Female Genital Cutting and Child Mortality: Evidence from the 1999 Senegalese FGC Ban

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Abstract

This study exploits across ethnic-group variation in exposure to a law that in January 1999 banned the practice of female genital cutting (FGC) in Senegal to investigate the causal link between FGC and child mortality. The analysis shows that girls from ethnic groups that were more affected by the law experienced also larger reductions in the probability of child mortality. The effect is particularly large among the urban sample and indistinguishable from 0 in rural areas. These results, robust to different falsification tests, document for the first time the causal link between FGC and child mortality.

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1 Motivation

Defined as the ritual cutting of some or all of the external female genitalia for reasons unrelated with health[1], the World Health Organization (WHO) estimates that 3 millions women undergo female genital cutting (FGC) every year (Bellemare et al., 2015). In total, UNICEF (2016) estimates that more than 200 million women worldwide are affected by FGC. The practice is particularly widespread among many ethnic groups in West Africa, where most girls undergone FGC during their infancy or early childhood (Yoder and Wang, 2013) and the cut is often conducted using crude unsterile instruments and without anaesthetics by a traditional practitioner with little knowledge of female anatomy (UNICEF, 2013).

In West African countries, where the health conditions are poor, frequent complications during and after the cutting include excessive bleeding (32%), urine retention (31%), genital tissue swelling (15%) and problems with wound healing (13%) (Berg et al., 2014). Despite the severe complications that often arise during the mutilation and the invasiveness of this practice, it is still unclear whether this practice contributes to the high prevalence of child mortality in these countries. Studies examining the long-term effects of FGC suggest that the lasting health effects of this practice are overall small and beyond some anecdotal evidence, there is not any rigorous analysis on the effect of this practice on early mortality.

This study uses the introduction of the Senegalese FGC ban in January 1999 as a natural experiment to investigate the causal link between FGC and child mortality. Using a difference in difference strategy comparing girls from ethnic groups where the practice of FGC was rooted in tradition with girls from ethnic groups where FGC was never practiced, I first show that exposure to the law decreased substantially the prevalence of FGC. Then, I provide evidence that girls from ethnic groups that experienced the larger reductions in the prevalence of FGC after the introduction of the law experienced also larger reductions in the probability of child mortality, suggesting the existence of a causal harmful effect of FGC on child mortality. While the effect is particularly strong in urban areas, the impact of the law in rural areas is small and statistically indistinguishable from 0, consistent with the documented lower compliance with the law in rural areas. The effect is robust to different falsification tests including the effect of the law on child mortality among boys, the effect of the law on mortality at ages at which FGC is highly unlikely to be practiced and the existence of different pre-FGC ban trends in terms of child mortality or FGC across ethnic groups.

The paper makes two main contributions to the literature. First, it adds to the body of evidence examining the lasting effects of FGC, providing the first empirical analysis on the causal link between FGC and child mortality. Second, the paper is also related with the emerging literature that investigates whether legal changes can be effective instruments to address harmful practices deeply rooted in tradition in many developing countries, an aspect

[1] http://www.who.int/mediacentre/factsheets/fs241/en/

that has recently gathered the attention of researchers and policy makers (see for example Crisman et al. (2016) or Garcia-Hombrados (2017)).

The study is structured as follows. Section 2 summarizes the related literature. Then, section 3 discusses some key aspects about the practice of FGC in Senegal, presents the law that banned the practice and examines the effectiveness of this law. Next, I introduce the empirical strategy in section 4 and the data used in the analysis in section 5. Section 6 presents the main results of the study and examines their robustness to different falsification tests. Section 7 concludes.

2 Related literature

The first body of literature to which this study is related to is the one that investigates the consequences of FGC. Two studies, Berg et al. (2014) and Berg and Unerland (2013), review systematically the existing medical evidence on the health consequences of FGC. Using a meta-analysis approach to synthesize existing results, these studies show that FGC is associated with menstrual problems and urinary tract infection, painful sexual intercourse and difficult labour during delivery. On the other hand, the meta-analyses show no association between FGC and HIV prevalence, infertility or obstetric haemorrhage. Nonetheless, the methodological rigour of the studies reviewed in Berg et al. (2014) and Berg and Unerland (2013) varies substantially and while some of them rely on large sample sizes and adjusted comparisons of health outcomes among women that experience FGC and women that did not (see for example WHO (2006), Jones et al. (1999) and Larsen (2002)), others use small samples and poor methodological designs.

