All in the Family: Explaining the Persistence of Female Genital Cutting in West Africa*

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Abstract

Why does female genital cutting (FGC) persist in certain places but has declined elsewhere? We study the persistence of FGC—proxied for by whether survey respondents are in favor of the practice continuing—in West Africa. We use 38 repeated cross-sectional country-year data sets covering 310,613 women aged 15 to 49 in 13 West African countries for the period 1995-2013. The data exhibit sufficient within-household variation to allow controlling for the unobserved heterogeneity between households, which in turn allows determining how much variation is due to factors at the levels of the individual, household, village, and beyond. Our results show that on average, 87 percent of the variation in FGC persistence can be attributed to household- and individual-level factors, with contributions from those levels of variation ranging from 71 percent in Nigeria in 2011 to 93 percent in Burkina Faso in 2006. Our results also suggest that once invariant factors across women aged 15 to 49 in the same household are accounted for, women who report having undergone FGC in West Africa are on average 16 percentage points more likely to be in favor of the practice.

Keywords: Female Genital Cutting, Female Genital Mutilation, Sexual and Reproductive Health, West Africa

JEL Classification Codes: I15, O10

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1. Introduction

Why does the practice of female genital cutting (FGC), in which a woman's genitalia is partially or totally removed for nonmedical reasons, persist in certain places even though it has been generally declining elsewhere (UNICEF, 2013)? Although more than 100 million women have undergone FGC and an additional three million girls experience the procedure every year worldwide (WHO, 2012),[1] social scientists only have a limited understanding of the reasons why FGC persists (Hayford, 2005).

Yet the potential physiological impacts of FGC are widely documented. According to Skaine (2005), FGC can

> "cause severe scarring that causes an obstruction during delivery. If infection is present at the time of the procedure in [clitoridectomy] and [excision], possible vulval adhesions can form that narrow or obstruct the vaginal opening and make labor long. The herbal pessaries used in [other types of FGC] and the use of rock salt after early pregnancies to reduce the vagina may result in severe scarring and stenosis."

Studies in Mali and Burkina Faso have documented the negative health impacts associated with having undergone FGC: compared to the five percent of uncut women who experience birthing complications, 18 to 30% of women who have undergone FGC experience similar complications (Jones, et al. 1999). Moreover, some speculate that the practice also has psychological consequences such as decreased trust in caregivers and relationship problems stemming from painful intercourse due to infibulation (Jones, et al. 1999; Shell-Duncan and Hernlund, 2006). Others surmise that the psychological damage inflicted by FGC is deeply embedded in the consciousness of those who have undergone the practice and that "[i]n the longer term, women may suffer anxiety, depression, chronic irritability, frigidity, and marital conflicts" (Dorkenoo, 1999). Lastly, others assert that, regardless of health or psychological damage, FGC is a violation of human rights (Moore et al., 1997), and that "[s]uppression and control over women's sexuality are demeaning to women and deny an aspect of their humanity" (Skaine, 2005).

Our results suggest that among women aged 15-49 in West Africa, the bulk of support for FGC—87 percent on average for the period 1995-2013—is due to household- and individual-level factors. Indeed,

[1] Many terms are used to describe the procedure examined in this study, including "female genital cutting," "female genital mutilation," and "female circumcision." "Female genital mutilation" is largely used by opponents of the practice, and carries with it an underlying negative judgment of the tradition, a moral judgment well outside the scope of our empirical investigation. "Female circumcision" tends to imply a tradition similar to the more familiar male circumcision, a comparison that can be misleading depending on the type of cutting referred to. Therefore, except when directly citing other sources, we favor the expression "female genital cutting."

the total contribution from those levels of variation ranges from a low of 71 percent in Nigeria in 2011 to a high of 93 percent in Burkina Faso in 2006. Put differently, only about 12 percent of the variation in support for FGC among women aged 15-49 can be explained by village-level factors on average (the remaining 1 percent is due to variation at levels beyond that of the village). Moreover, our results suggest that a woman who has undergone FGC is 16 percentage points more likely to support the continuance of the practice, a figure which is obtained by averaging our estimates of that increase in likelihood over the 38 country-year data sets for the most complete specification we estimate in this paper.

The practice of FGC is of economic interest for a number of reasons. First, given the physiological and psychological consequences of FGC discussed above, FGC is likely to have real consequences on the health, educational attainment, labor market outcomes, and productivity of women in societies where the practice is widespread, which means that FGC can contribute to underdevelopment. Second, there is a substantial line of research in economics focusing on how social norms emerge and evolve. For North (1990), a social norm like FGC is an institution, a "humanly devised constraint that shape[s] human interaction," and "structure[s] incentives in human exchange, whether political, social, or economic" (North, 1990:3). For Ellickson (1989, 1991), social norms emerge and evolve so as to minimize transaction costs and maximize social welfare.[2] Third, FGC is often associated with (and seemingly sustained by) marriage market prospects: in places where the practice is common, men often expect their future wife to have undergone FGC, and Wagner (2014) finds that women who report having undergone FGC are 40% more likely to get married in the 13 African countries we study. Lastly, understanding what drives the persistence of FGC in different countries can provide some insight about the (potentially nonlinear) dynamics of FGC persistence. Following tipping point and informational cascade models (Schelling, 1978; Bikhchandani et al., 1992; Bikhchandani et al., 1998), the decision to abandon FGC might follow a logistic growth path, and so in places where the practice is widespread the decision to abandon FGC might be entirely be due to individual-level factors, whereas it might be increasingly driven by higher-level (e.g., village, region, country) factors as the practice becomes less common, perhaps reverting back to becoming an individual-level decision when the practice becomes very uncommon. Consequently, we conclude by using our results to speculate as to whether this is the

[2] That said, a discussion of which exact transaction costs were being minimized when FGC first emerged in human societies must necessarily remain speculative due to the paucity of historical data on the practice, and is thus beyond the scope of this paper.

case for FGC in West Africa, finding that it is not. Indeed, our data suggest that as FGC becomes more and more pervasive over time and space, individual-level factors increasingly appear to contribute to the practice's persistence in our data.

Our contribution is thus threefold. First, we quantify the contribution that each level of variation (i.e., individual, household, village, and beyond) has on the persistence of FGC as we define it in our analysis. Second, we study the relationship between reporting having undergone FGC and support for the practice. Third, and perhaps most importantly, this study is among one of the first contributions of economics to the study of FGC, along with De Cao and Lutz (2014), Naguib (2012), and Wagner (2014).

The strength of our approach lies in the survey design of the data we use. The data cover over 300,000 women aged 15-49 across 38 repeated country-year cross-sections of households in West Africa for the period 1995-2013. There is more than one respondent in a substantial number of households in each country-year cross-section, and there is sufficient within-household variation in whether respondents support the practice to incorporate region, village and, ultimately, household fixed effects.[3] This allows quantifying the contribution of each level of variation (i.e., individual, household, village, and beyond) to the persistence of FGC as we define it here.

The rest of this paper is organized as follows. Section 2 provides some background on FGC for those readers who may not be familiar with the practice, and then discusses the data and provides some descriptive statistics. In section 3, we present our empirical framework, the strategy we use to quantify the contribution of each level of variation, and our identification strategy. Section 4 presents estimation results, compares the results among the countries included in our analysis, briefly speculates about the nonlinear dynamics involved in FGC persistence, and discusses the limitations of our approach. In section 5, we conclude with some directions for future research.

2. Background, Data, and Descriptive Statistics

The practice of FGC is widespread throughout Africa, Asia, and the Middle East,[4] but it is also a public health concern in the United States, the United Kingdom, and other developed countries (Black and

[3] We discuss the amount of within-household variation in the dependent variable in section 2.1.

[4] Cases of FGC have been reported in Benin, Burkina Faso, Côte d'Ivoire, the Central African Republic, Egypt, Eritrea, Ethiopia, The Gambia, Ghana, Guinea, India, Indonesia, Kenya, Liberia, Malaysia, Mali, Mauritania, Niger,

Debelle, 1995; Jones et al., 1997; National Public Radio, 2004), where immigrants from countries where FGC is widespread often import the practice and practice "back-alley" FGCs on girls born to their communities (Black and Debelle, 1995; US Department of Health and Human Services, 2009).[5]

In its typology of FGC, the World Health Organization distinguishes between four types of FGC. In the first type (clitoridectomy), the clitoris is partially or totally removed. In the second type (excision), both the clitoris and the labia are partially or totally removed. In the third type (infibulation), the vaginal opening is narrowed by sewing or stitching the labia together. The fourth type of FGC is a residual category of sorts, which covers any FGC-type procedure that does not neatly fit in any of the first three categories, and which usually involves any of "pricking, piercing, incising, scraping and cauterizing the genital area" (World Health Organization, 2012). The procedure can take place at any time between birth and the age of 15, but this varies widely, both between and within countries (US Department of Health and Human Services, 2009; World Health Organization, 2012). As a US Department of Health and Human Services (2009) fact-sheet on FGC notes:

> "Most often, FGC happens before a girl reaches puberty. Sometimes, however, it is done just before marriage or during a woman's first pregnancy. In Egypt, about 90 percent of girls are cut between 5 and 14 years old. However, in Yemen, more than 75 percent of girls are cut before they are 2 weeks old. The average age at which a girl undergoes FGC is decreasing in some countries (Burkina Faso, Côte d'Ivoire, Egypt, Kenya, and Mali)."

The West African context is well-suited to study the persistence of FGC. Our 38 data sets, which are all designed to be representative at the national level, show that 55 percent of the women across the 13 countries (and 38 country-years) in West Africa retained for analysis have undergone FGC. This number masks a considerable amount of heterogeneity, however, given that the prevalence of FGC at the country level ranges from 3 percent in Niger in 2012 to 99 percent in Guinea in 1999. Given the prevalence of FGC in West Africa as well as the sharp differences just discussed among West African countries, West Africa constitutes an ideal setting to study FGC.

Nigeria, Oman, Senegal, Somalia, South Sudan, Sudan, Tanzania, the United Arab Emirates, and Yemen (Black and Debelle, 1995; Dorkenoo, 1999; Hayford, 2005; Hernlund and Shell-Duncan, 2007; Jackson et al., 2003; Mackie, 1996; Shell-Duncan and Hernlund, 2006).

[5] Historically, FGC has been practiced in the US as early as the 1860s. James (1998:1037) notes how "[i]mmediately following the Civil War … [b]ecause women's 'mental disorders' were equated with their sexual organs, one 'cure' adopted in the late 1860s was clitoridectomy."

2.1. Data and Descriptive Statistics

Depending on the country-year, the data come either from the Demographic and Health Surveys (DHS) collected by USAID or from the Multiple Indicator Cluster Survey (MICS) collected by UNICEF. Both USAID and UNICEF work with in-country partners; those partners are often the country's national statistical agency or another government entity. The DHS and MICS use very similar and consistent data collection practices that make the data comparable across countries and time. The countries included in the analysis are all West African countries for which comparable data exist. For each country we include all available survey years that contain information on FGC. Those countries (survey: year) are Benin (DHS: 2001, DHS: 2006, DHS: 2011-2012), Burkina Faso (DHS: 1998, DHS: 2003, MICS: 2006, DHS: 2010), Côte d'Ivoire (DHS: 1998, MICS: 2006, DHS, 2011-2012), The Gambia (MICS: 2005, MICS: 2010), Ghana (MICS: 2006, MICS: 2011), Guinea (DHS: 1999, DHS: 2005, DHS: 2012), Guinea-Bissau (MICS: 2006), Mali (DHS: 1995, DHS: 2001, DHS: 2006, DHS: 2012), Niger (DHS: 1998, DHS: 2006, DHS: 2012), Nigeria (DHS: 1999, DHS: 2003, MICS: 2007, DHS: 2008, MICS: 2011, DHS: 2013), Senegal (DHS: 2005, DHS: 2010-2011), Sierra Leone (MICS: 2005, DHS: 2008, MICS: 2010), and Togo (MICS: 2006, MICS: 2010). Cape Verde[6] and Liberia[7] are excluded from the analysis due to a lack of data.

