

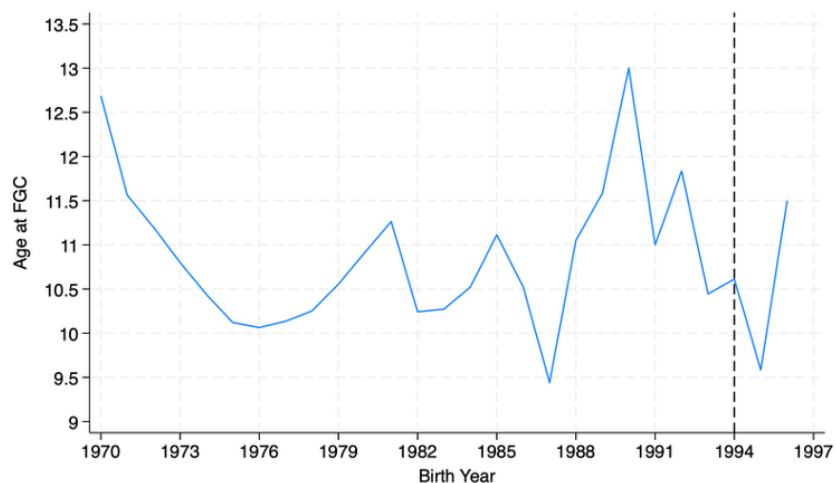
Education, marriage, and banning female genital cutting: evidence from Benin

Coleson Weir

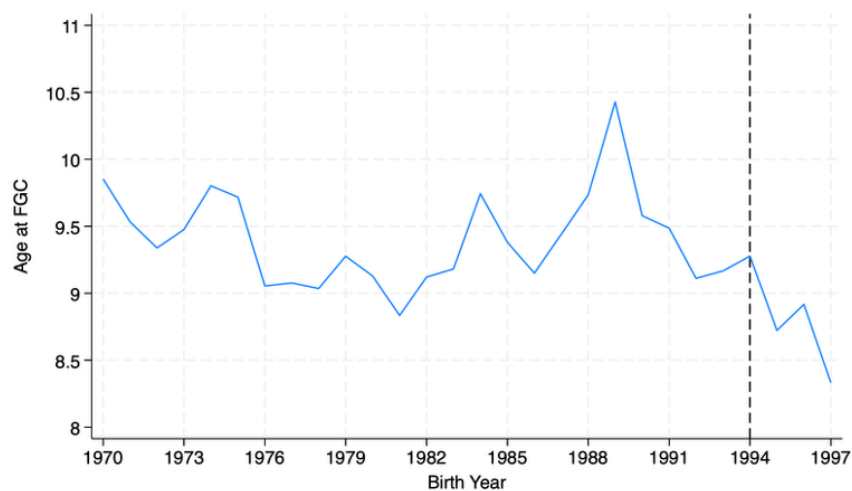
Online Appendix

A.1 Tables and figures

Figure A.1 Age at FGC conditional on being cut



Panel A: Ethnic Groups Excluding Bariba and Peulh



Panel B: Bariba and Peulh Ethnic Groups

Note: The Bariba and Peulh ethnic groups practice FGC at earlier ages than the other ethnic groups in Benin.

