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When democracy meets cultural norms: Democratic processes and female genital mutilation

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Abstract

Female genital mutilation (FGM) is a violation of women's human rights and a threat to their health. While there have been studies on the effect of democracy on women's health more broadly, there is a research gap on the effect of democracy on FGM. My thesis therefore aims to answer the research question "What is the effect of democracy on the prevalence of female genital mutilation?". I used a statistical analysis to compare the likelihood of being subjected to FGM between respondents born under democracy to those born under a non-democratic regime and a process tracing case study of Kenya to examine the mechanisms behind this. My results show that democracy can decrease the risk of FGM but that this effect is conditional on which country a woman lives in, urban residence, and education level. In Kenya, the representation of a plurality of opinions under democracy, a majority preference to eradicate FGM, an improvement in women's socioeconomic status, and the protection of individual rights led to a decrease in FGM, but evidence for women's political empowerment impacting FGM rates is mixed. My research addresses a literature gap and has implications for policymaking and anti-FGM initiatives, which could consider the effect of democracy influencing FGM rates. Importantly however, it also shows that democracy is not a universal solution to human rights violations and public health risks and can have distributive effects. Especially where it empowers a majority advocating for the continuation of harmful traditional norms and practices, it can reinforce them and prevent progress.

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1. Introduction

Movements against gender-based violence (GBV) have gained momentum since the 1990s (Weldon, 2006, p. 64). These include efforts to eradicate female genital mutilation (FGM), which affects over 200 million women globally and is defined as "all procedures that involve partial or total removal of the external female genitalia, or other injury to the female genital organs for non-medical reasons" (World Health Organization [WHO], 2024).

The WHO (2024) considers FGM a violation of human rights, the rights to health, security, physical integrity, be free from torture, cruel, inhuman, or degrading treatment, and potentially to life, and a discriminatory practice against women. Short-term risks include severe pain, bleeding, tissue swelling and injury, fever, infections, urinary problems, wound healing problems, shock, and death. Long-term, FGM can cause urinary, vaginal, sexual, and menstrual problems, scarring, childbirth complications, a need for surgery, and psychological problems. In most cases girls undergo it between infancy and age 15 (United Nations Children's Fund [UNICEF] USA, 2022).

Democracy is associated with improved public health and gender equality in health, resulting from electoral accountability mechanisms and improved socioeconomic rights for women (Harding, 2019, p. 248; Safaei, 2012, p. 135). This likely applies to the reduction of FGM. Democracy may reduce it through a representation of a plurality of opinions, electoral accountability towards a majority preference, women's political and socioeconomic empowerment, and better protection of individual rights. However, FGM is usually rooted in social norms and cultural traditions, creating social pressure to continue it (WHO, 2024). If a majority of the population favors its continuation, democratization may reinforce FGM rather than help combat it.

As Figure 1 (National FGM Centre, n.d.; Varieties of Democracy [V-Dem], n.d.) shows, countries with high FGM rates oftentimes have lower democracy rates, but a causal link has not been established. While there are studies on the effect of democracy on women's health (e.g., Safaei, 2012; Weijnert, 2010) and on factors influencing FGM (e.g. Bicchieri & Marini, 2015; Engelsma et al., 2020), there is a research gap on how democracy affects FGM. My thesis therefore aims to answer the research question "What is the effect of democracy on the prevalence of female genital mutilation?".

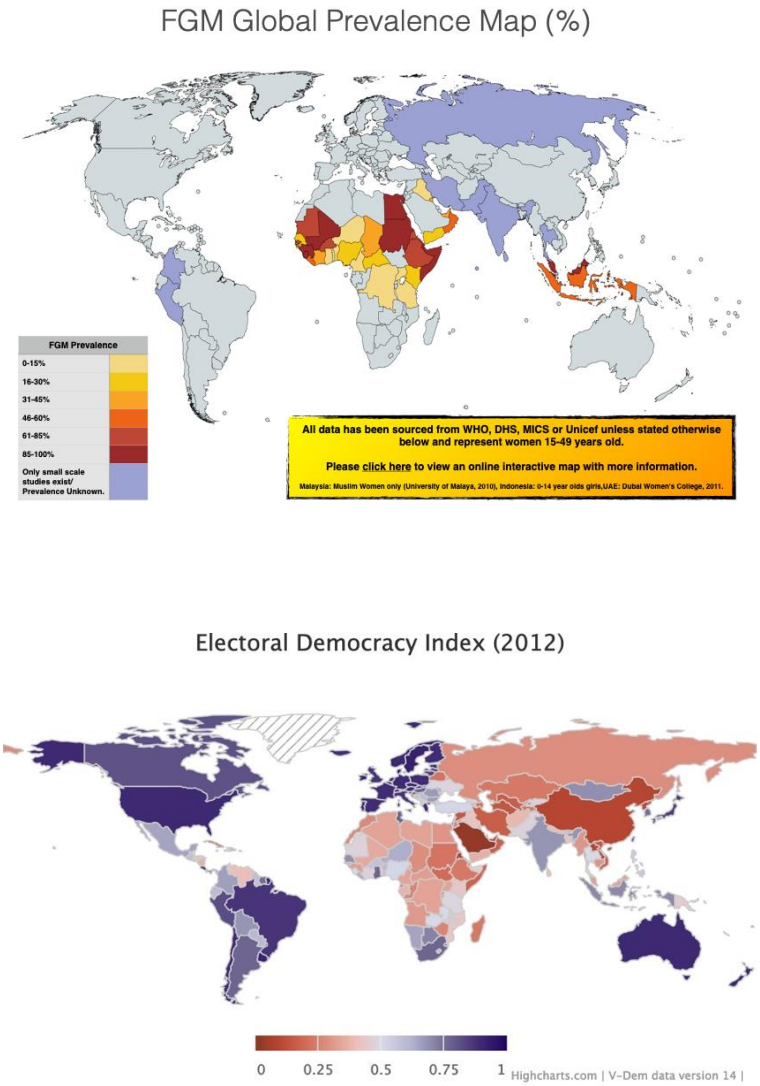

Figure 1

I used a mixed-methods design, combining a multi-country individual-level logistic regression analysis with process tracing. This enables both a quantitative assessment of the relationship, increasing generalizability, as well as of *how* democracy impacts FGM, increasing internal validity. Using Demographic and Health Surveys (DHS) from five Sub-Saharan African countries, I statistically analyzed the effect of democracy on the likelihood of being subjected to FGM. Countries that democratized between 1990 and 2000 were selected, allowing for sufficient time for democracy to impact FGM. Additionally, I examined the mechanisms through which democracy influences FGM, using a case study of Kenya. Kenya was selected due to its high initial

FGM prevalence, strong decline in FGM rates, and the statistical evidence showing that democracy reduced FGM in the country. Data included secondary sources and an interview with Sarah Mbira from the Macheo Children's Organisation.

The results show that being born under democracy reduces the risk of FGM but that the effect varies across countries and is conditional on residence and education levels. Democracy decreases the risk of FGM for urban and educated women, while it increases the risk for those with no education and has almost no effect for rural residents. In Kenya, the representation of a plurality of opinions under democracy, a majority preference to eradicate FGM, an improvement in women's socioeconomic status, and the protection of individual rights reduced FGM, for example through participatory communication or the protection of constitutional rights by the highest court. Evidence for women's political empowerment impacting FGM rates is mixed.

