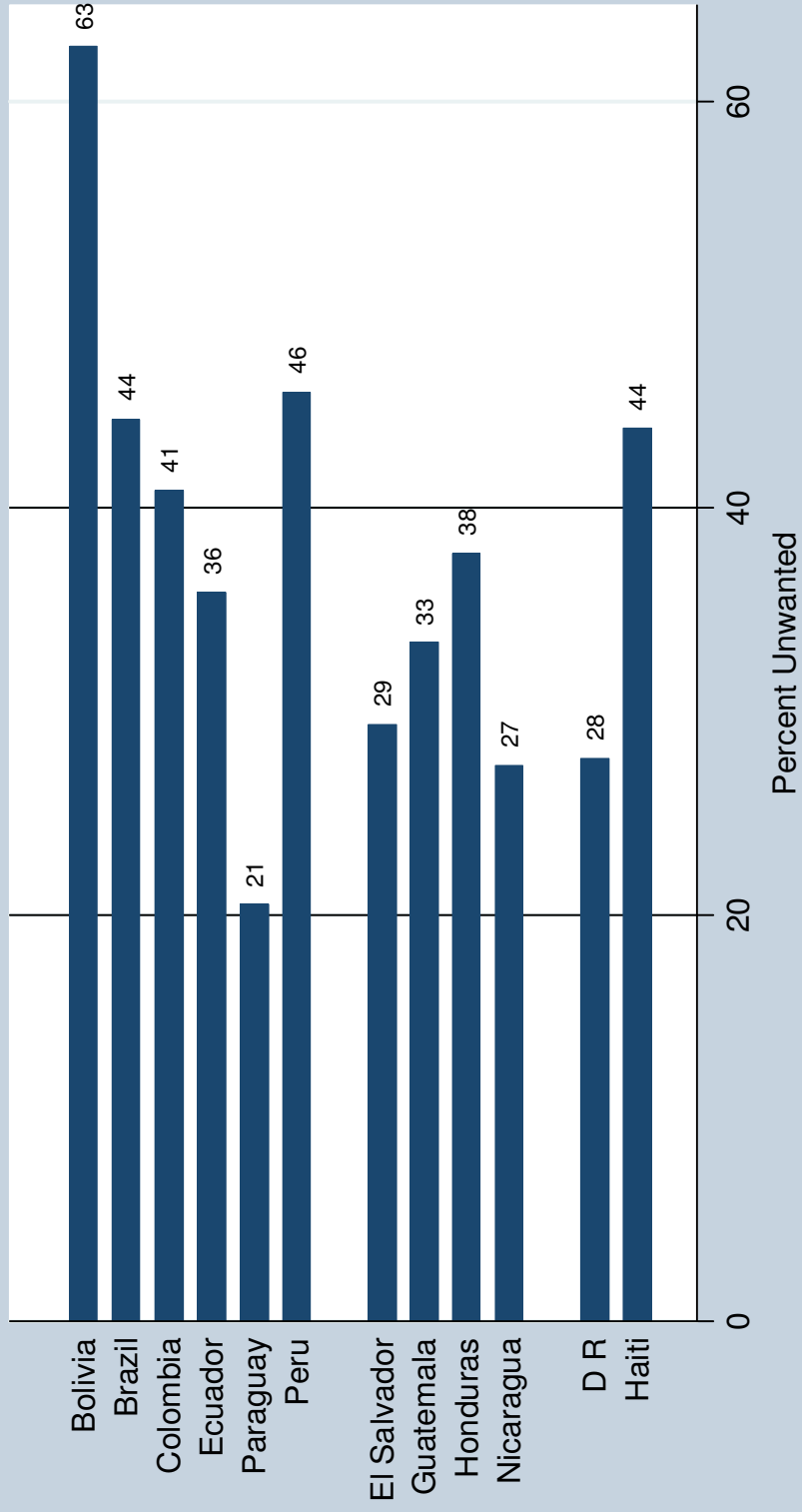
Country	Periods					
	1970s	1980s	1990s		2000s	
South America						
Bolivia		1989 [D]	1993-94 [D]	1998 [D]		2003 [D]
Brazil		1986 [D]	1996 [D]			2006 [P]
Colombia	1976 [W]	1986 [D]	1990 [D]	1995 [D]		2000 [D] 2005 [D]
Ecuador	1979 [W]	1987 [D]	1994 [R]	1999 [R]		2004 [R]
Paraguay	1979 [W]		1990 [D]	1995-96 [R]	1998 [R]	2004 [R]
Peru	1977 [W]	1986 [D]	1991-92 [D]	1996 [D]		2000 [D] 2004 [D]
Central America						
Costa Rica	1976 [W]		1993 [R]			
El Salvador		1985 [W]	1993 [R]	1998 [R]		2002-03 [R]
Guatemala		1987 [D]	1995 [D]	1998-99 [D]		2002 [R]
Honduras			1996 [R]			2001 [R] 2005 [D]
Nicaragua			1992-93 [R]	1997-98 [D]		2001 [D] 2006-07 [R]
Caribbean						
Dominican Republic	1975 [W]	1986 [D]	1991 [D]	1996 [D]	1999 [D]	2002 [D] 2007 [D]
Haiti	1977 [W]		1994-95 [D]			2000 [D] 2005-06 [D]

W = WFS
D = DHS
R = RHS
P = PNDS

Table 2. Fertility Decline: Contributions of Declines in Wanted and Unwanted Fertility