In a more recent study, Wagner (2015) examines the consequences of FGC using Demographic and Health Surveys from 13 countries. This study has an important advantage relative to the previous literature: the analysis is based on nationally representative information from more than 100,000 women rather than on hospitalized or clinical samples, providing sufficient statistical power and representative information to detect the effect of FGC on infrequent health outcomes. The study finds that, once the author includes cluster fixed effects and adjust for key individual characteristics, FGC has limited health consequences. Although the study suggests some effects of FGC on the prevalence of sexually transmitted illnesses, vaginal discharge and genital sore, the results also highlight no effect of FGC on BMI, weight, hemoglobin, amenorrhea and menstruation. The results of Wagner (2015) are also aligned with previous findings from Morrison et al. (2001) and Browning et al. (2010) for Gambia and Ethiopia.

Despite several studies investigate empirically the consequences of FGC, more evidence is needed to shed light on some essential aspects about the effect of FGC on health. First, existing studies typically rely on adjusting for observable differences in terms of individual, household and ethnicity-level health determinants between women with and without FGC.

Although this empirical approach account for observable differences between women with and without FGC, this approach would be problematic if unobservable characteristics such as attitudes towards tradition could drive both FGC and health outcomes. Second, while the existing evidence on the negative effect of FGC on sexually transmitted illnesses and vaginal soar is consistent across studies, the evidence on the effect of FGC on other health and sexual reproduction outcomes is mixed and more rigorous research is needed to understand the life lasting consequences of this practice. Third, despite the medical literature has documented that severe complications during the cutting are not rare, to the best of my knowledge no study investigates empirically the effect of FGC on early mortality.

This study is also related with the literature that investigates the effectiveness of legal reforms and other interventions to tackle traditional practices in settings where the capacity of the administration to enforce the law is limited. The effectiveness of legal reforms to address traditional practices such as poligamy, female genital cutting or child marriage have been examined empirically in different studies with mixed results. For example, using spatial regression discontinuity designs, Fenske (2012) shows that polygamy bans do not seem to have any effect on the prevalence of this marriage practice. On the other hand, Garcia-Hombrados (2017) finds that exposure to a law that banned underage marriage in Ethiopia decreases significantly the prevalence of child marriage in 5 of the most developed regions of the country, while no effect was found in the regions of Gambella and Oromiya.

More specifically, two empirical studies examine empirically the effectiveness of laws that ban FGC. In Crisman et al. (2016), the authors use a regression discontinuity design examining whether the hazard of FGC drops in Burkina Faso after the introduction of the law that banned this practice in 1996. The results of the study show that although the law did not end with FGC, its introduction reduces significantly the risk of experiencing FGC. Goyette et al. (2016) study the determinants of the effectiveness of the anti-FGC bans in Burkina Faso and Kenya through examining whether the reduction in the prevalence of FGC was higher after the introduction of the law in those areas where access to the media was higher. The authors find that while higher access to the media decreases the effectiveness of the anti-FGC law in Burkina Faso, it increases the effectiveness in the case of Kenya. The authors reconcile these contradictory results through arguing that the very high prevalence of FGC in Burkina Faso could explain why exposure to the media could backfire, leading to a more reluctant attitude towards the new law.

Although in the last decades different countries have introduced anti-FGC bans (Ras-Work, 2009), governments, international organizations and NGOs are aware that practices rooted in tradition cannot be eradicated only through legal reforms. In this sense, different interventions have been implemented targeting the economic and social causes of this practice. A synthesis of the existing evidence on the effectiveness of different interventions is provided in Berg and Denison (2012). The study highlights that training health personnel and multifaceted community activities have little effects on beliefs or on the prevalence of

FGC. On the other hand, the authors suggest that educational campaigns among female students could be beneficial to improve FGC knowledge. The evidence on village empowerment activities promoting community level declarations to end this practice is mixed. While the results of the study suggest that these declarations have reduced the prevalence of FGC in Senegal, the authors also highlight that the intervention was not successful when implemented in Burkina Faso.