Selection of respondents within clusters (i.e., villages) was random, with few refusals to participate in the survey. See section A.1 of the appendix for a discussion of how many women were identified, selected for survey, and were ultimately surveyed in each country. Response rates range from 99.0% (Cote d'Ivoire in 2006) to 80.9% (Guinea-Bissau in 2006). Sampling weights based on these response rates are provided in each DHS and MICS dataset to make the sample nationally representative. We use those weights throughout our analysis.

[6] Cape Verde (DHS, 2005) is not included because USAID decided against distributing data for Cape Verde as part of the DHS program due to serious problems which were identified in a high proportion of the questionnaires. The MICS program does not have a dataset for Cape Verde.

[7] Liberia (MICS, 2007) is not included in the analysis because, due to the particularly sensitive nature of discussing FGC in Liberia, the questionnaire does not include a question that asks if the respondent has undergone FGC. Instead the enumerators ask if the respondent is a member of the Sande society, which is bush school for young girls at which most undergo FGC. Membership in the Sande society could serve as a proxy indicator for FGC status. More damning for the use of Liberia is the fact that the survey includes a question about a respondent's beliefs about the Sande society only if she is a member of it. Thus, we do not have information on our outcome variable for women who are not members of the Sande society. The DHS program does not have a dataset for Liberia that includes information on FGC.

See section A.2 of the appendix for a discussion of slight variations in data availability and quality for the various datasets. Section A.3 of the appendix includes a discussion of the systematic differences (or lack thereof) between the women included and not included in the sample. Women are dropped from the sample due to missing data (i.e., a lack of response to key variables). The most notable and common difference between included and non-included women is age and education level. We find that, in general, older women in the 15-49 age range and more educated women are more likely to respond to the question regarding whether they believe the practice of FGC should continue and the question regarding their personal FGC status. This is important to keep in mind, as our results are slightly more indicative of older and more educated women.

Columns 1 and 2 of Table 1 present the descriptive statistics for the dependent variable (i.e., a dummy for whether or not the respondent believes that the practice of FGC should continue) and the variable of interest (i.e., a dummy variable for whether the respondent reports having undergone FGC). Guinea in 1999 claims the highest prevalence rate of FGC, with 99% of respondents stating that they have undergone FGC. Sierra Leone in 2005 professes the highest level of support for the practice, with 86% of respondents stating that they are in favor of the practice continuing. Niger in 2012 has the lowest prevalence of FGC with only 3% of respondents stating that they have undergone FGC, while Benin in 2006 had the lowest level of support for FGC, with only 2% of women stating that the practice should continue. All means and standard errors are weighted using the sampling weights discussed above.

Tables 2a to 2al of the appendix include descriptive statistics for all variables included in the analysis for each country and year of survey. These variables are age of the respondent, highest level of education attained by the respondent, marital status of the respondent, household ownership of a television and/or radio, household access to electricity, area of residence (rural or urban), ethnicity (of the respondent for DHS datasets and of the household head for the MICS datasets), and religion (of the respondent for DHS datasets and of the household head for MICS datasets).

Columns 3 and 4 of Table 1 present the proportion of households with intrahousehold variation in FGC status and support for the practice, which we exploit in order to study the persistence of FGC in this context. The majority of country-years retained for our analysis have sufficient variation—both between and within households—to estimate the relationship between a woman's report of her own FGC status and her beliefs about whether the practice should continue. Some countries, however, have very little within-household variation, which means that although it is in principle possible to estimate

specifications with household fixed effects, those estimates should be taken with the requisite amount of caution, as they are likely to be imprecisely estimated. The country-years with the least within-household variation are Niger in 2012 and Nigeria in 2011.

Tables 7a to 7y of the appendix show the relationship of the respondent to the household head. Note that the MICS datasets do not include this variable, thus we can only comment on relationship to household head for countries and years for which DHS supplied the data. The majority of respondents are the wife of the household head. A substantial portion of respondents are the daughter or daughter-in-law of the household head. Some respondents are the household head. A small number of respondent are the daughter, daughter-in-law, or co-spouse of the household head.

Lastly, Table 8 of the appendix shows the percent of women aged 15-49 who ascribe to a religion and report having undergone FGC or are in support of the practice. In the majority of countries, Muslim women are more likely to undergo FGC than women in the same country that ascribe to a different religion. The two exceptions to this are Niger and Nigeria, in which FGC is practiced and supported more among Christian women than Muslim women aged 15-49. In countries in which FGC is highly prevalent, FGC is practiced and supported by women from all religions. For example, in Sierra Leone, which has one of the highest rates of FGC, a large proportion of both Christian and Muslim women aged 15-49 report having undergone FGC and support the practice. We have not generated a similar table for ethnicity because many ethnic groups are only present in one or two countries, which makes cross-country comparisons more burdensome and less interesting.

3. Empirical Framework

As we noted in the introduction, our data allow doing two things. First, they allow quantifying the contribution of each level of variation (i.e., individual, household, village, and beyond) has on the persistence of FGC as we define it in our analysis, i.e., support for the continuance of FGC. Second, they allow looking at the relationship between whether a woman reports having undergone FGC and her support for the practice. We discuss how we do both of these things in turn.

3.1. Estimation Strategy

The first equation we estimate is

$$y_{ihvr} = \alpha_1 + \gamma_1 D_{ihvr} + \beta_1 x_{ihvr} + \delta_{1e} d_e + \epsilon_{1ihvr}, \quad (1)$$

where the subscripts denote individual i in household h in village v in region r, y_{ihvr} denotes our outcome of interest (i.e., whether the respondent would like the practice of FGC to continue), D_{ihvr} is

our variable of interest (i.e., whether a respondent reports having undergone FGC), x_{ihvr} is a vector of control variables, d_e is a vector of interviewer (or enumerator, hence the subscript e) fixed effects, and ϵ_{ihvr} is an error term with mean zero.

We estimate equation (1) by ordinary least squares (OLS), weighting each observation with the associated probability weights provided in the data and clustering the standard errors at the village level, given the sampling scheme. Given the binary nature of both dependent variables, our use of OLS means that every equation estimated in this paper is a linear probability model (LPM). Although the LPM might be biased and inconsistent relative to nonlinear procedures like probit or logit (Horrace and Oaxaca, 2006), we favor it for two reasons. First, recall that we use district-village-household fixed effects, and there is bias associated with using fixed effects in the context of nonlinear procedures stemming from the incidental parameter problem (Greene, 2002). Second, although we could focus on specifications without fixed effects, this would almost surely introduce much more bias due to unobserved heterogeneity than would our use of an LPM instead of a probit or logit, something that is supported by our empirical results.

In estimating LPMs, we follow the recommendations of Angrist and Pischke (2008) for microeconomic applications. There are three clear advantages to estimating LPMs instead of popular alternatives like probit and logit. First and foremost, a linear procedure like the LPM is better-suited to handle fixed effects given the incidental parameters problem associated with the probit (Heckman, 1981; Greene 2002). Second, the LPM prevents identification via the specific functional form (e.g., normal or logistic) assumed in a probit or logit. Finally, LPM coefficients are directly interpretable as marginal effects, i.e., as changes in the probability that $\Pr(y_{ihvr} = 1)$, whereas probit and logit coefficients have to be transformed before they can be interpreted as such.

There are some disadvantages to estimating LPMs, however, but we argue that those disadvantages are offset by the disadvantages associated with probit and logit in this context. The first disadvantage is that the variance of a binary variable like y_{ihvr} has a Bernoulli structure—i.e., $Var(y_{ihvr}) = p_{ihvr}(1 - p_{ihvr})$, where $p_{ihvr} = \Pr(y_{ihvr} = 1)$—so the LPM is inherently heteroskedastic. Our use of robust standard errors, however, means that our standard errors are robust to heteroskedasticity in general, and not just the heteroskedasticity that comes from a binary dependent variable. Second, many researchers avoid the LPM because it can lead to predicted values of the dependent variable that lie outside of $[0,1]$ interval. But as Wooldridge (2002) notes, "if the main purpose is to estimate the partial effect of [a variable of interest] on the response probability, averaged across the distribution of [the

variable of interest], then the fact that some predicted values are outside the unit interval may not be very important." The goal of our analysis is not to predict the probability that an individual respondent will be in favor of the practice of FGC continuing, but to find an average association between FGC status and support for FGC.

That said, equation (1) does a poor job of controlling for the unobserved heterogeneity between respondents. Indeed, many of the characteristics of our respondents are unobserved, which means that those characteristics are captured by the error term ϵ. But if those unobserved characteristics are correlated with whether a respondent has undergone FGC, our estimate of γ_1 (i.e., the estimate of the impact of a woman having undergone FGC on whether she wants the practice to continue) will be biased.

In order to obtain a measure of the impact of a woman's own reported FGC status on our outcome variables that is as accurate as possible, we incorporate increasingly refined levels of fixed effects—district, village, and household—in order to filter out unobserved heterogeneity at the same levels. Thus, the second equation we estimate controls for the heterogeneity between districts and is

$$y_{ihvr} = \alpha_2 + \gamma_2 D_{ihvr} + \beta_2 x_{ihvr} + \delta_{2r} d_r + \delta_{2e} d_e + \epsilon_{2ihvr}, \quad (2)$$

where d_r is a vector of region or district fixed effects to control for the factors that are common to all the respondents in a given district.

Equation (3) controls for the heterogeneity between villages (and, by construction, between districts) and is

$$y_{ihvr} = \alpha_3 + \gamma_3 D_{ihvr} + \beta_3 x_{ihvr} + \delta_{3vr} d_{vr} + \delta_{3e} d_e + \epsilon_{3ihvr}, \quad (3)$$

where d_{vr} is a vector of village-district fixed effects to control for the factors that are common to all the respondents in a given village.

Lastly, equation (4) controls for the heterogeneity between households (and, by construction, between villages and districts) and is

$$y_{ihvr} = \alpha_4 + \gamma_4 D_{ihvr} + \beta_4 x_{ihvr} + \delta_{4hvr} d_{hvr} + \delta_{4e} d_e + \epsilon_{4ihvr}, \quad (4)$$

where d_{hvr} is a vector of household-village-district fixed effects to control for the factors that are common to all the respondents in a given household.

As we explain below, equations (1) to (4) allow us to (i) quantify the contribution of each level of variation—individual, household, village, and beyond—to FGC persistence as we define it here, i.e., whether respondents support the continuance of the practice as well as (ii) controlling for mechanisms of FGC persistence at those levels. For example, Blaydes and Izama (2013) find that in Egypt, women in households with more sons are more likely to be in favor of FGC, and they speculate that having more sons invests women more heavily in patriarchal values.[8] Our use of household fixed effects would control for such a mechanism for FGC persistence, because it would hold constant the number of sons in a given household.

Our progressive use of increasingly refined layers of fixed effects also allow quantifying the contribution of each level of variation to the persistence of FGC as defined here, i.e., as captured by respondents support of the continuance of FGC. Estimating equation 1 allows recovering the associated R^2 measure, or coefficient of determination. The R^2 for equation 1—which we label R_1^2 for ease of exposition—tells us how much of the variation in the dependent variable (here, support for FGC) is due to the variables on the RHS of equation 1.