This is of both academic and societal relevance. Firstly, my thesis advances research on FGM and addresses a literature gap. Secondly, the conditional effect of democracy on FGM shows that democracy is not a universal solution to human rights violations and public health risks and may have distributive effects. Thirdly, exploring ways to reduce FGM is of intrinsic value, as it violates women's health and human rights (WHO, 2024). Fourthly, policymaking and anti-FGM initiatives could consider democratic governance and its distributive effects.

2. Theoretical framework

2.1 Conceptualization

The conceptualization of FGM, the dependent variable (DV), builds on the WHO's (2024) definition, describing FGM as "all procedures that involve partial or total removal of the external female genitalia, or other injury to the female genital organs for non-medical reasons." It distinguishes between four types of FGM, with infibulation (type 3) being the most harmful.

Some scholars (e.g., Batyra et al., 2020; Bicchieri & Marini, 2015; Yoder et al., 2013) use the terms female genital cutting (FGC), a combination of both (FGM/C), or female circumcision. This thesis uses the term FGM for two reasons. Firstly, FGC and female circumcision do not sufficiently capture the rights violations and high risk for medical complications, and risk equating it with male

circumcision. The second reason is to stay consistent with the WHO's (2024) definition, which includes all types of FGM. The inclusion of "non-medical reasons" leaves room for the numerous motivations for performing it.

To conceptualize democracy, the independent variable (IV), I will draw on Dahl's (1971, p. 8) concept of polyarchy, which describes a political system with a participation of a plurality of actors, extensive public contestation, a government responsible to its citizens, and individual freedoms (Keman, 2015). This reflects the multidimensionality and imperfectness of democracy, as Dahl (1971) focuses on the democratization process through which institutions become close to the ideal type of democracy, which would be a regime perfectly responsible to all citizens (Keman, 2015). The elements of polyarchy are relevant for FGM outcomes, which are influenced by a complexity of actors and interests that may translate into political discourse.

Dahl's (1971) concept is mirrored in V-Dem's Regimes of the World conceptualization, which distinguishes between electoral and liberal elements of democracy (Nord et al., 2024, p. 12). Electoral democracies are defined by free and fair elections, sufficient degrees of suffrage, and freedom of expression and association (p. 12). Liberal democracies additionally include judicial and legislative constraints on the executive, the protection of civil liberties and minority rights, and equality before the law (p. 12).

This distinction enables an understanding of different mechanisms through which democracy may impact FGM. Electoral and liberal elements form distinct dimensions of democracy that can change independently of each other. Electoral elements represent the majoritarian element of democracy and how the representation of a plurality of opinions can lead to changes in FGM. Liberal aspects might reflect women's rights and human and individual rights more generally.

2.2 Factors influencing FGM prevalence

To understand how democracy might impact FGM, examining factors influencing its prevalence is necessary. Common reasons for FGM are social pressure to conform with community practices, a rite of passage into adulthood, hygiene, beauty, marriageability, controlling girls' sexuality, and increasing men's sexual pleasure (Wagner, 2015, p. 229; WHO, 2024). Sometimes it is seen as a religious requirement, but no religious scripts require FGM, and some religious leaders promote

its eradication (WHO, 2024). The roots of the practice reflect gendered power imbalances (Wagner, 2015, p. 229). It is often performed by local traditional circumcisers, but sometimes also as "medicalized" FGM by health professionals (WHO, 2024).

Parental education and urban residence are associated with decreasing FGM, whereas being Muslim and a family history of FGM increase the risk of it (El-Dirani et al., 2022, p. 174). Ethnic fractionalization is linked with decreasing prevalence, as social norms may be questioned through exposure to other ethnicities (Bicchieri & Marini, 2015, p. 22; UNICEF, 2013, p. 33).

Enforcing anti-FGM legislation is often challenging due to legal loopholes, limited institutional capacity, reluctance to report family members, weak social support for family members of prosecuted parents, and secret performances of it (UNFPA & UNICEF, 2024, p. 37). Mobile courts and informal institutions are effective where law enforcement is weak, showcasing the importance of local engagement (p. 37).

Because FGM is a symbol of marriageability and gendered power structures, women's economic and legal equality may be necessary conditions for its elimination (Finke, 2006, p. 14; Flachs, 2011, p. 42). As the absence of rights is one factor sustaining FGM, community programs strengthening women's rights have been effective in combatting it by educating and empowering girls to stand up against it (Berg & Denison, 2012, p. 43). Empowering women economically can change traditional patterns of women being the dependent members of the household and make families less dependent on girls' marriageability (El-Dirani et al., 2022, p. 174; Williams-Breault, 2018, p. 231). Further, projects focused on equality and women's role in development led to a decrease in FGM in Egypt (Seif El Dawla, 1999, p. 130). The FGM discourse consequently became a symbol of women's societal status and democratic rights (p. 133).

Health education campaigns and formal education can lower support for FGM by influencing gender relations and increasing knowledge about health consequences (Matanda et al., 2023, p. 13). The use of media has also increased success in reaching more people (p. 13).

The UNFPA-UNICEF Joint Programme (2024, pp. 10, 19-20) identifies women- and youth-led grassroots movement-building as key to success because it encourages bottom-up initiatives and awareness-raising with local leadership. They boost girls' leadership and autonomy, initiate conversations, and increase community-level surveillance (pp. 14-15). Anti-FGM campaigns were

most effective when engaging families and community members to change attitudes towards FGM, rather than just providing information (Matanda et al., 2023, p. 9; UNFPA & UNICEF, 2024, p. 17).

Research regarding the influence of democracy on FGM is contradictory. Economic development, democratization, and international pressure may not reduce FGM, compared to other macro-level factors like population density, female education levels, political stability, and anti-FGM laws (Engelsma et al., 2020, p. 2). Contrary to this, Bicchieri and Marini (2015, p. 19) find that countries with political competition and a better protection of civil liberties and political rights are associated with lower FGM rates.

None of the studies used democracy as the sole IV and explored its influence on FGM rates in-depth but rather focused on correlation and democracy in combination with other factors. Moreover, they lack an analysis of the mechanisms behind how democracy might (not) lead to a reduction in FGM prevalence.

As Figure 1 (National FGM Centre, n.d.; V-Dem, n.d.) shows, high FGM rates are correlated with lower democracy rates. If causality can be established, this has important implications, as democratic governance interventions could potentially reduce FGM. This thesis aims to empirically test the statistical relationship between democracy and FGM, as well as the mechanisms behind this.

2.3 Theoretical argument and hypotheses

Due to the lack of comprehensive studies on the effect of democracy on FGM, I will link factors influencing FGM to theories about the broader effect of democracy on public health and women's health to form a theoretical argument about the relationship between my two variables.

Democracy may impact FGM rates through various mechanisms: (1) the representation of a plurality of opinions, (2) majority preference, (3) women's political empowerment, (4) an improvement in women's socioeconomic status, and (5) the protection of individual rights. I will explain how these might reduce FGM, as well as contradictory arguments.

Firstly, democracy allows for a plurality of opinions being represented. The traditional roots of FGM may be challenged, especially by younger generations, and democracy enables the political representation of these perspectives (Seif El Dawla, 1999, p. 133). Community engagement has reduced FGM by increasing education and encouraging a discourse about it (Matanda et al., 2023, p. 9). Engaging the population through democracy may have a similar effect.