3 Female Genital Cutting in Senegal and the anti-FGC legislation

The practice of FGC is widespread in West African countries, where its prevalence ranges between 3% in Niger and 99% in Guinea. In Senegal, approximately 25% of women aged 15-49 declared having undergone FGC (28TooMany, 2015). Using information from Senegalese Demographic and Health Surveys (DHS) for those women born before the introduction of the anti-FGC legislation in 1999, table 1 shows wide variation in terms of the prevalence of this practice across different ethnic groups in Senegal. The table shows that FGC is deeply rooted in the tradition of many ethnic groups such as the Soninke, Mandinke, Diola and the Pular, while it is rare among the Wolof, the largest Senegalese ethnic group, and among the Serer.

Table 1: Pre-law prevalence of FGC across ethnic groups in Senegal:

Ethnic group	FGC prevalence	Share ethnic. in DHS datasets	T-C
Wolof	0.020	0.322	C
Poular	0.656	0.341	T
Serer	0.023	0.119	C
Mandingue	0.831	0.086	T
Diola	0.592	0.039	T
Soninke	0.681	0.019	T
Not a Senegalese	0.760	0.023	T
Other	0.471	0.051	T

Note: The prevalence of FGC for each ethnic group and the sample of women from each ethnic group are calculated using DHS 2016, 2015, 2014, 2012 and 2010 for those women born between 1980 and 1998, before the introduction of the law. The DHS questionnaires do not include information on bride price.

Unlike countries like Kenya, Egypt or Tanzania where most cuts occurs during teenage, FGC in Senegal is mainly conducted during infancy or early childhood. Yoder and Wang (2013) show that in this West African country, 61% of the cuts occur before the girls turn one year old and only the 3.4% of Senegalese girls are cut after the age of 5, accounting for approximately the 12% of cut girls. The WHO defines four types of FGC depending on the degree of invasiveness of the excision. The Type I or cloridectomy is the partial or total removal of the clitoris. Type II FGC or excision consists in the partial or total removal of the clitoris and the labia minora, with or without excision of the labia majora. Type III or infabulation is the more aggressive practice, and it consists on the narrowing of the vaginal opening through the creation of the covering seal. Type IV includes other harmful procedures to the female genitalia for non-medical procedures. Although most FGC conducted in Senegal could be classified as types I and II, type III cuttings are also existent among a small share of Soninke and Maninke girls (28TooMany, 2015). Regardless of the specific FGC type, most of the FGC conducted in Senegal are performed by traditional practitioners with little knowledge of female anatomy using crude unsterile instrument and without anaesthetics (UNICEF, 2013; Berg et al., 2014).

Although the evidence on the long-term health effects of FGC is not conclusive[2], the medical literature documents that severe health complications such as genital tissue swelling or problems with wound healing during circumcisions are frequent. Increasingly aware of the health risks and discriminatory nature of FGC, tackling this practice has been at the top of Senegal's policy agenda for decades. The flagship measure of the Senegalese government against the practice of FGC was the approval of the Law No. 99-05 that banned FGC and sanctions those who provokes sexual mutilations or gives instructions for their commission with six months to five years of prison, or hard labor for life if cutting results in death. The law was enacted the 29th of January 1999, following the anti-FGC speech of the US first lady Hillary Clinton in Senegal and 10 months of intense anti-FGC campaign led by different Senegalese civil society organizations.

Although the enforcement of the law was not perfect, the rounds 2016, 2014, 2012 and 2010 of the Senegalese DHS shows that women born after the law are much less likely to have undergone FGC. In order to assess the effect of the law on the prevalence of FGC, I use across ethnic group variation in the pre-law prevalence of FGC as a measure of exposure to the law. The results of this analysis, reported in table 2, show that conditional on year of birth, region of residence and age, girls from ethnic groups with a higher pre-law prevalence of FGC born after the introduction of the law experience the larger reduction in their probability of experiencing FGC in both the total, rural and urban samples. The sharp reduction in the probability of FGC for those girls from ethnic group with higher pre-law levels of FGC born after the introduction of the law is also evident in figure 1. Furthermore, additional analysis reported in figure 1 and using a leads and lags approach where the intensity variable

[2]See for example Wagner (2015)

is interacted with girl's year of birth (Autor, 2003) suggest that before the introduction of the law, the evolution of the prevalence of FGC was not statistically different from 0 across girls from the different ethnic groups.