Figure A.2: Percent of women cut by ethnic group

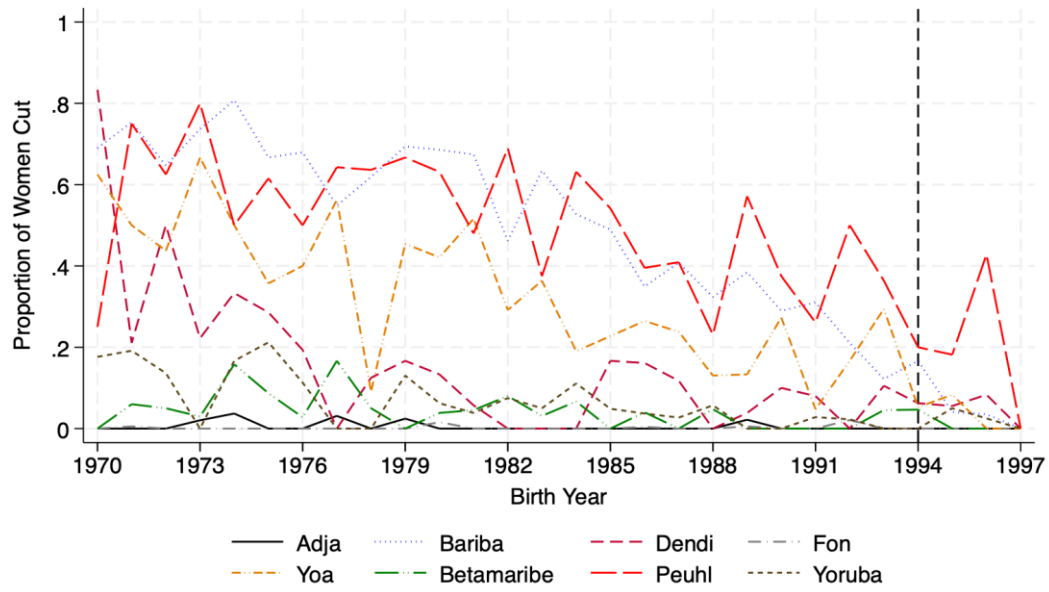


Figure A.3: Prevalence of FGC by ethnicity

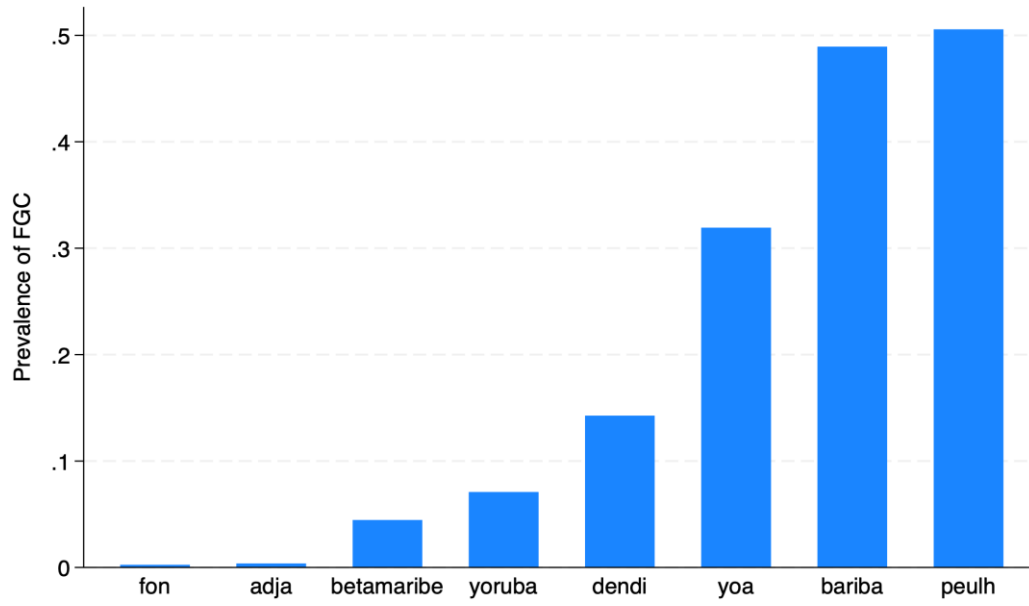
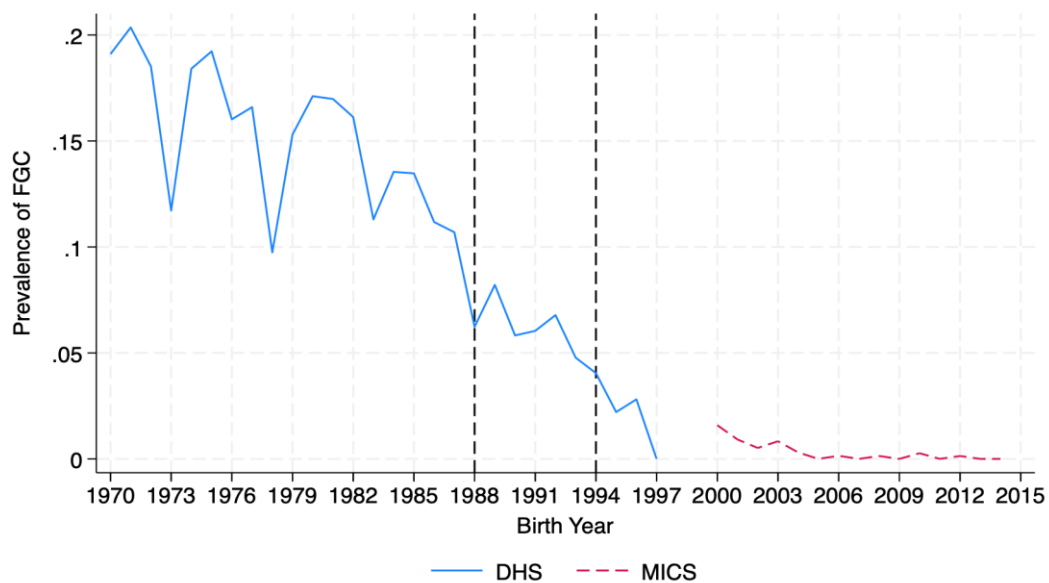
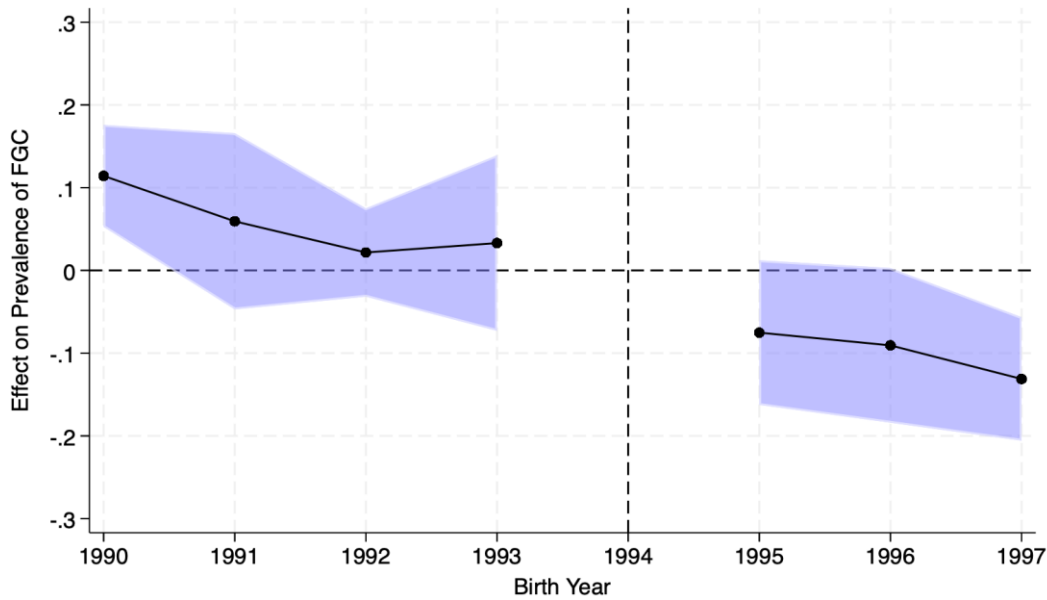