Moreover, freedom of expression can enable bottom-up initiatives of citizens against FGM and allow victims to speak out. They can encourage normative change, remove the taboo, and act as role models, empowering girls to pursue an education and career (UNFPA & UNICEF, 2024, p. 13). For example, the activism of Jaha Dukureh, a victim of FGM and child marriage, led to dialogue on the community and national levels in The Gambia, influential religious leaders speaking out against it, and a law banning FGM (Real Stories, 2024). Democratic mechanisms of involving the population in open dialogues and decision-making procedures and removing the taboo around FGM were key processes to enable a change.

Furthermore, freedom of the press can hold political leaders accountable to follow through with promised initiatives to reduce FGM, comply with international pressure, and publicly acknowledge the need to address FGM (Seif El Dawla, 1999, p. 131). This is exemplified by a CNN film screening of a girl being circumcised during the International Conference on Population and Development in Cairo in 1994, following the government's statement that FGM is not commonly practiced in Egypt, contradicting statistics (p. 131). This elicited international attention and led to the Egyptian government condemning the practice and promising to focus on anti-FGM legislation (p. 131). Although this focused on appeasing the international community and was met with a backlash to some extent, it strengthened anti-FGM movements, particularly among young women (p. 133). The case shows the power of the media in exposing hidden practices, drawing popular attention to FGM, and holding lawmakers accountable (p. 131).

At the same time, in communities where the continuation of the practice is supported, freedom of expression and association can allow pro-FGM advocates to build movements and share their views publicly. This is exemplified by protests by religious leaders in The Gambia in 2024 after the first successful prosecution of three cutters, describing anti-FGM legislation as opposing religious freedom (UNFPA & UNICEF, 2024, p. 36). This led to a more general societal backlash against law enforcement.

This ties into the second mechanism of how democracy may influence FGM, majority preference. A plurality of opinions can shift attitudes about FGM from a minority opinion towards a majority preference. The effect of democracy on FGM is likely conditional on public opinion.

On the one hand, electoral accountability mechanisms that influence reelection potential can improve public health (Harding, 2019, p. 248). This leads to increased public health spending, compared to autocracies, where political elites may deprioritize investing in health (Münch et al., 2020, p. 122).

If the majority of the population favors anti-FGM policies, it can pressure the government to initiate and enforce legislation and hold political leaders accountable at elections (Boyle & Preves, 2000, p. 721; Wigley & Akkoyunlu-Wigley, 2011, p. 649). Public support for eradicating FGM ranges from a low of 67% among Nigerian to a high of 95% of Tanzanian women among the cases analyzed (UNICEF, 2020a; 2020b; 2020c; 2020d; 2020e). While there is within-country variation, with a majority supporting FGM in some regions, and opinion surveys may be subject to a social desirability bias, this shows a majority in every country supporting its abandonment. The majoritarian element of democracy (Overeem, 2020, p. 49) is therefore likely to lead to a reduction of FGM in this context.

On the other hand, in contexts where a popular majority favors the practice, democracy may empower this majority. A backlash against rights discourses, anti-FGM legislation, and "imported" Western norms can reinforce FGM, especially if they contradict traditional practices (UNICEF, 2024, p. 10; Weijnert, 2010, pp. 165-166). Due to the majoritarian element of democracy, these groups may exert political influence.

Furthermore, democratic regimes are dependent on electoral support, and implementing anti-FGM legislation when a majority of the population supports its continuation may threaten re-election potential (Harding, 2019, p. 243). This may increase FGM, compared to previously autocratic regimes that implemented anti-FGM measures proposed by international actors.

Thirdly, where the majority of women support eradicating FGM, and democracy empowers women politically, this may have a similar effect to community projects focused on increasing female leadership and reduce FGM. Especially if male politicians acted as gatekeepers before, a higher descriptive representation of women may support anti-FGM efforts. Female politicians are

more likely to increase women's substantive representation by focusing on social welfare, health, and women's rights policies (Hessami & Lopes da Fonseca, 2020). Further, suffrage rights enable women to express their interests through elections, and if a majority supports ending FGM, this can increase its politicization. While democracy does not guarantee an increase in female political leaders, substantive representation, or women advocating for abandoning FGM, chances for it are higher than in an autocracy without electoral turnovers.

However, this requires female leaders acting as agents of change. Oftentimes women are the ones advocating for FGM, and female caretakers are subjecting girls to it to increase marriageability and prevent social sanctioning (Ahmed, 2022, pp. 81-82). Thus, the adverse effect could occur, where increasing women's political representation increases FGM rates. Further, descriptive representation does not necessarily increase women's substantive representation. Especially if representation is increased through quotas, women may act as proxies for representing interests of male family members (Chattopadhyay & Duflo, 2004, p. 16). This may be exacerbated by women's lower social status limiting their decision-making power and the success of reforms (Milazzo & Goldstein, 2017, p. 3). Further, corruption can prevent successful project implementation if funds do not reach education or healthcare campaigns (De Medeiros-Costa, 2022, p. 1108). A taboo around FGM can prevent the active encouragement and politicization of the discourse about it, especially if lawmakers favor FGM (Stew, 2019, p. 175).

Fourthly, democracy improves women's health status by increasing women's societal status and economic equality between genders (Nathanson, 2015, p. 24). This leads to more (economic) decision-making autonomy, less discrimination, and potentially reduced FGM rates by decreasing girls' and families' reliance on marriageability and weakening the gendered power structures FGM symbolizes (Batyra et al., 2020, p. 2). While FGM is usually decided upon by family members (Ahmed, 2022, pp. 81-82), rather than girls themselves, an overall normative shift may affect FGM rates.

However, this likely requires education campaigns and a normative change, as FGM is rooted in cultural traditions, and socioeconomic improvements might not significantly affect FGM by themselves (Abdulah et al., 2020; Williams-Breault, 2018, p. 231). Family members might prioritize traditional practices and gender roles over empowering girls economically.

Lastly, higher levels of individual rights and freedoms in democratic contexts, especially in liberal democracies (Wiebrecht et al., 2023, p. 769), may emphasize bodily autonomy and elicit a normative shift away from FGM. The discourse in Egypt exemplifies how changing norms towards individual rights and increased equality decreased FGM (Seif El Dawla, 1999, p. 133). The fight against FGM symbolized strengthening the democratic rights of women more broadly (p. 133).

Moreover, even if changing social norms takes time, legal reforms may support FGM eradication. Democracies are more likely to legally protect individual rights, including women's economic and social rights or a protection against FGM, through electoral accountability and an independent judiciary (Alaei et al., 2019, p. 1; Münch et al., 2020, p. 126). Especially liberal democracies have a higher protection of civil liberties through the rule of law, compared to electoral democracies (Coppedge et al., 2015, p. 44). Hence, especially if a majority supports ending FGM *and* there is an increased protection of individual rights, democracy likely reduces prevalence rates.

Yet, as FGM is a social norm practiced in traditional communities, national-level democratic governance may not influence it (WHO, 2024). If liberal democratic norms protecting individual rights oppose traditional norms and practices, this could cause a backlash against anti-FGM and gender equality legislation (UNICEF, 2024, p. 10).