Figure 1: FGC over time

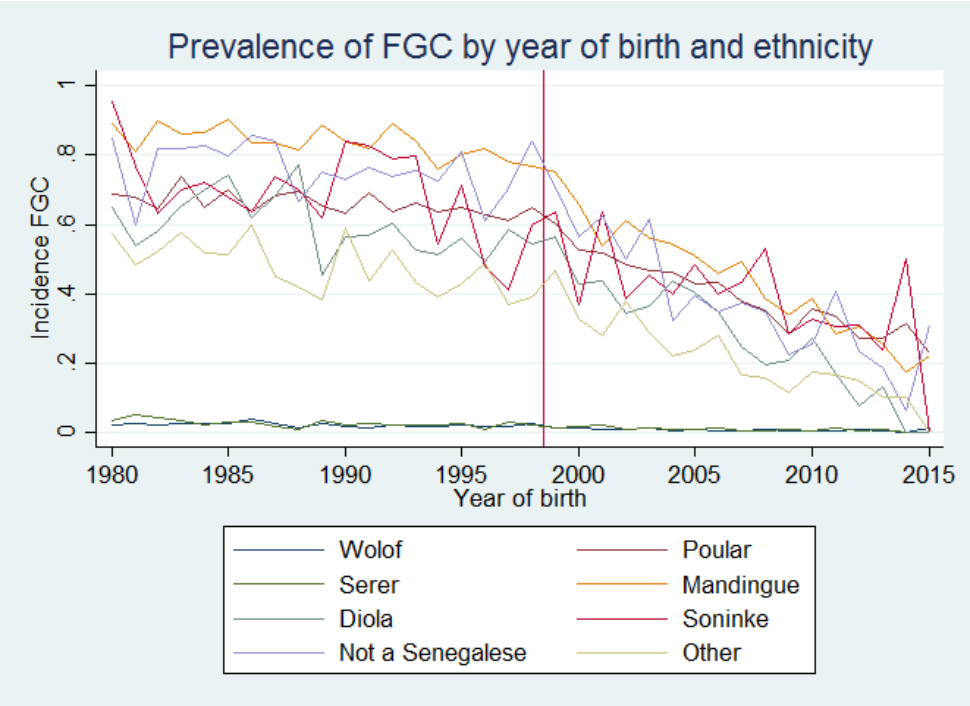
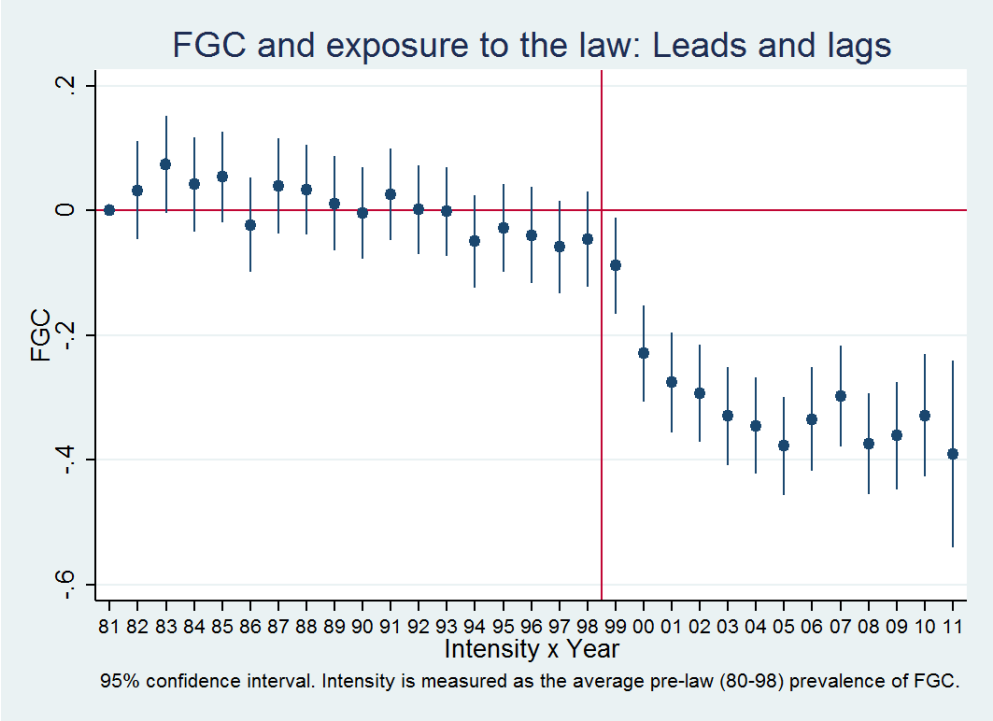