Note, however, that equation 1 does not include any geographic fixed effects. Estimating equation 2—which incorporates regional or district fixed effects—yields a coefficient of determination R_2^2, which is necessarily such that $R_2^2 > R_1^2$ given the nondecreasing nature of the coefficient of determination in the number of covariates included in a regression. But R_1^2 and R_2^2 can also be used to compute the contribution of district- or regional-level factors to the persistence of FGC by computing

$$\frac{R_2^2 - R_1^2}{1 - R_1^2}. \tag{5}$$

That is, we compute how much of the variation not explained by the factors on the RHS of equation 1 (i.e., the denominator) is explained by the inclusion of district or regional fixed effects (i.e., the numerator). Similarly, estimating equation 3—which incorporates village fixed effects—yields a coefficient of determination R_3^2, which is such that $R_3^2 > R_2^2$, and which can be used to compute the contribution of village-level factors to the persistence of FGC by computing

[8] As part of the preliminary empirical work for this paper, we estimated specifications controlling for the number of sons and daughters each respondent had living with her, for the year she last gave birth, for the number of children she lost while giving birth, and for the number of co-wives living with her. None of those factors were found to be statistically significantly determinants of support for FGC.

$$\frac{R_3^2 - R_2^2}{1 - R_1^2}. \quad (6)$$

That is, we compute how much of the variation not explained by the factors on the RHS of equation 1 is explained by the inclusion of village fixed effects. Similarly, estimating equation 4—which incorporates household fixed effects—yields a coefficient of determination R_4^2, which is such that $R_4^2 > R_3^2$, and which can be used to compute the contribution of village-level factors to the persistence of FGC by computing

$$\frac{R_4^2 - R_3^2}{1 - R_1^2}. \quad (7)$$

That is, by computing how much of the variation not explained by the factors on the RHS of equation 1 is explained by the inclusion of household fixed effects. Finally, equation 4 can also be used to determine how much of the variation in the persistence of FGC is due to unobserved individual-level factors by computing

$$\frac{1 - R_4^2}{1 - R_1^2}. \quad (8)$$

In other words, unexplained individual-level factor contribution is whatever variation is left unexplained after estimating equation 4 (i.e., the numerator of equation 7) as a percentage of whatever variation was unexplained after estimating equation 1 (i.e., the denominator of equations 5 to 8). By definition, the sum of the contributions of each level of variation—individual, household, village, and beyond—has to equal 1.

3.2. Identification

We noted earlier that another contribution of ours is to estimate the association between a woman reporting having undergone FGC and her support for the practice. While this is true, our estimate of that association is not as cleanly identified as one would like, which means that we cannot claim that the estimated relationships between a respondent's FGC status and our variables of interest are causal.

Indeed, there are three potential sources of statistical endogeneity to any empirical application, all of which are sources of bias: (i) reverse causality, (ii) unobserved heterogeneity, and (iii) measurement error. In this context, reverse causality is unlikely to be an issue, first because most women have little to no say in whether they undergo FGC or not given that the bulk of FGCs occur between the ages of four and eight. Second, even if a girl were given a choice in the matter, it is unlikely that her future support

for the practice would affect that early choice. This concern is also alleviated by the fact that FGC almost always takes place before the girl turns 15 and because our sample only includes women aged 15 to 49.

As is often the case in applied microeconomics, unobserved heterogeneity is perhaps the most important source of statistical endogeneity in this context, and thus the most important potential source of bias. That is, even though our use of district-village-household fixed effects allows purging the error term of a great deal of its correlation with the variables on the RHS of equation (4), it is not possible to control for the unobserved heterogeneity between individuals in this context. Indeed, there are many individual-level characteristics that are difficult to measure and which our data do not include, such as a respondent's bargaining power within her household, her degree of risk aversion, her level of trust, and so on. Furthermore, it is likely that at least some of those unobservable characteristics, which are in the error term in equation (4), are correlated with some of the variables on the right-hand side of the same equation.

With regards to measurement error, a few studies question the reliability of self-reported data on FGC, but the types of measurement error reported in those studies do not threaten the validity of the estimates presented in this paper. First, note that throughout our analysis, we are careful to talk of the association between *reporting* having undergone FGC and support for the practice rather than of the association between *having undergone* FGC and support for the practice. To talk of the latter, FGC status would need to be physically verified by interviewers. Moreover, Elmusharaf et al. (2006), report that there is measurement error in their Sudanese data due to their respondents being confused about which type of FGC they have undergone, but not about whether they have undergone FGC or not. Elmusharaf et al. note that in their context, "there was complete agreement between reporting undergoing FGM or not and what was found by inspection of genitals" (p. 126). Second, Jackson et al. (2003) find that between 1995 and 2000, 13% of the women in their Ghanaian longitudinal data went from reporting having undergone FGC in 1995 to reporting *not* having undergone FGC in 2000—those respondents were the same in 1995 and in 2000. In that context, however, the government began enforcing a law banning FGC sometime between 1995 and 2000, and so the respondents in Jackson et al.'s study might have been responding to a change in the legality of the practice. As such, because

Ghana is one of the 13 countries we retain for analysis and other included counties have implemented similar bans, measurement error of this kind is a distinct possibility in this study.[9]

Another potential problem threatening the identification of the γ coefficients in equations 1 to 4 is a violation of the stable unit treatment value assumption (SUTVA; see Morgan and Winship, 2007), which requires that whether one unit is treated or not should have no impact on another unit's outcome. In our application, the SUTVA entails that whether a woman reports having undergone FGC or not has no impact on whether another woman is in support of the continuance of the practice, i.e., that there are no "spillovers" between respondents. This is highly unlikely to hold in this context; one can think of situations where a woman who regrets having undergone FGC discusses it with the other women in her household and changes their view of the practice. Indeed, even with household fixed effects, which control for all the factors common to women in the same household, one cannot rule out that one respondent's experience (or lack thereof) of FGC has no impact on another woman's support for the practice.[10]

How could one obtain a causal or cleanly identified estimate of γ? Because the gold standard provided by a randomized controlled trial would raise serious ethical questions, one needs to think about alternative methods aimed at teasing out causation from correlation. The next-best alternative might be a difference-in-difference design that would survey respondents before and after they undergo FGC and look at whether their views on the practice change as a result of having undergone FGC. But given that the bulk of FGCs occur before the age of 15 (indeed, many occur between the ages of 4 and 8; see World Health Organization, 2012), the immaturity of respondents would likely make it difficult to get reliable answers. Similar issues would arise with longitudinal data, which would follow respondents over several years and exploit the variation in respondents' own-FGC status and in their views on the practice

[9] As per UNICEF (2013), the following countries have bans on FGC, with the year of adoption of the ban in parentheses: Benin (2003), Burkina Faso (1996), Côte d'Ivoire (1998), Ghana (1965, amended 2007), Guinea (1965, amended 2000), Guinea-Bissau (2011), Niger (2003), Nigeria (1999-2006), Senegal (1999), Togo (1998). The presence of those bans does not change the empirical results in Tables 3 to 15 below, however, because all respondents in a given country-year where the practice is banned face the same ban, and those bans only vary from country-year to country-year.

[10] Note that this is distinct from confirmation bias, the phenomenon whereby a woman who reports having undergone FGC might be more likely to be in favor of it, and vice versa. Our estimate of FGC persistence includes the effect of confirmation bias. This does not threaten identification, because confirmation bias can be one reason among many why a respondent supports FGC or not. Thus, whereas a violation of SUTVA threatens identification, confirmation bias does not.

of FGC, with the additional problem that one might not observe enough variation in the dependent variables and in the outcome of interest.

Another alternative would be to use a quasi-experimental research design that would rely on an instrumental variable, i.e., a variable that is correlated with whether a woman has undergone FGC, but which only affects her support for the practice through her own FGC status. Such a variable, however, might be extremely difficult, if not impossible, to come by.

4. Results

4.1. Cross Tabulations

For each of the 38 country-years we retain for analysis, table 2 presents a cross-tabulation of the dependent variable and variable interest, i.e., whether the respondent would like FGC to continue and whether the respondent reports having undergone FGC, for women aged 15-49 in West Africa. As alluded to in the tables of descriptive statistics, in all countries except The Gambia, Guinea, Mali, and Sierra Leone, the proportion of women aged 15-49 who say they do not support the continuance of FGC is greater than the proportion of women aged 15-49 who say they support the continuance of the practice. This is true for all years of data collection. Similarly, the proportion of women aged 15-49 who report not having undergone FGC exceeds the number of women aged 15-49 who report having undergone FGC in all but 5 out of 13 countries. Those countries are Burkina Faso, The Gambia, Guinea, Mali, and Sierra Leone. This is true for all years of data collection. Encouragingly for the opponents of FGC, the number of women aged 15-49 who (i) report having undergone FGC, but (ii) are against the continuance of the practice exceeds the number of women aged 15-49 who (i) report not having undergone FGC but (ii) are in favor of the continuance of the practice in each of the countries and years retained for analysis, except in Nigeria in 1998.

4.2. Linear Probability Models

Tables 3 to 15 present, in alphabetical order of countries for the most recent available year, estimation results for the LPMs in equations 1 to 4 in which a respondent's response to the question regarding her support for the continuance of the practice is regressed on whether she reports having undergone FGC herself, individual-level covariates, and household-level covariates. Ethnicity, religion, and interviewer fixed effects are included throughout all regressions. Our results do not show estimated coefficients for these variables. These coefficients are omitted in order to economize on space and, more importantly, because the estimated coefficients are not particularly meaningful since the coefficients only allow the reader to make comparisons to the omitted category. Interested readers should refer to Table 8 of the appendix for descriptive statistics on the prevalence of FGC and support for the practice among women aged 15-49 that ascribe to each religion. Tables 1a to 1y of the Appendix present the results for the LPMs in equations 1 to 4 for all earlier available years for each country retained for the analysis.

Consistent with the methodology outlined in section 3.1, columns 1 to 4 of each of Tables 3 to 15 (and Tables 1a to 1y of the appendix) include increasingly refined layers of fixed effects, from no geographic fixed effects in column 1 to region, village, and household fixed effects in columns 2, 3, and 4, respectively (ethnicity, religion, and interviewer fixed effects are included in all specifications).

Given the number of countries retained for analysis, we do not discuss individual country results, focusing instead on a summary of the results for the most recent year available for each country. In what follows, we focus on our most complete specifications (i.e., column 4 of Tables 3 to 15) and on the estimated coefficient for whether a respondent reports having undergone FGC, which is our variable of interest. Looking at the first line of each table, which presents the estimated coefficient on whether a respondent reports having undergone FGC, our results suggest that women aged 15-49 who report having undergone FGC are on average 16 percentage points more likely to be in favor of the practice in West Africa once household fixed effects (under which fixed effects for village, region, and beyond are subsumed) are included, but this average masks a considerable amount of heterogeneity given that it is the result of averaging over our estimates of that increase in likelihood over the 38 country-year data sets we use in this paper

At one extreme of the distribution, there are countries where there is little to no relationship between having undergone FGC and being in favor of the practice for women aged 15-49. In Benin in 2011, for example, the estimated coefficient on whether a woman reports having undergone FGC in column 4 is neither economically nor statistically significant, which suggests that in this country-year for

the women included in our data, a woman's own reported FGC status has no relationship with whether she supports the continuance of the practice. Similarly, in Niger in 2012, and in Togo in 2010, that coefficient is not statistically significant, and the point estimate is less than 0.05. These coefficients are also statistically insignificant in all earlier available years of data from Niger and Togo.

At the other extreme of the distribution, there are countries in which, for women aged 15-49, a woman's reported FGC status has a very strong association with whether she supports the practice. In The Gambia in 2010, the estimated coefficient on whether a woman aged 15-49 reports having undergone FGC is equal to 0.502 and is significant at the 1 percent level. Similarly, in Mali in 2012, the estimated coefficient on whether a woman aged 15-49 reports having undergone FGC is equal to 0.352 and is significant at the 1 percent level. This suggests that in The Gambia in 2010 and in Mali in 2012, a woman aged 15-49 who reports having undergone FGC was respectively 50 and 35 percentage points more likely to support the practice. The estimated coefficients and significance levels are very similar in earlier rounds of data collection for The Gambia and Mali.[11]

In an alternative specification of our main regression results, we included all variables listed above as well as (i) gender of the household head, and (ii) age of the respondent's partner. These variables are included to coarsely proxy for bargaining power of the woman in decisions related to FGC, such as whether or not her daughters will be cut. Tables 5a to 5al of the appendix display the regression results for this alternative specification. The results of this alternative specification are almost identical to the regression results presented here.