Despite these challenges, these theoretical linkages lead to the following hypothesis:

H_1: Democracy leads to a decrease in FGM prevalence rates.

Improvements in public health can differ across different parts of the population (Harding, 2019, pp. 241-242). Harding (pp. 252-253) shows that previously marginalized rural areas relatively benefit more from improvements in health and education outcomes through democracy, compared to urbanized areas (p. 241). This especially applies in countries with a rural majority because of a relatively larger electoral influence of those voters (pp. 243-244).

Similarly, the effect of democratization on the risk of FGM likely varies between urban and rural areas. In rural areas, FGM is more deeply entrenched as a social norm, local traditional leaders play an important role in influencing decision-making and normative discourses, and parents who do not have their daughters cut might fear social repercussions (Engelsma et al., 2020, p. 4;

Kandala & Komba, p. 841; Van der Windt & Vandoros, 2017, p. 11). In this context, democracy may empower those advocating for continuing FGM, especially in decentralized systems with more local autonomy or influence of village leaders. Law enforcement is also often weaker in rural areas (UNICEF, 2021, p. 13).

Living in an urban area improves women's educational opportunities, economic empowerment, and decision-making autonomy (El-Dirani et al., 2022, p. 175). This may make families less dependent on girls' marriageability. Increasing freedom of expression, weaker cultural traditions associated with communities, and exposure to other ethnicities and cultures in urban centers may lead to those wanting to eradicate FGM being empowered through democracy. Even if initial prevalence was lower than in rural areas, these mechanisms should lead to a stronger decreasing effect in urban areas.

This results in my second hypothesis:

H_2: There is a stronger decreasing effect of democracy on FGM in urban areas, compared to rural areas.

While urban areas have lower prevalence rates than rural areas, the difference is less pronounced than between different education levels (Batyra et al. 2020, p. 6). Low levels of education increase the likelihood of supporting and being subjected to FGM (Matanda et al., 2023, p. 11). Formal education can contribute to its abandonment "by empowering women and girls to demand their rights and to challenge existing gender and social inequalities such as FGM" (p. 11).

For women with low education levels, the effect of democracy on FGM may be limited or even empower them to advocate for its continuation. For those with higher education levels, democracy may increase opportunities to voice their opinions to end FGM and push for legislation. This leads to my third hypothesis:

H_3: The impact of democracy on FGM is conditional upon education levels, with democratization having a stronger decreasing effect for educated women.

3. Methodology – statistical analysis

3.1 Research design

A preliminary cross-country analysis showed a negative but not statistically significant effect of democracy on FGM rates (Appendix A1). This is true for the effect of electoral democracy, liberal elements, and when using a combined measure (Coppedge et al., 2015, pp. 43-44; Teorell et al., 2016, pp. 609-611).

There are two limitations to a cross-country analysis. Firstly, the number of cases is relatively small, limiting confidence in a causal relationship. Secondly, democratization does not change FGM rates drastically in the short run, as FGM is irreversible, and rates among older populations already affected by it do not change.

Hence, a more detailed analysis of the potential negative effect supported by the cross-country analysis is needed. The main research design focuses on an individual-level statistical analysis, comparing the likelihood of a woman being subjected to FGM based on whether she was born before or after democratization. This design is similar to Harding's (2019, pp. 246-248), measuring the effect of democracy on health outcomes. It enables a precise comparison of the impact of democracy to the counterfactual of being born under a non-democratic regime. Additionally, the research design is relevant to my analysis, as it employs the same IV and analyzes its effect on public health outcomes.

Countries where FGM is practiced, as indicated by the data of the cross-country analysis, and that democratized between 1990 and 2000 were included. The criteria for democratization are based on Harding's (2019, p. 242) of holding free and fair multiparty elections resulting in a replacement of the chief executive, rather than autocratic regimes using elections as a disguise to stay in power. I added the requirement of a peaceful transfer of power because this reflects political parties' and citizens' belief in the legitimacy of elected leaders. The timeframe was chosen to allow for sufficient time between the measurement of the IV and DV. This enables a comparison of the impact of democratization on FGM and ensures data availability, as there may be few adult respondents born after 2000, and those under 15 may still be at risk of being cut (Batyra et al., 2020, p. 3).

This resulted in an analysis of Benin, Kenya, Nigeria, Senegal, and Tanzania (Appendix A2). The most recent DHS datasets including data on FGM for each country were merged into a single dataset, resulting in a total of 63,064 respondents (The DHS Program, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e). Data were collected between 2011 and 2012 for Benin, in 2022 for Kenya, 2018 for Nigeria, 2023 for Senegal, and 2022 for Tanzania. DHS data offers the most comprehensive individual-level data on FGM across countries. Because it relies on self-reported data, there is a risk of underreporting, especially if FGM is criminalized (UNICEF, 2021, p. 5). While the inclusion of DHS from multiple years would be valuable, the most recent DHS data includes more adult respondents born after democratization. Data from earlier years risks including respondents still at risk of FGM due to the timeframe since democratization.

To assess the consistency of the effect of democracy on FGM across countries, I interacted democracy with the country variable. To test my second hypothesis that democracy has a stronger decreasing effect on FGM in urban areas, compared to rural areas, I included an interaction term between democracy and residence. An interaction between democracy and education was used to test my third hypothesis that democracy has a stronger decreasing effect on FGM for educated women. This enables an examination of the extent to which these factors act as moderators.

3.2 Operationalization

3.2.1 FGM prevalence

A binary measure (G102) of whether the respondent has experienced circumcision of any type was used, taking a value of 1 if they have, and 0 otherwise (The DHS Program, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e). While a change in individuals' likelihood of undergoing FGM takes time to reflect in prevalence rates, measuring the variable this way, rather than as the national percentage of circumcised women, enables a precise comparison of the effect of democracy.

3.2.2 Democracy

I created a dummy variable (DEM) based on whether a respondent was born before the year of democratization, indicated by a value of 0, or after it, indicated by a value of 1 (Harding, 2019, pp. 246-248).

The birth year was included in the DHS data for each country (The DHS Program, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e). The age of being subjected to FGM varies (UNFPA, 2024), and using the birth year to create the IV ensures measurement consistency. It also allows for an observation of how democratization affects the likelihood of being cut after several years, as democratic mechanisms may take time to affect FGM.

3.2.3 Control variables

Control variables were included to minimize confounding and enhance the internal validity of the analysis. Firstly, FGM is often more prevalent in rural areas (UNICEF, 2013, p. 36). Urban areas enable demands for democracy through innovation and trade and better coordination of uprisings (Glaeser & Millett Steinberg, 2016, p. 3). A binary control variable (V025) measures whether the respondent lives in an urban or rural area (The DHS Program, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e). For ease of interpretation, I recoded it, so that 0 indicates urban and 1 rural residence.

Secondly, FGM prevalence varies across ethnic groups. Ethnicity may be an indicator of social norms and traditional practices (Bicchieri & Marini, 2015, p. 22; UNICEF, 2013, p. 33). The categorical variable indicates the respondent's ethnicity (V131; The DHS Program, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e).

