Women's Education, Infant and Child Mortality, and Fertility Decline in Urban and Rural Sub-Saharan Africa: A Quantitative Assessment*

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Abstract

Sub-Saharan Africa (SSA) was the last major world region to experience the fertility decline that all industrialized countries have gone through and that much of the developing world has experienced in large part. It has uniquely high fertility: for 2015-2020, the United Nations estimates the total fertility rate at 4.75 for SSA, compared to 2.15 for Asia and 2.05 Latin America and the Caribbean. The ongoing fertility transition in the region has been comparatively slow and subject to stalling. At the same time, women's educational attainment and infant and child mortality have been shown in the demography literature to be important determinants of fertility and fertility decline. Since the 1980s, fertility in sub-Saharan Africa has been falling in many countries while women's school enrollment and educational attainment have been increasing and infant and child mortality for the most part has been declining. Previous research using aggregated data has shown the importance of growth in women's schooling and reduction in infant and child mortality as major factors contributing to fertility decline in the region. This research uses individual-level micro data and a well-known decomposition technique for analyzing differences or changes to quantify the importance of increased women's education and declining infant and child mortality in contributing to the observed declines in fertility in numerous countries. More specifically, this paper examines the quantitative impact of these two factors in sub-Saharan Africa in contributing to the ongoing decline in fertility that has been taking place in the region. Data come from urban and rural places in 31 countries, and are from the Demographic and Health Surveys (DHS). The methodology is to decompose observed changes in fertility to changes attributable to different factors, including the two key variables of interest – women's education and infant and child mortality – and a control variable, age.

Key words: Women's Education, Infant and Child Mortality, Fertility Decline, Sub-Saharan Africa, Decomposition Analysis, Urban and Rural Fertility

1. Introduction

This paper seeks to quantify the roles of increasing women's educational attainment and declining infant and child mortality in contributing to fertility decline in sub-Saharan Africa. Sub-Saharan Africa (SSA) was the last major world region to experience the fertility decline that all industrialized countries have gone through and that much of the developing world has experienced in large part. It has uniquely high fertility: at present, the United Nations (2015) estimates the total fertility rate (TFR, estimated lifetime births per woman) at 4.75 for SSA, compared to 2.15 for Asia and 2.05 for Latin America and the Caribbean. The ongoing fertility transition in the region has been comparatively slow and subject to stalling (Bongaarts, 2008; Shapiro and Gebreselassie, 2008; Shapiro et al., 2013).

Women's education is associated with demand for fewer numbers of better-educated children (what economists refer to as the quality-quantity tradeoff), reduced exposure to the risk of pregnancy via delays in marriage associated with increased schooling (Shapiro and Gebreselassie, 2014), greater use of more efficient contraception (Rosenzweig and Schultz, 1989; Shapiro and Tambashe, 1994), and lower infant and child mortality (Hobcraft, 1993; Rutstein, 2000).

Reduced infant and child mortality, from the perspective of the Easterlin framework for fertility analysis (Easterlin, 1975; Easterlin and Crimmins, 1985), raises the supply of children and hence, other things equal, increases the demand for fertility control and thus presumably contributes to declining fertility.

Fertility decline or fertility transition is part of the broader concept of demographic transition, the transition from high birth and death rates to low birth and death rates that all industrialized countries and many developing countries have undergone. As already noted, sub-

Saharan Africa has been the global laggard with respect to fertility transition, with declines evident at the national level emerging only in the latter part of the 1980s, distinctly after the initiation of national-level fertility decline in other parts of the developing world during the 1960s and 1970s. As a consequence of the late initiation of fertility transition, the prevalence of stalling of fertility decline, and the slow pace of decline (slower than in Asia and Latin America, as shown in Shapiro et al., 2013), the region has an overall level of fertility that is well over twice the levels in Asia or Latin America.

Compared to other parts of the developing world, women's schooling is low in sub-Saharan Africa (United Nations, 2010; Shapiro, 2012), although it has been increasing over time (Garenne, 2012), both absolutely and relative to the schooling of men (Schultz, 1993; Barro and Lee, 2013). These increases, then, would be expected to contribute to the ongoing fertility transition in the region; at the aggregate level, within SSA it is clear that countries with comparatively higher levels of female educational attainment are the countries that tend to have lower levels of fertility (Shapiro, 2012) and to be more advanced in their fertility transition (Garenne, 2012). However, using aggregated data in a longitudinal perspective, Garenne (2012) found that the percentage of educated women was low at the onset of fertility decline (2.2 years of schooling, on average), and he found no correlation between the speed of fertility decline and the mean level of education at the onset.

Similarly, infant and child mortality is higher in sub-Saharan Africa than elsewhere in the developing world (United Nations, 2015). For the most part declines in infant and child mortality have been taking place, and at the aggregate level, these declines have made an important contribution to fertility decline in the region (Shapiro, 2012).

This research uses individual-level micro data and a well-known decomposition technique for analyzing differences or changes to quantify the importance of increased women's education and reduced infant and child mortality in contributing to the observed declines in fertility in numerous countries. More specifically, this paper examines the quantitative impact of changes in these two factors in sub-Saharan Africa in contributing to the ongoing decline in fertility that has been taking place in the region. Data are from the Demographic and Health Surveys (DHS), and come from urban and rural places in the 31 countries that have had at least two surveys. These countries account for 87 percent of the population of sub-Saharan Africa.

The methodology entails decomposing observed changes in fertility to identify the magnitudes of those changes that are attributable to changes in different factors, and most notably women's education and infant and child mortality. As discussed below, the decompositions control for not only changes in these two variables, but also changes in the age composition of the female population. We examine overall changes between the first and last surveys, beginning in the mid-1980s up to the present. Estimates are provided separately for urban and rural places: Garenne and Joseph (2002) have shown that fertility transition in the region began first in urban areas, with a lag prior to onset of fertility decline in rural places; and Shapiro and Tambashe (2002) have emphasized that urban and rural areas in the region differ in terms of both the timing of onset of fertility decline and the pace of that decline as fertility transition unfolds.

The results indicate that for the most part, urban fertility tends to decline somewhat more rapidly than rural fertility. Further, while both increased women's educational attainment and reduced infant and child mortality contribute importantly to the observed changes in fertility, in urban areas increased educational attainment is likely to be more important for fertility decline,

while in rural places reduced mortality on average is a bit more important for fertility decline than is increased education. On average the contribution of improvements in women's education is to account for 57 percent of the observed decline in urban fertility and 30 percent of the decline in rural fertility. Improvements in mortality account for almost 30 percent of urban fertility decline and 36 percent of rural fertility decline.

The remainder of the paper is organized as follows. The next section provides an overview of changes in fertility, education, mortality, and mean age of women in urban and rural sub-Saharan Africa. Section 3 describes the decomposition method and the data. Section 4 presents the decomposition analysis and section 5 provides concluding remarks.

2. Overview of changes in fertility, education, mortality, and mean age of women

This section provides an overview of the changes in fertility and in the different factors that are included in our regressions for urban and rural places and that influence fertility between the first and last DHS for the 31 countries in sub-Saharan Africa with at least two surveys. Before we begin looking at data for urban and rural places separately, we provide a brief overview of data at the national level, to facilitate comparisons with earlier research.

Among the 31 countries, there is considerable variation in the pace of decline in fertility.[1] For all of the countries taken together, the average TFR in the first survey (looking at fertility over the three years prior to the survey) was essentially 6.0, while the average TFR in the last survey was just under 5.2. Hence, over a span that on average was a little more than 16 years, the TFR has declined on average by a little less than 0.05 per year. This is a fairly modest pace as compared to elsewhere in the developing world. For example, in an earlier study covering

[1] For a full analysis of the issues covered in this paper, but with a focus at the national level, see Shapiro and Tenikue (2015).

almost 50 developing countries and examining the pace of fertility decline in the two most recent surveys, Shapiro et al. (2013) found that the average decline in sub-Saharan Africa was 0.05 children per year, compared to an average decline of 0.08 for countries in Asia and 0.12 for countries in Latin America. Going back over a longer time period, Bongaarts (2008) reported an average annual decline in the TFR of 0.09 for all developing countries other than China for the period from 1965 to 1990. For the period from about 1992 to 1998, Bongaarts found an average annual decline in the TFR of 0.07 for sub-Saharan Africa and 0.08 for both Asia/North Africa and Latin America. For the period from about 1998 to 2004, however, he found average declines of only 0.02 per year in sub-Saharan Africa, compared with 0.10 in Asia/North Africa and 0.07 in Latin America. Using data from 31 sub-Saharan African countries as well, Garenne (2008) reported that the onset of fertility decline of most countries was between 1960 and 2000 and that the average speed of fertility decline was approximately 1 child per woman per decade.

We begin our analysis with an examination of the total fertility rates (TFRs) in the first and last DHS surveys, and the change in the TFRs, both overall and per year (our decompositions reported below use children ever born as our measure of fertility, and the strong correlation between these two measures of fertility is discussed below). These data are shown in Table 1 for urban and rural places, respectively, along with the dates of the first and last DHSs.[2] For all of the countries taken together, the average TFR in the first survey in urban areas was 4.7, while the average TFR in the last survey was 3.9. Hence, over a span that on average was a little more than 16 years, there was a 17 percent decline in average urban TFRs and the average annual decline in the TFR in urban places was just over 0.05 per year. In rural areas, the average

[2] Because the duration between the first and last survey varies across countries, we show the change per year to facilitate comparability across countries.

TFR in the first survey was 6.5, while in the last survey it was 6.0, corresponding to an eight percent overall decline and an average annual decline of a little more than 0.03.