Turning to the respective contribution of each level of variation (i.e., individual, household, village, and beyond), we use the method outlined in equations 5 to 8 to do so for each country-year on the basis of our core specifications. Appendix Table 3 presents those contributions, and Figure 1 below summarizes those results. What is immediately striking about Figure 1 is how, in almost all country-years, the bulk of the variation in support for FGC among women aged 15-49 can be ascribed to household-level factors. The lone exception to this is Mali in 2001 which, given that Mali in 1995 and Mali in 2006 look very similar, is likely the result of sampling error. In addition, in all but two cases (i.e., Niger in 2012 and Nigeria in 2011), individual- and household-level factors explain over 80 percent of the variation in support for FGC.

[11] Except for Mali in 2006, for which the estimated coefficient is substantially smaller (0.123) and statistically insignificant.

4.3. Dynamics in the Persistence of FGC

The findings in Tables 3 to 15 and in Figure 1 show the sources of variation in support for the continuance of FGC among women aged 15-49 across the 13 countries retained for analysis. The information contained in those tables and in that figure can be used to provide a discussion, albeit a necessarily speculative one, of the potential dynamics of FGC persistence. That is, for all 38 country-years in our sample, one can plot the percentage contribution of each level of variation against the extent of reported FGC and look at whether there seems to be any relationship between the proportion of women aged 15-49 who report having undergone FGC and what level of variation drives support for the continuance of the practice among these same women.

Figures 2a to 2c plot the extent of reported FGC on the *x*-axis and how much of the variation in support for the continuance of FGC comes from the individual, household, and village levels, respectively, on the *y*-axis. A round marker indicates that there is no FGC ban in place at the time of data collection in that country while an 'x' marker indicates that there was a ban on FGC at the time of data collection in the given country. The regressions used to obtain the fitted linear functions in each one of figures 2a and 2c can be found in appendix Table 4.[12] Again, we wish to reiterate that given the small sample of 38 country-year observations, this discussion is meant to be speculative. With that said, the results in figures 2a to 2c suggest that

1. The greater the prevalence of reported FGC among women aged 15-49 in a society, the more support for the continuance of the practice is driven by individual-level factors (figure 2a).
2. Conversely, the greater the prevalence of reported FGC among women aged 15-49 in a society, the less support for the continuance of the practice is driven by household-level factors (figure 2b).
3. Likewise, the greater the prevalence of reported FGC among women aged 15-49 in a society, the less support for the continuance of the practice is driven by village-level factors (figure 2c).
4. Generally speaking, a 10-percent increase in the prevalence of FGC among women aged 15-49 is associated with about (i) a 2 percent increase in the unobserved individual-level contribution to variation in support for FGC, (ii) a 1 percent decrease in the household-level

[12] In preliminary empirical work, we also investigated potential nonlinear dynamics by estimating quadratic specifications of the regressions in appendix Table 4, but we found that the quadratic terms were never statistically significant.

contribution to variation in support for FGC, and (iii) a 0.5 percent decrease in the village-level contribution to variation in support for FGC.

5. In the aggregate, as the practice of FGC becomes less prevalent among women aged 15-49, support for the practice appears to increasingly become the result of factors beyond the individual (i.e., household and village).

Figure 2b suggests that even with a sharp decrease in FGC prevalence, the bulk of FGC persistence would still come from household-level factors. This is in contrast to the tipping point and informational cascade models (Schelling, 1978; Bikhchandani et al., 1992; Bikhchandani et al., 1998) discussed in the introduction, wherein the decision to abandon a social norm such as FGC should be entirely individual in places where the practice is highly pervasive.

4.5. Limitations

We have discussed the limitations of our identification strategy at length in section 3. In addition to those limitations, we note the following limitations of this study. First, we cannot distinguish between the various types of FGC the women in our sample report to have undergone or between the types of FGC they support. This matters because one can be in support of one type of FGC without necessarily being in support of another type. Second, recall that the data we use only sampled women between the ages of 15 and 49, which means that we cannot possibly capture what women younger than 15 or older than 49 think. Additionally, we must remain agnostic about what men think about FGC. This is important to consider because elderly women are often the ones performing FGC (Morrone et al., 2002), and so they may have an important influence in the persistence of the practice—as one of our reviewers noted, women aged 15-49 are an important piece of the puzzle—but they are only one piece of it. Our findings, however, indicate that generally, either age has no impact on support for FGC or that support for FGC is decreasing in the age of respondents, up to age 49. Additionally, sampling men as well as women would allow studying intrahousehold decision processes regarding FGC (Alderman et al., 1995; Doss, 1995) as well the marriage market value of FGC (Wagner, 2014).

Third, relative to other studies, we must remain agnostic about the three theories that have been developed to account for the persistence of FGC. The first of those theories, convention theory, states that FGC persists as a social norm (Mackie, 1996; Shell-Duncan and Hernlund, 2006; Hayford, 2005; Easton et al., 2003; Lightfoot-Klein, 1989). The second theory, feminist theory, posits that as women's rights expand, support for FGC should decrease (Easton et al., 2003; El-Dawla, 1999; Finke, 2006; Yount,

2002). The third theory, modernization theory, states that as a society modernizes, support for FGC should wane (Easton et al., 2003; Williams and Sobiesczyk, 1997). Fourth, and finally, regarding external validity, though our sample allows drawing inference about the persistence of FGC among all women aged 15 to 49 in 13 out of 15 West African countries, it is unclear whether our results apply to other countries where FGC is practiced—or even to West African women younger than 15 or older than 49.

5. Summary and Conclusions

We have investigated the practice of FGC, which has been declining in some countries but persists in others. Specifically, using household survey data covering over 300,000 women aged 15-49 in 38 country-year observations in West Africa, we have done two things. First, we have studied the relationship between a woman's own reported FGC status—whether she reports having undergone FGC—and her support for the practice, which we adopt as our definition of FGC persistence. Second, we have quantified the contribution of each level of variation—individual, household, village, and beyond—in explaining support for the continuance of FGC. We find that much of the variation in a woman's support for FGC can be attributed to individual- and household-level factors rather than to village-level factors or to factors beyond the village level.

Finally, we find that reporting having undergone FGC is associated with a 16 percentage point increase in the likelihood that a woman will be in favor of the continuance of the practice in West Africa. This figure is found by averaging over our estimates from the 38 country-year datasets we use in this paper of the increase in the likelihood that one supports FGC if she reports that she has undergone FGC.

The main strength of this study lies in the design of the surveys used for analysis, which allows exploiting the within-household variation in respondents' support for the practice, which allows determining how much each level of variation contributes to the persistence of FGC. Additionally, our findings are nationally representative for women aged 15 to 49 in for 38 country-year observations spanning the period 1995-2013 in 13 out of 15 West African countries.

That said, the countries in our sample are only a fraction of the many countries where the practice of FGC remains widespread, which points to the need for studies such as this one in other regions. Cases of FGC have also been reported in the Central African Republic, Egypt, Eritrea, Ethiopia, India, Indonesia, Kenya, Liberia, Malaysia, Oman, Somalia, South Sudan, Sudan, Tanzania, the United Arab Emirates, and Yemen, and in those countries, the sources of variation in support for the practice might be different than in West Africa. In addition, to better understand the mechanisms through which FGC persists, there

is a need for systematic investigations of the causal pathways behind FGC persistence. Likewise, there is a need for a better understanding of the consequences of FGC regarding educational, health, and labor-market outcomes for the women who undergo FGC.

References

Alderman, H., P.-A. Chiappori, L. Haddad, R. Kanbur, J. Hoddinott, "Unitary versus Collective Models of the Household: Is It Time to Shift the Burden of the Proof?," *World Bank Research Observer* 10(1): 1-19.

Angrist, J.D., and J.-S. Pischke (2008), *Mostly Harmless Econometrics*, Princeton: Princeton University Press.

Antman, F., and D.J. McKenzie (2007), "Earnings Mobility and Measurement Error: A Pseudo-Panel Approach," *Economic Development and Cultural Change* 56: 125-161.

Basu, K. (2003), *A Prelude to Political Economy*, Oxford: Oxford University Press.

Bikhchandani, S., D. Hirshleifer, and I. Welch (1992), "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades," *Journal of Political Economy* 100(5): 992-1026.

Black, J.A., and G.D. Debelle (1995), "Female Genital Mutilation in Britain," *British Medical Journal* 310(6994): 1590-1594.

Blaydes, L., and R.M. Gillum (2013), "Religiosity-of-Interviewer Effects: Assessing the Impact of Veiled Enumerators on Survey Response in Egypt," *Politics and Religion* 6(3): 459-482.

Blaydes, L., and M.P. Izama (2013), "Religion, Patriarchy and the Perpetuation of Harmful Social Conventions: The Case of Female Genital Cutting in Egypt," Working Paper, Stanford University.

cad (1999), "Gambia: No Female Genital Mutilation Ban," *off our backs* 29(3): 4.

De Cao, E., and C. Lutz (2014), "Sensitive Survey Questions: Measuring Attitudes Regarding Female Circumcision through a List Experiment," Working Paper, University of Groningen.

Dorkenoo, E. (1999), "Female Genital Mutilation: An Agenda for the Next Decade," *Women's Studies Quarterly* 27(1/2): 87-97.

Doss. C. (1996), "Testing among Models of Intrahousehold Resource Allocation," *World Development* 24(10): 1597-1609.

Easton P., K. Monkman, R. Miles (2003), "Social Policy from the Bottom up: Abandoning FGC in Sub-Saharan Africa," *Development in Practice* 13(5):445-58.

El Dawla, A.S. (1999), "The Political and Legal Struggle over Female Genital Mutilation in Egypt: Five Years Since the ICPD," *Reproductive Health Matters* 7(13): 128-136.

Ellickson, R.C. (1989), "A Hypothesis of Wealth-Maximizing Norms: Evidence from the Whaling Industry," *Journal of Law, Economics, and Organization* 5(1): 83-97.

Ellickson, R.C. (1991), *Order without Law*, Cambridge, MA: Harvard University Press.

Elmusharaf S., N. Elhadi, L. Almroth (2006), "Reliability of Self-Reported Form of Female Genital Mutilation and WHO Classification: Cross-Sectional Study," *British Medical Journal* 333(7559):124-7.

Finke, E. 2006), "Genital Mutilation as an Expression of Power Structures: Ending FGM through Education, Empowerment of Women and Removal of Taboos," *African Journal of Reproductive Health* 10(2):13-7.

Gambian Bureau of Statistics (2007), "The Gambia Multiple Indicator Cluster Survey 2005/2006 Report," http://www.childinfo.org/mics/mics3/archives/gambia/survey0/data/Reports/MICS3_Gambia_FinalReport_2006_Eng.pdf last accessed June 11, 2012.

Greene, W. (2002), "The Bias of the Fixed Effects Estimator in Nonlinear Models," Working Paper, New York University.

Hayford, S.R. (2005), "Conformity and Change: Community Effects on Female Genital Cutting in Kenya," *Journal of Health and Social Behavior* 46(2): 121-140.

Heckman, J.J. (1981), "The Incidental Parameters Problem and the Problem of Initial Conditions in Estimating a Discrete Time-Discrete Data Stochastic Process," in C.F. Manski and D. McFadden, eds., *Structural Analysis of Discrete Data and Econometric Applications*, Cambridge, MA: MIT Press.