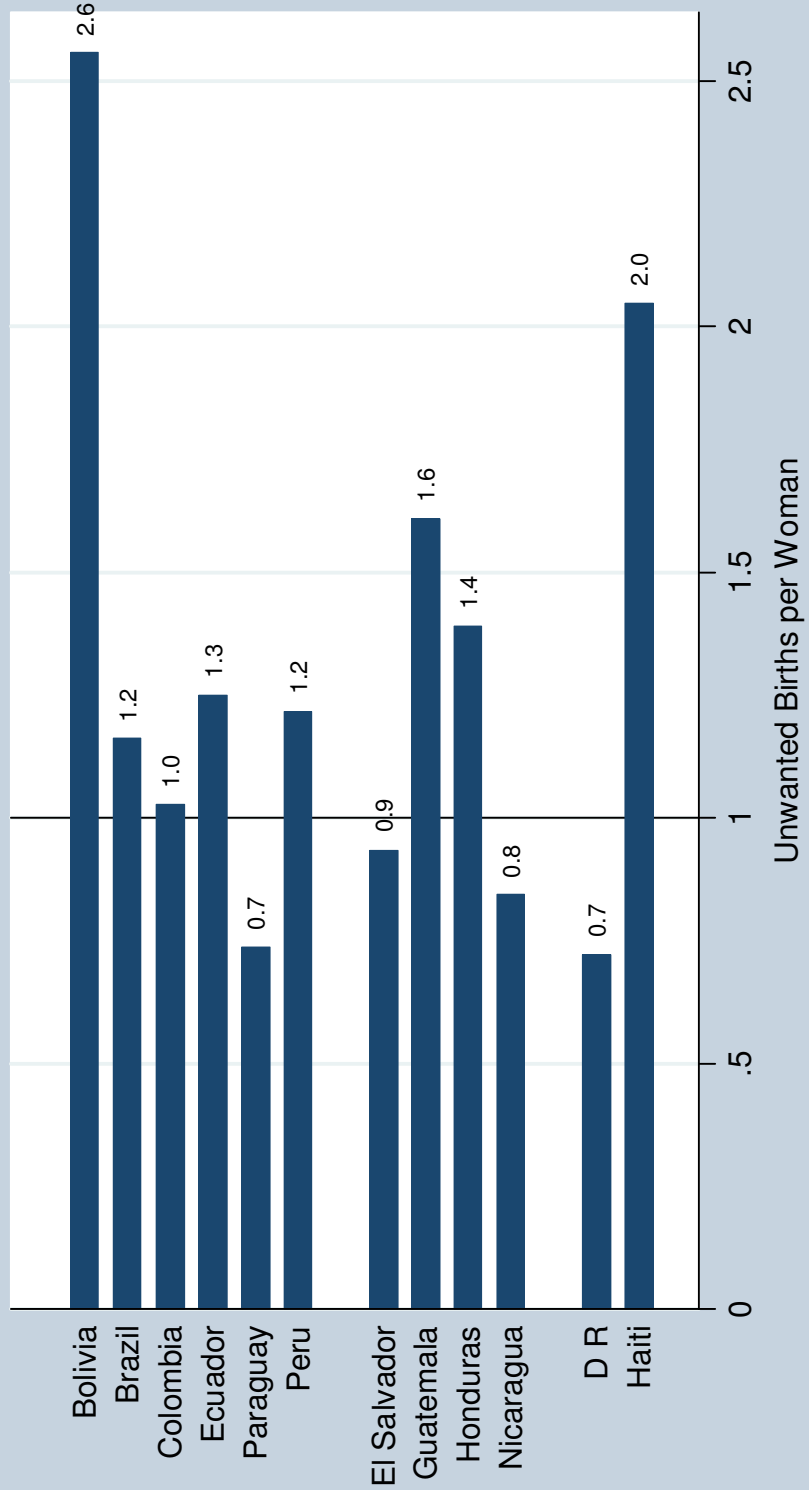
Country	Survey Years	Amount Decline in TFR	Percentage Contribution		
			Wanted	Unwanted	Total
South America					
Bolivia	1989, 2003	-1.20	16.1	83.9	100
Brazil	1986, 2006	-0.89	50.6	49.4	100
Colombia	1976, 2005	-2.14	30.7	69.3	100
Ecuador	1979, 2004	-2.00	34.7	65.3	100
Paraguay	1979, 2004	-1.94	69.9	30.1	100
Peru	1977, 2004	-2.77	31.9	68.1	100
Central America					
Costa Rica	1976, 1993	-0.48	55.8	44.2	100
El Salvador	1985, 2003	-1.41	55.1	44.9	100
Guatemala	1987, 2002	-1.29	71.5	28.5	100
Honduras	1996, 2005	-1.97	61.0	39.0	100
Nicaragua	1992, 2006	-1.90	9.7	90.3	100
Caribbean					
Dominican Republic	1975, 2007	-3.01	27.9	72.1	100
Haiti	1977, 2005	-1.57	86.5	13.5	100