Figure 2: Leads and lags: Exposure to the law and FGC



4 Empirical strategy

The primary objective of this study is to investigate the causal link between FGC and child mortality. However, the lack of information on FGC for those girls that are no longer alive prevents the direct estimation of the effect of experiencing FGC on child mortality. In this context, and once the previous section shows the large effect of exposure to the Senegalese FGC ban on the prevalence of FGC, the study investigates the causal link between FGC and child mortality through examining whether girls from ethnic groups that were more exposed to the law experienced also a larger reduction in the probability of dying before the age of 5 years old.

For this purpose, I estimate the following regression:

$$ChildMortality_{ikrt} = \alpha_0 + \alpha_1 POST_t \times LawIntensity_k + \alpha_2 LawIntensity_k + \alpha_3 YearBirth_t + \alpha_4 EthnicGroup_k + \alpha_5 Region_r + \alpha_6 Region_r \times YearBirth_t + \alpha_7 X_i + \mu_{ikrt} \quad (4.1)$$

where $ChildMortality_{ikrt}$ indicates whether girl i from the ethnic group k living in region r and born during year t died during the first 5 years of life. $POST_t$ is a dummy variable that

Table 2: Impact of Female Genital Cutting Ban on FGC prevalence:

	(1) FGC (0/1)	(2) FGC (0/1)	(3) FGC (0/1)
Intensity × PostLaw	-0.228***	-0.291***	-0.200***
	(0.016)	(0.023)	(0.023)
Proportion FGC (0/1)	0.325	0.259	0.363
Regional Dummies	Yes	Yes	Yes
Regional time trends	Yes	Yes	Yes
N	51,396	18,724	32,672
Sample	All	Urban	Rural

Note: Estimates are conducted using continuous Senegal DHS rounds 2010, 2012, 2014, 2015 and 2016. All the regressions include as control variables a vector of year of birth dummies, a quadratic polynomial for age at survey, a vector of Ethnic group dummies, a dummy indicating whether a women is born after the introduction of the law and a variable indicating 1980-1998 average pre-law incidence of FGC for the ethnicity of the woman. Standard errors in parentheses are clustered at the survey cluster level.***p<0.01;**p<0.05;*p<0.1

is equal to 1 if the girl is born after the introduction of the FGC ban (January 1999) and the variable $LawIntensity_k$ measures the pre-law average incidence of FGC among the ethnicity k. $YearBirth_t$, $EthnicGroup_k$ and $Region_k$ are vectors of dummy variables that indicate the year of birth, ethnic group and region of residence of the girl. X_i is a vector of individual variables including a quadratic polynomial for the age of the girl i and its birth order within the household. μ_{ikrt} is the error term. The interaction term $POST_t \times LawIntensity_k$ is the main variable of interest in the analysis. Its parameter α_1 measures the differential change in the prevalence of child mortality for ethnicities with higher and lower pre-law levels of FGC. Because groups with higher pre-law prevalence of FGC experience higher reductions in the prevalence of FGC after the introduction of the law, a negative sign for the parameter α_1 would imply the existence of a negative effect of FGC on child mortality. In order to account for differential trends in child mortality over time across Senegal, the specification includes regional level time trends. Standard errors are clustered at the DHS cluster level.