Thirdly, attending school decreases the risk of FGM, as education is prioritized over marriageability and enhances women's economic situation (African Union, 2021). More educated parents are less likely to have daughters cut (Matanda et al., 2023, p. 13). The highest level of education a respondent achieved is measured categorically (V106), with 0 indicating no education, 1 primary education, 2 secondary education, and 3 higher education (The DHS Program, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e).

Lastly, a categorical measure of a respondent's wealth quintile (V190) was included (The DHS Program, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e). FGM reflects a woman's or family's socioeconomic status. This influences how much women depend on marriageability. Democracy and economic growth appear to be correlated, which can be mirrored in household wealth (Przeworski & Limongi, 1993).

3.3 Methods of data analysis

A logistic regression with controls was used to estimate the following equation:

$$Y_{icy} = \alpha + \beta\,1\text{Democracy}_{icy} + \beta\, X_{icy} + \gamma_{c} + \rho_{y} + \varepsilon_{icy}$$

Y_i equals 1 if individual i, born in country c in year y, was subjected to FGM. The coefficient $\beta\,1$ for democracy indicates whether i was born under democracy. X_{icy} contains the control variables for residence, ethnicity, education, and wealth quintile. γ_{c} denotes the country fixed effects, while ρ_{y} contains year-of-birth fixed effects. These control for different baseline conditions and time trends unrelated to democratization, enabling a more precise analysis of the effect of democracy on FGM by comparing respondents born in the same year and country (Harding, 2019, p. 246). As the DHS for Tanzania does not include an indicator for ethnicity, one model excludes Tanzania but includes all control variables, and one includes all countries but does not control for ethnicity. An interaction term between democracy and country was included in another model to examine cross-country variation.

A logistic regression with an interaction term for the type of place of residence and education level, respectively, estimates the following equation to analyze the conditionality of the effect of democratization on FGM on these factors:

$$Y_{icy} = \alpha + \beta\,1\text{Democracy}_{icy} + \beta\,2\text{Rural}_{icy} + \beta\,3(\text{Democracy}_{icy}\times\text{Rural}_{icy}) + \beta\, X_{icy} + \gamma_{c} + \rho_{y} + \varepsilon_{icy}$$

$$Y_{icy} = \alpha + \beta\,1\text{Democracy}_{icy} + \beta\,2\text{Education}_{icy} + \beta\,3(\text{Democracy}_{icy}\times\text{Education}_{icy}) + \beta\, X_{icy} + \gamma_{c} + \rho_{y} + \varepsilon_{icy}$$

$\beta\,2$ represents the effect of the type of place of residence or education level of individual i on the likelihood of being subjected to FGM when democracy equals 0. $\beta\,3$ represents the interaction between democracy and rural residence, or education levels, respectively. Both models control for

ethnicity and wealth quintile. The model analyzing the interaction between democracy and residence controls for education level. The model interacting democracy with education level controls for residence. As ethnicity was not part of the Tanzania data, Tanzania was excluded from the analysis.

Clustered standard errors, based on the DHS stratified sampling clusters, were used in all models to account for geographical clustering. The logistic regression assumptions of no outliers and no influential cases were met for all models (Appendix C4-C9). Multicollinearity occurred in all models except Model 5, which is likely caused by the interaction terms and correlation between country and ethnicity.

4. Results

4.1 Average effect of democracy

Table 1 shows the exponentiated coefficients of Models 4 and 5, which estimate the average effect of democracy on FGM for individuals across the five countries, controlling for country and year-of-birth fixed effects. Model 4 excludes Tanzania but includes all control variables. The odds of being subjected to FGM are, on average, 0.91 times as great for a respondent born under democracy as for a respondent born before democratization, when holding residence, education, ethnicity, and wealth quintile constant. This effect is statistically significant at the 95% level ($p<0.05$). On average, being born under democracy decreases the probability of being subjected to FGM by 1.14 percentage points, compared to being born under non-democracy, when holding residence, ethnicity, education, and wealth quintile constant at their mean (Table B3). 15,671 of 63,064 respondents in the sample have been circumcised, equaling 24.85%. A 1.14 percentage point decrease of the risk of being subjected to FGM translates into a relative reduction of 4.59%.

Model 5 (Table 1) includes all countries and all control variables except ethnicity, which was not part of the Tanzania data. On average, the odds of being subjected to FGM are 1.03 times as great for a respondent born under democracy as for a respondent born before democratization, when holding residence, education, and wealth quintile constant. This effect is not statistically significant ($p>0.1$).

Effect of democratic regime at birth on FGM risk

	Model 4 (excluding Tanzania & full controls)	Model 5 (all countries & full controls except ethnicity)
Constant	1732558894447009875026247680.00***	85795850805339013120.00***
	[1497319798062361885016064.00, 2004755648467305571668134461440.00]	[259075284884016416.00, 2841231273259952819404 8.00]
Democracy	0.91**	1.03
	[0.84, 0.98]	[0.97, 1.10]
Kenya	161.53***	3.46***
	[122.89, 212.31]	[3.22, 3.73]
Nigeria	33.85***	4.52***
	[26.80, 42.76]	[4.21, 4.86]
Senegal	115.30***	5.16***
	[85.44, 155.58]	[4.79, 5.55]
Birth year	0.97***	0.98***
	[0.96, 0.97]	[0.97, 0.98]
Type of place of residence (0 = urban, 1= rural)	1.10***	0.64***
	[1.04, 1.17]	[0.61, 0.68]
Highest educational level: Primary	1.11***	0.83***
	[1.03, 1.19]	[0.78, 0.87]
Highest educational level: Secondary	0.82***	0.81***
	[0.76, 0.89]	[0.76, 0.85]
Highest educational level: Higher	0.57***	0.65***
	[0.50, 0.63]	[0.59, 0.71]
Wealth quintile: Second	0.81***	0.58***
	[0.76, 0.87]	[0.55, 0.61]
Wealth quintile: Third	0.70***	0.46***
	[0.65, 0.76]	[0.43, 0.49]
Wealth quintile: Fourth	0.54***	0.32***
	[0.50, 0.59]	[0.30, 0.34]
Wealth quintile: Fifth	0.35***	0.19***
	[0.31, 0.39]	[0.18, 0.21]
Tanzania		0.99
		[0.88, 1.10]
Num.Obs.	56378	63064
AIC		
BIC		

* p < 0.1, ** p < 0.05, *** p < 0.01
Odds ratios with 95% confidence intervals.

Table 1

The results therefore show a mixed effect of democratization on the likelihood of being subjected to FGM. The differing effect between the two models points to country-specific variation. FGM rates have historically been lower in Tanzania than the other countries, so the impact of democracy may be less strong (UNICEF, 2020e, p. 3).

The logistic coefficients in Table B4 (Models 6 and 7) and the predicted values plot in Figure 2 show the interaction between democracy and country. Treating Benin as the reference category, and holding residence, education level, wealth quintile, and ethnicity (Model 6 only) constant, the effect of democracy on the likelihood of being subjected to FGM is less negative for Kenya and Tanzania than for Benin. The effect is positive for Nigeria and Senegal. It is statistically significant for all countries. This shows that the effect of democracy on FGM is conditional on which country a woman lives in.