Figure A.4 Prevalence of FGC by birth cohort



Notes: The first vertical line represents the first cohort that would be affected by the local leaders' denunciation of the practice of FGC. The second vertical line represents the first cohort that would be affected by the anti-FGC legislation. Both DHS and MICS data are utilized

Figure A.5: Event study for FGC prevalence



Notes: Each point represents the coefficients from a regression. The point indicates the average effect of the law on the prevalence of FGC for a birth year cohort. The shaded region represents the 95% confidence interval for each point. The vertical line is at 1994 which is when the FGC ban would begin to affect cohorts. The horizontal line is at 0. The 2011 round of the DHS are used. The sample includes individuals born between 1990 and 1997.

Figure A.6: Raw data for educational attainment

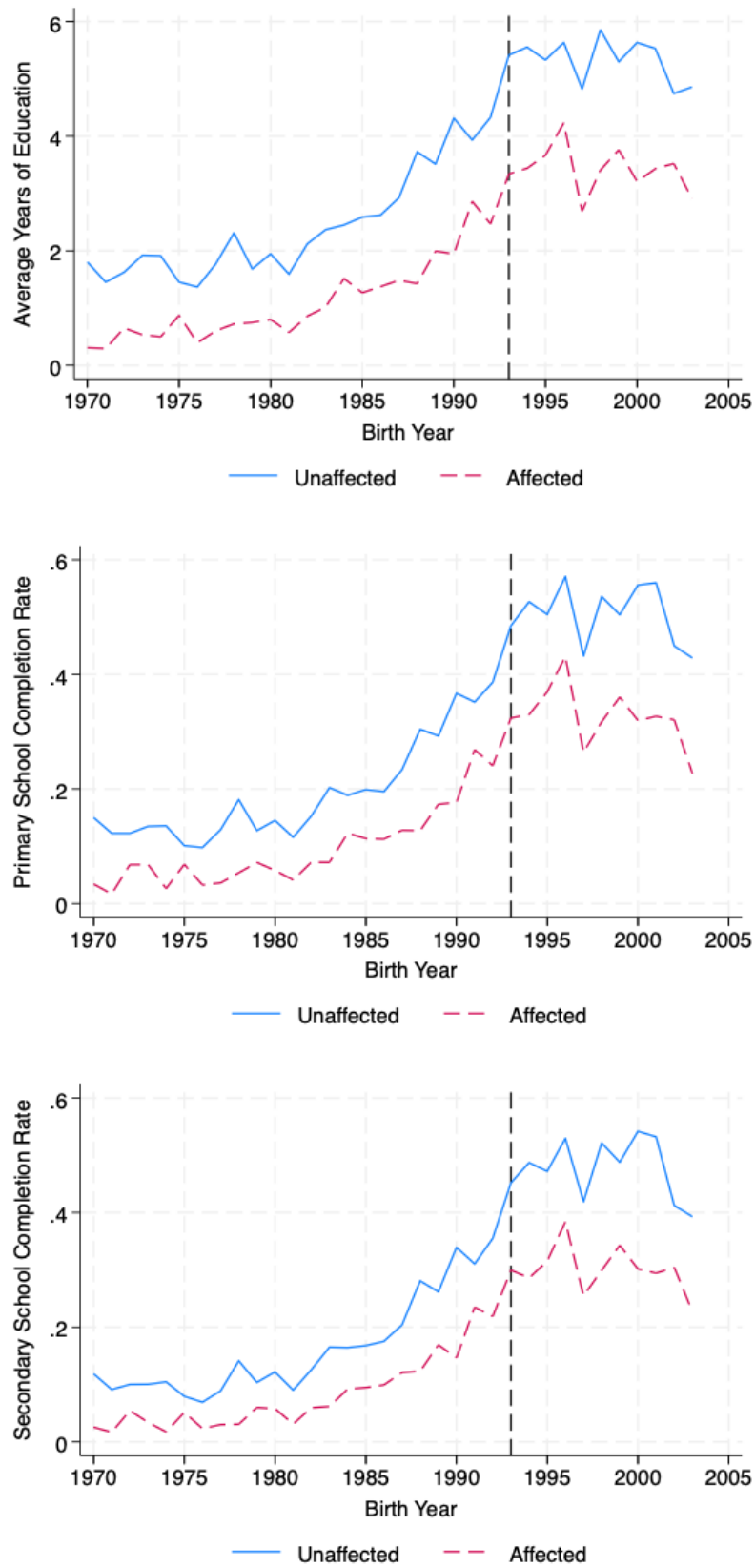


Figure A.7: Effect of FGC ban - dropping on birth cohort at a time

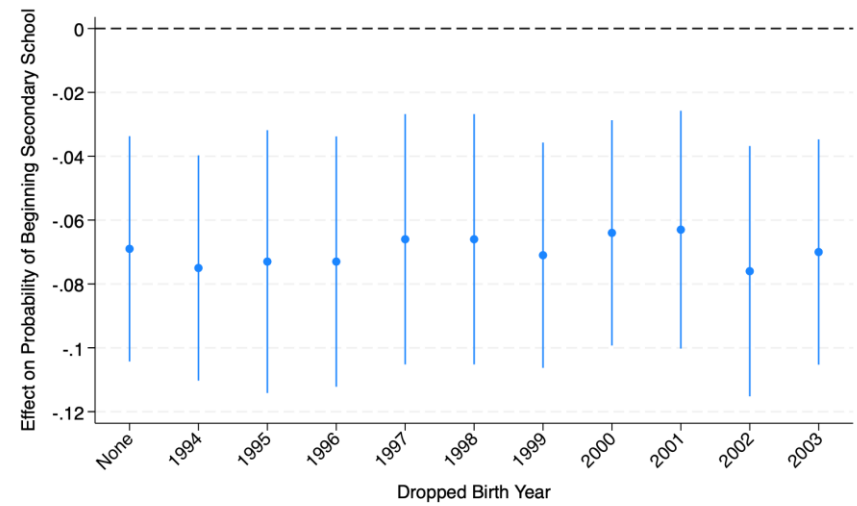
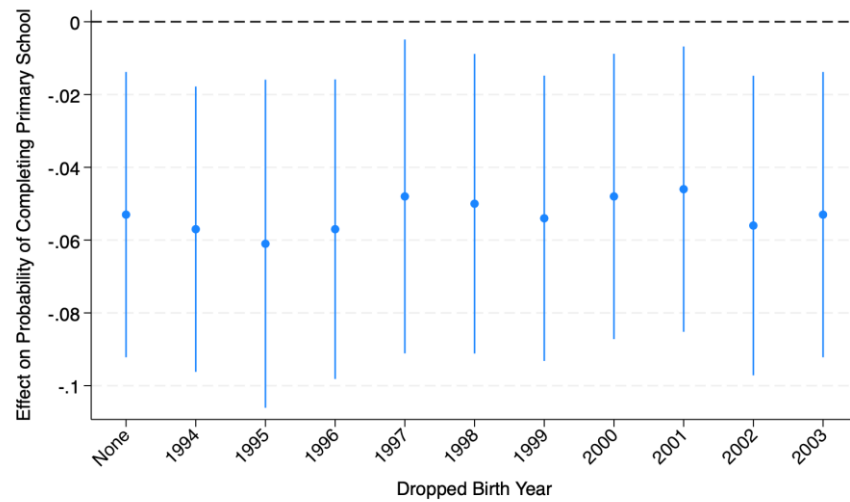
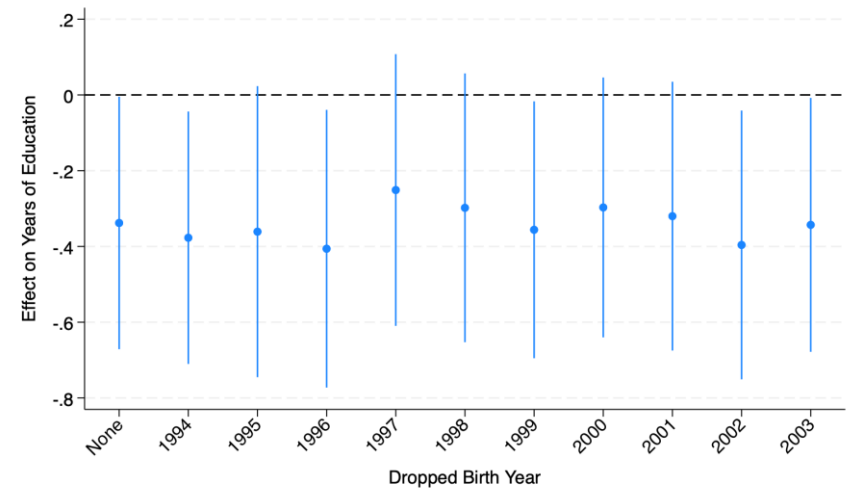
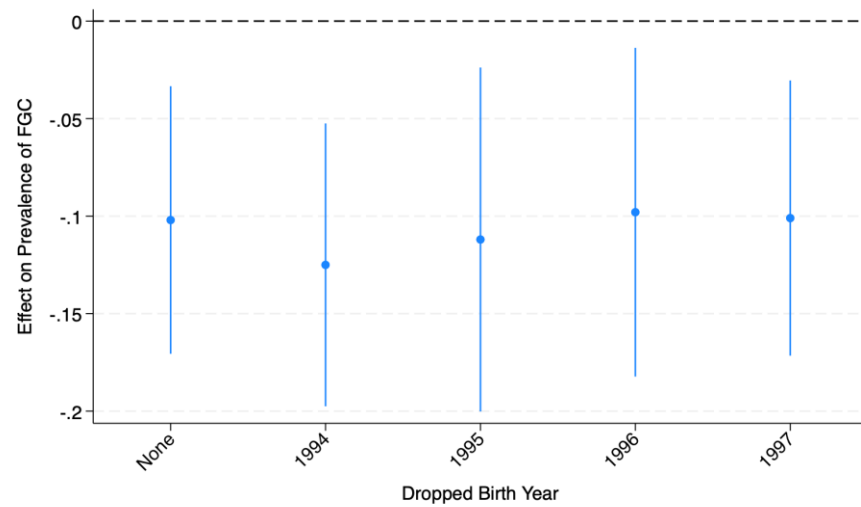