While the average pace of decline is slow in the region, it is apparent that there is considerable variation across countries in that pace in both urban and rural areas. Indeed, only 19 of the 31 countries have seen declines in both urban and rural fertility. And among these countries, 11 have experienced more rapid declines in urban areas, while in the other eight "double-declining" countries fertility decline has been more rapid in rural places.[3]

Another six countries have experienced declines in urban fertility but not in rural fertility, and another three countries have had more or less equal absolute declines in both urban and rural places (Burundi, Gabon, and Ghana), which means that relative declines were greater in the lower-fertility urban areas. Finally, two countries showed increased fertility in both urban and rural places (the Congo and the Democratic Republic of the Congo (DRC)), and one country had increased urban fertility and reduced rural fertility (Lesotho).[4]

In sum, then, the tendency overall is for fertility to decline in both urban and rural places, but in roughly 30-40 percent of the countries this is not the case (depending on whether one looks at absolute or relative declines, respectively). And fertility decline has been more prevalent in urban areas, being present in 28 countries as compared to the 23 countries that experienced rural fertility decline.

[3] It has been argued that the rapid fertility decline observed in Eritrea – which is the country with the most rapid pace of change in SSA – is in part a consequence of border conflict with Ethiopia that took place during the late 1990s (Blanc, 2004; Woldemicael, 2008). Eritrea had more rapid fertility decline in rural than in urban areas, but this might largely be a consequence of the border conflict having more disruptive impact in rural places.

[4] It is worth noting that these last three countries whose experience contrasts so sharply with that of the bulk of the countries all had relatively brief observation spans between the first and last survey, ranging from five to 6.5 years.

Figure 1 plots the data in the last two columns of Table 1 against the TFR as of the last DHS. When the TFR is comparatively high, urban fertility declines are large, for the most part, while rural fertility either declines at a slower pace or increases. At more middling levels of the last TFR, for the most part both rural and urban places show fertility decline, but the declines tend to be greater in urban places. And finally, at relatively low levels of the TFR, fertility decline predominates in both urban and rural places, but the declines tend to be more rapid in rural areas. This pattern corresponds closely to the "three-stage process" for fertility transition in the region proposed by Shapiro and Tambashe (2002).

Levels of and changes in educational attainment between the first and last DHS are shown in Table 2. Two indicators of educational attainment are used: the mean number of years of schooling of women of reproductive age, and the percentage of these women who had never been to school. First and foremost, it is essential to note that between the first and last survey, mean years of schooling increased everywhere – in both urban and rural places in every country. Similarly, the percentage of women with no schooling declined almost everywhere, except for urban and rural Lesotho and urban Congo, where the very low percentages with no schooling (1-3 percent) remained stable between the first and last survey. So increasing educational attainment is clearly universal. But there is substantial variation in the pace of increase, both across countries and between urban and rural areas.

On average, urban women had 5.3 years of schooling as of the first survey and 7.0 years as of the last survey, an increase of 1.7 years over a period that averaged just over 16 years. Among rural women, mean years of schooling increased from 2.5 as of the first survey to 3.8 at the last survey, an increase of 1.3 years. The average percentage of urban women who had never been to school declined from 29 percent at the first survey to 19 percent as of the time of the last

survey; the corresponding numbers for rural women are a decline from 55 percent to 41 percent. On each measure, then, rural women were worse off by roughly a factor of two. Educational attainment in rural places was lower than in urban places at the outset, and the increase in mean years of schooling has been a bit more rapid in urban areas.

Again, however, there was substantial variation across countries, both in levels and in changes in women's educational attainment. Most typically, mean years of schooling increased more rapidly in urban areas, but in five countries (Malawi, Namibia, Rwanda, Senegal, and Zimbabwe) mean schooling increased more rapidly in rural areas, and in two others (the DRC and Gabon) the increase in mean years of schooling was the same in urban and rural places. Of these seven countries with comparatively strong growth in rural schooling, five had rather high educational attainment at the outset. Hence, the strong rural growth presumably reflects the fact that the process of expansion of schooling from urban to rural areas that typically unfolds over time in developing countries is farther along in these already-high-schooling countries. For most countries, though, that process is at an earlier stage, and schooling is still increasing more rapidly in urban places.

As noted above, declines in infant and child mortality in SSA have been identified as an important factor contributing to fertility decline in the region (Shapiro and Gebreselassie, 2008; Shapiro, 2012). Table 3 shows evidence on changes in mortality for the 31 countries covered by this study. We use ${}_5q_0$, the infant and child mortality rate, calculated over the past 10 years prior to the survey, as our measure of mortality here. As with increased educational attainment, reduced infant and child mortality between the first and last survey in both urban and rural places is close to universal. Only rural Chad, Lesotho, with slightly higher mortality in both urban and rural places, and urban Zimbabwe did not show declining mortality, and except for Zimbabwe

the increases in mortality were trivial. In addition, in every country except for Tanzania, mortality is higher in rural areas, but in some cases the urban-rural difference in mortality is modest (e.g., Gabon, Kenya, Namibia) while in others it is substantial (e.g., Burkina Faso, Cameroon, Guinea, and Niger).

Among urban women the average rate of infant and child mortality fell from 139 as of the first survey to 87 as of the last survey – a decline of 52 points or nearly a 40 percent decline. Among rural women, ${}_5q_0$ averaged 183 at the first survey and 116 as of the last survey – a decline of 67 points, and again, nearly a 40 percent decline. So mortality is clearly higher in rural areas, and by a little more than 30 percent on average. Again, however, there is considerable diversity of experience across countries. Reflecting the larger average absolute declines in rural mortality, in 19 of the countries the decline in the rural mortality rate exceeded the decline in the urban mortality rate. However, in 11 countries the decline in the mortality rate was greater in urban places.

In the decompositions that we carry out and report on below, the age composition of the female population of reproductive age is an important control variable. This is because our dependent variable is children ever born, and the value of this variable increases with age, other things equal. Here, then, we examine the mean age of this population and how it changes between the first and last survey. Since we know from stable population theory that given the level of mortality, higher-fertility populations are younger than lower-fertility populations, in countries and areas experiencing fertility decline the population of women of reproductive age will tend to get older over time. This phenomenon will presumably be more common in urban places than in rural ones, given the lower urban fertility. At the same time, the age pattern of female rural-urban migration will also influence age distributions in both locations.

To the extent that the population of reproductive age gets older over time, this will at least partially mask fertility decline, since the aging will result in increased numbers of children ever born. Consequently, we control for the woman's age in the regressions in order to take account of this factor.

In Table 4, with data on 30 countries, we see that in urban areas, consistent with the observed declines in urban fertility, 25 of the countries experienced increasing mean age of women. In rural places, mean age of women of reproductive age increased in 20 countries. So the general pattern is increased mean age, but somewhat more so for urban women than for their rural counterparts.

We have used the TFR as our measure of fertility to this point. However, the TFR is a measure based on aggregated data, and for this study we use micro data for our decomposition analyses. For each individual, then, our measure of fertility for these analyses is the number of children ever born, or cumulative fertility, and mean number of children ever born will be a key variable in the analyses. As we shall see below, the mean number of children ever born is sensitive to even small changes in the average age of women of reproductive age.

At this point it is useful to compare the levels of the TFR and the mean number of children ever born. In urban areas, the levels of these two measures of fertility are very highly correlated, with the correlation being about +0.9 for both the first and last surveys. In rural areas, the correlation coefficient is about +0.7 for the first survey and +0.8 for the last survey. Given these high correlations, then, we think that the analyses below of changes in the determinants of fertility and their consequences for fertility behavior, using children ever born as our measure of fertility, are very useful for understanding the ongoing fertility transition in the region.

3. Decomposition method and data

Decomposing changes in fertility over time

In 1973, Oaxaca introduced a procedure for analyzing differences in wages between two groups. Consider wages as a consequence of earnings functions that reflect both *endowments* of factors that influence wages and the *payoffs* to those factors. From this perspective, two groups may have different wages as a consequence of either or both of different endowments of wage-relevant factors (such as schooling and work experience) and different payoffs to given factors (as might occur with labor market discrimination). The Oaxaca decomposition procedure allows one to assess the importance of different endowments of relevant factors in accounting for the observed difference in wages between two groups.

The procedure developed by Oaxaca (1973) and subsequently refined (Oaxaca and Ransom, 1994) has been used in many studies of wage differences between groups. However, it may also be applied to analysis of differences in fertility (see, for example, Bundervoet, 2014). For our purposes here, we are interested in changes in fertility over time, and in the importance of changes in educational attainment of women and in infant and child mortality in accounting for the fertility changes.

The number of children ever born to a women in period i, Yi (i=1,2), is considered as a linear function of a set women's characteristics X_i (i=1,2), a vector of parameters (β_i) and an error term (e_i).

$$Y_i = X_i \beta_i + e_i$$

The average number of children ever born to a woman in the sample is on the regression line and can be written as

$$\overline{Y}_i = \overline{X}_i \, \hat{\beta}_i$$

where $\overline{X}_i$ is the vector of average values of X_i and $\hat{\beta}_i$ is the vector of estimated values of β_i.

For any arbitrary vector β^* we have that

$$\overline{Y_2} - \overline{Y_1} = (\overline{X_2} - \overline{X_1})\beta^* + \overline{X_2}(\widehat{\beta_2} - \beta^*) + \overline{X_1}(\beta^* - \widehat{\beta_1}) \quad (1)$$

Equation 1 is a decomposition equation of the linear regression model. It expresses the change in the means of the dependent variable over two periods as a function of changes in means of the set of women's characteristics (first term on the right hand side of the equation) and changes in the regression coefficients (two last terms on the right hand side of equation 1). We can then compute the contribution of each of these factors (as well as the contributions of changes in other characteristics that influence fertility) to overall fertility decline. The literature has considered various values for β^* and some of them display some weaknesses (Oaxaca and Ransom, 1994; Sinning et al., 2008). Following Oaxaca and Ransom (1994), this paper sets β^* to be parameters estimated on the pooled sample. It reflects the set of parameters that should prevail irrespective of the time period.