Figure 1: Percentage of Births Unwanted
Most Recent Survey Since 2000



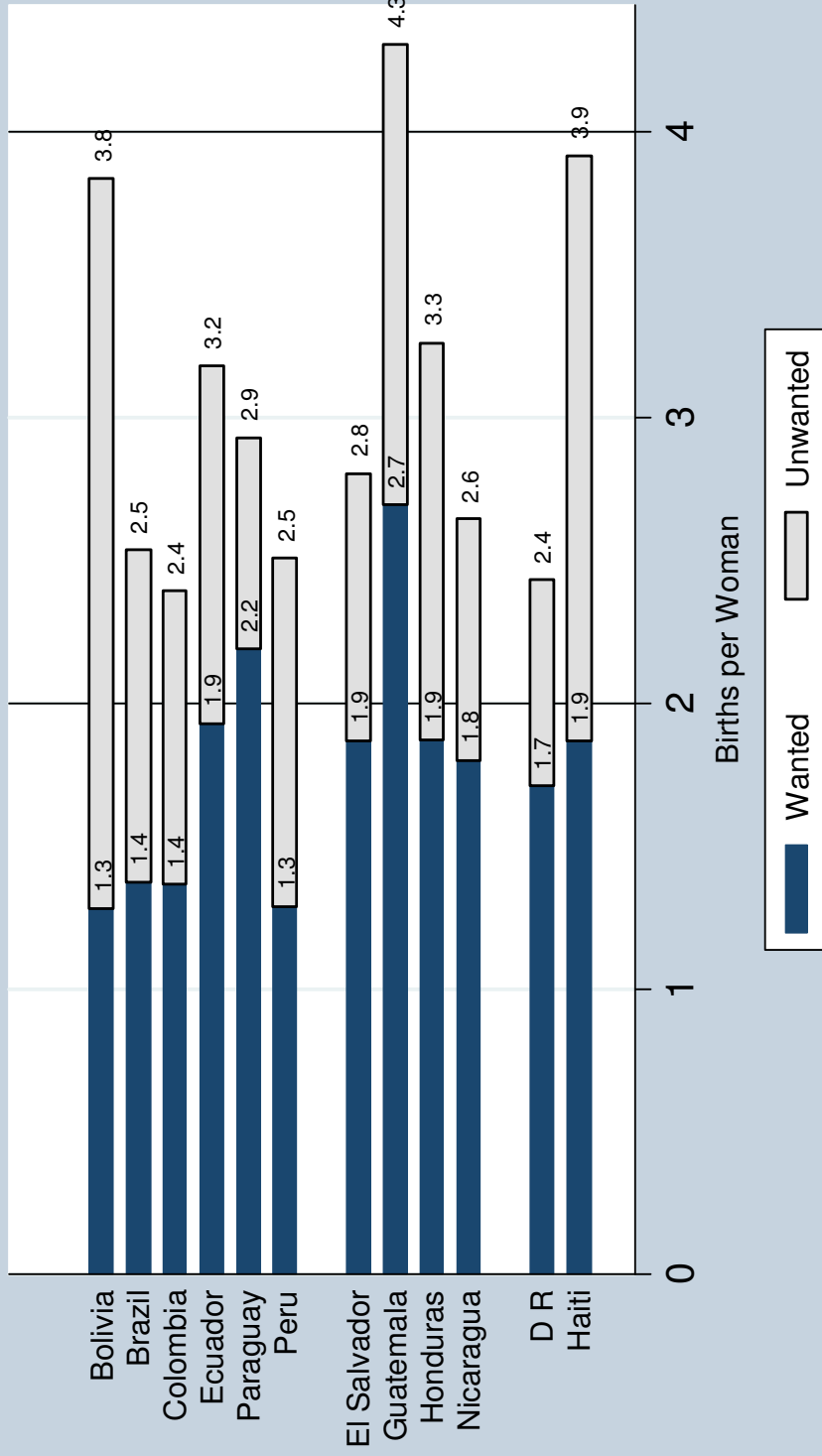
Aggregate Prospective estimates, births during 36 months before survey

Figure 2: Unwanted Total Fertility Rate
Most Recent Survey Since 2000



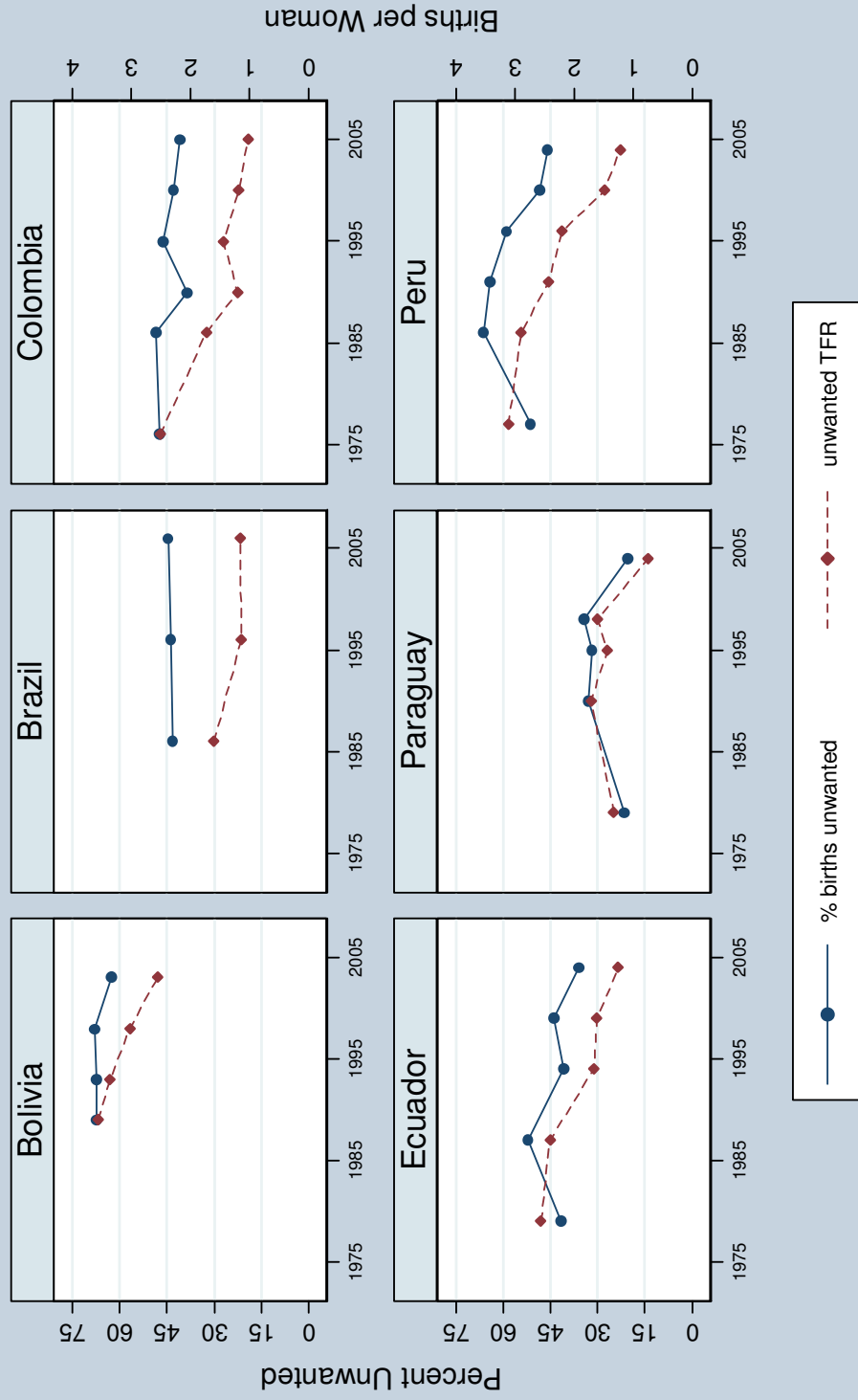
Aggregate Prospective estimates, births during 36 months before survey