The appropriateness of the empirical strategy to assess the link between child mortality and FGC relies on two main conditions. First, those ethnicities with a higher prevalence of FGC should have experienced larger reductions in the prevalence of FGC. This assumption has been tested in section 3 using data from 2010, 2012, 2014, 2015 and 2016 Senegalese

DHS surveys where information on FGC for women aged 0-49 years old is included. Second, the evolution of child mortality across cohorts born before the introduction of the law should be the same across the different ethnic groups. This identification assumption is examined in detailed in section 6.1.

5 Data

The main analysis of the paper is conducted using the birth history from women aged 15-49 included in the 1992, 1997, 1999, 2005, 2010, 2012, 2014, 2015 and 2016 Senegalese DHS. The 1986 and 2006 Senegalese DHS are excluded from the analysis because the former survey does not include information on the region of residence and the latter does not include women's birth history[3]. DHS have been implemented in more than 100 low- and middle-income countries across the world for more than three decades and they have been used in numerous studies on health and early mortality in developing countries. Although DHS questionnaires are designed to produce comparable statistics and the vast majority of them collect comprehensive information on birth history for every women aged 15-49, the exact questionnaire and the size and characteristics of the sample vary in every DHS. Indeed, comprehensive information on FGC for every girl is not collected before the 2010 round and even the surveys that did so, only collect this information for women that are alive.

Using the birth history reported in the surveys for women aged 15-49, I identify all births of girls occurred after 1980 and defined child mortality as those died before their 5th birthday. Because the vast majority of FGC occurs during childhood and in order to avoid censoring in the dependent variable, I restrict the analytical sample to the 90,097 girls born at least 5 years before each survey. Table 3 summarizes different early mortality measures for the girls and boys in our analytical sample. The prevalence of child mortality among these girls is 14.4%, which is lower than the prevalence among boys. Furthermore, child and infant mortality rates are substantially larger in urban areas than in rural areas.

6 Results

The main estimates examining the effect of exposure to the law on child mortality are reported in table 4. The table reports the estimates for the parameter α_1, measuring whether women from ethnic groups that experience larger reductions in the prevalence of FGC after the introduction of the law experience also larger reductions in the prevalence of child mortality.

[3]The 2006 Senegalese DHS only includes birth information for children younger than 5 years old. Since only children born 5 years or more before the survey are used in the analysis, this dataset is removed from the analysis.

Table 3: Early mortality in Senegal:

	(1) Total sample Prevalence	(2) Urban sample Prevalence	(3) Rural sample Prevalence
Girls			
Child mortality	0.144	0.098	0.163
Infant mortality	0.071	0.055	0.077
Sample	90,097	26,270	63,827
Boys			
Child mortality	0.162	0.115	0.181
Infant mortality	0.085	0.068	0.092
Sample	93,846	27,298	66,548

Equation 4.1 is estimated without regional time trends in column 1. Then, in columns 2 to 4, the equation is estimated with regional time trends using three different samples: all households in the dataset, only households living in urban areas and only households living in rural areas. The results of the first specification suggest that exposure to the law would decrease significantly the probability of infant mortality by 1.5 percentage points for women from a ethnic group that before the law cut the 100% of the girls ($p<0.05$). The magnitude of the effect is slightly smaller (1.2 percentage points) when regional time trends are included in the analysis, although the coefficient in this case is not statistically significant at conventional confidence levels ($p=0.13$). This effect masks large heterogeneity. When the estimates are run separately for the rural and urban samples, the results suggest that while the effect is small and non-significant for rural areas, the effect is larger and statistically significant in urban areas. The larger effect in urban areas could be explained by the larger reduction in the practice of FGC in urban areas observed in table 2, that is also consistent with a larger capacity of the state to enforce the law and a lower attachment to traditions in urban areas.