We first estimate the effects of educational attainment, infant and child mortality, and age on cumulative fertility (children ever born), using data from the first and last DHSs (pooled). The estimated coefficients are then used in conjunction with changes in the means of the explanatory variables to identify the consequences for fertility of the changes in age, infant and child mortality, and education between the first and last survey.

Educational attainment is measured by a series of dummy variables indicating the number of years of schooling completed (0, 1-6, 7-8, 9-10, 11-12, 13+). The reference category is those with 1-6 years of schooling, representing primary schooling in a system with six years of primary school. There is variation across countries in grades per level, however – in some countries,

there are seven years to primary school. For this reason, then, we prefer to use years of schooling rather than level. In addition, we break up what would be secondary schooling in a 6-6 system into three groups, as previous research (Shapiro and Tambashe, 2003; Shapiro, 2012) has shown that these three secondary-school groups have distinctly different fertility.

Infant and child mortality is proxied by the percentage of children born to women in the respondent's sample cluster who have died. This is essentially a measure of mortality that pertains to the small area in which each woman resides. It is not a measure of the infant and child mortality rate, but since most of the deaths it counts are likely to be of infants and children under five, our mortality measure should be highly correlated with the local area's infant and child mortality rate. And in fact, the correlation between levels of our measure of mortality and the reported infant and child mortality rate exceeds +0.96 in both urban and rural places as of the first survey, and exceeds +0.92 in both places of residence as of the last survey. Our measure should thus be a good indicator of women's perceptions of the level of mortality. Finally, as noted previously, the woman's age is included as a control variable, and children ever born is our dependent variable in the analyses.

Changes in mean values of the variables

As we've seen in the Overview section, as fertility decline has proceeded at a generally slow pace, particularly in rural areas, women's education has increased, and infant and child mortality has typically declined. Changes in these two factors have contributed to the declines in fertility that have been observed, as we shall see below. Likewise, for most of the countries the mean age of women of reproductive age in both urban and rural places has increased a bit between the first and last DHS, which has the impact of increasing the number of children ever born, other

things equal. However, there is considerable variation across countries in the magnitudes of the changes in each of these variables, as noted earlier.

Appendix Table A-1 shows the detailed results for individual countries with respect to changes in the mean values of the variables between the first and last surveys, for the variables used in the regressions.[5] Consider first the education dummy variables. In nearly every country, the proportion of women with no schooling declined between the first and last DHS in both urban and rural places, as noted previously. On average, the decline was by about 35 percent in urban areas and 25 percent in rural areas. However, the pace of decline varied substantially across countries, and in particular, was considerably slower in relative terms among the countries that had particularly low educational attainment at the outset.

For example, of the seven countries with more than 50 percent of urban women of reproductive age with no schooling as of the first survey, the average decline in this percentage by the time of the last survey was 13 percentage points, representing a 23 percent decline; while among the 23 countries with fewer than 50 percent of urban women with no schooling as of the first survey, the average decline was 10 percentage points, representing more than 45 percent of the initial level. Among rural women, when 50 percent or more had no schooling as of the first survey, there was a 15-point decline in that percentage at the last survey, or nearly a 20 percent decline, while in rural places where there were fewer than 50 percent with no schooling at the outset, the average decline was 11 points, or almost 45 percent.

At the other end of the education distribution, the general tendency for each of the three education groups representing women with nine or more years of schooling was for the proportion to increase over time, with this being the case for 90 percent of the 180 comparisons

[5] Since micro data are not available for Eritrea, these results, as well as those for the following appendix tables, are for 30 countries.

that can be made. Particularly in rural areas, however, these high-education-groups remained small. More broadly, these changes in educational attainment reflect the increased access to both primary and (especially in urban places) secondary schooling that women have experienced during the past 20-30 years.

Declines in mortality based on our measure reflecting mortality of children in each cluster of residence in urban and rural places were universal within this group of countries, with one exception: urban Zimbabwe, which had the lowest mortality of all countries as of the first survey and, despite a slight increase, the fifth-lowest level as of the last survey. In some cases these declines were substantial and in others quite modest. The correlations between infant and child mortality rates reported in Table 3 and the mortality measures reported in Table A-1 are greater than +0.9 in both urban and rural areas and for both the first and last surveys, as noted earlier.

Changes in mean age of the population of women aged 15-49 were mostly increases, as noted in our data overview, but sometimes there were decreases. And again, in some cases the changes were modest and in others more substantial. All of these changes, then, influence the decompositions.

Regression results

The first step in the decomposition procedure is to estimate regressions with the dependent variable, the number of children ever born to each woman, regressed on variables indicating her level of educational attainment, the extent of infant and child mortality locally, and the woman's age. The data from the first and last DHS are pooled, the regressions are estimated using weighted data, and the resulting coefficients indicate the effects of each variable on the number

of children ever born.[6] The samples for each of these regressions consist of all urban women and all rural women aged 15-49, respectively.

Detailed regression results for each country may be found in Table A-2 in the Appendix. The magnitudes of the estimated coefficients differ across countries, and for the most part these coefficients are highly significant. There are some consistent similarities in the results for the different countries and here we provide an overview of these detailed results that highlights those similarities.

First, consider the estimated coefficients for the education dummy variables. Compared to women with 1-6 years of schooling (the reference group), those women with no schooling tend to have significantly higher fertility, a little more so in urban places than in rural areas. Women with higher levels of schooling tend to have significantly lower numbers of children ever born than their counterparts with lower levels of schooling, and for the most part the negative impact of schooling gets larger in absolute value as the schooling level increases, in urban and especially in rural places.

These results may be seen more easily in Table 5. This table shows the (unweighted) average values of the urban and rural coefficients across the 30 countries for which micro data are available. Controlling for a woman's age and the level of mortality of children in the cluster in which she resides, we find that on average urban women with no schooling have had nearly a third of a child more than women with 1-6 years of schooling; among rural women the corresponding differential is only half as large. Both urban and rural women with 7-8 years of schooling have lower fertility than their counterparts with 1-6 years of education, other things

[6] For some countries (e.g, Cameroon), changes in the way samples were constructed resulted in mean values of unweighted data showing a decline in urbanization, while weighted data reflected the reality of increased urbanization. Hence, while we don't use urban residence in our regressions, since they are estimated separately by place of residence, we use used weighted data, to more accurately reflect the underlying population of women by place of residence.

equal, by close to 0.3 children, on average. As educational attainment increases beyond this level, the magnitudes of the negative coefficients for the schooling groups rise in absolute value and at an increasing rate, especially among rural residents. Similar evidence of increasingly stronger negative effects of schooling on fertility as schooling increases was also reported in Shapiro (2012).

The coefficients of our mortality variable typically have a small, positive value, slightly higher in urban places, on average, indicating that where mortality is higher, fertility tends as well to be higher, as anticipated. And finally, the number of children ever born increases with age, other things equal, but at a decreasing rate. The vast majority of estimated coefficients in these 30 regressions were statistically significant.

4. Decomposition analysis

Table A-3 of the Appendix provides detailed results of the decomposition that assesses the contributions of different variables to the observed change in fertility (children ever born) between the first and last DHS. Effects of the changes in means of the different education dummy variables, evaluated using the individual regression coefficients, are aggregated up so that we see the consequences of changes in the education variables as a group. Likewise the effects of changes in age and age squared are reported simply as the effect of the change in age.

Consider first some examples to illustrate the interpretation of the numbers in the table. The increased educational attainment in urban Benin accounts for just over a third of the observed decline in the average number of children ever born between 1996 and 2012. By contrast, the reduction in mortality experienced in urban Benin implies a corresponding decline in the number of children ever born equivalent to more than 80 percent of the observed decline

of 0.47 children. The increase in the mean age of urban women aged 15-49 of 0.7 years, by itself, would have increased fertility by almost 30 percent of the observed decline, and hence has a negative value. The three variables, taken together, account for 91 percent of the observed change in the number of children ever born between the first and last survey.

In urban Cameroon, increased education accounts for almost two-thirds of the observed fertility decline between 1991 and 2011 of more than 0.6 children in the average number of children ever born. The decline in mortality in Cameroon accounts for only 11 percent of the observed reduction in fertility. Finally, the slight increase in mean age of women of reproductive age between 1991 and 2011, since it would imply an increase in the number of children ever born, gets a minus sign for its influence, given that fertility in fact declined.

In rural Namibia, increased schooling accounted for almost 90 percent of the observed decline in fertility, while reduced mortality had only a very small impact on fertility. By contrast, in rural Senegal more than two-thirds of the observed fertility decline reflected declining mortality, and increased education only contributed modestly to the decline in fertility.

These different examples illustrate that in some countries increased women's educational attainment accounts for the lion's share of the observed changes in urban and rural fertility, while in other countries it is reductions in infant and child mortality that are predominant in accounting for declines in fertility. Before going into details on this point, however, it is useful to consider some peculiarities of the table.

The decompositions shown in Table A-3 omit results for a few urban locations and a substantial number of rural locations. In particular, when there is an increase in our measure of fertility (as in the urban Congo and in rural areas of nine countries), factors contributing to lower fertility will have negative signs, since their effect is to run counter to the observed fertility

increase. In addition, in urban areas of three countries (Chad, the DRC, and Lesotho) and in rural areas of six countries there was a decline in the mean number of children ever born, but the decline was quite small. Since that decline is the denominator in the decomposition calculations, the result of having small values of the denominator is inordinately high values for the impact of individual variables. The table thus includes decompositions only for those countries and places that experienced a decline of mean number of children ever born between the first and last survey of at least 0.10. This constituted 26 of the 30 urban areas, but reflecting the slower pace of rural fertility decline, only 15 of the 30 rural areas showed reduced fertility of at least 0.10.[7]

For the 26 countries whose urban areas experienced a decline in mean number of children ever born of at least 0.1, the unweighted mean contribution of improvements in women's education is to account for 57 percent of the observed decline in fertility, while the corresponding figure for improvements in mortality is 29 percent. In 17 of those countries education plays a more important role than mortality in contributing to reduced urban fertility, while in seven other countries mortality is more important for urban fertility and in two countries they have about the same impact.

