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Peacekeeping and the Prevalence of Female Genital Cutting in Sierra Leone

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Abstract

While the Sierra Leone government is under pressure from the international community to ban the practice of female genital cutting, very few among the politicians and civil society are willing to abolish a practice that is seen as a prerequisite to mark the entry into adulthood. Cultural practices, however, are not immutable. In this article, we postulate that the peacekeepers' presence in Sierra Leone during the 2000-2005 UNASMIL mission caused a shift in the female genital cutting practice. Using a difference-in-differences identification strategy and data from three waves of the Demographic and Health Surveys, carried out in 2008, 2013, and 2019, we show that women who were 19 years or younger at the start of the mission and who live within a 10-kilometre radius of a peacekeeper base have a 2.2 percentage point lower probability of being cut. The result holds for a variety of robustness checks. We provide evidence that peacekeepers' demand for transactional sex is likely driving the results.

JEL classification

J16, N37, N47

Keywords

female genital cutting, norms diffusion, peacekeepers, Sierra Leone war, transactional sex

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1 Introduction

Female genital cutting (FGC) is the practice of altering female genitals for non-medical reasons. It is practiced mainly in Africa and in some countries in the Middle East and Asia ([World Health Organization, 2025](#)). Despite the Sustainable Development Goals to eliminate the practice by 2030 (Target 5.3), an estimated 230 million women worldwide have undergone FGC, with an additional 4 million girls cut each year ([World Health Organization, 2025](#)).

FGC takes different forms. Infibulation, also known as type 3, is the most invasive form, as the female genitalia are sewn closed, with only a small opening, the size of a crayon tip, left for urine and menses to flow out. Types 1 and 2, namely clitoridectomy and excision, involve removing flesh, such as the clitoral hood or the whole or part of the clitoris, and may include removing some or all of the labia minora and labia majora. Type 4 consists of any other procedures done on the female genitals, such as cauterization and pricking ([World Health Organization, 2025](#)).

Given its potentially significant health risks ([Chibber et al., 2011](#)) and the fact that it is performed on children, who are unable to give informed consent to a permanent modification of their bodies, the international community strongly condemns FGC.¹ Many countries have banned the practice and launched campaigns to eradicate it. Sierra Leone, however, is an exception, as at the time of writing no law banning FGC has been enacted ([Evaborhenea et al., 2025](#)), except for a short ban during the Ebola epidemic ([Bjälkander et al., 2016](#)).

The prevalence and the type of FGC practised evolve over time and across space. Some

¹FGC is problematic for two reasons. First, while there is no known benefit of performing FGC, there are possibly very high costs in the procedure, with short-term risks, such as excessive bleeding and infection, and long-term risks, such as complications during childbirth and trauma. While one could argue that women are free to choose what is done to their bodies, FGC is problematic in the sense that it is usually performed on minors, including infants, who cannot resist a procedure that permanently modifies their bodies and can entail serious consequences for themselves and for their future children ([Banks et al., 2006](#); [Chibber et al., 2011](#); [Innocenti Research Centre, 2005](#); [World Health Organization, 2025](#)). It is thus not only problematic from a health perspective but also from a human rights perspective.

countries, such as Yemen, adopted FGC during the 20th century ([Innocenti Research Centre, 2005](#)), while others, such as Egypt, have practised for thousands of years ([Boyle, 2005](#)). While a few countries, such as the Central African Republic, have seen an increase in the prevalence of Type 1, the most invasive form, other countries have seen an increase in the prevalence of the much milder Type 4, such as Chad (authors' calculations based on various Demographic and Health Surveys). This raises the question of how norms surrounding FGC spread.

In this article, we postulate that one factor driving changes in FGC norms is the presence of peacekeepers. Peacekeepers' presence is known to attract prostitutes ([Mendelson, 2005](#)), notably child prostitutes ([Machel, 2001](#)), and results in an increase in transactional sex ([Wheeler, 2020](#)). As peacekeepers have sexual intercourse with people from the local community, they will encounter various modifications to the female genitals. They may bring this knowledge back to their home country, or introduce the local population to a form of FGC practiced there, or to the absence of FGC. In this article, we focus on the impact of peacekeepers' presence on the local population's practice of FGC.

Implementing a difference-in-differences identification strategy on the Demographic and Health Surveys (henceforth, DHS) carried out in Sierra Leone in 2008, 2013, and 2019, we find that girls 19 years or younger at the arrival of UNASMIL peacekeepers in Sierra Leone and living within a 10-kilometre radius of a base experienced a 2.2 percentage point (p.p.) lower probability of being cut. To the best of our knowledge, this article is the first to link peacekeeping missions and change in FGC prevalence.

The remainder of this article is organized as follows. In [section 2](#), female genital cutting in Sierra Leone is discussed, followed by a brief discussion of the war and the UNASMIL peacekeeping mission in [section 3](#). Sections [4](#) and [5](#) present the data and the estimation strategy, respectively, and [section 6](#) reports the empirical results. Section [section 7](#) discusses the mechanisms. Finally, [section 8](#) concludes.

2 Female Genital Cutting: The Bondo Society

In Sierra Leone, FGC typically occurs as girls are initiated into a female-only secret society, known as the Bondo society (Mgbako et al., 2010). Girls are taken to the Bondo bush, a specific area a few kilometres away from the village, to be initiated into the society (Mgbako et al., 2010). While the order of activities may vary from one area to another, there are always two key components to the initiation: FGC and the teaching of skills believed necessary for adulthood, such as managing a household, behaving as a wife, and fulfilling one's role within the sisterhood (Mgbako et al., 2010). The Bondo session is led by a Soweï, a traditional hereditary birth attendant with significant political power (Mgbako et al., 2010; O'Carroll, 2015), who is trained to perform FGC (Mgbako et al., 2010). Since one or at most a few Soweï perform FGC on all girls initiated in the community, we can expect the type of FGC to be the same for girls of similar age within a specific community.²

Being a member of the Bondo society offers numerous advantages to women. First, membership might be considered necessary to marry (Bjälkander et al., 2012; Mgbako et al., 2010). It also provides a female-only support system that can, for example, intervene in cases of marital conflict (Coulter, 2009, p. 60). Moreover, all Bondo members are invited to the Bondo bush when it is in session, allowing them weeks of rest, dance, singing, plentiful free food, and freedom from men, as men cannot interfere or know what happens there (Mgbako et al., 2010). Finally, initiation into the society marks the transition from childhood to adulthood, often involving celebrations and gifts for the initiated girls (Bjälkander et al., 2012; Mgbako et al., 2010).

While in many countries, FGC is performed on infants or very young children, in Sierra Leone, it is usually performed on girls at the onset of puberty. The average age at FGC

²DHS questions are not sufficiently precise for us to determine the extent of flesh removed. Moreover, given that women may not know exactly which part was removed, gynecological exams would need to be carried out to ascertain that Soweï perform a consistent type of cut on all girls. This is an interesting avenue for future research.

is 11 years, with only slight variations over time (Online Supplement [Figure O.1](#)). That said, 16% of girls who have undergone FGC were cut as infants, and we observe women being cut at various ages, but rarely past the age of 19 years, as 97% of women who have undergone FGC have been cut before they turn 20 (the distribution of age at FGC is available in Online Supplement [Figure O.2](#)).³

Sierra Leone is home to 8 main ethnic groups. The Temne and the Mende are the largest groups, each representing about 30% of the population (authors' calculation based on DHS data). The only ethnic group that does not traditionally belong to the Bondo society is the Krio, the descendants of liberated slaves who migrated to Sierra Leone in the late 18th century and throughout the 19th century ([Fyfe, 2025](#)). The Krio are primarily found in Freetown, the capital ([Fyfe, 2025](#)). While the type of cut performed will likely vary by ethnicity, inter-ethnic and interfaith marriages are common in Sierra Leone ([Coulter, 2009](#)). FGC is thus the norm across all ethnic groups, with a prevalence of at least 90% except among the Krio.

FGC is not a social norm that is openly discussed. In Sierra Leone, FGC is usually done under the umbrella of the Bondo society, a female-only secret society. Talking to non-initiates about what happens within the Bondo bush is extremely taboo ([Mgbako et al., 2010](#)).⁴ Thus, for a population to gain access to knowledge about other ways to practice FGC, or its absence, we need the two populations to interact in a way that can lead to an understanding of what female genitalia in a different community look like.⁵

There is thus a growing interest in the FGC literature on understanding how external forces influence local practice. [Congdon Fors et al. \(2024\)](#), using data from across Africa,

³While FGC is predominantly performed during childhood, a husband may ask his newlywed wife to undergo FGC ([Mgbako et al., 2010](#)).

⁴The secrecy surrounding FGC is not unique to Sierra Leone. For example, in Egypt, until the first DHS collected data on FGC (1995), it was believed that FGC was performed only by a small fraction of the population ([Boyle, 2005](#)), whereas among women born in the 1990s, and at least 21 at the time of DHS data collection, 84% have been cut (authors' calculation based on various DHS data).

⁵[Gruenbaum \(2001\)](#) contrasts FGC and facial scarification in Sudan. While facial scarification fell out of fashion in some groups, others observed the change and decided to follow suit. This is obviously not possible with changes to the female genitalia, as it is not openly displayed.

conclude that living within 10 kilometres of a historic Christian mission reduces the probability of having undergone FGC by 4-6 p.p. compared to someone living 100 kilometres from a mission, showing that the cultural change continues decades after the initial impetus. [Diabate & Mesplé-Somps \(2019\)](#) examine the impact of migrant returnees in Mali and find evidence that returnees who migrated to Côte d’Ivoire, a country with a low prevalence of FGC, reduce the prevalence of FGC in their communities. No such effect is found for returnees who migrated to non-African countries (i.e., countries that ban FGC and usually target African migrants with information campaigns against FGC) or to African countries with high FGC prevalence. [Diabate & Mesplé-Somps \(2019\)](#) thus demonstrate that it is not the process of migration itself that caused the change, but rather the exposure to a population with similar characteristics (Cote d’Ivoire shares a border with Mali) that do not routinely practice FGC. This article inscribes itself in this nascent literature.

3 The Sierra Leone war and the peacekeeping missions

At the onset of the civil war, Sierra Leone was an impoverished country, ranking 134 out of 141 countries in the 1990 Human Development Index ([UNdata, 2025](#)). While there were many factors behind the onset of the civil war, youth dissatisfaction with the corrupt government of Joseph Momoh played a role, alongside Charles Taylor’s desire, as the Liberian president at the time, to unite the countries in the Mano River region and control the rich diamond mines of Sierra Leone.

On March 23, 1991, the Revolutionary United Front (RUF) led by Sankoh attacked bordering towns from Liberia. What was initially thought to be a small localized unrest that would easily be crushed turned into a full-scale 11-year civil war that engulfed the

whole country.⁶

The war was ruthless, with a level of atrocities similar to the Rwanda genocide (Coulter, 2009). Half of the country's population was displaced through the war, and approximately 50,000 people were left dead (Coulter, 2009). While the RUF played a central role in the kidnapping, rape, mutilation and murder of the civilian populations, all involved actors during the civil war committed atrocities.

To help restore democracy, the Economic Community of West African States (ECOWAS) deployed peacekeepers from 1997 to 2001. The ECOMOG (Economic Community of West African States Monitoring Group) mission deployed up to 10,000 soldiers, mostly originating from Nigeria, and under the command of a Nigerian (Gberie, 2003).

The UN's involvement in Sierra Leone began only in 1998, when a small observer mission, UNOMSIL (United Nations Observer Mission in Sierra Leone), was established, with a maximum deployment of a mere 41 military personnel (Department of Peacekeeping Operations, 2025). The security situation was such that most UN observers had to be evacuated in January 1999 (Olonisakin, 2008), and it was agreed that UNOMSIL would be replaced by a more substantial mission, UNAMSIL (United Nations Mission in Sierra Leone), in October 1999. The first UNAMSIL troops arrived in 2000, with troop strength reaching over 17,000 in 2002 (Department of Peacekeeping Operations, 2005a), for a population of about 5 million (World Bank, 2025).

Peacekeepers are overwhelmingly young males. The troops are often posted for long stretches, far from home, and are relatively wealthy compared to the local population. This, taken together, results in a significant demand for sex and the ability to pay for the service, which has been noted in multiple peacekeeping missions (Al-Hussein, 2005; Allred, 2006; Lee & Bartels, 2020).^{7, 8}

⁶A peace treaty was signed on January 18, 2002.