Figure A.8: Probability density function for marriage by birth cohort

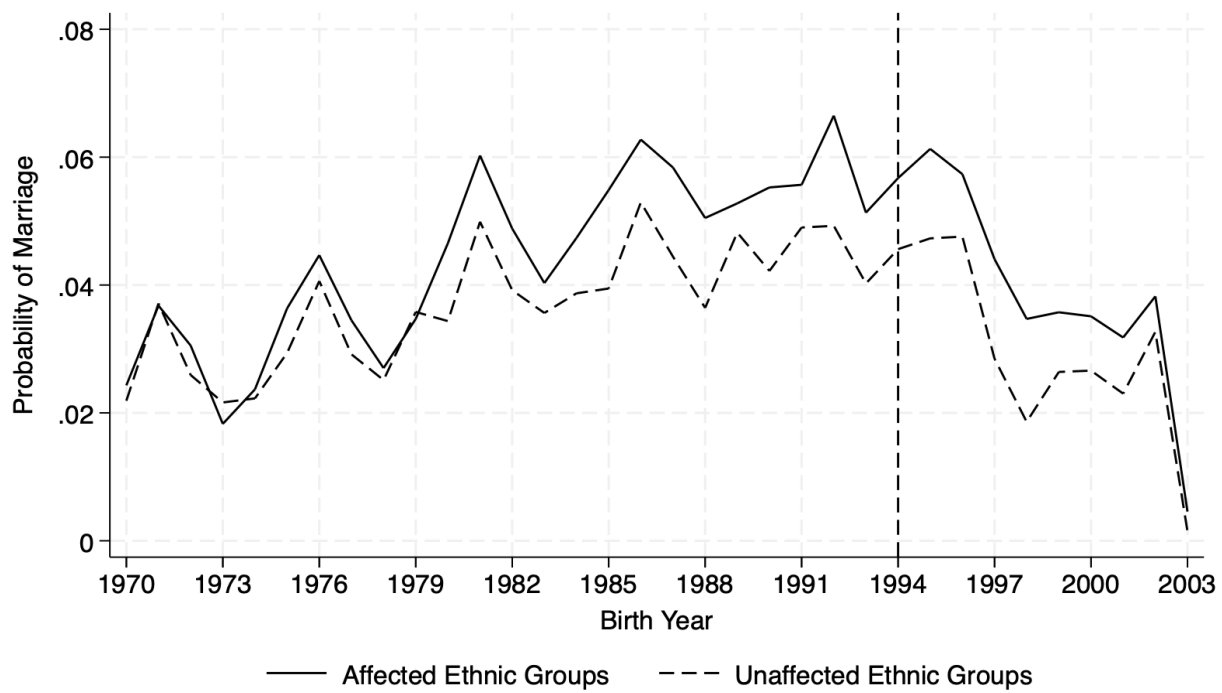


Table A.1: Summary statistics (pooled)

	Mean	SD	Min	Max	N
<i>Panel A: Demographic Information</i>					
Age	27.542	8.352	15	48	29413
Birth year	1986.629	8.698	1970	2003	29413
Underwent FGC	0.117	0.322	0	1	9808
Age at first birth	19.665	3.989	11	41	21434
Number of living children	2.407	2.202	0	12	29413
Ever married	0.744	0.436	0	1	29413
Age at first marriage	18.649	4.522	10	47	21896
<i>Panel B: Educational Attainment</i>					
Years of education	3.013	4.196	0	21	29413
Started primary school	0.423	0.494	0	1	29413
Completed primary school	0.265	0.441	0	1	29413
Started secondary school	0.238	0.426	0	1	29413
<i>Panel C: Social Norms</i>					
Heard about FGC	0.652	0.476	0	1	14633
Should FGC stop	0.935	0.247	0	1	9632
<i>Panel D: Marriage Quality</i>					
Husband's education	8.615	22.086	0	98	21151
Husband's age	38.114	10.619	15	95	20549
Age gap between husband and wife	7.821	7.758	-26	80	20549
Wife has been humiliated by husband	0.894	0.307	0	1	29413
Wife has been threatened by husband	0.874	0.331	0	1	29413
Wife has been hit by husband	0.870	0.336	0	1	29413
Wife has been kicked by husband	0.867	0.340	0	1	29413
Wife has been afraid by husband	0.928	0.258	0	1	29413
Wife can refuse sex with husband	0.853	0.354	0	1	29413
Wife can ask husband to use a condom	0.795	0.404	0	1	29413