Hernlund, Y., and B. Shell-Duncan (2007), "Contingency, Context, and Change: Negotiating Female Genital Cutting in The Gambia and Senegal," *Africa Today* 53(4): 43-57.

Horrace, W.L., and R.L. Oaxaca (2006), "Results on the Bias and Inconsistency of Ordinary Least Squares for the Linear Probability Model," *Economics Letters* 90(2006): 321-327.

Jackson, E.F., P. Akweongo, E. Sakeah, A. Hodgson, R. Asuru, and J.F. Phillips (2003), "Inconsistent Reporting of Female Genital Cutting Status in Northern Ghana: Explanatory Factors and Analytical Consequences," *Studies in Family Planning* 34(3): 200-210.

James, S.M. (1998), "Shades of Othering: Reflections on Female Circumcision/Genital Mutilation," *Signs* 23(4): 1031-1048.

Jones, H., N. Diop, I. Askew, and I. Kabore (1999), "Female Genital Cutting Practices in Burkina Faso and Mali and Their Negative Health Outcomes," *Studies in Family Planning* 30(3): 219-230.

Jones, W.K., J. Smith, B. Kieke, Jr., and L. Wilcox (1997), "Female Genital Mutilation/Female Circumcision: Who Is at Risk in the US?," *Public Health Reports (1974—)*, 112(5): 368-377.

Lightfoot-Klein, H. (1989), *Prisoners of Ritual: An Odyssey into Female Genital Circumcision in Africa*, New York: Haworth Press.

Mackie, G. (1996), "Ending Footbinding and Infibulation: A Convention Account," *American Sociological Review* 61(6): 999-1017.

Moore, K., K. Randolph, N. Toubia, and E. Kirberger (1997), "The Synergistic Relationship between Health and Human Rights: A Case Study Using Female Genital Mutilation," *Health and Human Rights* 2(2): 137-146.

Morgan, C., and S.L. Winship (2007), *Counterfactuals and Causal Inference: Methods and Principles for Social Research*, Cambridge: Cambridge University Press.

Morrone A., J. Hercogova, T. Lotti (2002), "Stop Female Genital Mutilation: Appeal to the International Dermatologic Community," *International Journal of Dermatology* 41(5):253-63.

Naguib, K. (2012), "The Effects of Social Interactions on Female Genital Mutilation: Evidence from Egypt," Working Paper, Boston University.

National Public Radio (2004), "Atlanta Female Circumcision Case Stirs Concerns," http://www.npr.org/templates/story/story.php?storyId=1763682, last accessed June 16, 2012.

North, D.C. (1990), *Institutions, Institutional Change, and Economic Performance*, Cambridge: Cambridge University Press.

Poirier, D.J. (1980), "Partial Observability in Bivariate Probit Models," *Journal of Econometrics* 12(2): 209-217.

Schelling, T.C. (1978), *Micromotives and Macrobehavior*, New York: W.W. Norton & Co.

Shell-Duncan, B., and Y. Hernlund (2006), "Are there 'Stages of Change' in the Practice of Female Genital Cutting? Qualitative Research Findings from Senegal and The Gambia," *African Journal of Reproductive Health* 10(2): 56-71.

Skaine, R. (2005), *Female Genital Mutilation: Legal, Cultural and Medical Issues*, Jefferson, NC: McFarland & Company, Inc.

UNICEF (2005), *MICS Manual 2005*, Department of Division and Planning, New York, NY: UNICEF.

UNICEF (2013), *Female Genital Mutilation/Cutting: A Statistical Overview and Exploration of the Dynamics of Change*, New York: United Nations Children's Fund.

United Nations Development Program (2005), "The Gambia Human Development Report 2005," http://hdr.undp.org/en/reports/national/africa/gambia/name,3419,en.html, last accessed June 11, 2012.

United Nations Development Program (2013), "Senegal Human Development Report 2013," http://hdrstats.undp.org/images/explanations/SEN.pdf, last accessed October 25, 2013.

US Department of Health and Human Services (2009), Female Genital Cutting, http://www.womenshealth.gov/publications/our-publications/fact-sheet/female-genital-cutting.cfm, last accessed March 19, 2012.

Wagner, N. (2014), "Why Female Genital Cutting Persists," *Journal of Development Studies* forthcoming.

Williams, L., and T. Sobieszczyk (1997) "Attitudes Surrounding the Continuation of Female Circumcision in the Sudan: Passing the Tradition to the Next Generation," *Journal of Marriage and the Family* 59(4): 966-981.

Wooldridge, J.M. (2002), *Econometrics of Cross-Section and Panel Data*, Cambridge, MA: MIT Press.

World Health Organization (2012), Female Genital Mutilation, Fact Sheet #241, http://www.who.int/mediacentre/factsheets/fs241/en/, last accessed March 19, 2012.

Yount K.M. (2002), "Like Mother, Like Daughter? Female Genital Cutting in Minia, Egypt," *Journal of Health and Social Behavior* 43(3):336-58.

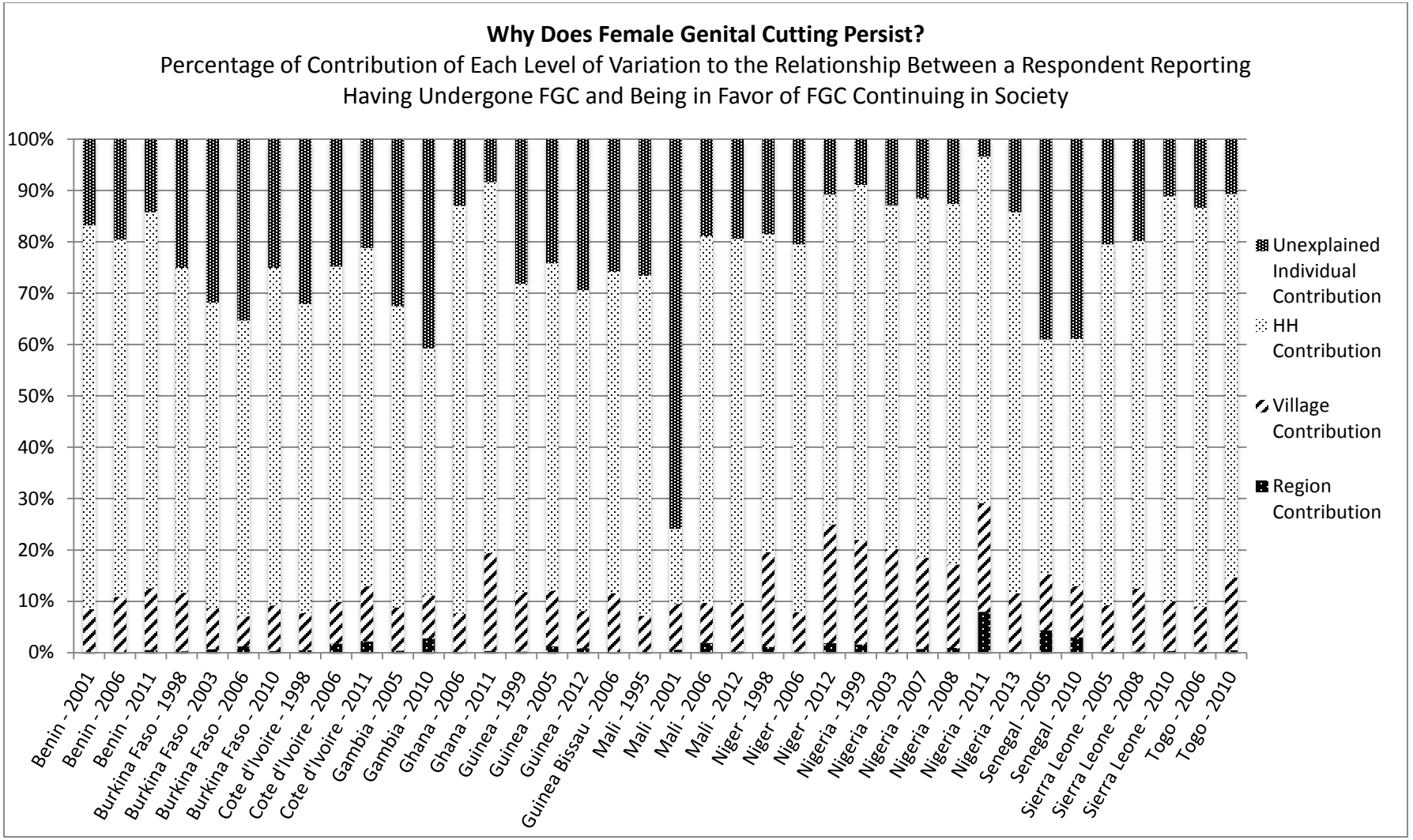

Figure 1. Percentage Contribution of Each Level of Variation to the Persistence of FGC in West Africa

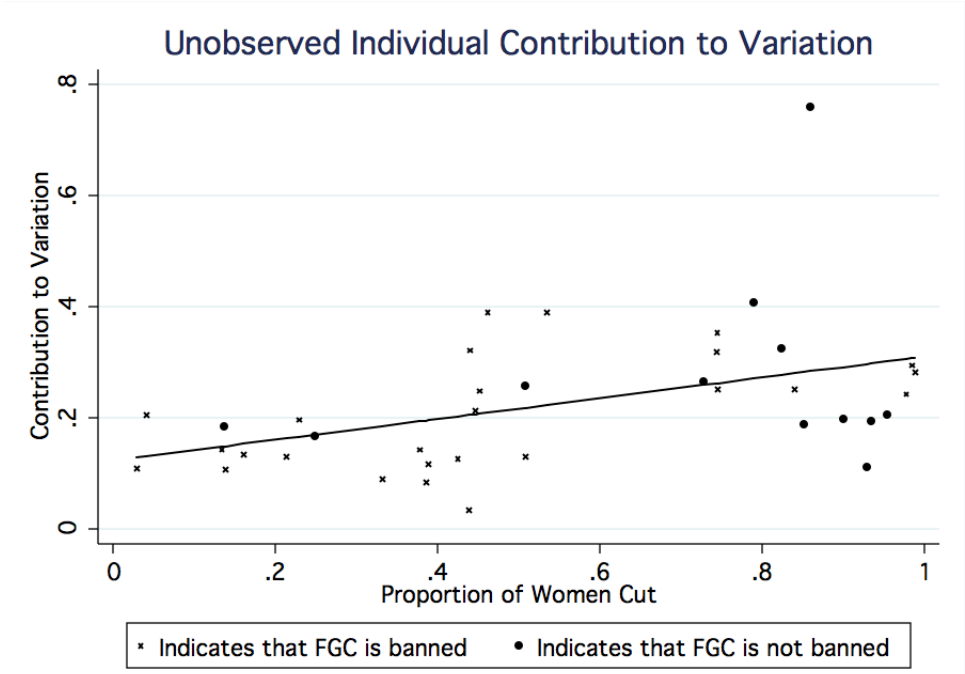

Figure 2a. Relationship between the Proportion of Women Who Report Having Undergone FGC and the Proportion of Variation in Support from FGC that Is Due to Individual-Level Factors.