⁷Given the socio-economic differences and the power relation between the peacekeepers and the local population, any sexual relation can be considered abusive (Wheeler, 2020).

⁸While the United Nations has tried to reduce the use of prostitutes by soldiers under its command, the process is riddled with difficulties. Indeed, peacekeepers often have judicial immunity in the host

Compounding the problem further was the limited range of productive activities available to girls and women after the war. Transactional sex was thus a means of accessing necessities, such as food and employment. There is even anecdotal evidence that some parents were asking their daughters to sell sexual services to the peacekeepers to provide for the family (UNHCR and Save the Children-UK, 2002). As for former female rebels, while during the disarmament periods many returned to their natal family without their bush husband, not all were accepted back, and transactional sex became one way to provide for themselves and their bush children (Coulter, 2009).^{9, 10} While we could not find an estimate of the prevalence of transactional sex with peacekeepers in Sierra Leone, such a figure exists for Liberia, a country sharing a border with Sierra Leone and that also had two civil wars in the late 20th century¹¹, and a very large blue helmets presence. Based on Beber et al. (2017), more than half of women aged 18 to 30 in Monrovia, the capital of Liberia, were engaged at least once in transactional sex, more than three-quarters of whom with UN peacekeepers.

Very few studies look at the sex economy near UNASMIL bases. The limited evidence available points toward a strong peacekeepers' sex work economy around some bases, notably around Freetown. Some bars, hotels, and beaches around Freetown were notorious for being places where peacekeepers were seen with young local girls (Higate, 2004).¹² There are also accounts of women welcoming upcoming peacekeepers at the

country, and the umbrella under which the operation takes place, i.e. the UN, has no power to put soldiers on trial. It is the soldiers' lending organization that has the power to punish misconduct. As a result, it is rare that peacekeepers who commit crimes, including rape, are punished (Higate, 2004).

⁹Among rebels, an estimated 30% of fighters were women and 37% were children, half of whom were girls (Coulter, 2009). While some women joined the RUF willingly, most were abducted, gang raped multiple times, before becoming a bush wife (i.e. married to a rebel who will get exclusive access to sexual services from his wife) (Coulter, 2009). The role of women during the war varied, from doing domestic chores to being sexual slaves. Almost all women were trained to fight, and many took responsibility for planning and commanding functions, alongside their bush husbands (Coulter, 2009).

¹⁰While training and financial support were provided to former rebels to help them reintegrate society during the disarmament period, female rebels were mostly overlooked, despite women having made up one third of the rebel force. This left former female rebels with no real means to support themselves outside of transactional sex, particularly for those whose natal family rejected them (Coulter, 2009).

¹¹The Sierra Leone and the Liberia wars were both involving Charles Taylor, who was president of Liberia at that time.

¹²While sex work was not confined to those under 18 years old, a common theme is that of peacekeepers experimenting with sex with teenagers (mostly girls, but also, to a much lesser extent, boys) (Higate,

airport (Hastings base) (Higate, 2004). Sex work would, however, not be restricted to brothels, as there are accounts of children being approached by peacekeepers or going near the peacekeeper base and engaging in sexual activities in exchange for money or small gifts, such as food (UNHCR and Save the Children-UK, 2002). Higate (2004), comparing the sex economy near UN peacekeepers' bases in Sierra Leone and the Democratic Republic of Congo, notes that prostitution was more discreet in Sierra Leone than in the Democratic Republic of Congo, suggesting that brothels were not as common.

While peacekeepers from various nations have engaged in sexual activities with the local population, Higate (2007) makes clear that the payment varied with the country of origin of the peacekeepers, with peacekeepers from poorer countries paying around 1 USD per sex act, while peacekeepers from richer nations paid up to 50 USD. It is thus not hard to imagine that peacekeepers from the richest nations would be the most attractive partners/clients.

Higate (2007) also points out that, depending on the commander, the base rules – such as strict adherence to curfews – and the availability of entertainment on the base, the sex economy near the base may or may not develop.

While we could not find any source linking transactional sex and female genital cutting, Higate (2007) discusses the case of a battalion feeling aghast that local women were not covering their breasts, which resulted in the distribution of t-shirts and the local chiefs being asked to urge the female population to cover up their breasts. There is thus evidence that at least one peacekeeper battalion was willing to challenge a local gender norm.

2007; UNHCR and Save the Children-UK, 2002).

4 Data

We pool data from three Demographic and Health Surveys (DHS) collected in Sierra Leone in 2008, 2013, and 2019.¹³ The three surveys are nationally representative and have information on women aged 15 to 49 years old. We restrict the sample to women aged 20 to 49 years to reduce the risk that a girl would be cut after the survey.¹⁴ The sample is further restricted to women born between 1970 and 1994 to ensure that there are at least 500 observations per birth year.¹⁵ This results in a sample of 24,942 women. Moreover, FGC was temporarily banned in Sierra Leone during the Ebola outbreak (Bjälkander et al., 2016), we thus exclude birth cohorts born after 1994, which are potentially the most affected by the ban. Indeed, uncut girls who were reaching the upper limit of traditional age to undergo FGC when the ban was implemented may have simply skipped the initiation, while younger girls may have postponed it. This birth-year-varying effect cannot be eliminated by the birth-year and cluster fixed effects in our model.

We link data from the Demographic and Health Surveys (DHS) with the Geocoded Peacekeeping Operations (Geo-PKO) Dataset. The Geocoded Peacekeeping Operations dataset contains information on all bases established by the UN during the peacekeeping operations, notably their dates of establishment (Figure 1)¹⁶, and their geographical coordinates. We match DHS respondents to the nearest UN base using their geographic coordinates. While the GEO-PKO data provide accurate geographical coordinates, DHS datasets do not release the exact location of a household. DHS uses a two-layer geographic masking to protect respondent anonymity. First, they aggregate all households in a

¹³An alternative data source for a nationally representative survey on FGC status is the Multiple Indicator Cluster Surveys (MICS) conducted in Sierra Leone in 2005, 2010, and 2017. However, the MICS does not include the households' geographic coordinates, which are essential for our estimation strategy.

¹⁴Among women aged at least 21 years old at the time of the survey, 97% of women who had undergone FGC had been cut by the time they turned 20.

¹⁵As women come from 3 different survey waves, we use their year of birth/age at the arrival of the first UNASMIL troops (2000), rather than their age at the time of the survey.

¹⁶While we do not have the exact date at which a base is established, we know the month and year at which the information about the base was first published on a UN map. For more information about the Geo.PKO dataset, see Cil et al. (2020)

cluster into a single point coordinate, and second, this point coordinate is randomly displaced within a 2-kilometre circular buffer area in urban areas and 5 kilometres in rural areas (Burgert et al., 2013).¹⁷ We thus use distance in bands rather than as a continuous variable and conduct a sensitivity analysis on the different bands in subsection 6.3.

[Table 1 about here]

A possible threat to our story is that peacekeepers participated in the reconstruction effort, for example, by rebuilding clinics (Department of Peacekeeping Operations, 2005b). If peacekeepers used clinics to inform the population on the risks associated with FGC, the observed effects could have been driven by efforts in eradicating FGC, rather than via sexual relations with the local population. A thorough search did not find any reports of peacekeepers addressing FGC via clinics. However, we cannot rule out the possibility that this detail was simply omitted from the written reports. In any case, the peacekeepers' presence would enable other organizations to implement development programs, some of which would likely aim to eradicate FGC. We thus also link DHS data with Sierra Leone AIMS Geocoded Research Release (Version 1.0), which includes geocoded health-related projects spanning from 2002 to 2013 from Sierra Leone's Development Assistance Database.

Prior to UNASMIL, ECOWAS established a peacemaking mission. The ECOMOG mission had up to 10,000 troops in Sierra Leone. The command, as well as the troops, were mostly composed of Nigerians (Gberie, 2003). The mission started in 1998 and ended in 2001, shortly after the arrival of the UNASMIL troops. The mission was underway before there was an effective peace treaty, and thus, ECOMOG was involved in much more fighting than UNASMIL. Given the size of the mission and its duration, it is very plausible that a sex industry was created near the ECOMOG bases. However, while there is good data on UNASMIL base location, information on the ECOMOG missions

¹⁷1% of randomly selected rural clusters are displaced within a 10-kilometre circular buffer area.

is significantly more patchy. We use Claude AI to scan the report “Sierra Leone Conflict Mapping Program” by the organization No Peace Without Justice, which gathered evidence of events related to the civil war at the chiefdom level, including ECOMOG presence.¹⁸ We consider that ECOMOG had a base in the chiefdom if their presence is reported.

5 Estimation Strategy

To estimate the causal effect of UN peacekeepers’ presence on FGC incidence, we exploit variation in girls’ exposure to UN peacekeepers across age and proximity to a base. This approach can be described as a birth-year $\times$ cluster difference-in-differences estimation strategy and is based on [Duflo \(2001\)](#).

We estimate the following linear probability model:

$$Y_{ict} = \alpha_0 + \beta_c + \delta_t + (P_c T_i)\gamma + H_{ict}\mu + E_{ict}\phi + \epsilon_{ict} \quad (1)$$

with:

- Y_{ict} : takes the value of 1 if woman i , living in cluster c , and born in year t has undergone FGC, and 0 otherwise.¹⁹
- P_c : takes the value of 1 if the cluster c is within 10 kilometres of the location of an

¹⁸DHS data does not contain information on the chiefdom of residence. We thus match cluster locations to a map of chiefdoms, assigning each cluster to its chiefdom. However, given the built-in uncertainty about distance in DHS, some clusters fall into chiefdoms that are not within their district, for which we have information in DHS. We kept the chiefdom assignment based on the geographic coordinates.

¹⁹FGC takes many different forms. For example, for those communities cutting off the clitoris, some would remove most of the clitoris while others would cut only the clitoral hood. The same can be said about the modifications to the labia minora and labia majora, not to mention all the possible combinations of those various modifications. However, the questions asked in DHS do not allow us to determine the extent of the cut, not even which part was modified. We can thus use only a blunt measure: whether FGC is practiced at all. Given that going from practicing FGC to not practicing FGC is a much more dramatic change in local customs than, say, the extent of clitoral cutting, our results are lower-bound estimates.

UNASMIL base, and 0 otherwise.²⁰

- T_i : takes the value 1 if the respondent i was born in 1981 or later (i.e., 19 years old or younger in 2000, when the first UNASMIL base was established), and 0 otherwise. We hypothesize that the presence of the base would not affect women born before 1981, as they would have been at least 20 years old when the first base was established and therefore past the age at which girls typically undergo FGC in Sierra Leone.
- H_{ict} : takes the value of 1 if cluster c is within 10 kilometres of a foreign aid health project and if the woman was 19 years or less at the time the first health-related project within 10 kilometers of her cluster took place, and 0 otherwise.
- E_{ict} : takes the value of 1 if the cluster c is located in a chiefdom in which the ECOMOG mission was present at any point during the mission and if the woman was 19 years or less when the first ECOMOG troops arrived in Sierra Leone (in 1997), and 0 otherwise.
- α_0 is a constant, β_c a set of cluster fixed effects, δ_t a set of year of birth fixed effects, and ϵ_{ict} is the error term.

Standard errors are adjusted for clustering at the primary sampling unit.

For peacekeepers to influence FGC prevalence, two conditions must be met. The peacekeepers' customs regarding FGC should differ from those of the local population, and the travelling distance between the base and the woman's residence should be sufficiently short to allow frequent interactions. The second criterion is part of our estimation strategy.

As for the first criterion, the contributing countries to the UNASMIL mission were Bangladesh, Germany, Ghana, Guinea, India, Indonesia, Kenya, Nepal, Nigeria, Pak-

²⁰10 kilometres from a base is also used by Bove et al. (2024) as the typical distance travelled by peacekeepers during patrol ranges from 5 to 10 kilometres.

istan, Russia, Ukraine and Zambia, half of whom do not practice FGC. Contributing countries believed to practice FGC to some extent are: Ghana, Guinea, India, Indonesia, Kenya and Nigeria. No data have been collected to quantify the prevalence of FGC in India and Indonesia, as FGC is not believed to be widespread in either country. As for Ghana, Kenya and Nigeria, we know from DHS data that the prevalence of FGC for women born in the 1980s was 6%, 28%, and 21%, respectively, significantly lower than in Sierra Leone. The only contributing country with a similar prevalence of FGC as Sierra Leone is Guinea, where 97% of women born in the 1980s have undergone FGC. Given that Guinea shares a border with Sierra Leone, it is to be expected that their marriage market will overlap to some extent. We thus cannot consider the Guinean troops to be introducing norms unfamiliar to the local population. Except for troops originating from Ghana, Guinea, Kenya, and Nigeria, other troops would have been unlikely to have encountered FGC in their home country.²¹

In an alternative specification, we replace T_i by a set of year-of-birth dummy variables (d_{it} equals 1 if the birth year of the woman i is t and 0 otherwise). The year-of-birth dummy for 1980 is the omitted category. This specification allows us to differentiate the impact of the peacekeeper presence by age at the onset of the UNASMIL mission, in 2000.