Notes: Sample uses the 2011 and 2017 DHS rounds and includes women born in 1970 or later. "Should FGC Stop" is restricted to those who have heard about FGC.

Table A.2: Summary statistics (2011 DHS survey)

	Mean	SD	Min	Max	N
<i>Panel A: Demographic Information</i>					
Age	27.107	7.537	15	42	14633
Birth year	1984.073	7.511	1970	1997	14633
Underwent FGC	0.117	0.322	0	1	9808
Age at first birth	19.540	4.144	11	39	10677
Number of living children	2.351	2.121	0	12	14633
Ever married	0.744	0.436	0	1	14633
Age at first marriage	18.580	4.406	10	40	10888
<i>Panel B: Educational Attainment</i>					
Years of education	2.831	4.181	0	21	14633
Started primary school	0.386	0.487	0	1	14633
Completed primary school	0.255	0.436	0	1	14633
Started secondary school	0.217	0.412	0	1	14633
<i>Panel C: Social Norms</i>					
Heard about FGC	0.652	0.476	0	1	14633
Should FGC stop	0.935	0.247	0	1	9632
<i>Panel D: Marriage Quality</i>					
Husband's education	8.859	22.972	0	98	10888
Husband's age	38.106	10.650	15	95	10286
Age gap between husband and wife	8.365	8.461	-26	80	10286
Wife has been humiliated by husband	1.000	0.000	1	1	14633
Wife has been threatened by husband	1.000	0.000	1	1	14633
Wife has been hit by husband	1.000	0.000	1	1	14633
Wife has been kicked by husband	1.000	0.000	1	1	14633
Wife has been afraid by husband	1.000	0.000	1	1	14633
Wife can refuse sex with husband	0.704	0.457	0	1	14633
Wife can ask husband to use a condom	0.588	0.492	0	1	14633

Notes: Sample uses the 2011 DHS round and includes women born in 1970 or later. "Should FGC Stop" is restricted to those who have heard about FGC.

Table A.3: Prevalence of FGC by ethnicity and department

<i>Ethnicity:</i>	Adja	Bariba	Dendi	Fon	Yoa	Betamaribe	Peulh	Yoruba
<i>Department</i>								
Alibori	No obs	0.418	0.4	0	No obs	0	0.373	0.115
Atacora	0	0.585	0.125	0	0.462	0.019	0.375	0
Atlantique	0	0	0.077	0.001	0.2	0	0	0.061
Borgou	No obs	0.523	0.327	0.014	0.379	0.244	0.689	0.147
Collines	0	0.5	0.667	0.004	0.133	0.071	0	0.046
Donga	0	0.5	0.183	0	0.324	0.139	0.333	0.309
Kouffo	0	0	0	0	No obs	0	0	0
Littoral	0.01	0.043	0.136	0	0.261	0.667	0.333	0.042
Mono	0.006	0	0.333	0	0	No obs	0	0
Ouémé	0	0	0.182	0.009	No obs	0.5	0	0.053
Plateau	0	0	No obs	0	0	No obs	0	0.015
Zou	0	0	0	0	0	No obs	0.5	0

Notes: Sample uses the 2011 round of the DHS. "No obs" denotes ethnicity-department groups without observations who reported their FGC status in the 2011 round of the DHS. Ethnicity-department groups are included in the "affected" group if they have a prevalence higher than average. The average prevalence by ethnicity-department group is 0.106.

Table A.4: Variance decomposition

	Department			Ethnicity		
	Overall	Between	Within	Overall	Between	Within
	(1)	(2)	(3)	(4)	(5)	(6)
Affected	0.424	0.388	0.228	0.424	0.446	0.204
FGC	0.328	0.161	0.286	0.328	0.211	0.270

Notes: Affected equals one if the individual is in an ethnicity-department group with higher than average prevalence of FGC. FGC is an indicator variable that equals one if the respondent has been cut.