Among the 15 countries with rural fertility decline of at least 0.1 children on average, the mean contribution of increased education represented 30 percent of the observed fertility decline, while reduced mortality accounted for 36 percent of the observed decline. Mortality had a greater impact than education on reducing rural fertility in eight countries, while the reverse was true in six countries and in rural Rwanda the two factors had equal weight.

[7] For each of the four countries whose urban areas were not included in the discussion below of the decompositions, the impact of education in contributing to reduced fertility was greater than the influence of reduced mortality. Among the 15 countries whose rural areas did not have sufficiently large fertility decline to be included in the discussion, they were almost evenly split between those in which increases in educational attainment contributed more to fertility decline and those where reductions in mortality had a greater impact.

In brief, then, a few conclusions emerge from the decompositions. First, both increased educational attainment and reduced mortality have contributed to the observed fertility declines in urban and rural places. In urban areas increased educational attainment is more often the dominant factor, while in rural areas mortality decline is slightly more likely to be more important for fertility decline. Over all, on average these two factors account for more than 85 percent of urban fertility decline and nearly two-thirds of the slower rural fertility decline.[8]

5. Summary and conclusions

This paper has provided analyses of changes in urban and rural fertility in 31 countries in sub-Saharan Africa, in many cases going back to the mid- or late-1980s. Those changes are typically but not exclusively declines, and they vary substantially in magnitude and pace. Using individual-level data, we employ a technique to decompose those fertility changes into portions due to increasing women's educational attainment and declining infant and child mortality, while at the same time controlling for changes in the mean age of women of reproductive age as an additional factor influencing changes in our measure of fertility, children ever born.

[8] We have not considered two important proximate determinants of fertility: age at marriage (first union) and contraceptive use. There are two major problems with using age at marriage and contraceptive use. First, endogeneity: these variables are likely to be related to education, so explicitly including them would reduce the estimated impact of education by attributing its consequences (later marriage, more and better contraception) to these other variables. We think of what we've done as essentially very close to a reduced-form approach. Even here, however, there is an endogenous component to mortality: as noted in the introduction, better-educated women tend to experience lower infant and child mortality. And indeed, if we omit mortality from our regression analyses, the impact of women's education in contributing to explaining fertility decline increases in all countries and locations where mortality had previously had some relevance (there is no change in the contribution of age). The increases are small, presumably because there is also a substantial exogenous component to mortality decline reflecting improvements in medical technology and in the delivery of health care services, but they show that including even only partially endogenous variables reduces the estimated contribution of women's education.

Second, the DHS gives us current contraceptive use, but using this to "explain" lifetime fertility (CEB) is problematic. Indeed, which is the dependent and which is the independent variable? And age at marriage is a weak measure if there has been marital disruption.

Over all, our analyses document that the pace of fertility decline is more rapid in urban areas than in rural places. In addition, while both increased women's education and reduced mortality contribute to fertility decline, in urban areas the importance of women's education tends more frequently to be distinctly greater, while in rural places reduced mortality tends, on average, to play a modestly more important role than increased schooling in contributing to fertility decline.

We estimate the impact of educational attainment and mortality on cumulative fertility (children ever born), using a six-category scheme to represent educational attainment rather than the trichotomy (none/primary/secondary+) that is often used to characterize schooling. Our more detailed representation of education makes it clear that as educational attainment increases through the secondary level and beyond, fertility differences by education tend to widen. This finding suggests that as educational attainment rises to the secondary level and beyond for many women, the pace of fertility decline may well accelerate.

The fertility transition in sub-Saharan Africa, late in getting started relative to elsewhere in the developing world, has been comparatively slow and subject to stalling. As continued high fertility in the region is an obstacle to efforts to promote socioeconomic development and economic growth, policies seeking to encourage lower fertility constitute efforts to facilitate growth and development. Our results make it clear that continued and augmented efforts to increase women's educational attainment and to reduce infant and child mortality are likely to result in more rapid fertility decline, and ultimately, we believe that such fertility decline will contribute to more rapid socioeconomic development.

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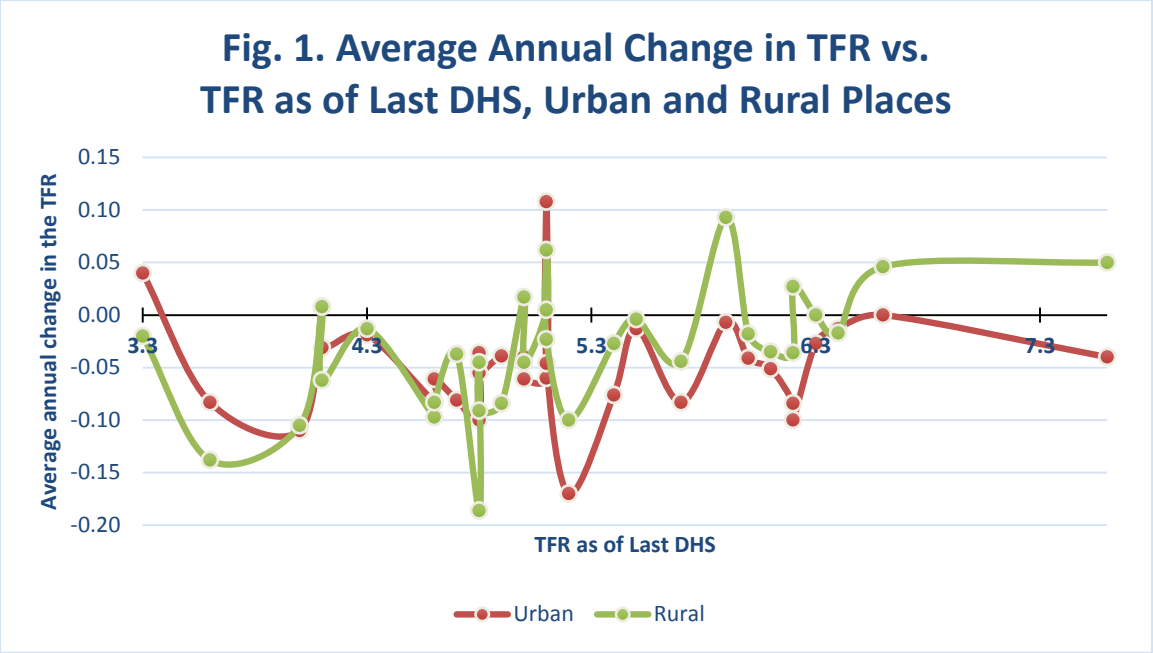
Fig. 1. Average Annual Change in TFR vs.
TFR as of Last DHS, Urban and Rural Places
Average annual change in the TFR
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
3.3
4.3
5.3
6.3
7.3
TFR as of Last DHS
Urban
Rural

Table 1: Fertility and Fertility Changes between the First and Last DHS, Urban and Rural Places

Country	First survey			Last survey			Change in TFR			
	Year	TFR		Year	TFR		Total		Per year	
		Urban	Rural		Urban	Rural	Urban	Rural	Urban	Rural
Benin	1996	4.9	6.7	2011.5	4.3	5.4	-0.6	-1.3	-0.039	-0.084
Burkina Faso	1993	4.6	7	2010	3.9	6.7	-0.7	-0.3	-0.041	-0.018
Burundi	1987	5.1	7	2010	4.8	6.6	-0.3	-0.4	-0.013	-0.017
Cameroon	1991	5.2	6.3	2011	4	6.4	-1.2	0.1	-0.06	0.005
Chad	1996.5	5.9	6.5	2004	5.7	6.5	-0.2	0	-0.027	0
Comoros	1996	3.8	5	2012	3.5	4.8	-0.3	-0.2	-0.019	-0.013
Congo	2005	3.8	6.1	2011.5	4.5	6.5	0.7	0.4	0.108	0.062
Cote d'Ivoire	1994	4.4	6	2011.5	3.7	6.3	-0.7	0.3	-0.04	0.017
DRC1	2007	5.4	7	2013.5	5.4	7.3	0	0.3	0	0.046
Eritrea	1995	4.2	7	2002	3.5	5.7	-0.7	-1.3	-0.1	-0.186
Ethiopia	2000	3	6	2011	2.6	5.5	-0.4	-0.5	-0.036	-0.045
Gabon	2000	3.8	6	2012	3.9	6.1	0.1	0.1	0.008	0.008
Ghana	1988	5.3	7	2008	3.1	4.9	-2.2	-2.1	-0.11	-0.105
Guinea	1999	4.4	6.1	2012	3.8	5.8	-0.6	-0.3	-0.046	-0.023
Kenya	1989	4.5	7.1	2008.5	2.9	5.2	-1.6	-1.9	-0.082	-0.097
Lesotho	2004	1.9	4.1	2009	2.1	4	0.2	-0.1	0.04	-0.02
Liberia	1986	6	7.1	2013	3.8	6.1	-2.2	-1	-0.081	-0.037
Madagascar	1992	3.8	6.7	2008.5	2.9	5.2	-0.9	-1.5	-0.055	-0.091
Malawi	1992	5.5	6.9	2010	4	6.1	-1.5	-0.8	-0.083	-0.044
Mali	1987	6.3	7.4	2012.5	5	6.5	-1.3	-0.9	-0.051	-0.035
Mozambique	1997	4.6	5.3	2011	4.5	6.6	-0.1	1.3	-0.007	0.093
Namibia	1992	4	6.3	2006.5	2.8	4.3	-1.2	-2	-0.083	-0.138
Niger	1992	6.4	7.1	2012	5.6	8.1	-0.8	1	-0.04	0.05
Nigeria	1990	5	6.3	2013	4.7	6.2	-0.3	-0.1	-0.013	-0.004

Rwanda	1992		4.5	6.3		2010		3.4	4.8		-1.1	-1.5		-0.061	-0.083
Senegal	1986		5.4	7.1		2010.5		3.9	6		-1.5	-1.1		-0.061	-0.045
Tanzania	1991.5		5.1	6.6		2010		3.7	6.1		-1.4	-0.5		-0.076	-0.027
Togo	1988		4.9	7.3		1998		3.2	6.3		-1.7	-1		-0.17	-0.1
Uganda	1988.5		5.7	7.6		2011		3.8	6.8		-1.9	-0.8		-0.084	-0.036
Zambia	1992		5.8	7.1		2007		4.3	7.5		-1.5	0.4		-0.1	0.027
Zimbabwe	1988		3.8	6.2		2010.5		3.1	4.8		-0.7	-1.4		-0.031	-0.062
Averages	1993.4		4.7	6.5		2009.7		3.9	6		-0.9	-0.6		-0.053	-0.034

Countries with at least two DHSs.