Figure 3: Total Fertility Rate and Components
Most Recent Survey Since 2000



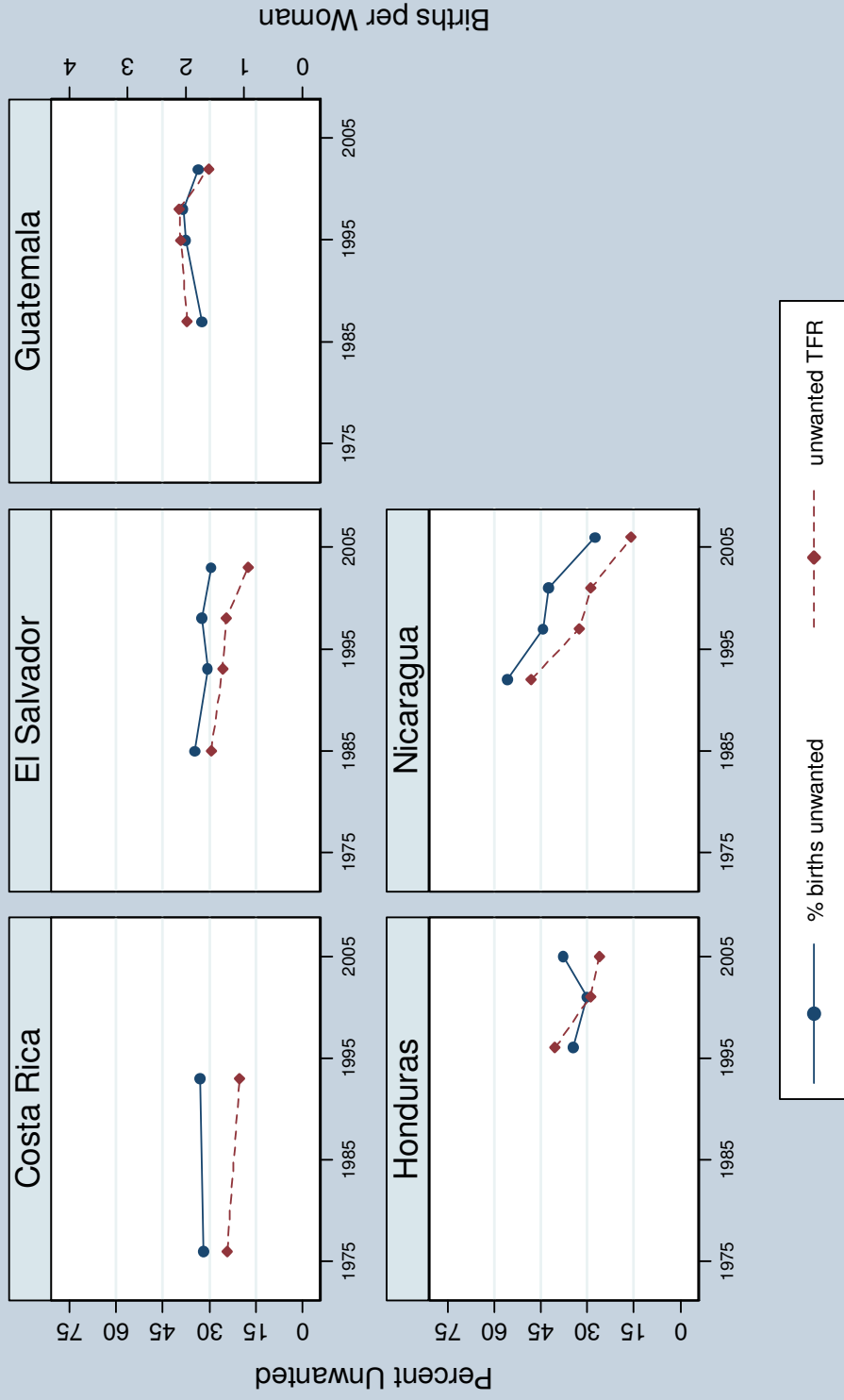
Aggregate Prospective estimates, 36 months before survey