The overall positive, albeit not statistically significant, effect of democracy on FGM in Model 5 is likely due to the exclusion of ethnicity as a control variable, rather than the inclusion of Tanzania, as the country interaction shows a negative effect for Tanzania. Public support for eradicating FGM ranges from 67% of women in Nigeria, 81% in Senegal, 86% in Benin, and 93% in Kenya, to 95% in Tanzania (UNICEF, 2020a; 2020b; 2020c; 2020d; 2020e). This means the majority of the population agrees with its eradication but that there is cross-country variation, which helps explain the differing statistical effect. This is consistent with the theoretical argument that, due to the majoritarian element of democracy, public opinion impacts FGM eradication efforts.

The results hence partially confirm my first hypothesis that democracy decreases FGM prevalence, with a decreasing effect only shown for certain countries.

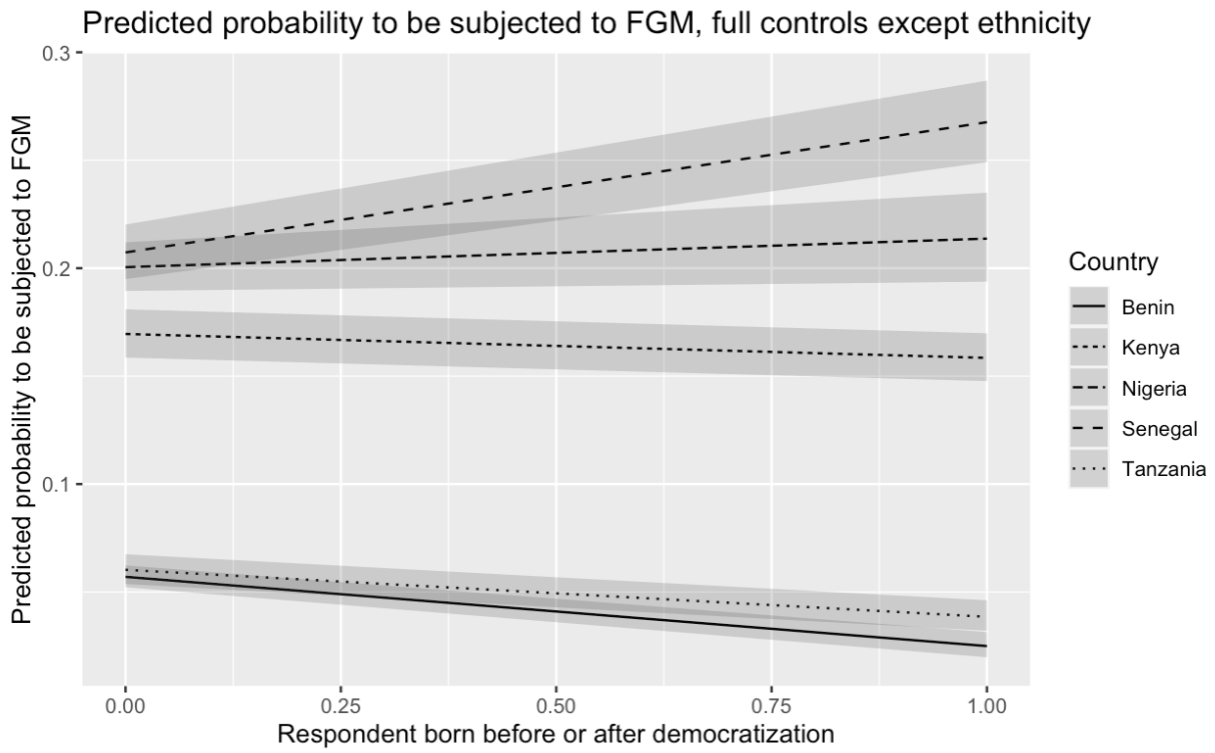

Figure 3

4.2 Interaction of democracy with residence and education levels

The moderation of the type of place of residence and education levels on the effect of democracy on FGM was only tested for using the data excluding Tanzania and including all controls, as only the effect for Model 4 was statistically significant.

Model 8 includes an interaction term between democracy and the type of place of residence, controlling for education, ethnicity, and wealth quintile. On average, for urban residents, the odds of being subjected to FGM are 0.78 times as great for a respondent born under democracy as for someone born under a non-democratic regime, holding all other variables constant (Table B5). Adding up and exponentiating the logistic coefficients for democracy and the interaction term shows that, on average, for rural respondents, the odds of being subjected to FGM are 1.01 times as great for a respondent born under democracy as for someone born before democratization, holding all other variables constant (Table B6). The effect of democracy for both urban and rural respondents is statistically significant at the 99% level ($p<0.01$). Interestingly, there is no

statistically significant difference between urban and rural respondents born under autocracy ($p>0.1$)

This implies that the effect of democracy on FGM rates is conditional on the type of place of residence and that it decreases the likelihood of being subjected to FGM for urban residents. It has almost no effect for rural residents, likely because of stronger social norms in rural areas. This confirms my second hypothesis that there is a stronger decreasing effect of democracy on FGM in urban areas, compared to rural areas.

Model 9 includes an interaction of democracy and education level, controlling for residence, ethnicity, and wealth quintile. On average, the odds of being subjected to FGM are 1.35 times as great for someone with no education born under democracy, compared to a respondent born under a non-democratic regime, holding all other variables constant (Table B7). On average, the odds of being subjected to FGM are 0.94 times as great for someone with primary education born under democracy, compared to a respondent born under a non-democratic regime (Table B8). On average, the odds of being subjected to FGM are 0.75 times as great for someone with secondary education born under democracy, compared to a respondent born under a non-democratic regime, On average, the odds of being subjected to FGM are 0.58 times as great for someone with higher education born under democracy, compared to a respondent born under a non-democratic regime, The effect is statistically significant at the 99% level for all education levels ($p<0.01$).

This confirms my third hypothesis that the impact of democracy on FGM is conditional on education levels. It increases the risk for uneducated women and decreases it for those with primary education or higher. The higher a respondent's education level, the stronger the decreasing effect.

5. Case study: Kenya

The statistical results indicate that democratization impacts the risk of FGM. This case study shows *how* democracy affects FGM, rather than focusing on conditional effects. Data was collected from reports by national and international governmental and non-governmental organizations, newspaper articles, and an interview with Sarah Mbira from Macheo Children's Organisation in Thika (full interview in Appendix D).

I selected Kenya because the statistical results showed that democracy decreased the risk of FGM in the country. The initial prevalence was higher in Kenya than in the other countries with a decreasing effect, and the decline was stronger (Figure 3, The DHS Program, n.d.-f; Appendix A3). The country's political leadership demonstrates firm opposition to FGM through policies, resource allocation, and public statements (Kibet, 2024). This section provides an overview of FGM in Kenya and shows how the five mechanisms outlined in the theoretical expectation operated in the country: (1) the representation of a plurality of opinions, (2) majority preference, (3) women's political empowerment, (4) an improvement in women's socioeconomic status, and (5) the protection of individual rights.