The following model is thus estimated using a Linear Probability Model:

$$Y_{ict} = \alpha_0 + \beta_c + \delta_t + \sum_{t=1970}^{1994} (P_c d_{it}) \gamma_t + M_{ict} \mu + E_{ict} \phi + \epsilon_{ict} \quad (2)$$

With: Y_{ict} , β_c , δ_t , P_c , H_{ict} , E_{ict} , T_i and X_c defined as in Equation 1. Standard errors are adjusted for clustering at the primary sampling unit.

²¹Ideally, we would differentiate the impact of proximity to a base with troops from non-FGC-practicing countries from proximity to a base with troops from FGC-practicing countries. In practice, this is not feasible, as bases usually host troops from more than one contributing country and thus include a mix of FGC-practicing and non-FGC-practicing peacekeepers. In any case, except for Guinean troops, the prevalence of FGC is significantly lower across all countries of origin than in Sierra Leone.

The key identifying assumption in our DID regressions is that, in the absence of treatment (i.e. peacekeepers' proximity), the FGC incidence trends evolve in parallel through the different birth cohorts for the treatment group – women located within 10 kilometres of a base – when compared to the control group – women located more than 10 kilometres away from a base. This assumption allows the treatment and control groups to differ; however, these differences must be fully accounted for by the birth-year and cluster fixed effects. This identifying parallel-trends assumption is not testable; however, we can provide supporting evidence that it is satisfied.

If the locations of the bases are correlated with the dependent variable, FGC incidence, for reasons other than the presence of peacekeepers, this would violate the parallel-trends assumption. There are strong reasons to believe that it is not the case. First, the peacekeepers were there to restore peace, not to fight FGC. The base's location was thus determined by the conflict situation. Moreover, FGC prevalence is very high across the country, with the only exception of Freetown, the capital city, where the Krio predominantly live. While there was an important peacekeepers' presence in and near Freetown, given that it is the seat of the government, there were bases located across the country, and the timing of their locations is unrelated to FGC, as [Figure 1](#) demonstrates.

[Equation 2](#) also serves as a validity test for the DID approach we implement. A common validity test used to support the parallel-test assumption is an assessment of the comparability of pre-treatment dynamics between the treated and the control groups. In other words, it is a testable hypothesis that all coefficient estimates on birth cohorts before 1981, i.e., $\hat{\gamma}_t$ for t between 1970 and 1980, are statistically zero in our model. The results are discussed in [subsection 7.1](#) and support the parallel trend assumption.

To provide additional evidence, we conduct two falsification tests to show that the relationship we estimate is not spurious and is not driven by any confounder that cannot be picked up by cluster fixed effects. In the first test, we estimate [Equation 1](#) and [Equation 2](#) on a placebo group (men) from the same population for a placebo outcome variable

(men’s circumcision). In the second test, we randomly assign a placebo treatment to half of the sample of women born between 1970 and 1980, who are thus too old to be affected by peacekeepers’ presence. We then estimate [Equation 1](#), repeat the exercise for 1000 iterations and report the mean and standard deviation of the placebo coefficient estimate ($\hat{\gamma}$). We discuss the results of both tests in [subsection 6.6](#).

6 Results

6.1 Descriptive Statistics

[Figure 2](#) presents the share of women, by year of birth, who have undergone FGC. The figure indicates that while there was no observable decrease in the prevalence of FGC for girls turning 19 during the civil war (1991-2002) or during the ECOMOG mission (1997-2001), we see a sharp decrease for girls 19 years old or less during the UNASMIL mission (2000-2005).

[[Figure 2](#) about here]

Among women who reported undergoing FGC and were at least 20 years old at the time of the Sierra Leone DHS surveys, 95% reported that some flesh was removed. 10% also reported that they had been sewn closed, and a mere 1.6% reported type 4. As [Bjälkander et al. \(2013\)](#) found no evidence of infibulation during gynecological exams in Sierra Leone, it is likely that respondents misunderstood the question about being sewn closed, as they are unlikely to be familiar with the practice of infibulation as carried out in other countries. In this article, we will thus study only FGC prevalence.

[Table 1](#) presents the proportion of women (20+) who have undergone FGC by various socio-demographic characteristics. The table presents the proportion for women born between 1970 and 1980, so who were at least 20 years old when the first UNASMIL troops

arrived, and for the full sample (women born between 1970 and 1994). Except for Krio, all ethnic groups have a prevalence above 90%. While Christian women are somewhat less likely than Muslim women to have undergone FGC, the prevalence remains above 80%. The same can be said for all districts, except the Western Area Urban District, where Krio predominantly live, and for both urban and rural areas, and for both women with some education and women with no education. Thus, with the exception of Krio, FGC is the norm for women from all socio-demographic backgrounds. Further descriptive statistics can be found in the Online Supplement ([Table O.1](#)),

[[Table 1](#) about here]

6.2 Main results

[Table 2](#) presents the estimation results for [Equation 1](#) using a linear probability model. Women who were 19 years old or less in 2000, when the first UNASMIL troops arrived, and living within 10 kilometres of a base have a 2.2 p.p. lower probability of having undergone FGC (Column 1), or a 2.3% decrease from the mean (93.3%).

However, as new troops were added over time and new bases were established up to 2004, not all women under 19 in 2000 were treated. [Table 3](#) shows the number of bases established in various years, and [Figure 1](#) shows their location. We thus re-estimate [Equation 1](#), excluding women born between 1981 and 1984, as their treatment status is ambiguous. The results presented in [Table 2](#) (Column 2) are consistent with the full sample, indicating that the treatment reduced the probability of undergoing FGC by 3 p.p. This coefficient also corresponds to a 3.2% decrease in the mean of the dependent variable (93.0%). Thus, as could have been predicted, the results from the full sample yield a lower-bound estimate.

The effect, however, is unlikely to be linear. Indeed, given that the average age at FGC is 11 years (authors' calculation using DHS data for women aged 20-49 years, see also Online

Supplement [Figure O.1](#)), the oldest girls in the treatment group have likely undergone FGC before the peacekeepers arrived and can thus not be influenced by their presence. We thus estimate [Equation 2](#), which includes individual-year-of-birth dummies interacted with proximity to the base. The results are presented in [Table 2](#) (Column 3) and [Figure 3](#). To test for a linear pre-trend for birth cohorts 1970-1980, we perform an F-test. We fail to reject the null of all γ_t 's being jointly zero (p-value: 0.2198). This is supporting evidence for our parallel trends assumption, which is the identifying assumption for a plausibly causal effect of peacekeepers' presence on FGC incidence.

To obtain a more efficient estimate of the effect of peacekeepers' presence on the prevalence of FGC by year of birth, the model is re-estimated with a control group consisting of women born between 1970 and 1980, as in [Duflo \(2001\)](#). The results are presented in [Table 2](#) (Column 4).²²

For women born between 1981 and 1984 (aged 16 to 19 in 2000 when the first UNASMIL troop arrived), we do not find a statistically significant impact of living near the base. This could be either because many in this age group have already been cut and thus their FGC status cannot be changed, or because we consider many of them to have been treated erroneously, as no troops have arrived within 10 kilometres of their cluster by the time they turn 19.

However, for women born between 1985 and 1988 (aged 12 to 15 years in 2000), we conclude that the presence of peacekeepers within 10 kilometres of their residence reduces the probability of undergoing FGC by 2.8-5.0 p.p.

We, however, lose statistical significance for those born between 1989 and 1991. Those girls would have been 14 to 16 years old in 2005, when the peacekeepers left. As the girls' mean age at first sex in Sierra Leone is 16, those would have been the girls starting, or about to start, their sexual lives. If parents consider the preference of men while deciding

²²[Table 2](#) (columns 5 and 6) re-estimates the same model as in Columns 3 and 4, respectively, but excluding women born between 1981 and 1984.

if their daughter should undergo FGC, the loss of significance might be due to parents preparing their daughter for a market with almost no foreigners with a preference for uncut girls.

For girls slightly younger, namely those born in 1992 or after (aged 13 years or younger when the peacekeepers left Sierra Leone), living within 10 kilometres of a base led to a significant reduction in the probability of being cut (3.8-6.6 p.p.), which would indicate a long-term impact of the peacekeepers' presence, as local men possibly started exhibiting a preference, or indifference, to uncut female partners.

Interestingly, while the presence of UNASMIL peacekeepers reduces the chance a girl will undergo FGC, the presence of ECOMOG peacekeepers increases it. Indeed, living in a chiefdom with ECOMOG peacekeepers present increased the probability of being cut by approximately 2 p.p. As FGC is practiced in Nigeria, the main ECOMOG contributing country, ECOMOG peacekeepers may have expressed a preference for FGC.

Finally, the security provided by UNASMIL peacekeepers enabled various organizations to implement development programs. Programs focusing on health or reproduction may have had a component targeting FGC. We find that women who had a health-related aid project set up within 10 kilometres of their cluster before turning 20 have about a 2.2 to 2.5 p.p. lower probability of being cut. While the focus of this article is on the impact of peacekeepers' presence on FGC, it is important to note that the sex economy was not only serving peacekeepers but also foreign donors' and NGOs' staff, some of whom were nationals and some foreigners. While we do not expect the incentive to perform FGC to change due to the presence of wealthy national workers paying for sex, given how common the practice is across the country, there are reasons to believe that expatriates, peacekeepers or not, would have an influence on FGC prevalence. While controlling for the presence of foreign aid health projects controls for possible exposure to anti-FGC messages, it also controls for the presence of foreigners. The coefficient thus should not be interpreted as the impact of the health project on FGC.

[Table 2 and Table 3 and Figure 3 about here]

6.3 Distance

For sexual interactions to take place, a girl/woman should be able to walk to the base easily, or the peacekeepers should be able to go and come back to the base rapidly. If we assume that a woman can walk 5 kilometres per hour, a return trip to a base 10 kilometres away would take 4 hours, which is possible but cumbersome. 10 kilometres is also the typical maximum patrol distance (Bove et al., 2024). Alternatively, sexual interactions could take place in a brothel. If brothels are indeed established and most of the transactional sex takes place within a brothel, the distance between the cluster of residence and the base should not be a huge advantage. To tease out those two options, Equation 1 is re-estimated using a donut-like estimator. More specifically, we include an interaction term between T_i , that is, woman i was 19 years or younger in 2000, and the cluster distance to the base, binned into [0-5],]5-10],]10-15],]15-20],]20-25], or 25+ kilometres. The results are presented in Table 2 (Column 7).

The results clearly indicate that proximity to the base matters. Women who were 19 years or younger in 2000 and lived within 5 kilometres of a base had a 3.3 p.p. lower probability of being cut, corresponding to a 3.5% decrease from a mean FGC incidence of 93.33%. While women less than 19 years old living within]5-10],]15-20],]20-25] kilometres are not significantly affected, those living]10-15] kilometres from the base are positively affected.²³

²³One possible explanation for the positive coefficient found for those living]10-15] kilometres from the base could be a cultural backlash. Those who live too far from a base to be able to participate in transactional sex may want to differentiate themselves from those who live near the base and participate in the sex economy. Prostitution remains taboo in Sierra Leone, and thus, while the appeal of the financial rewards may have been sufficiently strong to entice some girls to engage in transactional sex, those who live too far from the base to participate in the sex economy may have benefited from a marker, FGC, indicating that they were not having sexual relations with foreign men. Our data, however, do not allow us to test this hypothesis, and the cause of this positive coefficient remains a question for future research.

6.4 Socio-economic characteristics

In [Table 4](#), we split the sample by socio-economic characteristics, namely districts²⁴, location, ethnicity, religion and education.