Figure 4a: Trends in Unwanted Fertility: South America



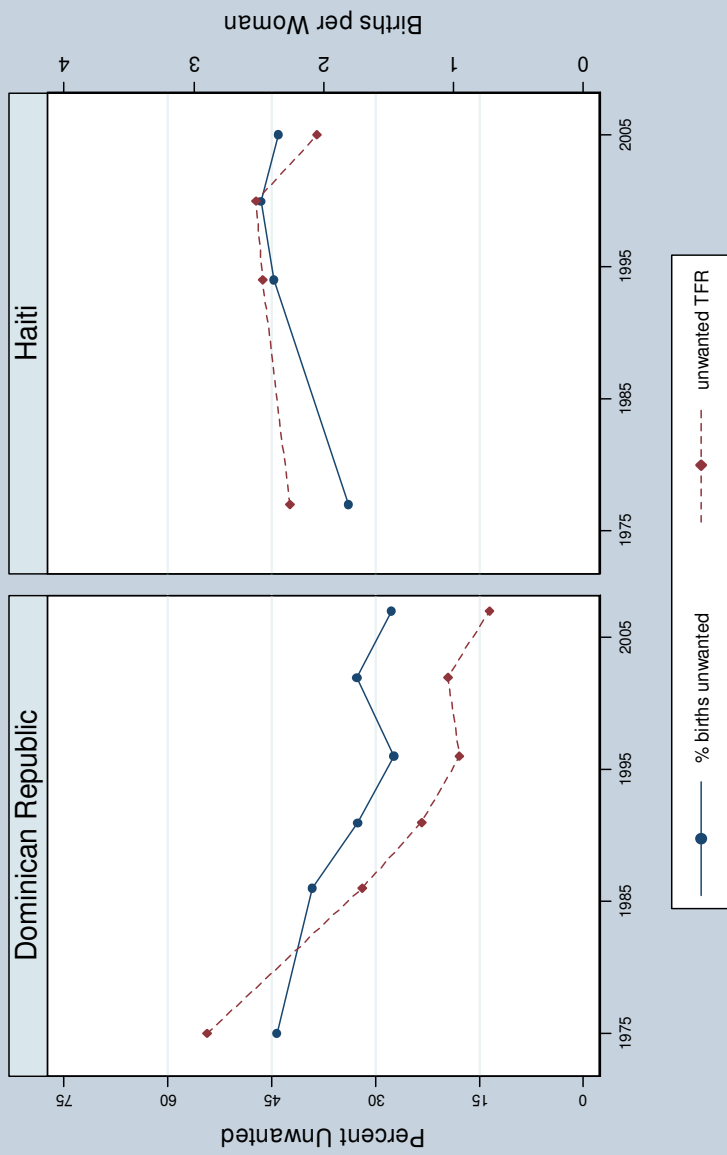
Aggregate Prospective estimates, 36 months before survey

Figure 4b: Trends in Unwanted Fertility: Central America



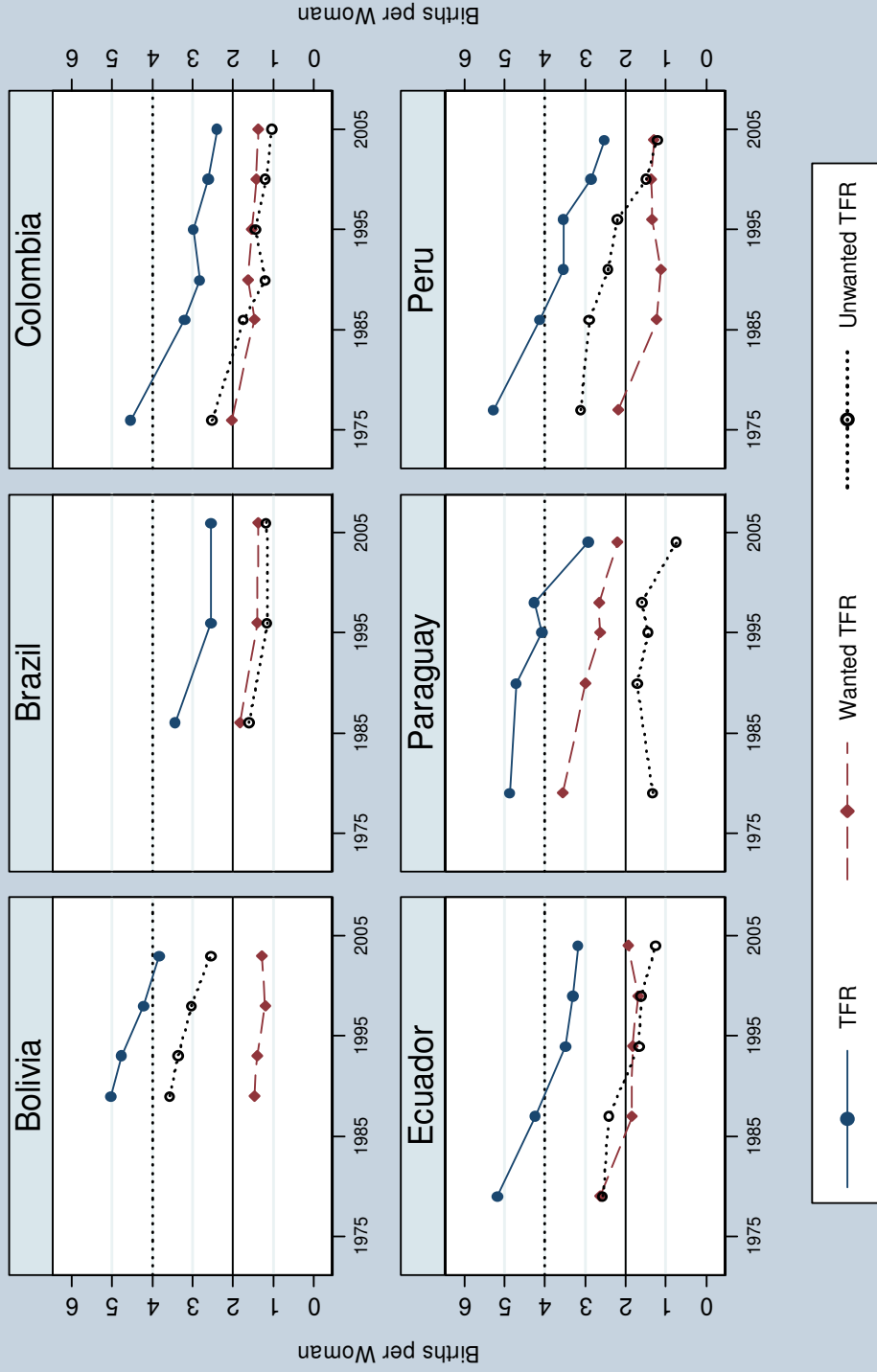
Aggregate Prospective estimates, 36 months before survey