[1] Democratic Republic of the Congo

Table 2. Levels and Changes in Educational Attainment between the First and Last DHS, Urban and Rural Places

	First survey				Last survey				Changes			
Country	mean years of school		Pct. w/ no school		mean years of school		Pct. w/ no school		mean years of school		Pct. w/ no school	
	urban	rural	urban	rural	urban	rural	urban	rural	urban	rural	urban	rural
Benin	2.9	0.6	51	85	4.7	1.6	42	75	1.8	1	-9	-10
Burkina Faso	3.7	0.4	50	91	4.6	0.7	40	87	0.9	0.3	-10	-4
Burundi	4.7	0.7	30	82	7	2.6	16	49	2.3	1.9	-14	-33
Cameroon	5.5	2.9	28	50	8.1	4	8	34	2.6	1.1	-20	-16
Chad	2.2	0.4	57	86	3.3	0.7	52	81	1.1	0.3	-5	-5
Comoros	4.7	2.2	38	61	8.3	5.3	19	38	3.6	3.1	-19	-23
Congo	8.4	5.5	3	14	8.8	5.8	3	11	0.4	0.3	0	-3
Cote d'Ivoire	3.5	1.6	48	70	4.9	1.9	41	66	1.4	0.3	-7	-4
DRC	7.6	3.4	8	34	8.7	4.5	4	23	1.1	1.1	-4	-11
Eritrea	3.6	0.6	30	83	5.8	1.4	23	71	2.2	0.8	-7	-12
Ethiopia	4.7	0.5	36	86	6.4	1.8	23	61	1.7	1.3	-13	-25
Gabon	7.4	5.1	6	7	8.6	6.3	4	5	1.2	1.2	-2	-2
Ghana	6.5	4.1	27	47	8.2	5.1	11	31	1.7	1	-16	-16
Guinea	3.5	0.4	56	93	5.2	1.1	42	82	1.7	0.7	-14	-11
Kenya	7.2	4.8	12	28	9.9	7.1	5	10	2.7	2.3	-7	-18
Lesotho	8.6	6.9	1	2	9.3	7.5	1	2	0.7	0.6	0	0
Liberia	4.2	1.4	46	76	5.9	2.3	24	52	1.7	0.9	-22	-24
Madagascar	6.6	3	7	27	7.3	3.6	4	23	0.7	0.6	-3	-4
Malawi	5.4	2.2	23	52	7.8	4.8	7	18	2.4	2.6	-16	-34
Mali	2.4	0.3	65	93	4.5	1	48	85	2.1	0.7	-17	-8
Mozambique	4.1	1.4	19	55	6.2	2.6	14	42	2.1	1.2	-5	-13
Namibia	7.6	4.8	9	19	10.1	7.8	4	10	2.5	3	-5	-9
Niger	2.2	0.2	65	95	4	0.6	47	88	1.8	0.4	-18	-7
Nigeria	5.8	2.2	31	66	9	4	16	54	3.2	1.8	-15	-12
Rwanda	6.3	3.2	20	41	6.4	4.1	8	19	0.1	0.9	-12	-22
Senegal	3.9	0.3	54	94	4.6	1.3	38	78	0.7	1	-16	-16
Tanzania	5.5	3.8	20	39	7.4	5.1	8	24	1.9	1.3	-12	-15
Togo	3.9	1.5	38	70	4.2	1.6	28	61	0.3	0.1	-10	-9

Uganda	6.4	2.9		13	41		8.7	5		4	16		2.3	2.1		-9	-25
Zambia	6.6	3.8		7	28		8.4	4.9		3	16		1.8	1.1		-4	-12
Zimbabwe	7.7	5.2		6	17		10.2	8.3		1	3		2.5	3.1		-5	-14
Averages	5.3	2.5		29	55		7	3.8		19	41		1.7	1.3		-10	-14

Countries with at least two DHSs.

Table 3: Mortality and Mortality Changes Between First and Last DHS, Urban and Rural Places

	First survey			Last survey			Change in 5q0			
Country	Year	5q0		Year	5q0		Total		Per Year	
		Urban	Rural		Urban	Rural	Urban	Rural	Urban	Rural
Benin	1996	150	200	2011.5	62	83	-88	-117	-5.7	-7.5
Burkina Faso	1993	148	214	2010	104	156	-44	-58	-2.6	-3.4
Burundi	1987	163	186	2010	79	131	-84	-55	-3.7	-2.4
Cameroon	1991	120	159	2011	93	153	-27	-6	-1.4	-0.3
Chad	1996.5	190	204	2004	179	208	-11	4	-1.5	0.5
Comoros	1996	81	123	2012	28	58	-53	-65	-3.3	-4
Congo	2005	108	136	2011.5	77	88	-31	-48	-4.8	-7.4
Cote d'Ivoire	1994	120	165	2011.5	100	125	-20	-40	-1.2	-2.3
DRC	2007	122	177	2013.5	96	118	-26	-59	-4	-9.1
Eritrea	1995	129	160	2002	86	117	-43	-43	-6.1	-6.1
Ethiopia	2000	149	193	2011	83	114	-66	-79	-6	-7.1
Gabon	2000	88	100	2012	61	77	-27	-23	-2.3	-1.9
Ghana	1988	131	163	2008	75	90	-56	-73	-2.8	-3.6
Guinea	1999	149	211	2012	87	148	-62	-63	-4.7	-4.8
Kenya	1989	89	91	2008.5	74	86	-15	-5	-0.8	-0.3
Lesotho	2004	87	105	2009	89	110	2	5	0.4	1
Liberia	1986	216	239	2013	106	120	-110	-119	-4.1	-4.4
Madagascar	1992	142	183	2008.5	63	84	-79	-99	-4.8	-6
Malawi	1992	205	244	2010	113	130	-92	-114	-5.1	-6.3
Mali	1987	203	303	2012.5	64	113	-139	-190	-5.5	-7.5
Mozambique	1997	150	237	2011	100	111	-50	-126	-3.6	-9
Namibia	1992	86	94	2006.5	60	76	-26	-18	-1.8	-1.3
Niger	1992	210	347	2012	83	163	-127	-184	-6.4	-9.2
Nigeria	1990	130	208	2013	100	167	-30	-41	-1.3	-1.8

Rwanda	1992		155	163		2010		81	105		-74	-58		-4.1	-3.2	
Senegal	1986		135	250		2010.5		62	102		-73	-148		-3	-6	
Tanzania	1991.5		159	152		2010		94	92		-65	-60		-3.5	-3.3	
Togo	1988		131	169		1998		101	157		-30	-11		-3	-1.1	
Uganda	1988.5		164	191		2011		77	111		-87	-80		-3.9	-3.5	
Zambia	1992		151	201		2007		132	139		-19	-62		-1.3	-4.1	
Zimbabwe	1988		55	99		2010.5		77	78		22	-21		1	-0.9	
Averages	1993.4		139	183		2009.7		87	116		-53	-66		-3.2	-4.1	

Countries with at least two DHSs. Data on infant and child mortality are for the 10-year period preceding the survey.

Table 4: TFR and Mean Age of Women, First and Last DHS, Urban and Rural Places

Country	First survey					Last survey					Change in mean age			
	Year	Mean Age		TFR		Year	Mean Age		TFR		Total		Per year	
		Urban	Rural	Urban	Rural		Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Benin	1996	27.8	29.8	4.9	6.7	2011.5	28.5	29.2	4.3	5.4	0.7	-0.6	0.045	-0.0387
Burkina Faso	1993	26.7	28.5	4.6	7	2010	27.3	29.3	3.9	6.7	0.6	0.8	0.035	0.0471
Burundi	1987	27.9	28.5	5.1	7	2010	26.5	27.9	4.8	6.6	-1.4	-0.6	-0.06	-0.0261
Cameroon	1991	27	28.2	5.2	6.3	2011	27.4	28.5	4	6.4	0.4	0.3	0.02	0.015
Chad	1996.5	27.5	28	5.9	6.5	2004	27.5	28.5	5.7	6.5	0	0.5	0	0.0667
Comoros	1996	26.9	27.4	3.8	5	2012	28	27.5	3.5	4.8	1.1	0.1	0.069	0.0063
Congo	2005	27.6	28.2	3.8	6.1	2011.5	28	29.9	4.5	6.5	0.4	1.7	0.062	0.2615
Cote d'Ivoire	1994	26.5	28.3	4.4	6	2011.5	27.4	29.5	3.7	6.3	0.9	1.2	0.051	0.0686
DRC	2007	27.6	28.9	5.4	7	2013.5	27.5	28.5	5.4	7.3	-0.1	-0.4	-0.02	-0.0615
Eritrea	1995	NA	NA	4.2	7	2002	NA	NA	3.5	5.7	NA	NA	NA	NA
Ethiopia	2000	26.5	28.5	3	6	2011	26.5	28.1	2.6	5.5	0	-0.4	0	-0.0364
Gabon	2000	27	28.6	3.8	6	2012	28.2	30.2	3.9	6.1	1.2	1.6	0.1	0.1333
Ghana	1988	28.3	28.8	5.3	7	2008	28.6	29.3	3.1	4.9	0.3	0.5	0.015	0.025
Guinea	1999	27.6	29.8	4.4	6.1	2012	27.1	29.2	3.8	5.8	-0.5	-0.6	-0.04	-0.0462
Kenya	1989	26.2	28.9	4.5	7.1	2008.5	27.9	28.7	2.9	5.2	1.7	-0.2	0.087	-0.0103
Lesotho	2004	28.5	28.3	1.9	4.1	2009	28.6	28	2.1	4	0.1	-0.3	0.02	-0.06
Liberia	1986	26.6	28.9	6	7.1	2013	27.7	29.9	3.8	6.1	1.1	1	0.041	0.037
Madagascar	1992	27.8	27.9	3.8	6.7	2008.5	28.7	29	2.9	5.2	0.9	1.1	0.055	0.0667
Malawi	1992	27.3	28.7	5.5	6.9	2010	27.2	28.2	4	6.1	-0.1	-0.5	-0.01	-0.0278
Mali	1987	28.7	30.1	6.3	7.4	2012.5	27.5	29	5	6.5	-1.2	-1.1	-0.05	-0.0431
Mozambique	1997	27.3	28.9	4.6	5.3	2011	27.8	29	4.5	6.6	0.5	0.1	0.036	0.0071
Namibia	1992	28.5	27.7	4	6.3	2006.5	28.6	28.1	2.8	4.3	0.1	0.4	0.007	0.0276