Table A.5: Robustness check - alternative definition of affected group

	Underwent FGC		Years of Education		Completed Primary School		Started Secondary School	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A: Original Estimates (Mean)</i>								
Affected x Post	-0.114*** (0.034)	-0.102*** (0.035)	-0.403** (0.171)	-0.338** (0.170)	-0.061*** (0.019)	-0.053*** (0.020)	-0.078*** (0.018)	-0.069*** (0.018)
Observations	2,643	2,643	29,413	29,413	29,413	29,413	29,413	29,413
Adjusted R-squared	0.201	0.205	0.254	0.288	0.202	0.232	0.200	0.227
<i>Panel B: 40th Percentile</i>								
Affected x Post	-0.054** (0.022)	-0.048** (0.021)	-0.420*** (0.118)	-0.392*** (0.116)	-0.053*** (0.012)	-0.050*** (0.012)	-0.061*** (0.012)	-0.057*** (0.012)
Observations	2,643	2,643	29,413	29,413	29,413	29,413	29,413	29,413
Adjusted R-squared	0.192	0.198	0.254	0.289	0.202	0.232	0.200	0.226
<i>Panel C: Median</i>								
Affected x Post	-0.060** (0.024)	-0.053** (0.023)	-0.513*** (0.128)	-0.452*** (0.121)	-0.062*** (0.014)	-0.056*** (0.013)	-0.068*** (0.013)	-0.060*** (0.012)
Observations	2,643	2,643	29,413	29,413	29,413	29,413	29,413	29,413
Adjusted R-squared	0.193	0.199	0.254	0.289	0.202	0.232	0.200	0.227
<i>Panel D: 60th Percentile</i>								
Affected x Post	-0.075** (0.028)	-0.066** (0.027)	-0.617*** (0.132)	-0.574*** (0.131)	-0.077*** (0.016)	-0.070*** (0.017)	-0.090*** (0.015)	-0.082*** (0.015)
Observations	2,643	2,643	29,413	29,413	29,413	29,413	29,413	29,413
Adjusted R-squared	0.195	0.200	0.254	0.289	0.202	0.233	0.201	0.227
<i>Panel E: 75th Percentile</i>								
Affected x Post	-0.111*** (0.034)	-0.100*** (0.034)	-0.403** (0.166)	-0.336** (0.165)	-0.061*** (0.019)	-0.052*** (0.019)	-0.078*** (0.018)	-0.069*** (0.018)
Observations	2,643	2,643	29,413	29,413	29,413	29,413	29,413	29,413
Adjusted R-squared	0.200	0.205	0.254	0.288	0.202	0.232	0.200	0.227
Controls	NO	YES	NO	YES	NO	YES	NO	YES
Avg of Dependent Variable	0.117	0.117	3.01	3.01	0.265	0.265	0.238	0.238

Notes: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors are clustered at the ethnicity-birth year level. Controls include religion and age dummies. Underwent FGC is an indicator variable that equals one if the respondent has been cut. The sample is restricted to women born after 1990 due to local officials denouncing the practice. "Years of education" is measured in single years. "Completed primary school" and "Started secondary school" are indicator variables. Panel A displays the estimates from Tables 2 and 3, and Panel B defines "Affected" using the 40th percentile of prevalence of FGC. Panel C uses the median to define "Affected". Panels D and E use the 60th and 75th percentiles to define the "Affected" group, respectively.

Table A.6: Randomization inference

	Underwent FGC	Years of Education	Completed Primary School	Started Secondary School
	(1)	(2)	(3)	(4)
Panel A: <i>Randomly Assign Age</i>				
Affected x Post	-0.102**	-0.338**	-0.053***	-0.069***
[Randomization Inference p-value]	[0.014]	[0.029]	[0.000]	[0.000]
Controls	YES	YES	YES	YES
Panel B: <i>Randomly Assign Ethnicity-Department Group</i>				
Affected x Post	-0.102***	-0.338***	-0.053***	-0.069***
[Randomization Inference p-value]	[0.000]	[0.002]	[0.000]	[0.000]
Controls	YES	YES	YES	YES

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. P-values based on the distribution of estimates from the randomization inference are reported in brackets under the original estimates. Significance of the estimates is based on these p-values. Controls include religion and age dummies. "Underwent FGC" is an indicator variable that equals one if the respondent has been cut. "Years of education" is measured in single years. "Completed primary school" and "Started secondary school" are indicator variables.

Table A.7: Effect of the FGC ban on marriage quality

	Emotional Abuse Index		Physical Abuse Index		Sex Index		Household Wealth Index		Age Gap	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Affected x Post	-0.131*** (0.030)	-0.184*** (0.034)	-0.112*** (0.031)	-0.168*** (0.034)	0.196*** (0.033)	0.257*** (0.032)	-0.026 (0.024)	0.006 (0.023)	-0.603* (0.358)	-0.600* (0.348)
Observations	29,413	29,413	29,413	29,413	29,413	29,413	29,413	29,413	20,549	20,549
Adjusted R-squared	0.028	0.192	0.032	0.215	0.105	0.316	0.343	0.379	0.016	0.027
Controls	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Avg of Dependent Variable	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.82	7.82

Notes: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors are clustered at the ethnicity-birth year level. Controls include religion and age dummies. All dependent variables are listed above the columns. All of the indices are normalized. The following discussion of index scales are pre-normalization. The emotional abuse index is measured on a scale from 0 to 3 and includes if the woman has been humiliated, threatened, or feels afraid of her husband. The physical abuse index is measured on a scale from 0 to 2 and includes if the woman has been hit or kicked by her husband. The sex index is measured from 0 to 2. This index includes information about if a woman is able to refuse to have sex with her husband and if a woman is able to ask her husband to use a condom. Household Wealth Index is the index created by the DHS and measures wealth on a scale of 1 to 5 with 1 being the poorest and 5 being the wealthiest. The DHS Wealth Index is normalized for this analysis. "Age Gap" is calculated as the husband's age minus the wife's age.