When estimating [Equation 1](#) for each district, we find only 3 districts for which the coefficient estimates are statistically significant. For Port Loko and Western Area Rural, the coefficients indicate statistically significant decreases of 2.2 and 9.9 p.p. in the probability of FGC, respectively, or decreases of 2.3% and 11% relative to their mean. The very large impact found for Western Area Rural district can be explained by its proximity to Freetown, which we discuss later. The coefficient for the district of Koinagudugu is positive but statistically significant only at the 10% level.

As noted by [Higate \(2007\)](#), the sex economy did not develop next to every base. The commander's desire and ability to curb the sex economy would vary. Some of the troops were isolated, and thus, if commanders were also participating in the sex economy, a sub-culture could emerge ([Higate, 2007](#)). While overall we observe that the proximity to a base reduces FGC, it is not surprising to find that in some districts no significant effect is found, either due to a lack of transactional sex or due to peacekeepers being indifferent to FGC status, and, in the case of Koinagudugu, a positive effect is found, as peacekeepers may have valued FGC or there might have been a cultural backlash. Understanding what causes the sex economy to develop, or not, near peacekeepers' bases is an important avenue for future research.

The Western Area Urban District, in which Freetown is located, had only one UNASMIL base. However, three bases (Hastings, Goderich and Lakka), while located in the Western Area Rural District, are very near the edge of the Western Area Urban District. Because of the locations of those bases, very few residents of the Western Area Urban District in

²⁴Karene district was created in 2017 by splitting Bombali and Port Loko districts, while Falaba was created from Koinadugu, in both cases along the chiefdom lines. We thus used cluster locations to allocate them into chiefdoms, which we then used to reconstitute the 2017 districts in the 2008 and 2013 DHS samples.

our sample live more than 10 kilometres from a base, leading to collinearity when the model is estimated separately for the district. Given the importance of the sex economy in Freetown, the bases of Freetown, Hastings, and Lakka all come up in discussions of the sex economy in Sierra Leone (Higate, 2004); we analyze whether the Western Area Urban District is driving the results. All equations are thus re-estimated, excluding this region. While the coefficients are somewhat smaller, the effect on our key results is minimal (results available on request). There are only two noteworthy differences. First, once Freetown is excluded from the sample, we lose statistical significance for the model that disaggregates the impact by year of birth. This is likely due to age heaping, as age is not always known precisely, especially outside of Freetown.²⁵ Second, in the donut-like model, the coefficient for]5-10 kilometres] becomes positive and statistically significant. A likely explanation is that walking to the base is particularly cumbersome in rural areas.

As for ethnicity, girls aged 19 or younger when the first peacekeepers arrived and living within 10 kilometres of a base are significantly less likely to be cut among two of the largest ethnic groups, namely Temne and Limba (by 2.3 and 6.2 p.p., respectively). The results, however, do not reach statistical significance for the Mende and for the smaller ethnic groups, possibly due to the smaller sample size in the latter case.

In terms of religion and education, we find that the results are driven by the sample of Christian girls (4.4 p.p.) and by girls with some education (4.2 p.p.), two groups that had a lower prevalence before the UNASMIL troop arrived (Table 1). Interestingly, we also find that only women in urban areas are significantly affected by the treatment. The probability of undergoing FGC decreases by 4.1 p.p., or 4.6% from the mean. As prostitution is frowned upon in Sierra Leone, it might be easier to conceal the activity from acquaintances within the anonymity of urban areas. There might also be less

²⁵We analyze age heaping in the Western Area Urban District and outside the Western Area Urban District by plotting the age density. We observe significant age heaping at 0s and 5s, particularly outside of the Western Area Urban District. We also test whether the density heaping at these convenient age-rounding levels is statistically significant by regressing the counts at each age on a linear and quadratic trend and a suite of dummy variables indicating the 0s and 5s on the age grid. Results are as expected and are available on request.

pressure from Soweis and the local community in the urban area, allowing parents to quietly abandon the practice.

[[Table 4](#) about here]

6.5 Migration

A limitation of DHS data is that, while we know who has migrated at some point in their life, we do not know when or where they migrated. This is problematic given that 50% of our sample has migrated at some point in their lives.

There are two main causes of migration in Sierra Leone. First, given the level of atrocities committed against the civilian population during the war, one-third of the population was displaced at some point during the war ([Pagonis, 2008](#)). Displacement was often internal, such as moving to the bush while the rebels occupied the village. There were also international migrations, notably to refugee camps in neighbouring countries. Moreover, we can assume that most people would have returned to their old communities once the security level had increased. As a key objective of the UNASMIL mission was to enable the safe return of the displaced ([Department of Peacekeeping Operations, 2005b](#)), we can expect many refugees to have returned during the mission. However, we have no way to ascertain that this is the case.

Displacement could have brought about changes in people's beliefs regarding FGC. Given that FGC prevalence is very high across Sierra Leone, internal displacement would not have exposed refugees to radically different norms regarding FGC. The same reasoning applies to those who were internationally displaced. Sierra Leone shares borders with only two countries: Guinea and Liberia. Sierra Leone's main ethnic groups are found in the three countries, and so is the presence of the Bondo society ([Mgbako et al., 2010](#)). Therefore, not surprisingly, Guinea and Liberia also have a high prevalence of female genital cutting (97 and 38%, respectively, among women born in the 1980s, authors'

calculation based on various DHS).

That said, refugee camps would have received protection from international military forces, and there is qualitative evidence that transactional sex took place in those camps between the refugees and the international personnel ([UNHCR and Save the Children-UK, 2002](#)). It is thus likely that international refugees have been exposed to new norms regarding FGC. As the refugees would have originated from all over the country, the impact of being in proximity to foreign personnel while abroad would have been felt throughout Sierra Leone. The impact of living within 10 kilometres of a base is thus the effect after part of the population in the control and treatment areas has been potentially exposed to new FGC norms while in exile. Our results are therefore lower-bound estimates.

The second main reason for migration in Sierra Leone is rural-to-urban migration. While in 2000 35.5% of Sierra Leone’s population lived in urban areas, by 2019 this share had risen to 42.7% ([World Bank, 2026](#)). Rural-to-urban migration may have occurred at any time. As we only know the place of residence at the time of the survey, which we use to determine how far someone lives from a base, it is likely that some respondents’ proximity to the base when the peacekeepers were present is not measured accurately. As a robustness check, we have re-estimated the model excluding all respondents who have migrated at some point in their lives.²⁶ The results are presented in [Table 2](#) (Column 8) and are in line with the results for the full sample, thus providing supporting evidence that migration does not bias our main results.

Another type of migration would be women moving near the peacekeepers’ base to work in the sex economy. There are accounts of women, including from neighbouring countries, working as prostitutes in Sierra Leone ([UNHCR and Save the Children-UK, 2002](#)). While we could not find evidence of how widespread such migration was, we can expect that

²⁶As DHS 2013 did not collect information on migration, the sample is restricted to DHS 2008 and 2019.

those women would have faced a similar reaction from peacekeepers to female genital cutting as the local women. Thus, the control group, from which those migrant women are drawn, would have been contaminated. The observed effect is thus a lower-bound estimate.

6.6 Falsification tests

In Sierra Leone, men and women undergo circumcision. As is the case for women, male circumcision takes place in a secret society, the Poro ([Albrecht, 2016](#)). The rituals and privileges surrounding the Poro are very similar to those of the Bondo. As for the Bondo, initiation into the Poro marks the transition from childhood to adulthood ([Albrecht, 2016](#)). Boys are taken to the bush to undergo circumcision, followed by training on their duties as men ([Albrecht, 2016](#)). Participation in the Poro is necessary to hold political power, and non-initiates are excluded from key activities, such as resolving land disputes ([Albrecht, 2016](#)). During special Poro activities, such as after a Poro member's death or towards the end of the initiation period, non-initiated men and women must remain indoors, in fear of the Poro devil ([Albrecht, 2016](#)).

As for women, participation in the Poro society is considered an essential part of being an adult, and thus, male circumcision is widespread in Sierra Leone. However, in contrast to FGC, very few circumcised men would engage in transactional sex with peacekeepers, as peacekeepers are overwhelmingly male. While homosexual relations have certainly taken place, they are extremely taboo in Sierra Leone ([UNHCR and Save the Children-UK, 2002](#)). Therefore, it is unlikely that parents would consider adapting the circumcision status of their son to prepare them for sexual relationships with peacekeepers.

As a falsification test, we re-estimate [Equation 1](#) and [Equation 2](#), using male circumcision status as the dependent variable. We present the regression results in [Table 5](#). The estimates of γ_t in [Equation 2](#) are plotted in [Figure O.3](#). As expected, proximity to an

UNASMIL base has no statistically significant impact on male genital cutting. This is evidence that, in our main results shown in [Table 2](#), the interaction terms capture the identified effect rather than unobservable effects or a spurious relationship between peacekeepers’ base proximity and FGC incidence.

[[Table 5](#) about here]

We conduct another falsification test using a subsample of older women from our main sample, i.e., those born between 1970 and 1980 who are too old to be affected by the presence of peacekeepers. We randomly consider half of these women to be born after 1980, thereby assigning them a placebo treatment. We estimate [Equation 1](#), record the placebo $\hat{\gamma}$ as $\hat{\gamma}_p$ and repeat this for 1000 iterations. The mean of $\hat{\gamma}_p$ is .0001, smaller than our estimate of -0.0215 in [Table 2](#) column 1. The standard error of $\hat{\gamma}_p$ is .0002, thus indicating that the mean of this coefficient estimate is statistically indistinguishable from zero (t-statistic: 0.6816).

The results of both falsification tests provide further evidence supporting the parallel trends assumption, and thus strengthening our argument for a causal analysis.

7 Mechanisms

7.1 HIV/AIDS

While the previous results have established the causal effect of peacekeepers’ presence on the decrease in FGC, they are silent on the mechanism. We take advantage of the fact that transactional sex is known to increase sexually transmitted diseases, such as HIV/AIDS.^{27, 28}

²⁷The spread of HIV/AIDS can be either from the prostitutes to the peacekeepers, or from the peacekeepers to the prostitutes ([Higate, 2007](#)).

²⁸For a discussion of the link between peacekeepers’ presence, prostitution and the spread of HIV/AIDS in Sierra Leone see [Fofana \(2005\)](#).

During the three waves of DHS, blood samples were collected and tested for HIV/AIDS. If transactional sex is the mechanism behind the reduction in FGC, we should also observe a higher prevalence of HIV/AIDS near the bases, particularly among teenage girls. We thus estimate the following linear probability model:

$$H_{icw} = \zeta + \kappa_w + F\lambda + \alpha D_{icw} + \eta_{icw} \quad (3)$$

with:

- H_{icw} : A dummy variable taking the value of 1 if woman i living in cluster c and surveyed in wave w has tested HIV/AIDS positive, and 0 otherwise
- D_{icw} : A dummy variable taking the value of 1 if the respondent lives in a cluster within a 10-kilometre radius of the closest UNASMIL base, and 0 otherwise.
- κ_w : Waves fixed effects, as for a given year of birth, women who were observed at an older age would have faced a risk of contracting HIV/AIDS for longer.
- F : A vector of dummy variables indicating residence in a chiefdom.²⁹
- ζ : constant term.
- η_{icw} : The error term.

Standard errors are adjusted for clustering at the primary sampling unit.

In the model explaining HIV/AIDS, we cannot include the presence of a foreign aid health project. Indeed, while a foreign aid health project may help reduce the prevalence of HIV/AIDS³⁰, the location of the health project may have been chosen due to the prevalence of HIV/AIDS in the locality, a prevalence that might in turn be caused by the presence of peacekeepers.

²⁹Cluster fixed effects are not possible due to the presence of D_{icw} .

³⁰Or increase it if infected people survive longer due to antiretroviral therapy. In such a case, the prevalence may increase, even if new infections are reduced.

The results are presented in [Table 6](#) (Column 1). Living within 10 kilometres of a base increases the probability of being HIV/AIDS positive by 0.6 p.p., which corresponds to a 27% increase on the mean of the dependent variable (2.03%).

We then disaggregated the distance to the base into a set of dummy variables indicating 5-kilometre categories, ranging from [0-5] to [20-25], with any distance greater than 25 kilometres as the reference category. The results are presented in [Table 6](#) (Column 2). While living within 5 kilometres or less of a base increases the probability of being HIV/AIDS positive by 2.1 p.p. (or a 105% increase above the mean), the effect is smaller for women living within 5-10 and 10-15 kilometres, with an increase in the probability of having HIV/AIDS ranging from 1.3 to 1.5 p.p. The probability of having HIV/AIDS for women living above 15 kilometres away from a base is not statistically significantly affected by the distance to the base.