Figure 4c: Trends in Unwanted Fertility: Caribbean



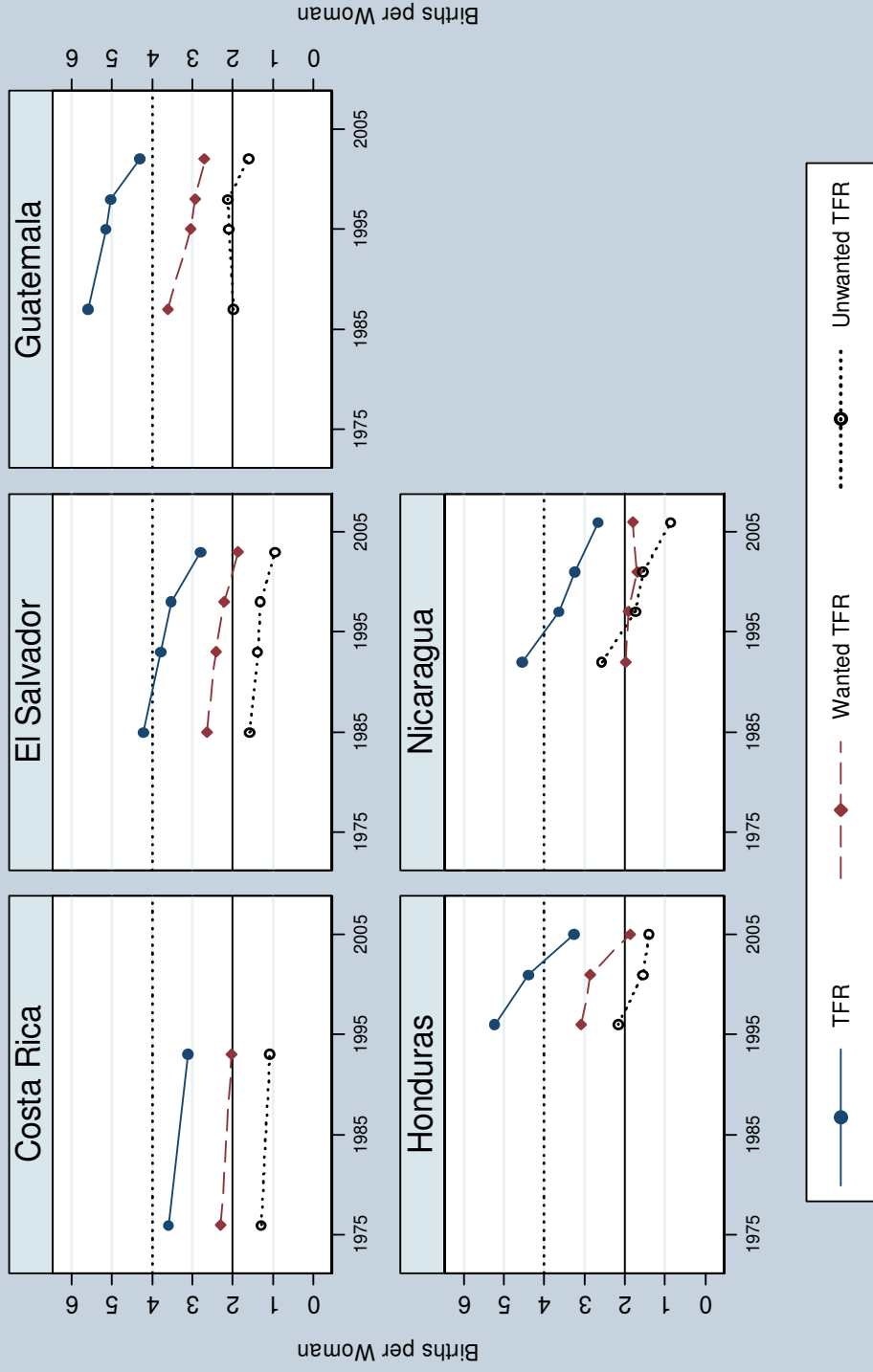
Aggregate Prospective estimates, 36 months before survey