Table 4: Female Genital Cutting Ban and Infant Mortality:

	(1) Child mortality	(2) Child mortality	(3) Child mortality	(4) Child mortality
Intensity × PostLaw	-0.015**	-0.012	-0.034***	-0.005
	(0.008)	(0.008)	(0.012)	(0.011)
Regional time trends	No	Yes	Yes	Yes
Sample	All	All	Urban	Rural
N	87,380	87,380	25,703	61,677

Note: All the regressions include as control variables a vector of year of birth dummies, a vector of Ethnic group dummies, a dummy indicating whether a women is born after the introduction of the law, a variable indicating sibling order and a variable indicating 1990-1998 average pre-law incidence of FGC for the ethnicity of the woman. Standard errors in parentheses are clustered at the survey cluster level.***p<0.01;**p<0.05;*p<0.1

6.1 Robustness checks

The previous section shows that girls from ethnic groups where the practice of FGC was rooted in tradition experienced a reduction in the probability of child mortality after the introduction of the law relative to girls from ethnic groups where FGC was never practiced, remarking the existence of a causal effect of FGC on child mortality in Senegal. In this section, I check the robustness of the results to different placebo tests.

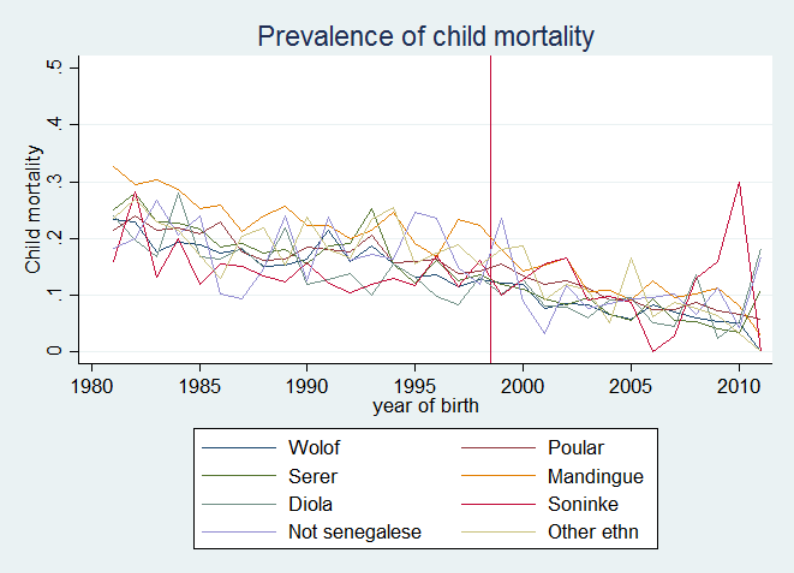
First, I estimate the effect of the law on the prevalence of child mortality among boys. Although we cannot rule out the possibility that a lower child mortality among girls have an effect on the probability of infant mortality of their male siblings, the effect of the law on boys, if any, should be smaller. The results of this analysis are reported in columns 1, 2 and 3 of table 5 and show very small and statistically insignificant effects of the law on the probability of child mortality in the three samples examined: rural, urban and total.

Second, it is also possible that the evolution of the prevalence of child mortality for girls was already different before the introduction of the FGC ban. In this scenario, the effect of the law on child mortality might be simply capturing pre-existing differences in the trends of child mortality across different ethnic groups. Figure 3 illustrate the evolution of child mortality over time by ethnic group. Since the assessment of the pre-law parallel trends condition is not straightforward in the figure, I run the analysis setting falsely the introduction of the law in 1995 and in 1990 and limiting the analysis to those women born

before 1999. The main results of the study would be compromised if the estimates of the effect of the law in these placebo test show significant effects. The results of these two placebo tests are reported in columns 4 to 9 of table 5, confirming that the main analysis are not driven by pre-law differences in terms of the trends of child mortality across ethnic groups. Additionally, following Autor (2003) I estimate a leads and lags model where the pre-law prevalence of FGC of the ethnic group is interacted with the year of birth of the girl. The pre-law parallel trends condition would hold if the coefficients for the set of variables $Intensity \times Yearofbirth$ are not statistically different from 0 for those girls born before the introduction of the law. The results of an F test for the interaction terms for the girls born before the law in the leads and lags specification are statistically indistinguishable from 0 at conventional confidence levels in both the rural ($p-value = 0.83$), urban ($p-value = 0.44$) and total sample ($p-value = 0.61$), confirming that the effects of the law on child mortality are not capturing pre-law differences in child mortality across ethnic groups[4].