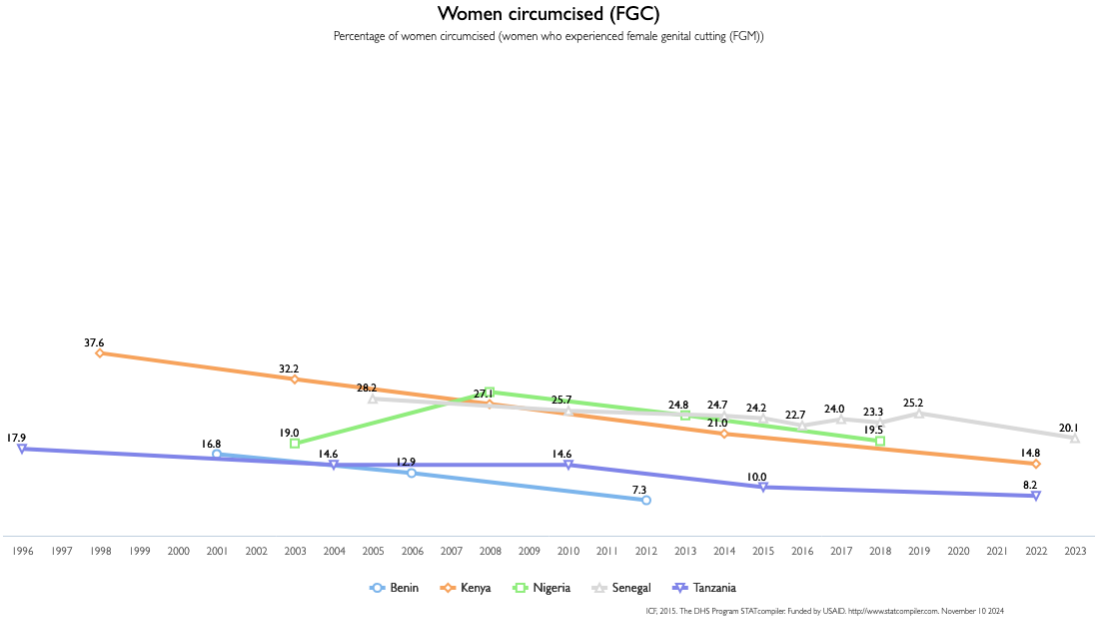

Figure 3

5.1 FGM in Kenya

FGM has been common in Kenya for centuries (Cassidy, 2021). During Kenya's colonization, earlier initiation rituals promoted by British missionaries to prevent abortions increased FGM rates because reforms provoked a backlash from the local population. In the war of independence, FGM was used as a political symbol of cultural unity against Christian colonists (Ondiek, 2010, p. 50).

Because of this, the Kenyatta government that followed independence until 1978 and supported its continuation did not address FGM (p. 67). President Moi banned it in 1989 (p. 67).

Despite overall declining over the past decades, prevalence varies across regions and ethnic groups, with the Northeastern province having the highest rate (UNICEF, 2021, pp. 11, 13). Consistent with the regression results, prevalence has decreased among educated and urban women but has barely changed for uneducated women (Figure 4, The DHS Program, n.d.-f). Interestingly, while prevalence remains higher for rural than urban residents, the decline has been similar, contrary to the regression results.

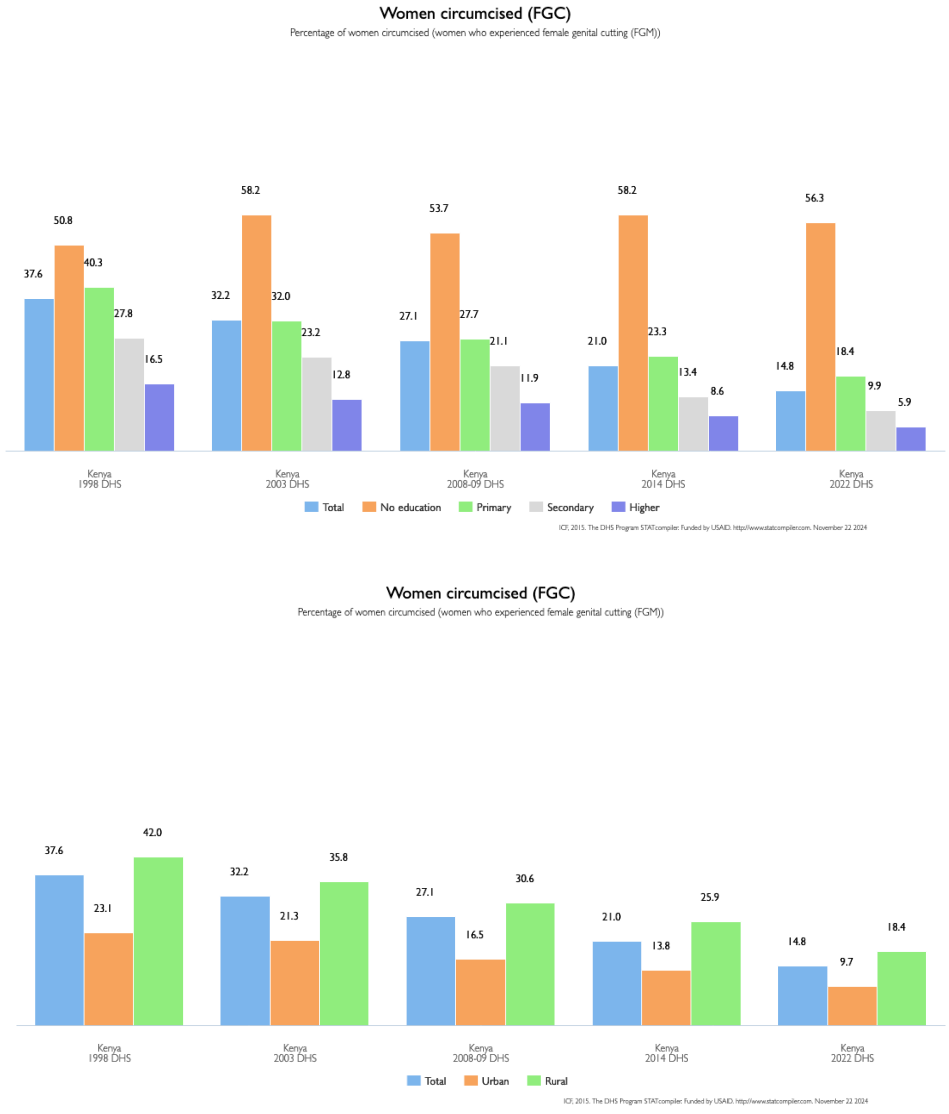

Figure 4

5.2 Process tracing

5.2.1 Representation of a plurality of opinions

Adolescents' and women's groups and FGM survivors significantly contributed to reducing FGM by speaking out, educating communities, encouraging girls' agency and a discourse around FGM and gender equality (Kibet, 2024; UNICEF, 2021, p. 16). An example of this is the #FrontlineEndingFGM network of over 1,000 grassroots and feminist organizations gathering to ask for donor support (UNFPA Kenya, 2022). Further, media attention on FGM has increased, for example by reporting cases in hotspot regions (Maichuhie & Gichana, 2024). Sarah Mbira also notes that media freedom provides activists a platform to challenge pro-FGM narratives and raise awareness.

While she describes specifically female progressive local leaders as key in shifting cultural narratives, men have been important in raising awareness and reducing FGM, for example through the HeForShe movement encouraging men to protect sisters and daughters (Maichuhie, 2023). Involving them was crucial in addressing discriminatory social norms, as they often enjoy more influence in communities and public declarations and can support community surveillance and reporting (Thomsen & Nilofer, 2023).