Figure 5a: Trends in Fertility: South America



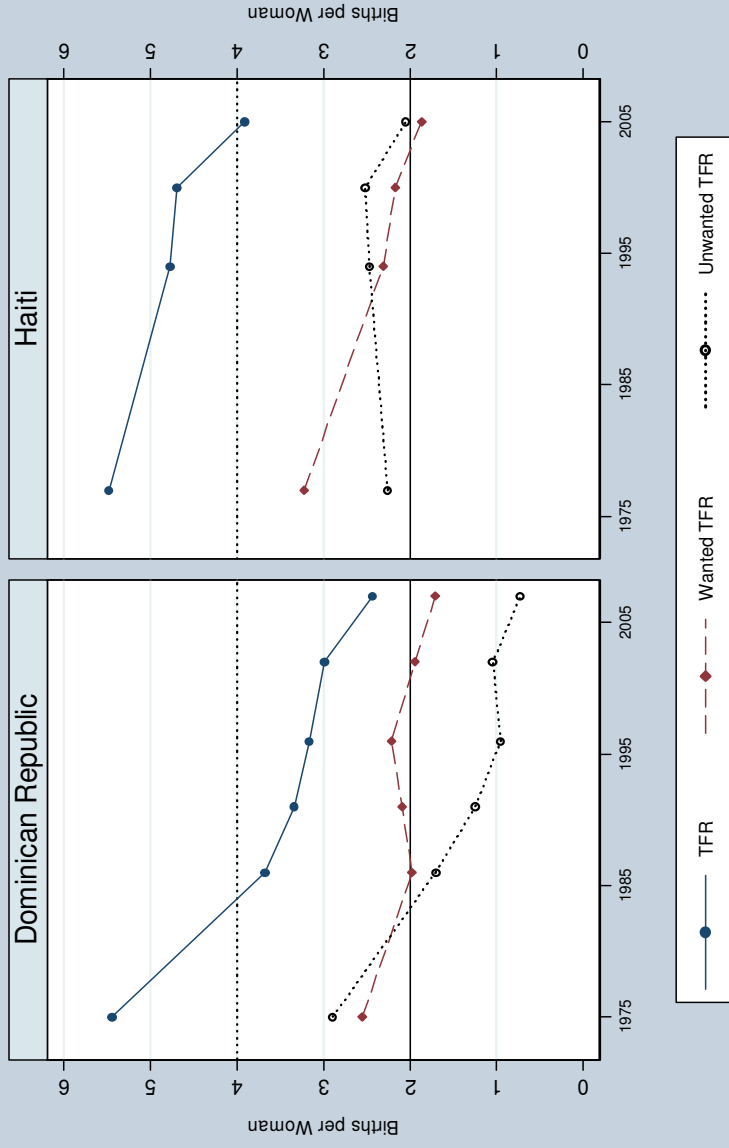
Aggregate Prospective estimates, 36 months before survey

Figure 5b: Trends in Fertility: Central America



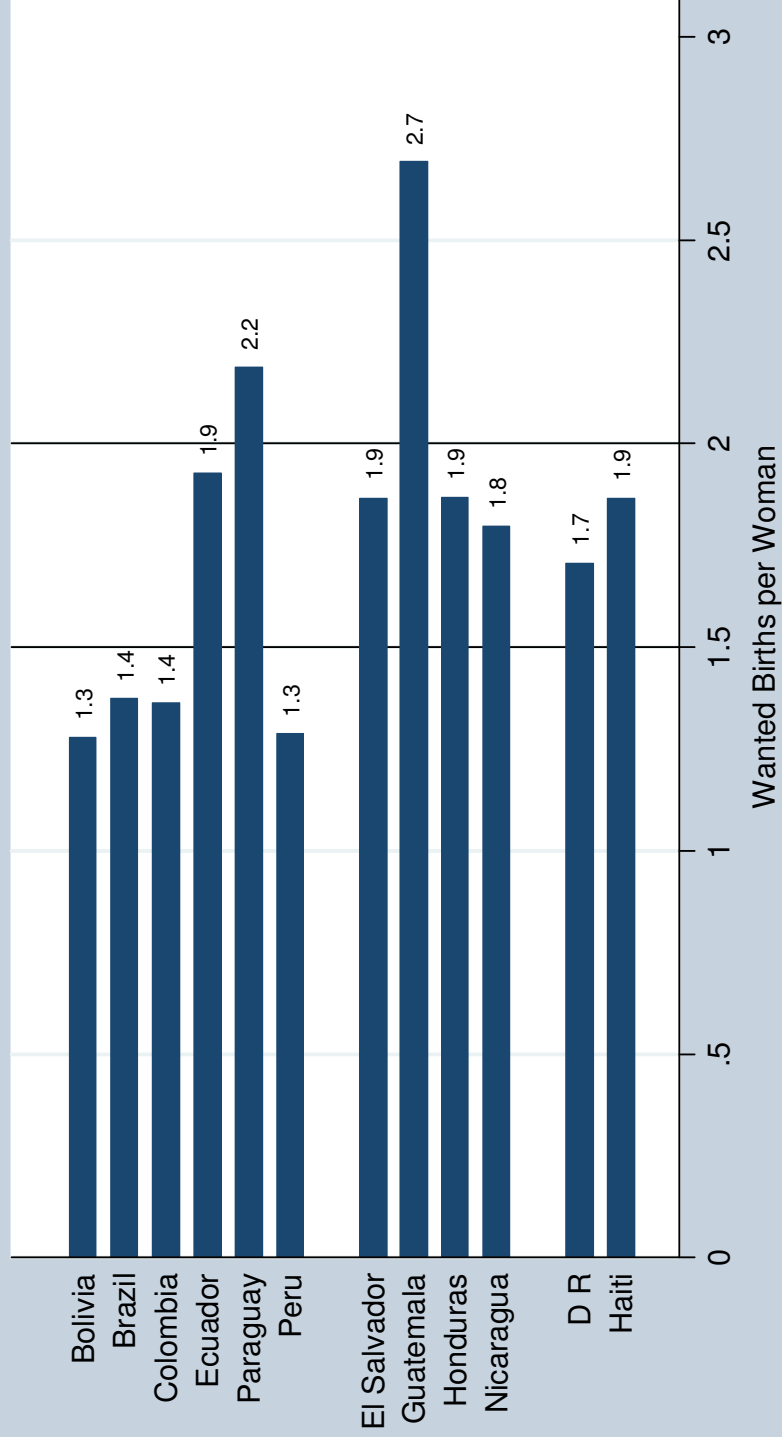
Aggregate Prospective estimates, 36 months before survey