Finally, in [Table 6](#), Column 3, we interact D_{icu} with a dummy variable that takes the value 1 if the respondent was born between 1981 and 1989 and thus was between the ages of 15 and 19 at some point during the UNASMIL mission, and 0 otherwise. This age group constitutes women who reached the average age of first sexual encounters during the UNASMIL mission, and were in the final years at which FGC traditionally take place, as well as likely being a preferred age group with whom to have sexual intercourse from the peacekeepers' point of view. Women who were aged 15 to 19 years old at any point during the UNASMIL mission and who live within 10 kilometres of a base have a 1.1 p.p. higher probability of having HIV/AIDS (or a 54.7% increase above the mean) than women of the same age group who live beyond a 10-kilometre radius from the base. Older age groups, living either near or far from the base, are not statistically significantly different than those aged 15 to 19 during the UNASMIL mission and living more than 10 kilometres from a base.

[\[Table 6 about here\]](#)

7.2 Wealth Effect

An alternative mechanism would be income/wealth shocks. Indeed, a daughter's initiation into the Bondo society entails significant expenses. The cost of participating in the ceremony ranges from 200,000 to 600,000 Leones (USD 62-USD 185), which is equivalent to an entire harvest for some families (Mgbako et al., 2010).³¹ It is thus to be expected that, in times of financial difficulty, families may choose to postpone initiation, as found by McGavock & Novak (2023).

If this story holds, the financial loss caused by the war should have reduced the initiation rate, whereas the financial boom from the presence of a peacekeeper base and the reconstruction effort should have increased it. Thus, this story cannot explain why we see a reduction in FGC during the UNASMIL mission but an increase during the ECOMOG mission, as the ECOMOG mission took place while the civil war was still raging, and the presence of ECOMOG in a chiefdom is an indicator that the RUF was active in that chiefdom, and thus that fighting and looting were taking place.

8 Conclusion

In this article, we show that the prevalence of FGCs changed in Sierra Leone due to the presence of UN peacekeepers.

We used a difference-in-differences approach on data from three Demographic and Health Surveys linked to the Geocoded Peacekeeping Operations Dataset to establish a plausibly causal link between peacekeepers' presence and the prevalence of female genital cutting in Sierra Leone. We show that for girls aged 19 or younger, when the first UNASMIL troops arrived in Sierra Leone, living within 10 kilometres of a base reduced the probability of undergoing FGC by 2.2 p.p.

³¹More recent figures put it at USD 300-USD 400 (Strzyżyńska, 2024).

Supporting a transactional sex story, we find that women living within 10 kilometres of a base have a 0.6 p.p. higher probability of having HIV/AIDS, which is a 27% increase from the mean. The effect rises to a 2.1 p.p. higher probability, or a 105% increase above the mean, for women living within 5 kilometres of a base, and declines as the distance to the base increases. The effect reaches statistical significance only for those women who were 15 to 19 years old during the peacekeeping mission and who live within 10 kilometres of a base, supporting the idea that sex with minors was common and is the mechanism behind the decrease in the prevalence of FGC.

Our results show that parents are responsive to men's demand for cut/uncut women when deciding whether to make their daughter undergo FGC. To eradicate the practice, men should be educated on the benefits of having an uncut partner. A pledge by parents not to let their son marry a cut woman could also possibly help eradicate the practice, as was the case for foot binding in China ([Mackie, 1996](#)).

Our results also contribute to the nascent literature on the impact of contacts with outside cultures on changes in FGC practice, either due to out-migration ([Diabate & Mesplé-Somps, 2019](#)), the presence of missionaries ([Congdon Fors et al., 2024](#)), or, in our case, peacekeepers.

Finally, establishing sexual crimes in a conflict setting is difficult. While a report by UNICEF and Save the Children claimed widespread abuse by UN staff and NGOs ([UN-HCR and Save the Children-UK, 2002](#)), a UN enquiry report ([UN General Assembly, 2002](#)) concluded that many claims could not be substantiated, for example, because the victim could not identify the person who paid them. The link between peacekeeper presence and change in FGC should be seen as evidence of significant sexual interactions between the peacekeepers and a highly vulnerable population. Our results, for FGC and for HIV/AIDS, support the idea that sexual relations were taking place with minors, at a sufficiently large scale to be found significant using regression analysis.

Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this work, the authors used Claude AI in order to extract information on ECOMOG location from the report “Sierra Leone Conflict Mapping Program” by the organization No Peace Without Justice. The authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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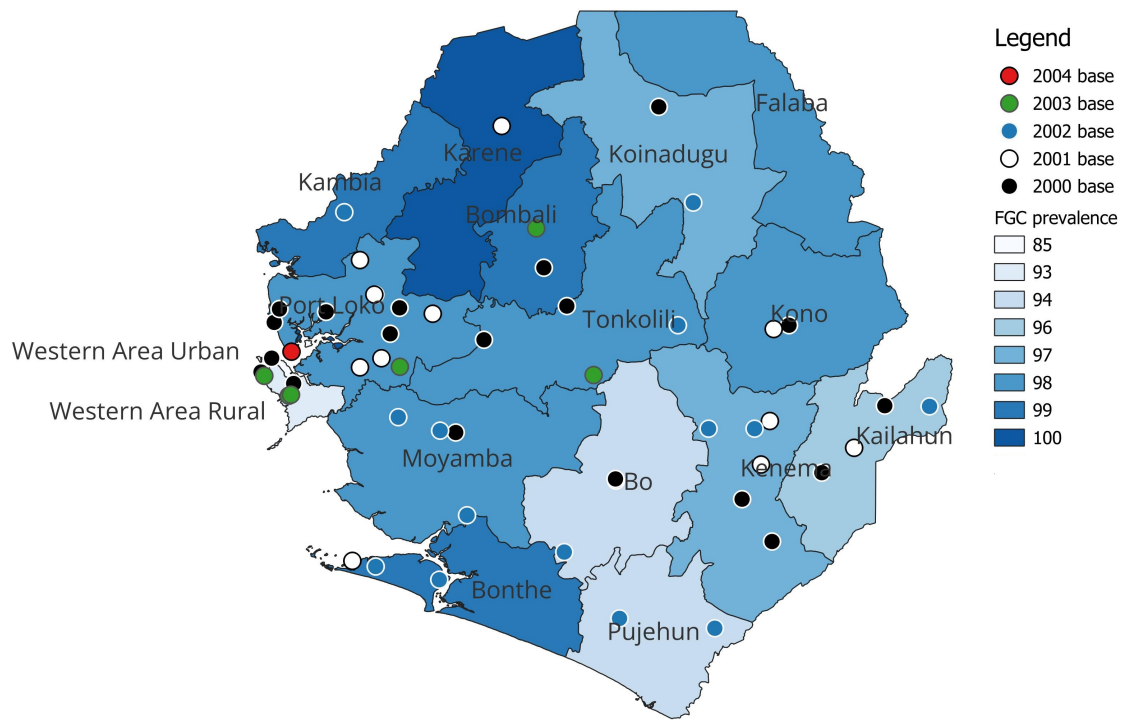
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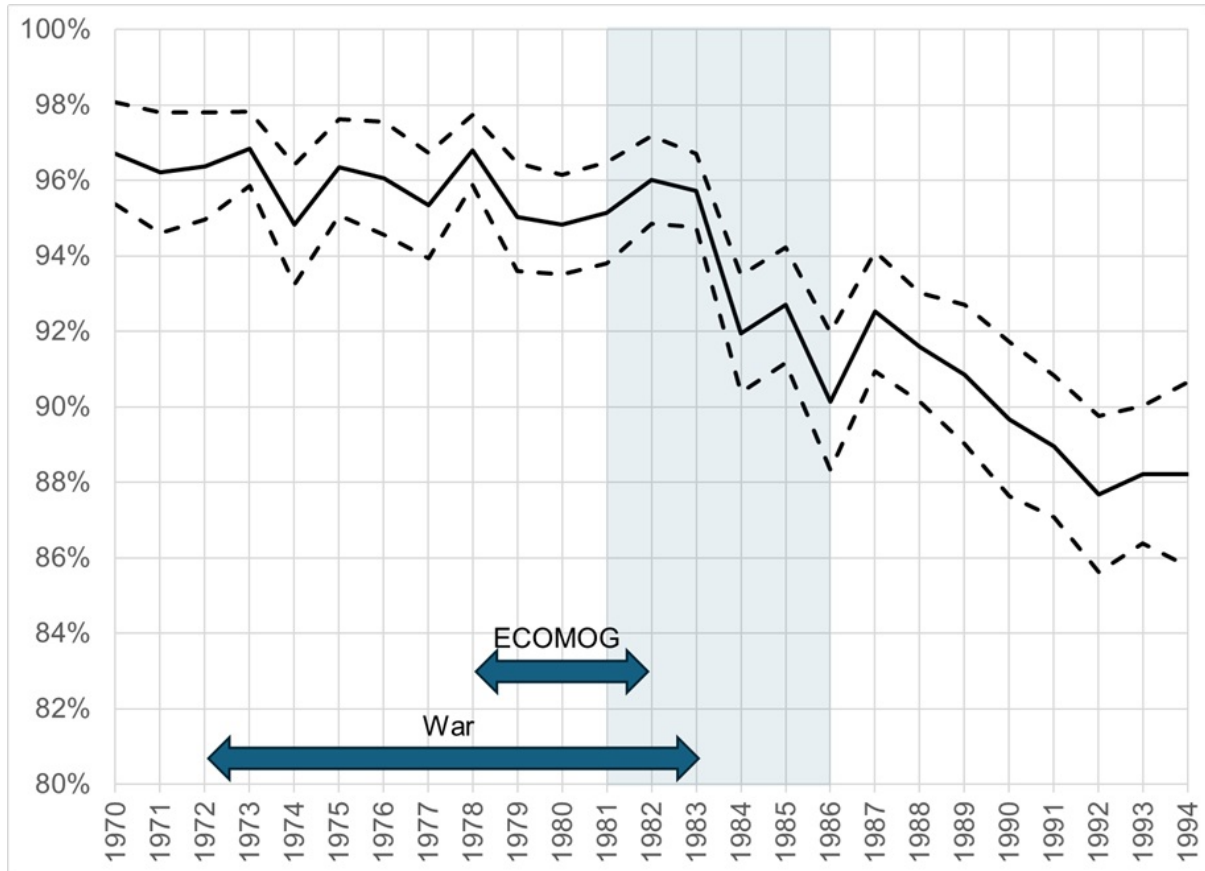
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Figure 1: FGC prevalence and UNASMIL base location by year of establishment