Niger	1992		27.2	27.9		6.4	7.1		2012		28.3	28.9		5.6	8.1		1.1	1		0.055	0.05
Nigeria	1990		27.4	28.6		5	6.3		2013		28.9	28.7		4.7	6.2		1.5	0.1		0.065	0.0043
Rwanda	1992		27	28.4		4.5	6.3		2010		27.6	28.6		3.4	4.8		0.6	0.2		0.033	0.0111
Senegal	1986		27	28.2		5.4	7.1		2010.5		27.9	27.9		3.9	6		0.9	-0.3		0.037	-0.0122
Tanzania	1991.5		26.9	28.1		5.1	6.6		2010		27.5	29		3.7	6.1		0.6	0.9		0.032	0.0486
Togo	1988		26.8	28.8		4.9	7.3		1998		27.6	29.2		3.2	6.3		0.8	0.4		0.08	0.04
Uganda	1988.5		25.5	27.6		5.7	7.6		2011		26.6	28.3		3.8	6.8		1.1	0.7		0.049	0.0311
Zambia	1992		26.2	27.6		5.8	7.1		2007		27.3	28.6		4.3	7.5		1.1	1		0.073	0.0667
Zimbabwe	1988		27.2	28.1		3.8	6.2		2010.5		27.8	28.4		3.1	4.8		0.6	0.3		0.027	0.0133
Averages	1993.4		27.23	28.47		4.742	6.52		2009.7		27.73	28.77		3.884	5.97		0.5	0.3		0.031	0.0182

Table 5: Mean Values of Regression Coefficients, Children Ever Born Regressions, Urban and Rural Places

Variable	Average values	
	Urban	Rural
Age	0.292	0.438
Age2	-0.0017	-0.0034
ED0	0.318	0.156
ED1-6	--	--
ED7-8	-0.29	-0.279
ED9-10	-0.567	-0.676
ED11-12	-1.041	-1.295
ED13+	-1.642	-2.06
Mortality	0.023	0.018

Table A-1A: Mean values of the variables used in the regressions, first and last surveys, by country, Urban Places

Variable/	Benin		Burkina Faso		Burundi		Cameroon		Chad		Comoros		Congo		Cote d'Ivoire	
Year	1996	2012	1993	2010	1987	2010	1991	2011	1997	2004	1996	2012	2005	2011	1994	2012
Age	27.8	28.5	26.7	27.3	27.9	26.5	27	27.4	27.5	27.5	26.9	28	27.6	28	26.5	27.4
Age2	860.4	895.4	792.9	830.9	861.2	781.5	801.8	838.6	840.7	845.5	808.6	871.4	843.5	866	780.4	829.3
ED0	0.508	0.419	0.501	0.403	0.305	0.161	0.277	0.082	0.569	0.521	0.381	0.192	0.03	0.034	0.483	0.411
ED1-6	0.301	0.229	0.248	0.249	0.413	0.388	0.301	0.288	0.311	0.265	0.246	0.144	0.205	0.174	0.293	0.247
ED7-8	0.074	0.08	0.071	0.098	0.112	0.099	0.14	0.135	0.05	0.064	0.134	0.107	0.232	0.206	0.078	0.058
ED9-10	0.069	0.126	0.103	0.139	0.081	0.094	0.167	0.221	0.038	0.065	0.131	0.159	0.328	0.321	0.09	0.125
ED11-12	0.032	0.061	0.037	0.058	0.041	0.102	0.084	0.145	0.022	0.047	0.059	0.143	0.112	0.126	0.035	0.059
ED13+	0.016	0.085	0.04	0.053	0.048	0.156	0.031	0.129	0.01	0.038	0.049	0.255	0.093	0.14	0.021	0.1
Mortality	16.3	6.4	15.8	12.1	14.9	9.3	13.5	10	20.6	18.6	8.9	4.4	10.1	8.2	13.6	10.8
CEB	2.695	2.227	2.632	2.05	2.821	1.913	2.788	2.147	3.286	3.219	2.161	1.872	1.965	2.095	2.472	1.947

Variable/	DRC		Ethiopia		Gabon		Ghana		Guinea		Kenya		Lesotho		Liberia	
Year	2007	2013	2000	2011	2000	2012	1988	2008	1999	2012	1989	2009	2004	2009	1986	2013
Age	27.6	27.5	26.5	26.5	27	28.2	28.3	28.6	27.6	27.1	26.2	27.9	28.5	28.6	26.6	27.7
Age2	844.3	839.3	787.7	775.3	813.7	881	889.9	906.8	850.5	815.5	750.1	850.2	899.1	903.6	779.2	853.2
ED0	0.075	0.039	0.364	0.233	0.062	0.045	0.267	0.111	0.555	0.418	0.123	0.047	0.008	0.007	0.465	0.237
ED1-6	0.292	0.225	0.229	0.249	0.349	0.214	0.15	0.165	0.211	0.19	0.186	0.091	0.17	0.124	0.203	0.315
ED7-8	0.207	0.191	0.182	0.167	0.232	0.229	0.095	0.118	0.067	0.09	0.302	0.283	0.31	0.286	0.095	0.14
ED9-10	0.189	0.212	0.093	0.149	0.19	0.265	0.385	0.344	0.061	0.102	0.143	0.094	0.289	0.266	0.102	0.118
ED11-12	0.187	0.248	0.109	0.068	0.094	0.103	0.053	0.172	0.037	0.082	0.211	0.308	0.195	0.205	0.108	0.138
ED13+	0.05	0.085	0.023	0.134	0.073	0.144	0.05	0.09	0.069	0.118	0.035	0.177	0.028	0.112	0.027	0.052
Mortality	13	10.3	16.8	9.8	9.9	7.2	14.5	8.9	17.2	10.4	8.7	6.4	8.9	8.3	21.7	15.2
CEB	2.554	2.494	1.934	1.643	2.354	2.114	2.687	1.768	2.686	2.039	2.324	1.676	1.429	1.377	2.82	2.346

Table A-1A (cont.)

Variable/	Madagascar		Malawi		Mali		Mozambique		Namibia		Niger		Nigeria		Rwanda	
Year	1992	2009	1992	2010	1987	2012	1997	2011	1992	2007	1992	2012	1990	2013	1992	2010
Age	27.8	28.7	27.3	27.2	28.7	27.5	27.3	27.8	28.5	28.6	27.2	28.3	27.4	28.9	27	27.6
Age2	852.8	918.2	821.9	815	900.5	832.4	833.3	860.6	895.8	903.1	815.4	886.2	824.8	927	804.2	842.4
ED0	0.073	0.044	0.232	0.073	0.649	0.485	0.19	0.145	0.09	0.038	0.655	0.469	0.312	0.155	0.202	0.078
ED1-6	0.438	0.368	0.309	0.278	0.183	0.147	0.582	0.365	0.231	0.101	0.196	0.228	0.267	0.168	0.328	0.508
ED7-8	0.212	0.221	0.251	0.202	0.068	0.114	0.142	0.204	0.267	0.124	0.07	0.098	0.06	0.055	0.149	0.153
ED9-10	0.076	0.135	0.108	0.175	0.06	0.091	0.057	0.16	0.229	0.346	0.052	0.121	0.106	0.11	0.08	0.089
ED11-12	0.149	0.154	0.089	0.207	0.019	0.089	0.022	0.093	0.142	0.279	0.014	0.043	0.216	0.347	0.156	0.109
ED13+	0.052	0.078	0.011	0.065	0.021	0.074	0.007	0.033	0.041	0.112	0.013	0.041	0.039	0.165	0.085	0.063
Mortality	14	8.1	20.6	13.5	21.8	7.8	17.1	11.8	9.4	6.1	20.7	11.9	13.3	10.9	15.4	11
CEB	2.342	1.868	3.018	2.369	3.573	2.526	2.645	2.337	2.185	1.657	3.328	2.998	2.752	2.509	2.236	1.829