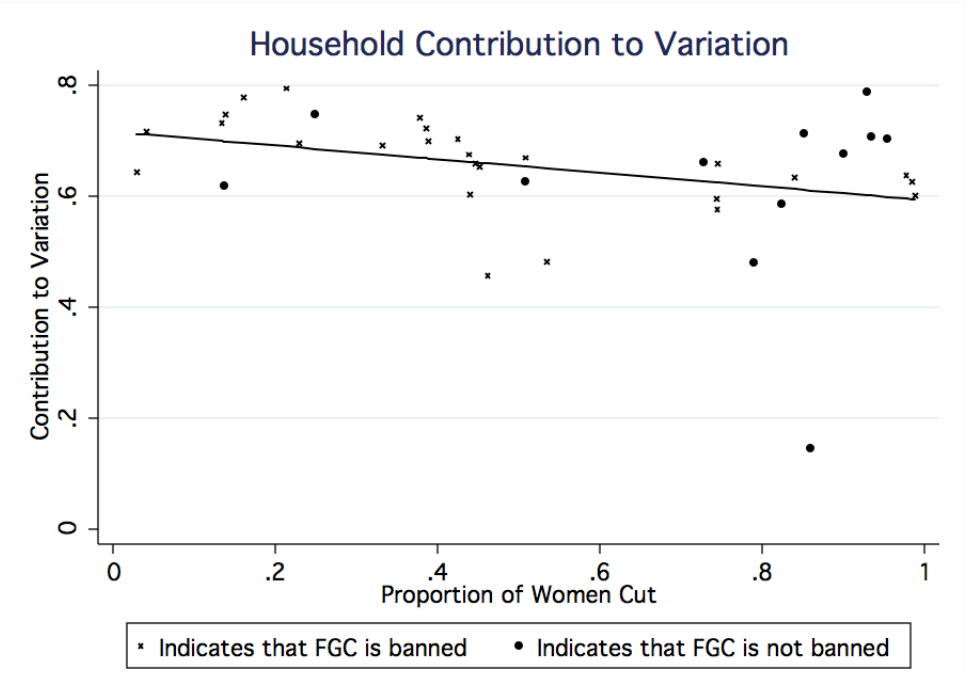

Figure 2b. Relationship between the Proportion of Women Who Report Having Undergone FGC and the Proportion of Variation in Support from FGC that Is Due to Household-Level Factors.

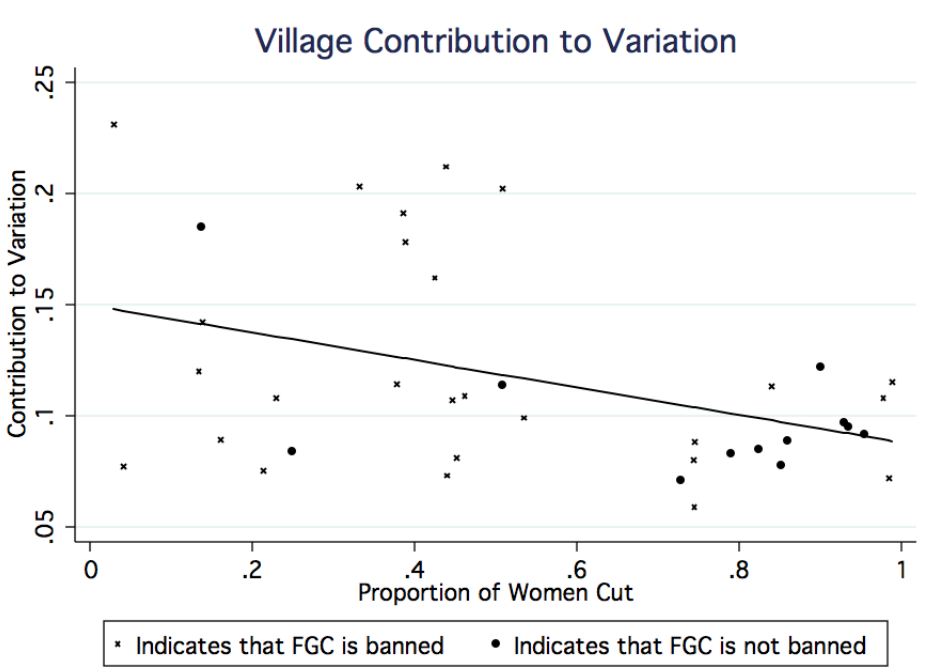

Figure 2c. Relationship between the Proportion of Women Who Report Having Undergone FGC and the Proportion of Variation in Support from FGC that Is Due to Village-Level Factors.

Table 1. Descriptive Statistics and Intrahousehold Variation for FGC Variables—West Africa (n=38 Country-Year Observations)

Country-Year	Proportion of Respondents Underwent FGC (Std. Err.)	Proportion of Respondents Think FGC Should Continue (Std. Err.)	Proportion of Households with Intrahousehold Variation in Support for FGC Continuing	Proportion of Households with Intrahousehold Variation in FGC Status of Respondents
Benin 2001	0.248 (0.027)	0.056 (0.007)	0.019	0.032
Benin 2006	0.229 (0.017)	0.017 (0.002)	0.006	0.031
Benin 2011	0.134 (0.011)	0.025 (0.003)	0.005	0.025
Burkina Faso 1998	0.841 (0.012)	0.206 (0.012)	0.093	0.062
Burkina Faso 2003	0.744 (0.016)	0.144 (0.008)	0.103	0.111
Burkina Faso 2006	0.745 (0.020)	0.137 (0.010)	0.083	0.112
Burkina Faso 2010	0.746 (0.011)	0.073 (0.004)	0.043	0.099
Côte d'Ivoire 1998	0.440 (0.030)	0.267 (0.020)	0.113	0.077
Côte d'Ivoire 2006	0.452 (0.029)	0.272 (0.026)	0.077	0.072
Côte d'Ivoire 2011	0.447 (0.028)	0.152 (0.015)	0.051	0.068
Gambia 2005	0.824 (0.014)	0.770 (0.016)	0.056	0.027
Gambia 2010	0.79 (0.019)	0.676 (0.018)	0.126	0.034
Ghana 2006	0.214 (0.029)	0.037 (0.005)	0.009	0.026
Ghana 2011	0.386 (0.024)	0.062 (0.008)	0.006	0.016
Guinea 1999	0.989 (0.003)	0.748 (0.013)	0.099	0.006
Guinea 2005	0.978 (0.004)	0.795 (0.010)	0.082	0.020
Guinea 2012	0.985 (0.003)	0.769 (0.014)	0.112	0.014
Guinea-Bissau 2006	0.508 (0.027)	0.312 (0.019)	0.070	0.027

Mali 1995	0.728 (0.037)	0.647 (0.035)	0.060	0.012
Mali 2001	0.86 (0.022)	0.787 (0.021)	0.254	0.095
Mali 2006	0.852 (0.019)	0.713 (0.019)	0.052	0.016
Mali 2012	0.934 (0.006)	0.801 (0.009)	0.052	0.016
Niger 1998	0.137 (0.023)	0.259 (0.025)	0.046	0.027
Niger 2006	0.041 (0.007)	0.028 (0.004)	0.013	0.015
Niger 2012	0.029 (0.005)	0.021 (0.003)	0.007	0.006
Nigeria 1999	0.332 (0.024)	0.22 (0.017)	0.025	0.025
Nigeria 2003	0.326 (0.022)	0.509 (0.026)	0.046	0.045
Nigeria 2007	0.389 (0.016)	0.176 (0.010)	0.028	0.043
Nigeria 2008	0.425 (0.016)	0.214 (0.010)	0.036	0.038
Nigeria 2011	0.439 (0.016)	0.204 (0.010)	0.009	0.010
Nigeria 2013	0.378 (0.016)	0.222 (0.011)	0.042	0.049
Senegal 2005	0.462 (0.028)	0.295 (0.021)	0.112	0.052
Senegal 2010	0.535 (0.025)	0.315 (0.019)	0.121	0.061
Sierra Leone 2005	0.954 (0.005)	0.863 (0.011)	0.040	0.023
Sierra Leone 2008	0.9 (0.009)	0.673 (0.021)	0.074	0.041
Sierra Leone 2010	0.929 (0.008)	0.739 (0.015)	0.029	0.010
Togo 2006	0.161 (0.019)	0.048 (0.006)	0.010	0.031
Togo 2010	0.139 (0.018)	0.026 (0.004)	0.005	0.026

Table 2. Cross Tabulations of the Dependent Variables with the Variable of Interest

Respondent Reports that She Underwent FGC:	No	No	Yes	Yes
Respondent Would Like FGC to Continue:	No	Yes	No	Yes
Country - Year	**%**	**%**	**%**	**%**
Benin - 2001	73.71	1.70	20.84	3.75
Benin - 2006	78.28	0.76	20.20	0.76
Benin - 2011	86.21	1.72	11.44	0.63
Burkina Faso - 1998	14.46	1.18	62.82	21.54
Burkina Faso - 2003	22.28	1.08	60.89	15.75
Burkina Faso - 2006	23.36	1.39	63.79	11.46
Burkina Faso - 2010	23.79	0.41	67.72	8.08
Cote d'Ivoire - 1998	52.44	2.50	18.56	26.50
Cote d'Ivoire - 2006	52.82	1.50	19.74	25.94
Cote d'Ivoire - 2011	54.93	1.48	29.81	13.78
Gambia - 2005	17.53	0.64	6.25	75.58
Gambia - 2010	19.29	1.38	11.90	67.43
Ghana - 2006	87.39	1.86	9.60	1.15
Ghana - 2011	76.87	1.53	19.45	2.15
Guinea - 1999	0.68	0.35	23.95	75.02
Guinea - 2005	1.28	1.73	19.47	77.52
Guinea - 2012	1.43	0.59	20.65	77.33
Guinea Bissau - 2006	49.57	1.49	18.83	30.11
Mali - 1995	7.10	0.83	10.51	81.56
Mali - 2001	6.70	0.96	8.77	83.57
Mali - 2006	8.45	1.71	11.67	78.17
Mali - 2012	5.10	1.22	15.07	78.61
Niger - 1998	62.76	21.12	4.18	11.94
Niger - 2006	92.57	1.76	4.58	1.09
Niger - 2012	92.80	2.82	3.20	1.18
Nigeria - 1999	62.09	2.67	14.44	20.80
Nigeria - 2003	50.99	5.12	21.59	22.30
Nigeria - 2007	53.45	2.88	25.35	18.32
Nigeria - 2008	51.56	2.69	24.51	21.24
Nigeria - 2011	47.99	3.04	28.55	20.42
Nigeria - 2013	52.93	7.66	22.58	16.83
Senegal - 2005	59.74	1.63	15.55	23.08
Senegal - 2010	58.62	1.69	16.57	23.12
Sierra Leone - 2005	2.54	1.66	10.27	85.53
Sierra Leone - 2008	6.40	2.31	22.54	68.75
Sierra Leone - 2010	4.02	1.31	19.72	74.95
Togo - 2006	85.95	1.94	10.68	1.43
Togo - 2010	89.07	1.22	8.35	1.36

Table 3. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Benin 2011

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.056***	0.058***	0.054***	0.006
	(0.012)	(0.012)	(0.011)	(0.016)
Age	0.001	0.001	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.004)
Age Squared	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.006	-0.006*	-0.006	-0.014
	(0.004)	(0.004)	(0.004)	(0.021)
Secondary Education	0.000	0.000	-0.000	-0.001
	(0.005)	(0.005)	(0.005)	(0.016)
Higher Education	0.010	0.007	0.010	0.010
	(0.014)	(0.013)	(0.014)	(0.031)
Married	-0.002	-0.002	-0.000	0.004
	(0.005)	(0.005)	(0.005)	(0.016)
Cohabitating	0.017*	0.016*	0.016	0.007
	(0.009)	(0.009)	(0.010)	(0.032)
Widowed	0.014	0.013	0.021	0.052
	(0.014)	(0.014)	(0.014)	(0.059)
Divorced	0.019	0.018	0.012	0.005
	(0.018)	(0.018)	(0.018)	(0.017)
Separated	-0.005	-0.006	-0.002	-0.025
	(0.006)	(0.006)	(0.007)	(0.039)
Television	-0.001	-0.001	-0.002	
	(0.004)	(0.004)	(0.004)	
Radio	-0.004	-0.004	0.001	
	(0.004)	(0.004)	(0.005)	
Electricity	0.004	0.004	0.008*	
	(0.004)	(0.004)	(0.004)	
Urban Household	-0.001	-0.001		
	(0.004)	(0.004)		
Constant	-0.028	-0.037*	-0.018	0.040
	(0.026)	(0.022)	(0.018)	(0.072)
Observations	10,477	10,477	10,477	10,477
R-squared	0.402	0.405	0.477	0.915
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 4. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Burkina Faso 2010