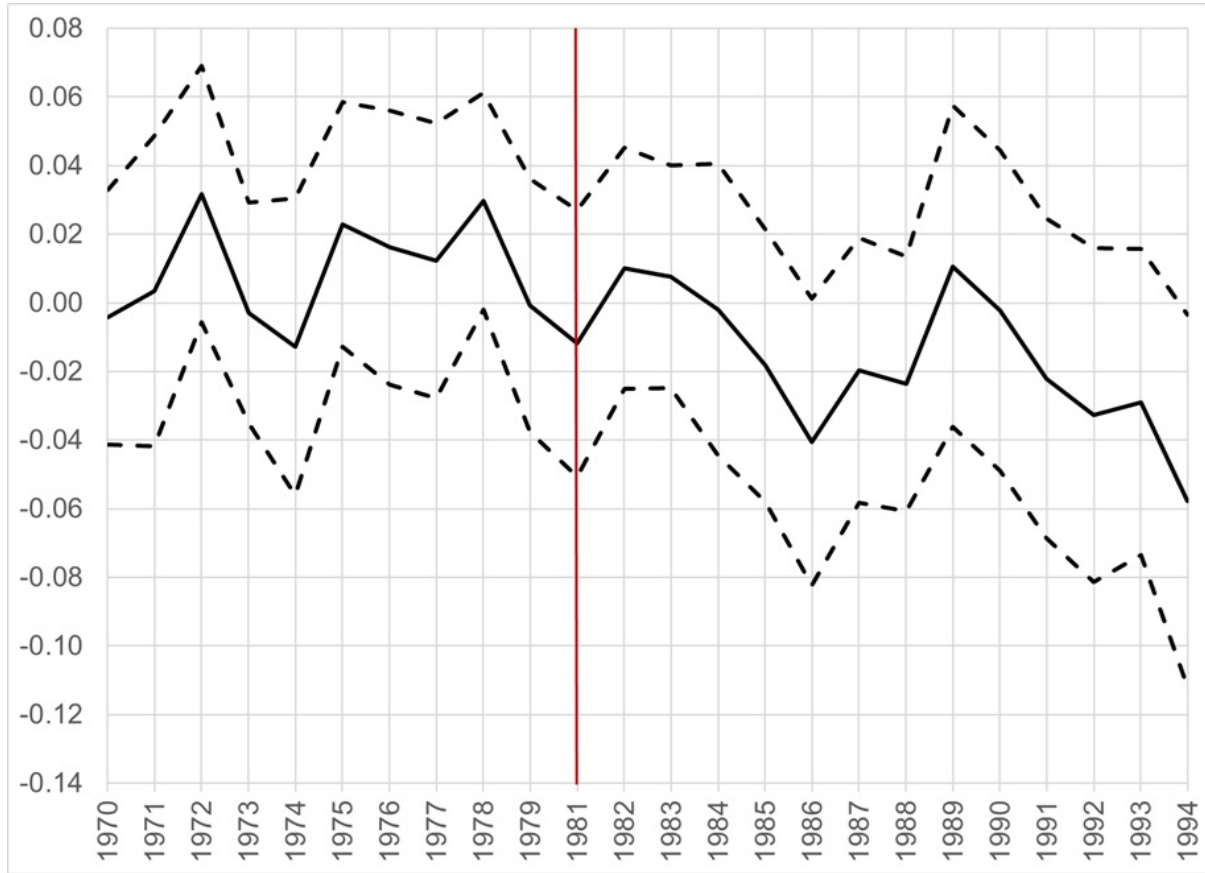
Notes: Data sources are described in [section 4](#). The shapefile is from the Spatial Data Repository of the DHS program. The sample includes women aged 20-49 at the time of the survey, born between 1970 and 1980.

Figure 2: FGC Prevalence by year of birth



Notes: The data are from DHS 2008, 2013 and 2019. The sample includes women aged 20-49 at the time of the survey, born between 1970 and 1994. The area highlighted in blue represents the birth years of women who turned 19 during the UNASMIL mission. The blue arrows represent the birth years of women who turned 19 during the civil war or during the ECOMOG mission. 95% confidence intervals are indicated by the dashed lines.

Figure 3: Linear Probability Model: Determinants of FGC



Notes: Data sources are described in [section 4](#). The sample includes women aged 20-49 at the time of the survey, born between 1970 and 1994. The figure plots the γ_t estimates of [Equation 2](#), also presented in [Table 2](#), Column 3. The red line demarcates the birth cohort that turned 19 the year the first UNASMIL troop arrived. 95% confidence intervals indicated by the dashed lines.

Table 1: Share of women aged 20+ who have undergone FGC by characteristics

	1970-1980			1970-1994		
	Mean	C.I.	Obs.	Mean	C.I.	Obs.
<i>Ethnicity</i>						
Kono	98.1%	[96.9%, 99.3%]	481	93.7%	[92.3%, 95.1%]	1,154
Kriole	21.2%	[13.0%, 29.4%]	99	21.9%	[16.8%, 27.1%]	251
Limba	97.5%	[96.4%, 98.6%]	765	93.6%	[92.5%, 94.7%]	1,917
Loko	94.7%	[91.7%, 97.6%]	225	91.1%	[88.7%, 93.5%]	562
Mandigo	98.0%	[96.3%, 99.7%]	252	95.1%	[93.5%, 96.7%]	715
Mende	95.9%	[95.2%, 96.6%]	3,424	92.1%	[91.6%, 92.7%]	8,617
Sherbro	96.3%	[93.8%, 98.8%]	217	91.1%	[88.8%, 93.3%]	604
Temne	98.0%	[97.5%, 98.5%]	2,914	96.4%	[95.9%, 96.8%]	7,781
Other	95.2%	[94.0%, 96.4%]	1,251	94.9%	[94.1%, 95.6%]	3,313
<i>Religion</i>						
Christianity	90.5%	[89.3%, 91.8%]	2,152	83.7%	[82.8%, 84.7%]	5,592
Islam	97.5%	[97.2%, 97.9%]	7,441	96.1%	[95.8%, 96.4%]	19,230
<i>District</i>						
Bo	94.4%	[92.9%, 95.9%]	878	88.9%	[87.6%, 90.2%]	2,270
Bombali	99.1%	[98.4%, 99.9%]	574	97.6%	[96.8%, 98.4%]	1,534
Bonthe	98.9%	[97.9%, 99.9%]	450	96.0%	[95.0%, 97.1%]	1,283
Fabala	97.9%	[96.4%, 99.3%]	376	97.9%	[97.0%, 98.9%]	924
Kailahun	96.4%	[94.9%, 97.9%]	584	95.3%	[94.2%, 96.4%]	1,438
Kambia	98.8%	[97.9%, 99.6%]	656	98.8%	[98.3%, 99.3%]	1,579
Karene	99.7%	[99.0%, 100.3%]	298	99.2%	[98.6%, 99.8%]	795
Kenema	97.1%	[95.9%, 98.2%]	852	94.5%	[93.5%, 95.5%]	2,038
Koinadugu	96.7%	[94.7%, 98.6%]	329	96.7%	[95.6%, 97.8%]	993
Kono	98.1%	[97.1%, 99.1%]	692	96.0%	[95.1%, 96.9%]	1,700
Moyamba	98.5%	[97.5%, 99.5%]	597	95.4%	[94.3%, 96.5%]	1,419
Port Loko	98.3%	[97.3%, 99.3%]	635	97.3%	[96.6%, 98.1%]	1,687
Pujehun	94.3%	[92.4%, 96.3%]	545	92.5%	[91.0%, 93.9%]	1,285
Tonkolili	97.7%	[96.6%, 98.8%]	689	96.6%	[95.7%, 97.4%]	1,758
Western Area Rural	92.8%	[90.7%, 94.9%]	594	88.3%	[86.8%, 89.8%]	1,726
Western Area Urban	85.2%	[82.8%, 87.5%]	889	79.0%	[77.4%, 80.6%]	2,513
<i>Location</i>						
Rural	97.5%	[97.1%, 97.9%]	6,227	96.4%	[96.1%, 96.7%]	15,277
Urban	93.1%	[92.3%, 94.0%]	3,411	88.5%	[87.9%, 89.1%]	9,665
<i>Education</i>						
None	97.7%	[97.4%, 98.0%]	7,302	96.6%	[96.4%, 96.9%]	16,363
Some	90.5%	[89.4%, 91.7%]	2,328	87.0%	[86.3%, 87.7%]	8,556

Notes: The data are from DHS 2008, 2013 and 2019. The sample includes women aged 20-49 at the time of the survey, born between 1970 and 1980 (Column 1) and between 1970 and 1994 (Column 2). 95% confidence intervals are in brackets.

Table 2: Linear Probability Model: Determinants of FGC

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Women born after 1980 and living [0 - 10 km] from a base	-0.0215*** (0.0016)	-0.0295*** (0.0005)						-0.0335** (0.0170)
Women born after 1980 and living [0 - 5 km] from a base							-0.0326*** (0.0030)	
Women born after 1980 and living]5 - 10 km] from a base							0.0130 (0.1616)	
Women born after 1980 and living]10 - 15 km] from a base							0.0191** (0.0475)	
Women born after 1980 and living]15 - 20 km] from a base							0.0069 (0.4779)	
Women born after 1980 and living]20 - 25 km] from a base							-0.0014 (0.8868)	
Birth year (age in 2000)								
1970 (30)			-0.0041 (0.8275)		-0.0022 (0.9074)			
1971 (29)			0.0035 (0.8779)		0.0095 (0.6906)			
1972 (28)			0.0317* (0.0960)		0.0308 (0.1165)			
1973 (27)			-0.0030 (0.8555)		-0.0024 (0.8867)			
1974 (26)			-0.0128 (0.5622)		-0.0134 (0.5517)			
1975 (25)			0.0228 (0.2092)		0.0207 (0.2561)			
1976 (24)			0.0161 (0.4289)		0.0141 (0.5048)			
1977 (23)			0.0123 (0.5469)		0.0122 (0.5568)			
1978 (22)			0.0296* (0.0655)		0.0308* (0.0601)			
1979 (21)			-0.0007 (0.9718)		0.0020 (0.9169)			
1981 (19)			-0.0119 (0.5487)	-0.0210 (0.1802)				
1982 (18)			0.0101 (0.5752)	0.0009 (0.9469)				
1983 (17)			0.0076 (0.6440)	-0.0016 (0.8857)				
1984 (16)			-0.0020 (0.9278)	-0.0108 (0.5349)				
1985 (15)			-0.0183 (0.3650)	-0.0276* (0.0760)	-0.0184 (0.3706)	-0.0280* (0.0749)		
1986 (14)			-0.0405* (0.0579)	-0.0496*** (0.0039)	-0.0346 (0.1102)	-0.0442** (0.0112)		
1987 (13)			-0.0198 (0.3152)	-0.0287* (0.0604)	-0.0167 (0.4096)	-0.0261* (0.0999)		
1988 (12)			-0.0236 (0.2123)	-0.0329** (0.0365)	-0.0202 (0.2927)	-0.0300* (0.0609)		
1989 (11)			0.0107 (0.6545)	0.0022 (0.9165)	0.0121 (0.6144)	0.0033 (0.8744)		
1990 (10)			-0.0023 (0.9243)	-0.0113 (0.5740)	-0.0012 (0.9592)	-0.0107 (0.6036)		
1991 (9)			-0.0220 (0.3534)	-0.0309 (0.1238)	-0.0169 (0.4848)	-0.0261 (0.2016)		
1992 (8)			-0.0326 (0.1887)	-0.0416** (0.0496)	-0.0271 (0.2807)	-0.0365* (0.0889)		
1993 (7)			-0.0289 (0.2038)	-0.0380* (0.0524)	-0.0242 (0.2907)	-0.0336* (0.0877)		
1994 (6)			-0.0577** (0.0373)	-0.0659*** (0.0097)	-0.0546* (0.0566)	-0.0632** (0.0166)		
Health project within [0-10 km]	-0.0262*** (0.0004)	-0.0251*** (0.0039)	-0.0220*** (0.0030)	-0.0221*** (0.0027)	-0.0257*** (0.0030)	-0.0259*** (0.0026)	-0.0230*** (0.0020)	-0.0149 (0.3319)
ECOMOG presence in chiefdom	0.0188*** (0.0032)	0.0230*** (0.0014)	0.0192*** (0.0026)	0.0192*** (0.0025)	0.0227*** (0.0017)	0.0227*** (0.0016)	0.0150** (0.0188)	0.0092 (0.4854)
Constant	1.0079*** (0.0000)	1.0054*** (0.0000)	1.0177*** (0.0000)	1.0108*** (0.0000)	1.0123*** (0.0000)	1.0055*** (0.0000)	1.0097*** (0.0000)	1.0120*** (0.0000)
Mean FGC	0.9333	0.9298	0.9333	0.9333	0.9298	0.9298	0.9333	0.9284
Birth year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	24,942	19,986	24,942	24,942	19,986	19,986	24,942	6,946
Adj. R2	0.1817	0.1860	0.1820	0.1821	0.1859	0.1860	0.1825	0.2399

Notes: P -values in parentheses. *** p -value<0.01, ** p -value<0.05 and * p -value<0.10. Data sources are described in [section 4](#). The full sample includes women aged 20-49 at the time of the survey and born between 1970 and 1994. Column 1 presents the results for [Equation 1](#) for the full sample. Column 2 presents the results for [Equation 1](#), excluding women born between 1981 and 1984. Column 3 presents the results for [Equation 2](#), with the omitted category being birth year 1980. Column 4 presents estimates for [Equation 2](#) where the omitted category is birth years 1970-1980. Columns 5 and 6 replicate Columns 3 and 4, but exclude women born between 1981 and 1984. Column 7 presents the results for [Equation 1](#) using a donut-like estimator for distance to the base for the full sample. Column 8 presents the results of [Equation 1](#) for women who have never migrated and were surveyed in DHS 2008 and 2019, for whom migration information was available.