Third, I re-estimate equation using two alternative measures of early mortality: mortality within the first day and the first year of life. This analysis has two objectives. Firstly, in a country where more than 60% of FGC occurs within the first year of life (Yoder and Wang, 2013), these analyses provide information on whether the law has any effect on mortality from the very young age. Secondly, since FGC is unlikely to happen within the first day of life, this measure of early mortality could work as a placebo test. If the analysis yields an effect of the law on mortality within the first day of life, it would be difficult to argue that this effect is driven by a reduction in the prevalence of FGC.

Figure 3: Child mortality over time



[4]Also, none of the individual coefficients for the set of interaction variables for the girls born before the introduction of the law is statistically significant at conventional confidence levels in any of the samples.

Table 5: Placebo tests: Female Genital Cutting Ban and Infant Mortality.

	Placebo test: Men			Placebo law: 1995			Placebo law: 1990		
	(1) Child mortality	(2) Child mortality	(3) Child mortality	(4) Child mortality	(5) Child mortality	(6) Child mortality	(7) Child mortality	(8) Child mortality	(9) Child mortality
Intensity × PostLaw	0.004	-0.014	0.009	-0.004	-0.028	0.006	0.003	-0.014	0.005
	(0.009)	(0.013)	(0.011)	(0.012)	(0.019)	(0.016)	(0.011)	(0.017)	(0.015)
Regional time trends	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Sample	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural
N	90,802	26,697	64,105	50,490	15,411	35,079	50,490	15,411	35,079

Note: All the regressions include as control variables a vector of year of birth dummies, a vector of Ethnic group dummies, a dummy indicating whether a women is born after the introduction of the law, a variable indicating sibling order and a variable indicating 1990-1998 average pre-law incidence of FGC for the ethnicity of the woman. Standard errors in parentheses are clustered at the survey cluster level.***p<0.01;**p<0.05;*p<0.1

The results of these placebo tests are reported in table 6. The effects on infant mortality or mortality within the first year or life are overall very similar to those found for child mortality. The coefficients that measure the effect of the law on the prevalence of infant mortality, reported in columns 1 to 3, are all negative and statistically significant at conventional confidence levels, suggesting than the effect of FGC on mortality arises from a very young age. On the other hand, the coefficients reported in columns 4 to 6 yielding the effect of exposure to the law on our placebo measure of mortality (mortality within the first day of life) are very small and statistically indistinguishable from 0.

Table 6: Female Genital Cutting Ban and Other Early Mortality Outcomes:

	(1) Infant mortality	(2) Infant mortality	(3) Infant mortality	(4) First-day mortality	(5) First-day mortality	(6) First-day mortality
Intensity × PostLaw	-0.018***	-0.026***	-0.013*	-0.002	0.000	-0.003
	(0.006)	(0.010)	(0.008)	(0.002)	(0.003)	(0.002)
Regional time trends	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	Urban	Rural	All	Urban	Rural
N	87,380	25,703	61,677	87,380	25,703	61,677

Note: All the regressions include as control variables a vector of year of birth dummies, a vector of Ethnic group dummies, a dummy indicating whether a women is born after the introduction of the law, a variable indicating sibling order and a variable indicating 1990-1998 average pre-law incidence of FGC for the ethnicity of the woman. Standard errors in parentheses are clustered at the survey cluster level.***p<0.01;**p<0.05;*p<0.1

7 Conclusions

This study contributes to the literature through documenting for the first time the existence of a causal effect of FGC on child mortality. Although previous studies examine the association between this traditional practice and health outcomes with mixed results, the extent to which the several complications that often arise during the excision could be contributing to explain the large child mortality rates in the countries where this practice is widespread remained unexplored.

The results of the study remark the urgency for designing effective strategies to tackle this practice. Furthermore, the analysis provides evidence supporting the introduction of anti-FGC legislation in the many countries where the practice is widespread but still not regulated (28TooMany, 2015).

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Figure 4: Early mortality and FGC over time