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.079***	0.080***	0.076***	0.036*
	(0.007)	(0.007)	(0.007)	(0.019)
Age	-0.008***	-0.008***	-0.008***	-0.010**
	(0.002)	(0.002)	(0.002)	(0.005)
Age Squared	0.000***	0.000***	0.000***	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.007	-0.008	-0.005	-0.005
	(0.006)	(0.006)	(0.006)	(0.019)
Secondary Education	-0.032***	-0.033***	-0.030***	-0.021
	(0.007)	(0.007)	(0.008)	(0.021)
Higher Education	-0.043***	-0.050***	-0.051***	-0.026
	(0.013)	(0.013)	(0.012)	(0.035)
Married	0.000	0.000	-0.005	0.013
	(0.008)	(0.008)	(0.008)	(0.025)
Cohabitating	0.004	0.003	-0.008	-0.015
	(0.012)	(0.012)	(0.013)	(0.035)
Widowed	-0.024*	-0.025*	-0.030**	0.013
	(0.014)	(0.014)	(0.015)	(0.037)
Divorced	0.015	0.013	0.025	-0.043
	(0.033)	(0.033)	(0.034)	(0.054)
Separated	-0.005	-0.007	-0.009	-0.031
	(0.019)	(0.019)	(0.020)	(0.047)
Television	-0.003	-0.005	-0.001	
	(0.008)	(0.008)	(0.009)	
Radio	-0.010*	-0.009	-0.010	
	(0.006)	(0.006)	(0.006)	
Electricity	-0.008	-0.009	-0.010	
	(0.009)	(0.009)	(0.010)	
Urban Household	-0.009	-0.012*		
	(0.007)	(0.007)		
Constant	0.054*	0.067*	0.013	0.168
	(0.030)	(0.040)	(0.067)	(0.127)
Observations	16,595	16,595	16,595	16,595
R-squared	0.094	0.097	0.177	0.773
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 5. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Côte d'Ivoire 2011

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.215***	0.202***	0.175***	0.110**
	(0.016)	(0.015)	(0.015)	(0.043)
Age	-0.014***	-0.014***	-0.012***	-0.012
	(0.004)	(0.004)	(0.004)	(0.012)
Age Squared	0.000***	0.000***	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.050***	-0.051***	-0.042***	-0.004
	(0.010)	(0.010)	(0.010)	(0.027)
Secondary Education	-0.065***	-0.063***	-0.067***	-0.030
	(0.013)	(0.013)	(0.012)	(0.029)
Higher Education	-0.032*	-0.032*	-0.053***	-0.022
	(0.018)	(0.019)	(0.013)	(0.035)
Married	0.044***	0.042***	0.031**	0.055
	(0.013)	(0.013)	(0.014)	(0.042)
Cohabitating	0.032**	0.036**	0.030**	0.043
	(0.014)	(0.014)	(0.015)	(0.042)
Widowed	0.028	0.032	0.028	0.081
	(0.027)	(0.027)	(0.027)	(0.065)
Divorced	0.016	0.024	0.007	0.087
	(0.034)	(0.034)	(0.038)	(0.097)
Separated	0.018	0.020	0.012	0.032
	(0.020)	(0.020)	(0.020)	(0.041)
TV	-0.038***	-0.038***	-0.042***	
	(0.014)	(0.014)	(0.014)	
Radio	0.009	0.011	0.018*	
	(0.012)	(0.011)	(0.011)	
Electricity	-0.028	-0.027	-0.013	
	(0.018)	(0.017)	(0.022)	
Urban Household	-0.035**	-0.028*		
	(0.016)	(0.015)		
Constant	0.373***	0.414***	0.352***	0.411
	(0.064)	(0.075)	(0.093)	(0.254)
Observations	8,731	8,731	8,731	8,731
R-squared	0.279	0.295	0.372	0.847
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 6. LPM Estimation Results for Whether Respondents Think FGC Should Continue—The Gambia 2010

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.673***	0.670***	0.677***	0.502***
	(0.018)	(0.018)	(0.018)	(0.053)
Age	-0.003	-0.001	-0.002	-0.003
	(0.003)	(0.003)	(0.003)	(0.005)
Age Squared	0.000	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.031**	-0.026**	-0.026*	-0.016
	(0.013)	(0.012)	(0.013)	(0.024)
Secondary Education	-0.095***	-0.092***	-0.085***	-0.072***
	(0.014)	(0.013)	(0.014)	(0.023)
Higher Education	-0.178***	-0.175***	-0.164***	-0.160**
	(0.037)	(0.037)	(0.039)	(0.066)
Non-traditional Education	-0.099**	-0.069*	-0.029	-0.062
	(0.044)	(0.038)	(0.039)	(0.082)
Madrassa Primary Education	0.022	0.019	0.002	-0.009
	(0.017)	(0.016)	(0.016)	(0.018)
Madrassa Secondary Education	0.047	0.043	0.044	-0.007
	(0.034)	(0.033)	(0.034)	(0.033)
Married	0.017	0.012	0.016	0.013
	(0.012)	(0.012)	(0.013)	(0.023)
Cohabitating	-0.314**	-0.322**	-0.318*	-0.004
	(0.146)	(0.137)	(0.168)	(0.023)
Widowed	0.028	0.022	0.018	0.007
	(0.031)	(0.031)	(0.030)	(0.044)
Divorced	-0.015	-0.017	-0.021	-0.035
	(0.031)	(0.030)	(0.029)	(0.054)
Separated	0.014	0.010	0.021	0.067
	(0.064)	(0.058)	(0.058)	(0.175)
Television	0.009	0.012	0.008	
	(0.011)	(0.010)	(0.011)	
Radio	-0.006	-0.012	-0.015	
	(0.014)	(0.013)	(0.013)	
Electricity	-0.028*	-0.016	-0.014	
	(0.016)	(0.013)	(0.014)	
Urban Household	0.026	0.087***		
	(0.020)	(0.031)		
Constant	0.380***	0.329***	0.352***	-0.201
	(0.056)	(0.054)	(0.088)	(0.182)
Observations	13,101	13,101	13,101	13,101
R-squared	0.522	0.535	0.575	0.805
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 7. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Ghana 2011

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.066***	0.066***	0.060**	0.118
	(0.023)	(0.023)	(0.029)	(0.153)
Age	-0.015**	-0.015**	-0.012	-0.048
	(0.007)	(0.007)	(0.009)	(0.077)
Age Squared	0.000*	0.000*	0.000	0.001
	(0.000)	(0.000)	(0.000)	(0.001)
Primary Education	-0.002	0.001	0.002	-0.069
	(0.018)	(0.018)	(0.025)	(0.148)
Secondary Education	-0.024*	-0.021	-0.012	-0.160
	(0.013)	(0.013)	(0.016)	(0.268)
Vocational Training	-0.043***	-0.040**	-0.037	-0.087
	(0.017)	(0.016)	(0.024)	(0.354)
Tertiary Education	-0.028	-0.028	-0.014	-0.134
	(0.024)	(0.024)	(0.028)	(0.378)
Married	0.031	0.028	0.015	0.184
	(0.026)	(0.026)	(0.028)	(0.397)
Cohabitating	0.029	0.026	0.026	0.208
	(0.028)	(0.028)	(0.031)	(0.440)
Widowed	0.024	0.023	0.028	-0.029
	(0.037)	(0.037)	(0.045)	(1.102)
Divorced	0.012	0.013	0.008	0.174
	(0.028)	(0.029)	(0.031)	(0.334)
Separated	-0.006	-0.010	-0.002	0.186
	(0.036)	(0.036)	(0.038)	(0.607)
Television	0.031	0.031	0.047	
	(0.025)	(0.025)	(0.034)	
Radio	-0.007	-0.006	-0.014	
	(0.012)	(0.012)	(0.015)	
Electricity	-0.020	-0.020	-0.013	
	(0.019)	(0.019)	(0.022)	
Urban Household	-0.022	-0.020		
	(0.015)	(0.015)		
Constant	0.307**	0.329**	0.293*	0.843
	(0.127)	(0.138)	(0.169)	(1.386)
Observations	4,181	4,181	4,181	4,181
R-squared	0.081	0.084	0.259	0.923
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 8. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Guinea 2012

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.313***	0.312***	0.302***	0.260**
	(0.041)	(0.042)	(0.040)	(0.123)
Age	-0.002	-0.003	-0.002	0.007
	(0.004)	(0.004)	(0.004)	(0.011)
Age Squared	0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.023	-0.023	-0.021	-0.009
	(0.017)	(0.017)	(0.017)	(0.050)
Secondary Education	-0.172***	-0.171***	-0.169***	-0.121***
	(0.021)	(0.021)	(0.021)	(0.045)
Higher Education	-0.349***	-0.353***	-0.347***	-0.284***
	(0.035)	(0.035)	(0.037)	(0.102)
Married	0.079***	0.081***	0.073***	0.067
	(0.015)	(0.016)	(0.016)	(0.049)
Cohabitating	0.034	0.023	0.011	0.086
	(0.054)	(0.053)	(0.059)	(0.159)
Widowed	0.048	0.051	0.046	-0.007
	(0.048)	(0.047)	(0.048)	(0.109)
Divorced	-0.043	-0.044	-0.052	-0.016
	(0.048)	(0.047)	(0.048)	(0.115)
Separated	0.125**	0.111*	0.122**	0.072
	(0.059)	(0.058)	(0.059)	(0.185)
Television	-0.006	-0.010	0.003	
	(0.026)	(0.025)	(0.028)	
Radio	-0.027**	-0.021*	-0.014	
	(0.012)	(0.012)	(0.012)	
Electricity	-0.042	-0.061**	-0.057	
	(0.031)	(0.030)	(0.037)	
Urban Household	-0.073***	-0.086***		
	(0.021)	(0.022)		
Constant	0.650***	0.663***	0.629***	0.348*
	(0.077)	(0.083)	(0.075)	(0.188)
Observations	8,607	8,607	8,607	8,607
R-squared	0.190	0.198	0.256	0.762
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 9. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Guinea-Bissau 2006

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.269***	0.269***	0.242***	0.083
	(0.023)	(0.023)	(0.023)	(0.065)
Age	-0.004	-0.004	-0.003	-0.000
	(0.006)	(0.006)	(0.006)	(0.010)
Age Squared	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.148***	-0.146***	-0.126***	-0.084*
	(0.018)	(0.018)	(0.019)	(0.048)
Secondary Education	-0.196***	-0.194***	-0.176***	-0.106*
	(0.021)	(0.022)	(0.023)	(0.062)
Higher Education	-0.196***	-0.193***	-0.184**	-0.078
	(0.068)	(0.069)	(0.076)	(0.062)
Non-standard Education	-0.001	0.001	-0.024	-0.118
	(0.071)	(0.072)	(0.067)	(0.079)
Married	0.055***	0.054**	0.041*	0.023
	(0.021)	(0.021)	(0.021)	(0.034)
Cohabitating	-0.014	-0.016	-0.022	-0.054
	(0.026)	(0.026)	(0.026)	(0.063)
Widowed	0.068	0.067	0.073*	0.093
	(0.041)	(0.041)	(0.042)	(0.094)
Divorced	-0.031	-0.033	-0.038	-0.086
	(0.026)	(0.026)	(0.030)	(0.091)
	(0.018)	(0.018)	(0.021)	
Television	-0.057**	-0.057**	-0.045*	
	(0.024)	(0.024)	(0.025)	
Radio	0.017	0.018	0.019	
	(0.016)	(0.016)	(0.017)	
Electricity	0.004	0.003	0.014	
	(0.022)	(0.022)	(0.021)	
Urban Household	-0.127***	-0.126***		
	(0.018)	(0.018)		
Constant	0.788***	0.815***	0.903***	1.128***
	(0.127)	(0.129)	(0.152)	(0.261)
Observations	6,431	6,431	6,431	6,431
R-squared	0.484	0.485	0.544	0.867
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 10. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Mali 2012