Table 3: Number of bases established by year and percentage of girls in 2000 living within a 10-kilometre radius of a base

Year base was established	Number of newly established UNAMSIL bases	Cumulative percentage of girls living [0-10 km] from a base
2000	22	27%
2001	7	32%
2002	14	39%
2003	5	43%
2004	5	46%
Total	53	

Notes: Data sources are described in [section 4](#). The sample includes women aged 20-49 at the time of the survey.

Table 4: Linear Probability Model: Determinants of FGC by Sub-samples

	Women born after 1980 and living [0-10 km] from a base	Constant	Obs.	Adj. R2	FGC mean
<i>District</i>					
Bo	-0.0426 (0.1149)	0.9861*** (0.0000)	2,270	0.2717	0.8885
Bombali	0.0032 (0.7671)	0.9833*** (0.0000)	1,534	0.0293	0.9759
Bonthe	-0.0015 (0.9549)	0.9383*** (0.0000)	1,283	0.0443	0.9602
Fabala	-0.0387 (0.1536)	0.9144*** (0.0000)	924	0.0024	0.9794
Kailahun	0.0093 (0.6980)	0.8069*** (0.0000)	1,438	0.0641	0.9527
Kambia	-0.0006 (0.9619)	1.0108*** (0.0000)	1,579	-0.0077	0.9880
Karene	0.0112 (0.1724)	0.9435*** (0.0000)	795	-0.0193	0.9925
Kenema	0.0040 (0.8650)	0.9954*** (0.0000)	2,038	0.1711	0.9450
Koinadugu	0.0539* (0.0697)	0.9663*** (0.0000)	993	0.107	0.9668
Kono	-0.0051 (0.8035)	1.0220*** (0.0000)	1,700	0.0684	0.9600
Moyamba	0.0384 (0.4070)	1.0279*** (0.0000)	1,419	0.0975	0.9542
Port Loko	-0.0222* (0.0980)	0.9926*** (0.0000)	1,687	0.0127	0.9733
Pujehun	0.0137 (0.6085)	0.9706*** (0.0000)	1,285	0.1292	0.9245
Tonkolili	-0.0276 (0.2307)	0.9921*** (0.0000)	1,758	0.2345	0.9659
Western Area Rural	-0.0987*** (0.0012)	1.0168*** (0.0000)	1,726	0.0878	0.8830
<i>Location</i>					
Rural	0.0029 (0.6536)	1.0132*** (0.0000)	15,277	0.1468	0.9639
Urban	-0.0406** (0.0202)	0.8657*** (0.0000)	9,665	0.1729	0.8850
<i>Ethnicity</i>					
Kono	0.0130 (0.7516)	1.0654*** (0.0000)	1,154	0.2331	0.9367
Kriole	0.1655 (0.5980)	-0.0699 (0.7301)	251	0.5295	0.2191
Limba	-0.0615** (0.0469)	1.1572*** (0.0000)	1,917	0.3284	0.9358
Loko	-0.0820 (0.1692)	0.8899*** (0.0000)	562	0.3773	0.9110
Mandingo	0.0562 (0.3294)	1.0089*** (0.0000)	715	0.3865	0.9510
Mende	-0.0142 (0.2861)	0.9925*** (0.0000)	8,617	0.2261	0.9212
Sherbro	-0.0045 (0.9571)	0.9385*** (0.0000)	604	0.3942	0.9106
Temne	-0.0230*** (0.0039)	1.0008*** (0.0000)	7,781	0.1879	0.9635
Other	-0.0240 (0.2873)	1.0180*** (0.0000)	3,313	0.2117	0.9490
<i>Religion</i>					
Christian	-0.0441** (0.0425)	0.9923*** (0.0000)	5,592	0.2656	0.8373
Muslim	-0.0090 (0.1124)	1.0055*** (0.0000)	19,230	0.1379	0.9611
<i>Education</i>					
None	-0.0076 (0.2027)	1.0048*** (0.0000)	16,363	0.1597	0.9664
Some	-0.0423** (0.0335)	0.7964*** (0.0000)	8,556	0.1521	0.8700

Notes: *P*-values in parentheses. *** *p*-value<0.01, ** *p*-value<0.05 and * *p*-value<0.10. Data sources are described in [section 4](#). The sample includes women aged 20-49 at the time of the survey, born between 1970 and 1994. [Equation 1](#) is estimated for various sub-samples as indicated in column 1. Each row represents a different regression.

Table 5: Linear Probability Model: Determinants of Male Genital Cutting

	(1)	(2)
Men born after 1980 and living [0-10 km] from a base	0.0027 (0.5335)	
<i>Birth year (age in 2000)</i>		
1970 (30)		-0.0178 (0.2189)
1971 (29)		0.0057 (0.7347)
1972 (28)		-0.0180* (0.0887)
1973 (27)		-0.0165 (0.2366)
1974 (26)		-0.0197 (0.1262)
1975 (25)		-0.0189 (0.1358)
1976 (24)		-0.0166 (0.2374)
1977 (23)		-0.0188 (0.2005)
1978 (22)		-0.0114 (0.4015)
1979 (21)		-0.0202 (0.1962)
1981 (19)		-0.0101 (0.5482)
1982 (18)		-0.0196 (0.1177)
1983 (17)		-0.0102 (0.4371)
1984 (16)		-0.0139 (0.2500)
1985 (15)		-0.0117 (0.3235)
1986 (14)		-0.0308** (0.0460)
1987 (13)		-0.0116 (0.4897)
1988 (12)		0.0092 (0.5460)
1989 (11)		-0.0172 (0.1904)
1990 (10)		-0.0024 (0.8633)
1991 (9)		0.0017 (0.9016)
1992 (8)		-0.0281** (0.0366)
1993 (7)		-0.0053 (0.6869)
1994 (6)		-0.0138 (0.2089)
Health project within [0-10 km]	-0.0021 (0.6354)	-0.0030 (0.5390)
ECOMOG presence in chiefdom	-0.0008 (0.8251)	-0.0009 (0.7985)
Constant	0.9945*** (0.0000)	0.9969*** (0.0000)
Mean MGC	0.9937	0.9937
Cluster fixed effects	Yes	Yes
Birth-year fixed effects	Yes	Yes
Obs.	9,686	9,686
Adj. R2	0.1010	0.1020

Notes: P -values in parentheses. *** p -value<0.01, ** p -value<0.05 and * p -value<0.10. Data sources are described in [section 4](#). The sample includes men aged 20-49 at the time of the survey, born between 1970 and 1994. Linear probability model estimates of [Equation 1](#) are shown in Column 1, and of [Equation 2](#) are shown in Column 2. The dependent variable in these regressions is a binary indicator for having been circumcised.

Table 6: Linear Probability Model: Determinants of HIV/AIDS

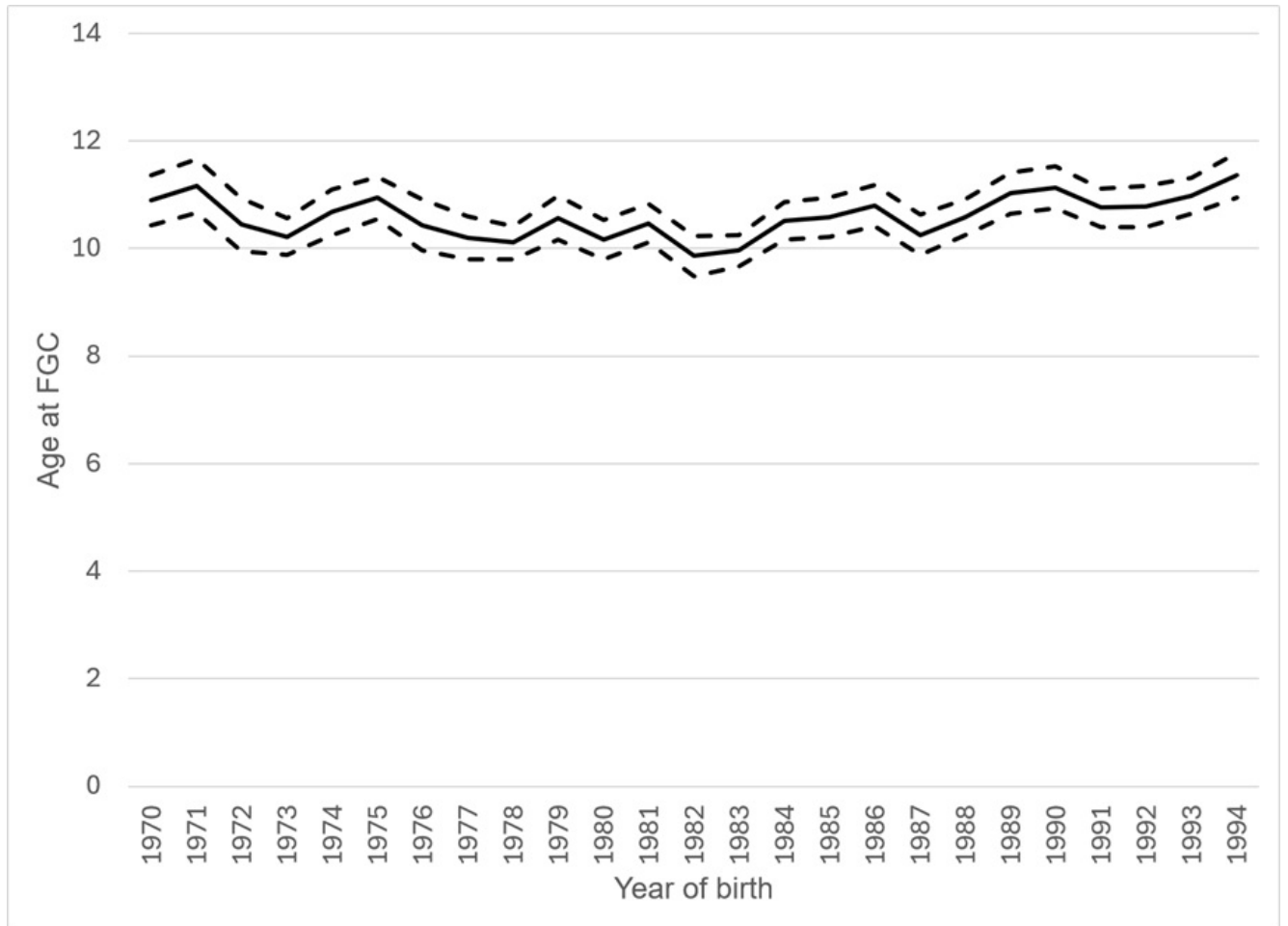
	(1)	(2)	(3)
Women living [0-10 km] from a base	0.0055* (0.0680)		
Women living [0- 5 km] from a base		0.0214*** (0.0005)	
Women living]5-10 km] from a base		0.0128** (0.0338)	
Women living [10-15 km] from a base		0.0148** (0.0111)	
Women living]15-20 km] from a base		0.0059 (0.2745)	
Women living]20-25 km] from a base		0.0084 (0.1158)	
Women living]25-30 km] from a base		0.0051 (0.2401)	
Women living [0-10 km] from a base and aged 15 to 19 years old at some point during the UNASMIL mission			0.0111** (0.0427)
Women living [0-10 km] from a base and never aged 15 to 19 years old during the UNASMIL mission			-0.0013 (0.7461)
Women living more than 10 km from a base and never aged 15 to 19 years old at some point during the UNASMIL mission			-0.0047 (0.1164)
Constant	0.0256*** (0.0002)	0.0105 (0.2221)	0.0245*** (0.0004)
Survey wave fixed effects	Yes	Yes	Yes
Chieftdom fixed effects	Yes	Yes	Yes
Obs.	18,088	18,088	18,088
Adj. R2	0.0043	0.0045	0.0049

Notes: Standard errors in parentheses. *** p -value<0.01, ** p -value<0.05 and * p -value<0.10. The table shows estimation results of Equation 3. Data sources are described in section 4. The sample includes all women surveyed in DHS for whom HIV/AIDS results have been collected. In column 1, the omitted category is women living more than 10 km away from any base. In column 2, the omitted category is women living more than 30 km from any base. In column 3, the omitted category is women living more than 10 km from any base and aged 15 to 19 years during the UNASMIL mission.