Variable/	Senegal		Tanzania		Togo		Uganda		Zambia		Zimbabwe	
Year	1986	2011	1992	2010	1988	1998	1989	2011	1992	2007	1988	2011
Age	27	27.9	26.9	27.5	26.8	27.6	25.5	26.6	26.2	27.3	27.2	27.8
Age2	807.5	863.5	807	840.2	792.1	846.4	719.5	776.5	763	830.5	818.8	852.8
ED0	0.541	0.378	0.195	0.078	0.376	0.283	0.134	0.037	0.074	0.033	0.065	0.008
ED1-6	0.245	0.311	0.175	0.091	0.39	0.444	0.357	0.263	0.272	0.197	0.204	0.045
ED7-8	0.001	0.085	0.52	0.552	0.095	0.16	0.188	0.199	0.479	0.273	0.272	0.144
ED9-10	0.026	0.108	0.046	0.126	0.101	0.097	0.128	0.157	0.089	0.241	0.181	0.208
ED11-12	0.075	0.061	0.056	0.093	0.03	0	0.148	0.142	0.057	0.152	0.244	0.489
ED13+	0.112	0.057	0.008	0.06	0.008	0.016	0.045	0.202	0.029	0.104	0.034	0.106
Mortality	16.4	8.2	15.8	11	13.2	12.1	14.2	8.9	14.1	13.6	6	6.7
CEB	2.738	1.951	2.58	1.987	2.277	2.014	2.611	2.19	2.785	2.355	2.288	1.571

Table A-1B: Mean values of the variables used in the regressions, first and last surveys, by country, Rural Places

Variable/	Benin		Burkina Faso		Burundi		Cameroon		Chad		Comoros		Congo		Cote d'Ivoire	
Year	1996	2012	1993	2010	1987	2010	1991	2011	1997	2004	1996	2012	2005	2011	1994	2012
Age	29.8	29.2	28.5	29.3	28.5	27.9	28.2	28.5	28	28.5	27.4	27.5	28.2	29.9	28.3	29.5
Age2	980.4	934	898.7	949.2	893.3	870.8	891.6	904.8	871.9	906.8	846.7	837.7	882	987.2	890.8	956.6
ED0	0.852	0.75	0.915	0.866	0.824	0.488	0.5	0.344	0.859	0.812	0.607	0.376	0.135	0.115	0.7	0.663
ED1-6	0.127	0.134	0.07	0.096	0.167	0.439	0.33	0.434	0.135	0.172	0.278	0.221	0.462	0.449	0.238	0.266
ED7-8	0.014	0.045	0.006	0.021	0.004	0.037	0.098	0.09	0.005	0.013	0.048	0.109	0.204	0.226	0.032	0.024
ED9-10	0.004	0.055	0.007	0.013	0.003	0.02	0.052	0.095	0.001	0.002	0.048	0.112	0.154	0.164	0.021	0.031
ED11-12	0.002	0.01	0.001	0.003	0.002	0.012	0.013	0.025	0	0.001	0.014	0.073	0.034	0.03	0.007	0.007
ED13+	0.001	0.006	0.001	0.001	0	0.004	0.007	0.012	0	0	0.005	0.109	0.011	0.017	0.002	0.009
Mortality	22.9	9	24	17.3	19.5	16.2	19.3	15.8	22	21.8	15.1	6.6	14.1	10.4	18.2	14.1
CEB	3.926	3.179	3.715	3.76	3.03	2.807	3.484	3.408	3.571	3.84	2.779	2.322	2.926	3.324	3.539	3.46

Variable/	DRC		Ethiopia		Gabon		Ghana		Guinea		Kenya		Lesotho		Liberia	
Year	2007	2013	2000	2011	2000	2012	1988	2008	1999	2012	1989	2009	2004	2009	1986	2013
Age	28.9	28.5	28.5	28.1	28.6	30.2	28.8	29.3	29.8	29.2	28.9	28.7	28.3	28	28.9	29.9
Age2	930.1	897.3	907.3	879.7	914.5	1016.1	911.3	956	979.2	945.9	922.5	919.3	901.5	882.1	921.4	995.2
ED0	0.335	0.232	0.855	0.614	0.067	0.049	0.465	0.313	0.927	0.816	0.279	0.104	0.025	0.017	0.757	0.524
ED1-6	0.477	0.484	0.124	0.294	0.703	0.523	0.169	0.249	0.053	0.115	0.296	0.219	0.355	0.293	0.163	0.357
ED7-8	0.094	0.151	0.014	0.056	0.136	0.202	0.102	0.137	0.01	0.03	0.284	0.412	0.373	0.375	0.037	0.069
ED9-10	0.056	0.079	0.003	0.024	0.068	0.156	0.237	0.234	0.005	0.025	0.07	0.096	0.175	0.204	0.023	0.027
ED11-12	0.037	0.052	0.002	0.002	0.019	0.043	0.018	0.052	0.002	0.008	0.064	0.13	0.064	0.087	0.018	0.019
ED13+	0.001	0.002	0.002	0.01	0.007	0.027	0.009	0.015	0.003	0.006	0.007	0.039	0.008	0.024	0.002	0.004
Mortality	18.2	13.9	22.9	16.3	11.5	8.4	17.5	11.3	24.5	17.3	10.2	9.3	10.9	10.2	25.3	17.6
CEB	3.332	3.402	3.348	3.271	3.342	3.259	3.417	2.848	3.781	3.515	3.955	3.019	2.249	2.015	3.347	3.732

Table A-1B (cont.)

Variable/	Madagascar		Malawi		Mali		Mozambique		Namibia		Niger		Nigeria		Rwanda	
Year	1992	2009	1992	2010	1987	2012	1997	2011	1992	2007	1992	2012	1990	2013	1992	2010
Age	27.9	29	28.7	28.2	30.1	29	28.9	29	27.7	28.1	27.9	28.9	28.6	28.7	28.4	28.6
Age2	865.3	935.1	919.2	881.3	992.3	920.5	929.1	937.5	860.8	887.7	863.9	914.8	903	917.4	892.8	909.3
ED0	0.268	0.23	0.517	0.181	0.927	0.851	0.553	0.418	0.189	0.095	0.948	0.88	0.659	0.541	0.407	0.189
ED1-6	0.61	0.589	0.368	0.483	0.065	0.08	0.425	0.468	0.477	0.241	0.049	0.096	0.229	0.181	0.405	0.644
ED7-8	0.079	0.104	0.095	0.203	0.007	0.036	0.016	0.068	0.194	0.211	0.002	0.014	0.029	0.046	0.128	0.105
ED9-10	0.02	0.037	0.013	0.08	0.001	0.017	0.006	0.037	0.103	0.307	0.001	0.007	0.032	0.067	0.019	0.031
ED11-12	0.021	0.031	0.007	0.047	0	0.012	0	0.008	0.032	0.107	0	0.002	0.043	0.131	0.034	0.025
ED13+	0.002	0.009	0	0.006	0	0.004	0	0.001	0.005	0.039	0	0.001	0.008	0.034	0.007	0.006
Mortality	19.1	10.4	27.1	16.3	33.7	11.8	23.3	15.3	10.1	8.2	32.8	20.7	21.4	17.6	19.6	15
CEB	3.415	3.063	3.546	3.231	4.101	3.552	3.176	3.204	2.592	2.152	3.961	4.461	3.499	3.466	3.125	2.521

Variable/	Senegal		Tanzania		Togo		Uganda		Zambia		Zimbabwe	
Year	1986	2011	1992	2010	1988	1998	1989	2011	1992	2007	1988	2011
Age	28.2	27.9	28.1	29	28.8	29.2	27.6	28.3	27.6	28.6	28.1	28.4
Age2	877	863.2	882.4	933.3	918.8	941.7	848.7	896.4	852.6	905.2	885.8	896.1
ED0	0.937	0.779	0.386	0.24	0.702	0.61	0.41	0.162	0.282	0.16	0.173	0.035
ED1-6	0.056	0.149	0.205	0.163	0.239	0.335	0.448	0.526	0.442	0.464	0.41	0.157
ED7-8	0	0.036	0.387	0.522	0.028	0.04	0.099	0.172	0.247	0.258	0.259	0.303
ED9-10	0.002	0.027	0.009	0.046	0.027	0.015	0.029	0.073	0.016	0.09	0.088	0.224
ED11-12	0.002	0.006	0.012	0.02	0.004	0	0.013	0.036	0.008	0.02	0.066	0.249
ED13+	0.003	0.003	0.001	0.009	0	0	0.001	0.031	0.005	0.008	0.004	0.032
Mortality	27.4	12.6	16.9	12.3	19.5	17.5	19.2	13.7	19.5	15.2	10.7	7.9
CEB	3.625	3.052	3.279	3.236	3.718	2.483	3.607	3.726	3.443	3.525	3.288	2.433

Table A-2A Regression coefficients, children ever born, by country, Urban Places

Variable	Benin	B.F.	Bur.	Cam.	Chad	Com.	Congo	C.I.	DRC	Ethio.	Gab.	Ghana	Gui.	Kenya	Leso.
Age	0.3	0.232	0.331	0.315	0.582	0.175	0.266	0.235	0.396	0.191	0.247	0.237	0.253	0.367	0.117
Age2	-0.002	0	-0.002	-0.002	-0.006	0.000ns	-0.002	-0.001	-0.003	0.000ns	-0.001	-0.001	-0.001	-0.003	0.000ns
ED0	0.614	0.555	-0.005ns	0.825	0.175	0.865	0.075ns	0.392	-0.039ns	0.313	-0.292	0.37	0.354	0.419	0.004ns
ED1-6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ED7-8	-0.225	-0.143*	-0.070ns	-0.307	-0.290*	-0.327	-0.208	-0.129ns	-0.277	-0.226	-0.361	-0.194ns	-0.303	-0.481	-0.181
ED9-10	-0.453	0.557	-0.668	-0.574	-0.69	-0.736	-0.536	-0.507	-0.588	-0.447	-0.625	-0.636	-0.371	-0.591	-0.391
ED11-12	-0.594	-1.011	-0.984	-1.048	-1.219	-0.987	-0.945	-0.75	-1.304	-1.001	-1.027	-1.147	-0.754	-1.156	-0.675
ED13+	-1.047	-1.575	-1.751	-1.575	-2.054	-1.597	-1.384	-1.366	-2.357	-1.097	-1.558	-1.651	-1.26	-1.922	-0.845
Mortality	0.04	0.031	0.022	0.02	0.010*	0.018*	0.012	0.033	0.017	0.03	0.02	0.023	0.024	0.035	0.006*
Constant	-4.743	-4.153	-0.509	-4.386	-8.104	-2.583	-3.471	-3.963	-5.516	-3.433	-3.403	-3.558	-4.122	-4.825	-1.661
R2	0.567	0.692	0.65	0.58	0.601	0.566	0.553	0.565	0.606	0.584	0.528	0.608	0.627	0.53	0.527
N	8889	8104	2727	9953	5.893	3.145	8426	8441	23184	9872	9898	3673	5847	4524	3.916