Figure 5c: Trends in Fertility: Caribbean



Aggregate Prospective estimates, 36 months before survey

**Figure 6: Wanted Total Fertility Rate
Most Recent Survey Since 2000**



Aggregate Prospective estimates, births during 36 months before survey

Appendix. Unwanted Fertility Estimates

Country	Year	Survey Program	Total Fertility Rates						
			Unwanted		Overall TFR	Unwanted			Aggregate
			Ideal vs. Living	Aggregate Prospective		Ideal	Bongaarts	Prospective	Prospective
Bolivia	1989	DHS	41.4	67.4	5.04	2.28	3.26	3.56	1.47
Bolivia	1993	DHS	38.3	67.4	4.77	2.02	3.29	3.36	1.40
Bolivia	1998	DHS	37.6	68.1	4.23	1.75	2.91	3.03	1.20
Bolivia	2003	DHS	41.0	62.7	3.84	1.74	2.56	2.56	1.28
Brazil	1986	DHS	29.2	43.1	3.42	1.15	1.37	1.60	1.82
Brazil	1996	DHS	28.7	43.7	2.54	0.75	1.64	1.14	1.40
Brazil	2006	PNDS	28.7	44.4	2.54	0.75	1.04	1.16	1.37
Colombia	1976	WFS	21.2	47.3	4.54	1.21	1.83	2.51	2.02
Colombia	1986	DHS	27.9	48.4	3.20	1.06	1.27	1.73	1.47
Colombia	1990	DHS	23.2	38.6	2.82	0.75	1.23	1.20	1.62
Colombia	1995	DHS	25.0	46.1	2.97	0.81	1.74	1.44	1.53
Colombia	2000	DHS	29.0	42.8	2.61	0.81	1.50	1.18	1.42
Colombia	2005	DHS	28.7	40.9	2.39	0.73	1.34	1.03	1.36
Costa Rica	1976	WFS	15.6	31.8	3.58	0.63	0.72	1.29	2.29
Costa Rica	1993	RHS	15.2	33.1	3.10	0.52	0.77	1.08	2.02
Dominican Republic	1975	WFS	21.3	44.2	5.45	1.53	2.37	2.90	2.55
Dominican Republic	1986	DHS	23.0	39.1	3.68	1.09	1.19	1.71	1.98
Dominican Republic	1991	DHS	19.6	32.6	3.34	0.76	1.59	1.25	2.10
Dominican Republic	1996	DHS	19.6	27.4	3.17	0.70	1.58	0.95	2.21
Dominican Republic	2002	DHS	19.8	32.6	2.99	0.63	1.60	1.04	1.94
Dominican Republic	2007	DHS	19.6	27.7	2.43	0.51	1.17	0.72	1.71
Ecuador	1979	WFS	17.5	41.7	5.18	1.18	1.99	2.56	2.62
Ecuador	1987	DHS	29.3	52.1	4.24	1.42	2.05	2.41	1.83
Ecuador	1994	RHS	24.8	40.8	3.49	1.02	1.46	1.66	1.83
Ecuador	1999	RHS	28.9	44.0	3.30	1.07	1.41	1.61	1.69
Ecuador	2004	RHS	26.5	35.9	3.18	0.92	1.09	1.25	1.93
El Salvador	1985	DHS	12.8	34.6	4.21	0.70	1.31	1.57	2.64
El Salvador	1993	RHS	1.2	30.4	3.79	0.06	1.14	1.37	2.42
El Salvador	1998	RHS	1.2	32.5	3.51	0.05	1.14	1.31	2.20
El Salvador	2003	RHS	0.7	29.4	2.81	0.02	0.77	0.94	1.87
Guatemala	1987	DHS	16.6	32.4	5.59	1.09	1.87	1.98	3.61
Guatemala	1995	DHS	18.4	37.5	5.13	1.10	2.18	2.09	3.04
Guatemala	1998	DHS	15.9	38.5	5.04	0.94	2.48	2.12	2.92
Guatemala	2002	RHS	16.0	33.4	4.31	0.80	1.37	1.61	2.69
Haiti	1977	WFS	20.1	33.9	5.48	1.44	1.83	2.26	3.22
Haiti	1994	DHS	30.5	44.7	4.78	1.75	2.28	2.47	2.31
Haiti	2000	DHS	33.7	46.5	4.69	1.90	2.46	2.52	2.17
Haiti	2005	DHS	31.8	44.0	3.92	1.53	1.75	2.05	1.87
Honduras	1996	RHS	27.1	34.5	5.23	1.74	2.25	2.16	3.07
Honduras	2001	RHS	24.2	30.0	4.39	1.26	1.61	1.55	2.85
Honduras	2005	DHS	24.7	37.8	3.26	0.93	1.56	1.39	1.87
Mexico	1976	WFS	22.3	46.2	5.86	1.61	2.80	3.12	2.74
Mexico	1987	DHS	25.6	47.2	4.02	1.17	1.64	2.08	1.94
Nicaragua	1992	RHS	74.3	55.6	4.55	3.49	2.39	2.56	1.98
Nicaragua	1997	DHS	27.6	44.2	3.63	1.17	2.18	1.73	1.90
Nicaragua	2001	DHS	25.2	42.5	3.23	0.96	1.78	1.54	1.69
Nicaragua	2006	RHS	15.4	27.4	2.65	0.48	0.54	0.85	1.80
Paraguay	1979	WFS	7.5	21.7	4.87	0.49	1.04	1.33	3.55
Paraguay	1990	DHS	13.4	32.8	4.71	0.73	1.55	1.71	3.00
Paraguay	1995	RHS	17.5	31.8	4.07	0.79	1.14	1.44	2.63
Paraguay	1998	RHS	9.4	34.4	4.26	0.45	1.26	1.60	2.66
Paraguay	2004	RHS	14.6	20.5	2.93	0.52	0.60	0.74	2.19
Peru	1977	WFS	28.1	51.3	5.28	1.79		3.11	2.17
Peru	1986	DHS	38.1	66.2	4.12	1.79	2.30	2.89	1.22
Peru	1991	DHS	38.4	64.2	3.54	1.54	2.14	2.43	1.11
Peru	1996	DHS	34.2	58.8	3.54	1.35	2.25	2.20	1.34
Peru	2000	DHS	32.9	48.4	2.85	1.03	1.49	1.48	1.36
Peru	2004	DHS	31.8	45.8	2.51	0.85	1.16	1.22	1.29