Online Supplement

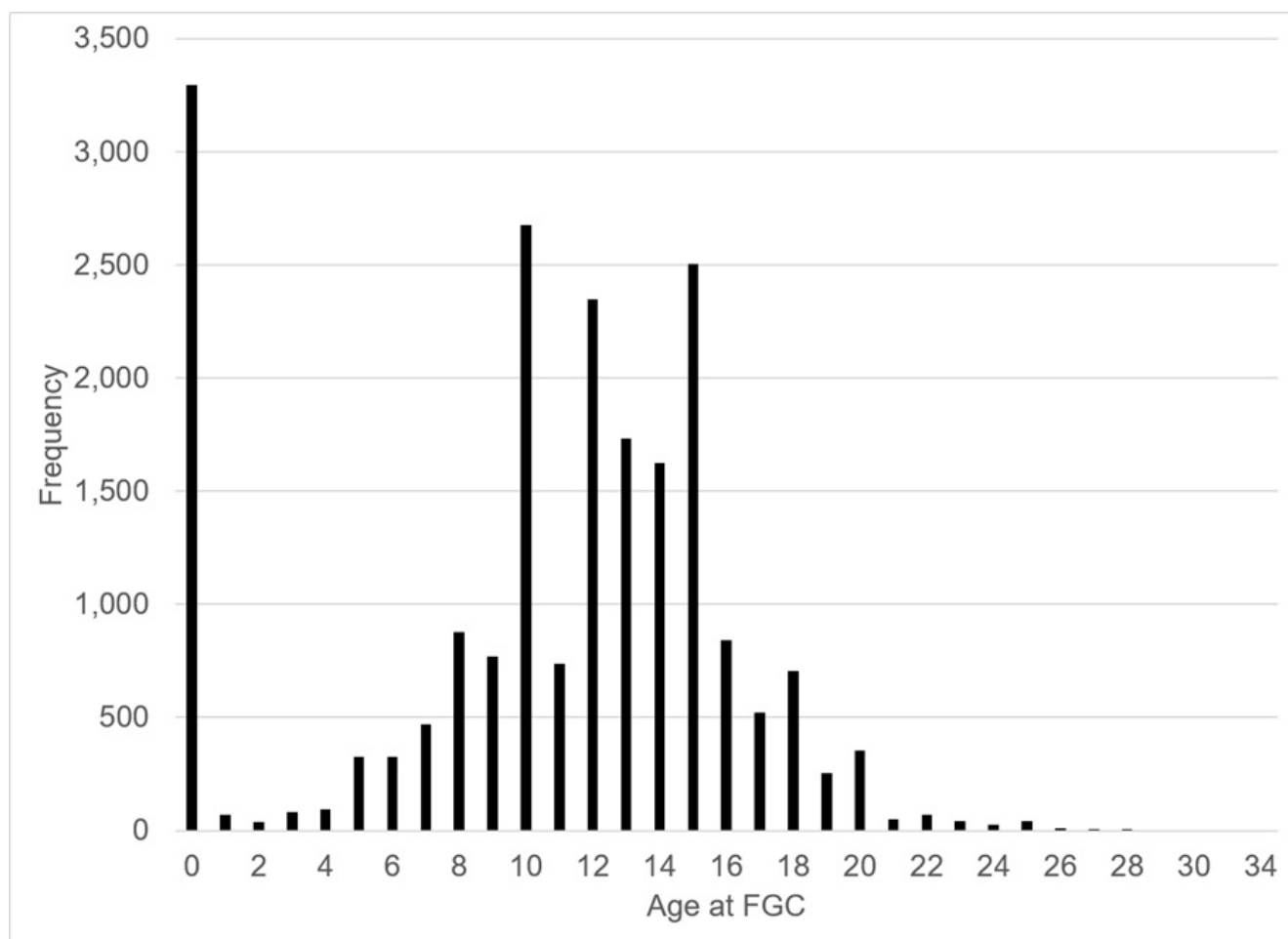
Peacekeeping and the prevalence of female genital cutting in Sierra Leone

Figure O.1: Average age at FGC by year of birth



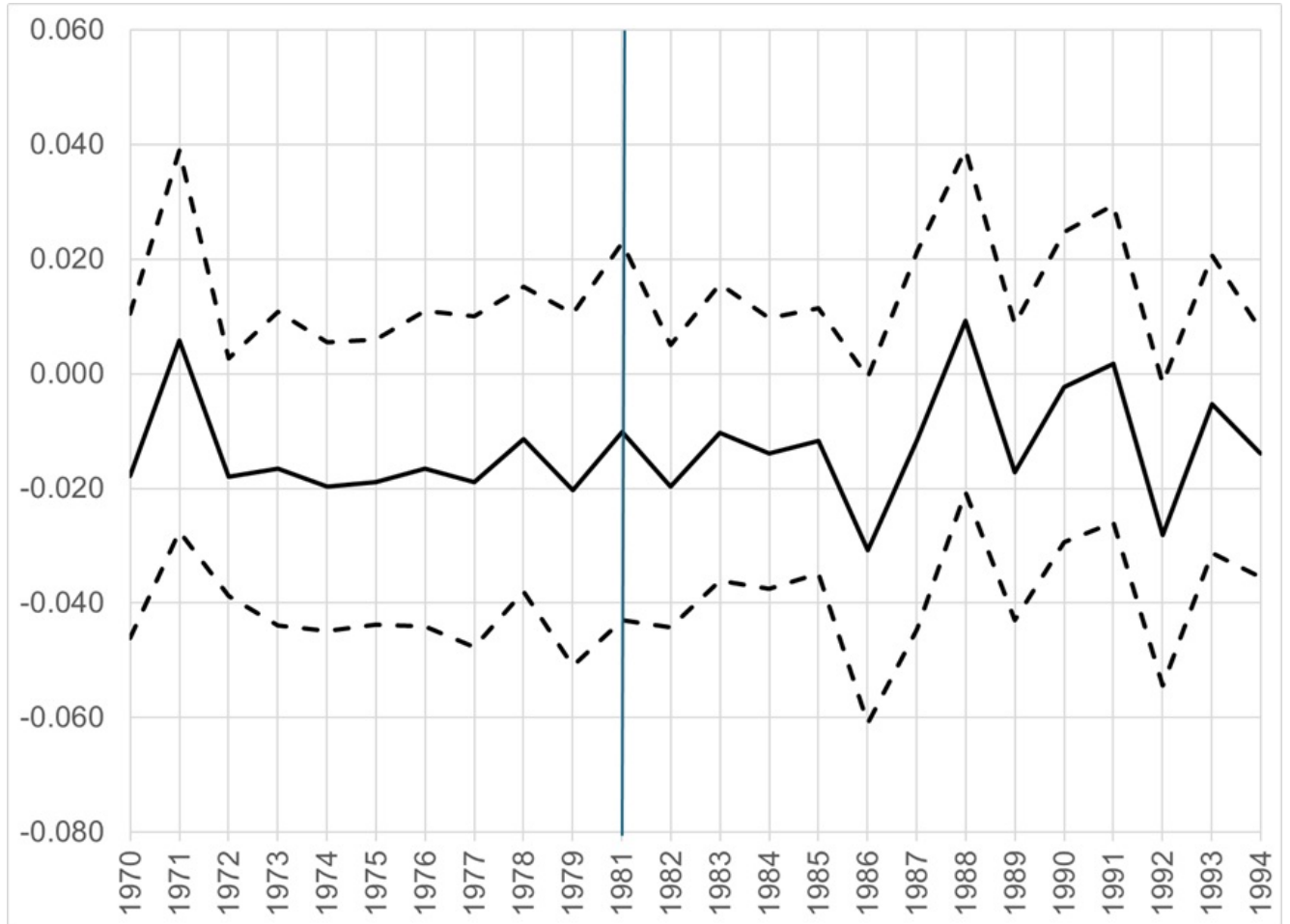
Notes: The data are from DHS 2008, 2013 and 2019. The full sample includes women aged 20-49 at the time of the survey and born between 1970 and 1994. 95% confidence intervals are indicated by the dashed lines.

Figure O.2: Age at FGC among women aged 21-49 at the time of the survey



Notes: The data are from DHS 2008, 2013 and 2019. The full sample includes women aged 21-49 at the time of the survey and born between 1970 and 1994.

Figure O.3: Linear Probability Model: Determinants of male genital cutting



Note: Data sources are described in [section 4](#). The full sample includes men aged 20-49 at the time of the survey and born between 1970 and 1994. The figure plots the γ_t estimates of [Equation 2](#), also shown in [Table 5](#) Column 2. The blue line demarcates the birth cohort that turned 19 the year the first UNASMIL troop arrived. 95% confidence intervals are indicated by the dashed lines.

Table O.1: Descriptive Statistics

	Full sample	Born between 1970-1980		Born between 1981-1994	
		≤10 km from base	> 10 km from base	≤10 km from base	> 10 km from base
FGC	0.9333	0.9394	0.9761	0.8783	0.9534
Flesh removed	0.8823	0.8863	0.9136	0.8374	0.9021
Nicked	0.0152	0.0167	0.0253	0.0070	0.0154
Sewn closed	0.0946	0.0814	0.1056	0.0866	0.1021
Age at FGC	10.5332 (5.7033)	10.2924 (5.7347)	10.5862 (5.7433)	10.4617 (5.7241)	10.6887 (5.6360)
Urban	0.3875	0.6427	0.1223	0.6941	0.1361
Education (years)	2.8684	3.2495	0.8257	5.1127	1.9109
Age at first sex	15.8590 (2.3944)	16.0586 (2.4789)	15.8186 (2.5238)	16.0806 (2.3248)	15.5657 (2.2913)
<i>Ethnic group</i>					
Kono	0.0463	0.0458	0.0533	0.0462	0.0420
Krio	0.0101	0.0208	0.0019	0.0181	0.0022
Limba	0.0769	0.0824	0.0771	0.0824	0.0687
Loko	0.0226	0.0285	0.0193	0.0258	0.0184
Mandingo	0.0287	0.0401	0.0150	0.0422	0.0189
Mende	0.3459	0.3058	0.3956	0.2870	0.3901
Sherbro	0.0242	0.0208	0.0240	0.0220	0.0285
Temne	0.3123	0.3522	0.2629	0.3615	0.2772
Other	0.1330	0.1036	0.1510	0.1149	0.1540
<i>Region</i>					
Eastern	0.2084	0.2410	0.2072	0.2055	0.1943
Northern	0.3722	0.2865	0.4362	0.3040	0.4405
Southern	0.2499	0.1765	0.3177	0.1764	0.3141
Western	0.1694	0.2960	0.0389	0.3141	0.0511
Never migrated	0.4991	0.4406	0.5826	0.4342	0.5411
<i>Religion</i>					
Christian	0.2253	0.2795	0.1800	0.2818	0.1724
Muslim	0.7747	0.7205	0.8200	0.7182	0.8276
<i>District</i>					
Bo	0.0910	0.0855	0.0955	0.0948	0.0873
Bombali	0.0615	0.0611	0.0583	0.0725	0.0534
Bonthe	0.0514	0.0221	0.0664	0.0247	0.0828
Fabala	0.0370	0.0012	0.0694	0.0027	0.0675
Kailahun	0.0577	0.0650	0.0570	0.0532	0.0583
Kambia	0.0633	0.0413	0.0896	0.0354	0.0841
Karene	0.0319	0.0163	0.0426	0.0161	0.0482
Kenema	0.0817	0.1009	0.0783	0.0808	0.0743
Koinadugu	0.0398	0.0175	0.0475	0.0297	0.0565
Kono	0.0682	0.0751	0.0692	0.0714	0.0606
Moyamba	0.0569	0.0303	0.0873	0.0276	0.0787
Port Loko	0.0676	0.0963	0.0415	0.0999	0.0390
Pujehun	0.0515	0.0385	0.0711	0.0293	0.0666
Tonkolili	0.0705	0.0529	0.0864	0.0478	0.0910
Western Area Rural	0.0692	0.0888	0.0398	0.0968	0.0521
Western Area Urban	0.1008	0.2072	0.0000	0.2172	0.0000
Health project within [0-10 km]	0.2137	0.0000	0.0000	0.6066	0.1017
ECOMOG presence in chiefdom	0.3193	0.1301	0.1707	0.3471	0.4980
Obs.	24,942	4,290	5,348	7,476	7,828S

Notes: Data sources are described in [section 4](#). The full sample includes women aged 20-49 at the time of the survey and born between 1970 and 1994. Observation numbers are based on the FGC variable. Due to missing data, the sample varies slightly across variables. Standard deviation for continuous variables is in parentheses.