Variable	Lib.	Mad.	Malawi	Mali	Mozamb.	Nam.	Niger	Nigeria	Rwa.	Sen.	Tanz.	Togo	Uga.	Zambia	Zimb.
Age	0.304	0.305	0.329	0.385	0.342	0.209	0.364	0.322	0.179	0.203	0.31	0.212	0.401	0.328	0.32
Age2	-0.002	-0.002	-0.002	-0.003	-0.003	-0.001	-0.002	-0.002	0.000ns	0.000ns	-0.002	0.000ns	-0.003	-0.001	-0.003
ED0	0.139*	0.652	0.431	0.333	0.090ns	0.119ns	0.824	0.579	0.485	0.646	0.022ns	0.435	-0.008ns	-0.044ns	0.197ns
ED1-6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ED7-8	-0.317	-0.475	-0.382	-0.162ns	-0.378	-0.403	-0.051ns	-0.42	-0.108ns	0.085ns	-0.714	-0.542	-0.248	-0.269	-0.602
ED9-10	-0.526	-0.707	-0.758	-0.355	-0.758	-0.976	-0.599	-0.522	-0.122ns	-0.398	-0.95	-0.806	-0.53	-0.889	-0.865
ED11-12	-1.071	-1.169	-1.361	-0.778	-1.168	-1.352	-1.089	-1.069	-0.67	-0.425	-1.63	-0.938	-1.114	-1.418	-1.369
ED13+	-1.654	-1.683	-2.104	-1.469	-2.135	-1.698	-1.759	-1.958	-0.933	-0.937	-2.03	-1.729	-1.967	-2.37	-1.803
Mortality	0.03	0.035	0.009	0.04	0.025	0.013	0.026	0.034	0.022	0.054	0.019	0.022	0.014	-0.001ns	0.009*
Constant	-4.718	-4.383	-4.376	-5.819	-4.698	-2.413	-5.933	-4.654	-3.401	-3.952	-4.134	-3.699	-5.42	-4.6	-3.601
R2	0.602	0.506	0.686	0.592	0.562	0.543	0.623	0.622	0.603	0.534	0.589	0.62	0.631	0.677	0.563
N	5.662	7.044	4.384	4.603	8.312	6.295	6.080	19.054	3.525	8.000	4.429	4.227	3.526	6.532	4.840

All coefficients are significant at the .01 level, except as noted below.

* significant at the .05 level
ns not significant

Table A-2B Regression coefficients, children ever born, by country, Rural Places

Variable	Benin	B.F.	Bur.	Cam.	Chad	Com.	Congo	C.I.	DRC	Ethio.	Gab.	Ghana	Gui.	Kenya	Leso.
Age	0.472	0.49	0.339	0.531	0.627	0.272	0.379	0.442	0.5	0.406	0.49	0.356	0.455	0.513	0.27
Age2	-0.004	-0.004	-0.001	-0.005	-0.006	-0.001	-0.003	-0.003	-0.004	-0.002	-0.005	-0.002	-0.004	-0.005	-0.002
ED0	0.367	0.197	-0.074*	0.523	-0.026ns	0.441	0.2	0.253	-0.122	0.155	-0.056ns	0.187	-0.026ns	0.254	0.051ns
ED1-6	--	--	--	--	--		--	--	--	--	--	--	--	--	--
ED7-8	0.142ns	0.021ns	-0.112ns	-0.221	-0.651	-0.255*	-0.329	-0.224ns	-0.165	-0.371	-0.378	-0.018ns	-0.263*	-0.584	-0.256
ED9-10	-0.109ns	-0.956	-0.532	-0.632	-0.710ns	-0.59	-0.746	-0.907	-0.575	-1.057	-0.775	-0.617	-0.593	-0.876	-0.653
ED11-12	-0.631	-1.712	-1.558	-1.228	-1.981*	-0.934	-1.226	-1.332	-1.05	-1.295	-1.289	-1.171	-0.891	-1.661	-1.041
ED13+	-1.466	-1.422	-1.637	-1.968		-1.605	-1.623	-2.057	-3.004	-1.645	-2.083	-2.197	-1.737	-2.415	-1.572
Mortality	0.043	0.028	0.013	0.011	0.013	0.013	-0.002ns	0.023	0.024	0.003ns	0.026	0.032	0.024	0.023	0.006
Constant	-7.432	-7.706	-5.592	-7.305	-8.792	-4.284	-4.996	-6.602	-7.288	-6.194	-6.549	-5.581	-6.627	-6.903	-3.686
R2	0.604	0.715	0.69	0.578	0.637	0.563	0.604	0.584	0.606	0.679	0.483	0.663	0.618	0.664	0.621
N	13201	15327	10594	9333	7.639	5.208	9441	9711	34350	22010	4698	5704	10021	11041	10.790

Variable	Lib.	Mad.	Malawi	Mali	Mozamb.	Nam.	Niger	Nigeria	Rwa.	Sen.	Tanz.	Togo	Uga.	Zambia	Zimb.
Age	0.436	0.42	0.447	0.533	0.476	0.284	0.594	0.472	0.241	0.409	0.428	0.419	0.597	0.5	0.355
Age2	-0.003	-0.003	-0.003	-0.005	-0.004	-0.002	-0.005	-0.004	0.000ns	-0.003	-0.003	-0.003	-0.005	-0.004	-0.003
ED0	-0.152	0.241	0.152	-0.040ns	-0.004ns	0.335	0.129ns	0.191	0.444	0.309	0.110*	0.326	0.106*	-0.032ns	0.254
ED1-6		--	--	--	--	--	--	--	--	--	--	--	--	--	--
ED7-8	-0.329	-0.55	-0.266	-0.158ns	-0.131ns	-0.413	-0.328ns	-0.135*	-0.169	-0.073ns	-0.452	-0.521	-0.268	-0.375	-0.551
ED9-10	-0.352*	-1.037	-0.715	-0.389*	-0.613	-0.881	-0.733	-0.342	-0.457	-0.497	-0.792	-0.983	-0.607	-0.718	-0.827
ED11-12	-1.007	-1.736	-1.417	-1.156	-1.407	-1.456	-2.462	-1.055	-0.905	-1.256	-1.601	-0.244ns	-1.238	-1.525	-1.385
ED13+	-2.316	-2.377	-2.39	-1.652	-3.368	-1.86	-2.759	-2.206	-1.276	-1.65	-2.262		-2.161	-2.75	-2.23
Mortality	0.02	0.036	0.007	0.021	0.019	0.015	0.012	0.036	0.023	0.026	0.004*	0.029	-0.003ns	0.001ns	0.028
Constant	-6.283	-6.193	-6.259	-7.358	-6.737	-3.937	-8.542	-7.164	-4.584	-6.507	-5.917	-6.805	-8.142	-6.909	-4.576
R2	0.552	0.531	0.686	0.522	0.536	0.608	0.65	0.622	0.684	0.604	0.64	0.678	0.671	0.661	0.637
N	8.802	16.568	23.483	9.021	14.194	8.924	11.558	28.639	16.697	12.097	14.947	7.696	9.878	7.670	8.527

All coefficients are significant at the .01 level, except as noted below.

* significant at the .05 level
ns not significant

Table A-3A Decomposition results by country, all women aged 15-49, Urban Places

Variable	Benin	B.F.	Bur.	Cam.	Com.	C.I.	Ethio.	Gab.	Ghana	Gui.	Kenya	Lib.	Mad.
Education	36	21	28	64	204	32	49	67	26	26	58	27	24
Mortality	84	20	14	11	28	18	72	22	14	25	12	42	44
Age	-29	-22	35	-10	-68	-31	3	-91	-6	17	-42	-44	-25
Total	91	19	77	64	164	19	124	-2	34	69	28	25	42

Variable	Malawi	Mali	Mozamb.	Nam.	Niger	Nigeria	Rwa.	Sen.	Tanz.	Togo	Uga.	Zambia	Zimb.
Education	58	20	79	70	84	196	2	9	45	22	76	91	59
Mortality	10	54	42	8	70	35	23	56	15	10	17	0	-1
Age	6	26	-24	-3	-84	-119	-26	-21	-22	-61	-59	-63	-12
Total	74	100	97	75	70	112	-1	44	39	-29	34	28	47

Note: Total may not equal sum of components due to rounding.
Figures show percentage of the change in mean number of children ever born that is attributable to the variable in question.
Decompositions are reported only for countries with declining mean number of children ever born of at least 0.1.

Table A-3B Decomposition results by country, all women aged 15-49, Rural Places

Variable	Benin	Bur.	Com.	Ghana	Gui.	Kenya	Leso.	Mad.	Malawi	Mali	Nam.	Rwa.	Sen.	Togo	Zimb.
Education	7	4	82	14	9	35	29	21	63	5	89	15	12	10	57
Mortality	79	18	24	34	64	2	2	88	25	84	6	18	68	24	9
Age	11	86	-3	-19	60	9	20	-55	33	37	-17	-7	13	-53	-9
Total	97	109	104	30	132	47	51	54	121	126	78	25	93	-19	58

Note: Total may not equal sum of components due to rounding.
Figures show percentage of the change in mean number of children ever born that is attributable to the variable in question.
Decompositions are reported only for countries with declining mean number of children ever born of at least 0.1.