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.551***	0.549***	0.494***	0.352***
	(0.028)	(0.028)	(0.029)	(0.121)
Age	-0.008**	-0.007**	-0.008**	-0.006
	(0.003)	(0.003)	(0.004)	(0.016)
Age Squared	0.000*	0.000*	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.050***	-0.051***	-0.051***	-0.052
	(0.017)	(0.017)	(0.017)	(0.069)
Secondary Education	-0.104***	-0.104***	-0.102***	-0.080
	(0.016)	(0.015)	(0.016)	(0.071)
Higher Education	-0.253***	-0.259***	-0.245***	-0.272*
	(0.037)	(0.037)	(0.036)	(0.143)
Married	0.038**	0.038**	0.044**	0.025
	(0.017)	(0.017)	(0.017)	(0.071)
Cohabitating	0.018	0.018	0.029	0.065
	(0.030)	(0.030)	(0.032)	(0.123)
Widowed	0.025	0.023	0.043	0.071
	(0.045)	(0.046)	(0.048)	(0.173)
Divorced	-0.024	-0.022	0.010	0.064
	(0.058)	(0.057)	(0.059)	(0.287)
Separated	0.027	0.029	0.037	0.087
	(0.054)	(0.053)	(0.052)	(0.161)
Television	-0.038***	-0.039***	-0.025**	
	(0.011)	(0.011)	(0.011)	
Radio	0.017*	0.018*	0.020**	
	(0.010)	(0.010)	(0.010)	
Electricity	0.027*	0.022	0.027*	
	(0.016)	(0.015)	(0.014)	
Urban Household	0.027	0.007		
	(0.018)	(0.019)		
Constant	0.243***	0.247***	0.498***	0.595**
	(0.080)	(0.081)	(0.058)	(0.253)
Observations	9,202	9,202	9,202	9,202
R-squared	0.274	0.276	0.345	0.859
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 11. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Niger 2012

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.218***	0.223***	0.198***	0.021
	(0.046)	(0.044)	(0.051)	(0.116)
Age	-0.003	-0.003	-0.003	-0.001
	(0.002)	(0.002)	(0.002)	(0.004)
Age Squared	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.007	-0.007	-0.008	-0.012
	(0.006)	(0.006)	(0.006)	(0.017)
Secondary Education	-0.009**	-0.013***	-0.007	-0.012
	(0.005)	(0.005)	(0.006)	(0.018)
Higher Education	-0.023***	-0.023***	-0.017**	-0.016
	(0.008)	(0.007)	(0.008)	(0.020)
Married	0.010*	0.008	0.010	0.005
	(0.006)	(0.006)	(0.006)	(0.022)
Cohabitating	0.004	0.004	0.004	0.003
	(0.007)	(0.008)	(0.013)	(0.011)
Widowed	0.033	0.030	0.032	-0.004
	(0.021)	(0.020)	(0.021)	(0.030)
Divorced	0.027*	0.024	0.015	-0.000
	(0.015)	(0.015)	(0.012)	(0.026)
Separated	0.005	0.001	-0.002	0.010
	(0.012)	(0.011)	(0.011)	(0.020)
Television	0.002	0.002	0.002	
	(0.005)	(0.005)	(0.005)	
Radio	0.000	-0.000	-0.002	
	(0.005)	(0.005)	(0.005)	
Electricity	-0.016***	-0.017***	-0.014**	
	(0.005)	(0.005)	(0.006)	
Urban Household	-0.019***	-0.024***		
	(0.007)	(0.008)		
Constant	0.084***	0.086**	0.016	0.048
	(0.029)	(0.034)	(0.028)	(0.059)
Observations	4,474	4,474	4,474	4,474
R-squared	0.165	0.180	0.373	0.910
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	No	No	No	No
Religion Fixed Effects	No	No	No	No
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Note: Religion and ethnicity dummies were not available for this country-year.

Table 12. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Nigeria 2013

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.292***	0.291***	0.253***	0.154***
	(0.012)	(0.012)	(0.012)	(0.049)
Age	-0.002	-0.002	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.009)
Age Squared	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.015	-0.017	-0.010	-0.038
	(0.012)	(0.012)	(0.010)	(0.048)
Secondary Education	-0.030**	-0.031**	-0.022*	-0.031
	(0.013)	(0.013)	(0.011)	(0.054)
Higher Education	-0.083***	-0.084***	-0.064***	-0.107
	(0.015)	(0.015)	(0.013)	(0.067)
Married	-0.011	-0.011	-0.011	0.022
	(0.009)	(0.009)	(0.009)	(0.045)
Cohabitating	-0.003	-0.005	-0.003	-0.029
	(0.016)	(0.016)	(0.016)	(0.097)
Widowed	0.005	0.006	0.003	-0.009
	(0.016)	(0.016)	(0.017)	(0.083)
Divorced	0.002	0.003	-0.004	-0.035
	(0.024)	(0.024)	(0.023)	(0.099)
Separated	-0.004	-0.004	-0.021	0.029
	(0.021)	(0.021)	(0.021)	(0.115)
Television	-0.021***	-0.022***	-0.014**	
	(0.007)	(0.007)	(0.007)	
Radio	-0.013*	-0.012*	-0.013	
	(0.007)	(0.007)	(0.008)	
Electricity	-0.009	-0.007	0.010	
	(0.010)	(0.010)	(0.013)	
Urban Household	-0.005	-0.004		
	(0.011)	(0.011)		
Constant	0.135***	0.203***	0.262	-0.231
	(0.036)	(0.061)	(0.169)	(0.246)
Observations	21,336	21,336	21,336	21,336
R-squared	0.339	0.339	0.415	0.906
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	No	No	No	No
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Note: Ethnicity dummies were not available for this country-year.

Table 13. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Senegal 2010

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.411***	0.392***	0.326***	0.228***
	(0.022)	(0.021)	(0.020)	(0.048)
Age	-0.009**	-0.010**	-0.009**	-0.009
	(0.004)	(0.004)	(0.004)	(0.007)
Age Squared	0.000	0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.054***	-0.054***	-0.043***	-0.050**
	(0.014)	(0.014)	(0.013)	(0.021)
Secondary Education	-0.134***	-0.131***	-0.122***	-0.115***
	(0.014)	(0.014)	(0.013)	(0.031)
Higher Education	-0.068	-0.061	-0.069	-0.064
	(0.051)	(0.049)	(0.049)	(0.067)
Married	0.023	0.031**	0.031**	0.036**
	(0.015)	(0.015)	(0.014)	(0.017)
Cohabitating	-0.116**	-0.111**	-0.088**	-0.005
	(0.051)	(0.052)	(0.042)	(0.090)
Widowed	-0.032	-0.039	-0.033	0.047
	(0.045)	(0.043)	(0.045)	(0.065)
Divorced	-0.002	0.005	0.009	0.027
	(0.027)	(0.027)	(0.027)	(0.046)
Separated	-0.032	-0.024	-0.016	0.050
	(0.056)	(0.056)	(0.054)	(0.101)
Television	-0.006	-0.012	0.004	
	(0.016)	(0.015)	(0.015)	
Radio	0.019	0.021	0.012	
	(0.013)	(0.013)	(0.013)	
Electricity	-0.004	-0.015	-0.009	
	(0.018)	(0.018)	(0.017)	
Urban Household	-0.047***	-0.039**		
	(0.018)	(0.018)		
Constant	0.185***	0.302***	0.274***	0.309**
	(0.065)	(0.069)	(0.060)	(0.123)
Observations	13,160	13,160	13,160	13,160
R-squared	0.404	0.422	0.481	0.768
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 14. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Sierra Leone 2010

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.349***	0.350***	0.347***	0.402
	(0.026)	(0.026)	(0.029)	(0.464)
Age	-0.004	-0.004	-0.006	-0.006
	(0.006)	(0.006)	(0.007)	(0.033)
Age Squared	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.001)
Primary Education	-0.039	-0.040	-0.020	-0.077
	(0.025)	(0.025)	(0.029)	(0.133)
Secondary Education	-0.173***	-0.172***	-0.162***	-0.172
	(0.031)	(0.031)	(0.034)	(0.279)
Higher Education	-0.294***	-0.291***	-0.287***	-0.180
	(0.068)	(0.067)	(0.078)	(0.405)
Married	-0.001	-0.001	-0.015	-0.064
	(0.027)	(0.027)	(0.030)	(0.261)
Cohabitating	0.006	0.005	0.003	-0.196
	(0.046)	(0.045)	(0.054)	(0.441)
Widowed	-0.004	-0.002	0.008	-0.093
	(0.043)	(0.043)	(0.047)	(0.360)
Divorced	0.087	0.074	-0.022	0.159
	(0.094)	(0.090)	(0.073)	(0.499)
Separated	-0.001	-0.004	-0.017	-0.020
	(0.037)	(0.037)	(0.039)	(0.266)
Television	-0.016	-0.014	-0.005	
	(0.034)	(0.034)	(0.035)	
Radio	-0.053***	-0.053***	-0.036***	
	(0.012)	(0.012)	(0.013)	
Electricity	-0.018	-0.021	-0.010	
	(0.032)	(0.032)	(0.037)	
Urban Household	-0.024	-0.020		
	(0.020)	(0.021)		
Constant	0.449***	0.479***	0.461***	1.052
	(0.148)	(0.148)	(0.164)	(0.796)
Observations	7,232	7,232	7,232	7,232
R-squared	0.325	0.328	0.393	0.925
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 15. LPM Estimation Results for Whether Respondents Think FGC Should Continue—Togo 2010

	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue, = 0 Otherwise.				
Underwent FGC	0.110***	0.109***	0.087***	0.032
	(0.023)	(0.023)	(0.024)	(0.041)
Age	-0.005	-0.005	-0.003	-0.005
	(0.003)	(0.003)	(0.003)	(0.008)
Age Squared	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.003	-0.003	0.003	0.002
	(0.008)	(0.008)	(0.009)	(0.023)
Secondary Education (Collège)	-0.008	-0.009	-0.003	0.012
	(0.007)	(0.007)	(0.008)	(0.013)
Secondary Education (Lycée)	-0.018	-0.020*	-0.010	0.006
	(0.011)	(0.011)	(0.012)	(0.037)
Married	0.017	0.018	0.010	-0.001
	(0.012)	(0.012)	(0.013)	(0.039)
Cohabitating	0.015	0.014	0.007	0.017
	(0.012)	(0.012)	(0.015)	(0.055)
Widowed	0.018	0.017	0.016	-0.018
	(0.018)	(0.018)	(0.021)	(0.041)
Divorced	0.012	0.011	-0.016	-0.014
	(0.015)	(0.015)	(0.018)	(0.037)
Separated	0.015	0.017	0.009	0.000
	(0.012)	(0.012)	(0.013)	(0.028)
Television	0.004	0.003	0.009	
	(0.009)	(0.009)	(0.009)	
Radio	-0.007	-0.007	-0.004	
	(0.008)	(0.008)	(0.009)	
Electricity	0.007	0.008	-0.001	
	(0.008)	(0.007)	(0.009)	
Urban Household	-0.011	-0.011		
	(0.007)	(0.007)		
Constant	0.100**	0.090**	0.007	0.131
	(0.045)	(0.046)	(0.070)	(0.144)
Observations	3,843	3,843	3,843	3,843
R-squared	0.139	0.143	0.265	0.908
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Religion Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1