A.2 Free primary education in Benin and Senegal

Benin and Senegal have both banned FGC. Senegal had free primary education prior to the ban, and Benin implemented free primary education three years after the passage of the ban. García-Hombrados and Salgado (2023) examine the effect of the anti-FGC legislation on women's educational outcomes. They find an increase in education overall; the probability of never going to school decreases and the probability of getting two or more years of schooling increases. In Benin before free primary education is introduced, educational outcomes decrease as a result of the ban as shown in Table 3. Once free primary education is implemented the negative impact of the ban is counteracted. Thus, free primary education in addition to the ban has positive but not significant impacts on years of education, completing primary school, and beginning secondary school, which is evident in Table 5.

To compare the Senegal results from García-Hombrados and Salgado (2023) to my results in Benin, I examine the same outcome variables in Tables 2 and 3 of their paper using the discrete measure of free primary education in Benin as it provides more conservative estimates in Table 5. Appendix Table A.8 displays the results. Panel A shows the impact of the FGC ban in Senegal from García-Hombrados and Salgado (2023). Panel B shows the results of estimating equation 2 in Benin. The outcome variable in Column 1 is the probability a woman has never been to school. Columns 2 through 5 use the probability of a woman's years of education being greater than one, two, three, or four years respectively. After free primary education was implemented in Benin, there are very similar effects on educational outcomes to those in Senegal as studied by García-Hombrados and Salgado (2023).

Table A.8: Comparison between FGC bans in Senegal and Benin

	Never in School	Years of Educ ≥ 1	Years of Educ ≥ 2	Years of Educ ≥ 3	Years of Educ ≥ 4
	(1)	(2)	(3)	(4)	(5)
Panel A: <i>Senegal</i>					
Effect of FGC Ban	-0.099*** (0.022)	0.054*** (0.018)	0.039** (0.017)	0.019 (0.024)	0.003 (0.026)
Panel B: <i>Benin</i>					
Affected x Post x FPE	-0.099** (0.039)	0.099** (0.039)	0.099** (0.039)	0.100** (0.041)	0.084** (0.041)

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors are clustered at the ethnicity-birth year level. All regressions in Panel B include controls including religion and age dummies. "Years of education" is measured in single years. "Completed primary school" and "Started secondary school" are indicator variables. FPE stands for Free Primary Education. Panel A is the results from Tables 2 and 3 of García-Hombrados and Salgado (2023). Panel B is the results from the triple difference-in-differences estimation with a discrete measure of regions affected by free primary education in Benin. To measure the impact of free primary education, proportion of women who never attended school is utilized.

A.3 Norms about FGC

I look at how the anti-FGC law impacts social norms surrounding genital cutting, which is presented in Appendix Table A.9. Columns 1 through 4 look at the women's sample, whereas Columns 5 through 8 use the men's sample. Columns 1, 2, 5 and 6 show the effect on whether someone has heard about FGC. Columns 3, 4, 7, and 8 look at the effect of the law on people's opinion as to whether the practice of genital cutting should be stopped. For both men and women, the law had no effect on whether people heard about genital cutting. A woman who has not undergone the procedure is 1% less likely to have heard about genital cutting regardless of the law. There is no statistically significant effect from the law on thoughts surrounding the future of FGC for women; however, 93% of women and 91% of men think FGC should stop regardless. The law increased the proportion of men who think FGC should stop by 4.8 percentage points. This shows the law may not have been successful in changing women's attitudes regarding the future of the practice of FGC but did change men's attitudes towards the future of FGC.

Table A.9: Effect of the FGC ban on norms surrounding FGC

	Women				Men			
	Heard about FGC		Should FGC Stop		Heard about FGC		Should FGC Stop	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Affected x Post	-0.013 (0.032)	-0.010 (0.031)	-0.018 (0.014)	-0.018 (0.015)	0.019 (0.038)	0.029 (0.038)	0.038 (0.028)	0.048** (0.024)
Observations	14,633	14,633	9,374	9,374	3,735	3,735	2,786	2,786
Adjusted R-squared	0.128	0.139	0.133	0.144	0.105	0.108	0.067	0.078
Controls	NO	YES	NO	YES	NO	YES	NO	YES
Avg of Dependent Variable	0.652	0.652	0.934	0.934	0.761	0.761	0.907	0.907

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors are clustered at the ethnicity-birth year level. Controls include religion and age dummies. Heard about FGC equals 1 if the respondent knows about the existence of female genital cutting. "Should FGC Stop" was originally coded in four levels: stop, continue, depends, and "I do not know." Continue and depends were recoded as 0, stop was recoded as 1, and "I don't know" was recoded as missing. The regressions with the outcome being "Should FGC Stop" is only run using individuals who have heard about FGC.