Further, according to Sarah Mbira, a participatory governance model involves affected communities in decision-making processes, contrary to a top-down approach. For example, participatory communication was an effective engagement strategy in the Marakwet community, constituting around one-third of techniques in anti-FGM efforts (Kiprop Cheruiyot, 2022, p. 35).

Nevertheless, some women have been advocating for its continuation. For instance, Maasai women felt discriminated against because they were not involved in law-making and organized a series of gatherings to voice their opinions (Jaafari, 2014). According to Sarah Mbira, key supporters of FGM are older generations, traditional leaders, and circumcisers gaining financial income or social status from it. They might use participatory mechanisms to lobby for FGM as a cultural tradition and against what they consider imported norms, especially in contexts of political decentralization. However, around 90% of both genders supporting its abandonment makes these initiatives unlikely to substantially impact overall FGM outcomes (UNICEF, 2020a).

There is therefore evidence for democratic participatory practices reducing FGM by facilitating an open dialogue and supporting anti-FGM movements.

5.2.2 Majority preference

92% of female Kenyans support ending FGM, compared to 89% of males (UNICEF, 2020a). There is no public opinion data from pre-democratization, and the first DHS measuring support for FGM in 1998 only measured women's views, with 73% supporting its elimination (The DHS Program, n.d.-g). Comparing this to recent data shows a significant rise in support for ending FGM. Linking this to the majoritarian element of democracy implies that public support was a key factor in making progress towards eradication in Kenya.

There have been several legislative reforms against gender inequality, GBV, and FGM, such as the Anti-FGM Act of 2011, the establishment of an Anti-FGM Board, and ongoing educational programs ("Cases of FGM on the decline in Kenya", 2024; Tanui-Too & Chelang'a, 2021, pp. 16-19). This reflects majority-backed legislative processes and accountability mechanisms, as elected representatives actively initiated legislation to end FGM. Sarah Mbira describes the legal framework as enabling partnerships between the government and civil society organizations. However, she notes that FGM is not strongly politicized due to its cultural sensitivity and usually occurs in legislative debates about broader themes like women's rights, education, or health.

This supports the theoretical expectation that majority preference impacts FGM prevalence, leading to a reduction in Kenya.

5.2.3 Women's political empowerment

While the constitution requires no more than two-thirds of the legislature to be of one gender, this target has not been reached (Constitution of Kenya, 2010; Tanui-Too & Chelang'a, 2021, p. 17). After the 2022 elections, women held 81 seats, or 23%, in the National Assembly, of which 47 were reserved seats (International Institute for Democracy and Electoral Assistance, n.d.). The Senate, at 31%, still does not achieve gender parity. Traditional gender roles still make attaining leadership positions difficult for women (Tanui-Too & Chelang'a, 2021, p. 17). Outside of formal

politics, women's movements have strongly influenced anti-FGM advocacy (Toubia & Sharief, 2003, p. 255), but women's political empowerment in formal political institutions has been limited. Declines in FGM and the political leadership opposing it, shown by legislation, resource allocation, and public statements (Kibet, 2024), have occurred independently of increasing women's descriptive representation.

However, where women are empowered politically, Sarah Mbira highlights the role of critical actors like Hon. Linah Jebii Kilimo, chair of the Anti-FGM board, and female legislators significantly contributing to legislation, ensuring budget allocations, and mobilizing communities.

Evidence for the theoretical expectation that democracy decreases FGM rates through women's political empowerment is therefore mixed for Kenya.

5.2.4 Improvement in women's socioeconomic status

Some legislation to advance women's socioeconomic status has been passed, such as the National Policy on Gender and Development. Women composed 48.6% of the labor force in 1991 and 49.8% in 2023 (World Bank Group, n.d.), which signals that it has been near gender parity since Kenya's democratization. However, women still do most unpaid domestic and care work, with an average of five hours a day for women, compared to one hour for men (UN Women, 2023). While the total hours are similar to numbers in other countries for women, the difference is larger (e.g., compared to the U.S., where hours average 5.7 for women and 3.6 for men; Hess et al., 2020, p. 2).

Primary school completion rates are similar across genders in most counties (López-Lalinde et al., 2024). Lower secondary school completion rates averaged 70.1% for boys and 60.5% for girls in 2022 but varied across counties, with the largest difference observed in Marsabit (15.5% for girls and 50.5% for boys; López-Lalinde et al., 2024; World Bank Group, 2024a, 2024b). While no pre-democratization data is available, completion rates have increased from 27.7% for girls and 38.8% for boys in 2009.

While the persisting gender gap shows that cultural norms may emphasize girls' post-primary education less than boys', higher secondary school completion rates indicate an increase in

women's socioeconomic status (Institute of Economic Affairs, 2008, p. 42). Sarah Mbira also describes that democratization has improved education access, entrepreneurship opportunities, and representation in governance. This has decreased support for FGM due to greater economic independence and less dependence on male-dominated structures.

This supports the theoretical expectation that increasing women's socioeconomic status weakens the gendered power structures that FGM symbolizes.

5.2.5 Protection of individual rights

Community discourses in Kenya related FGM to the broader topics of GBV and gender equality (UNICEF, 2021, p. 16). This encouraged girls' agency and represents changing social norms regarding traditional gender roles and individual rights.

This was supported by legal and constitutional reforms protecting girls from FGM and guaranteeing individual and human rights, such as Article 27 of the constitution, guaranteeing equality and freedom from discrimination, or the National Policy on Gender and Development ("Cases of FGM on the decline in Kenya", 2024). This not only shows legislation aligning with majority preference, as outlined above, but also a protection of rights by the state. Sarah Mbira sees this legislative framework as crucial for prevention and enforcement efforts by increasing awareness among law enforcement and communities.

In 2021, the High Court of the Republic of Kenya confirmed that FGM is also illegal if it affects adult women. A medical doctor had claimed a total FGM ban violates a women's right to choose and uphold cultural practices, after several women were imprisoned for practicing FGM. In addition to demonstrating successful law enforcement and the court reinforcing the total ban, its reason for dismissing the case is relevant. It ruled that "FGM violates a woman's right to health, human dignity and, in instances when it results in death, the right to life, adding that the practice also undermines international human rights standards" (African Union, 2021). The court used the preamble and Bill of Rights of Kenya's constitution (Constitution of Kenya, 2010) as evidence that FGM violates constitutional rights. Specifically, Article 53(1b) ensures the protection of children against harmful cultural practices. Enshrining this in the constitution is powerful by itself.

The case exemplifies how a democratic system can enforce anti-FGM legislation through legal and constitutional structures protecting individual rights.

This provides evidence for the theoretical expectation that the protection of individual rights decreases FGM.

5.3 Challenges to FGM eradication

While FGM has significantly declined in Kenya, several obstacles remain to its eradication. Because it is deeply rooted in cultural traditions, social norms take time to change and uncut women continue to be marginalized and seen as children in their social environment (Maichuhie & Gichana, 2024). Oftentimes, criminal law conflicts with cultural customs, resulting in secret performances, medicalized FGM, or cross-border FGM instead of a ceremonial rite of passage. While there have been prosecutions, law enforcement is still poor, and corruption hinders the success of anti-FGM programs (Meroka-Mutua et al., 2020, p. 37). The COVID-19 pandemic exacerbated these dynamics by reinforcing gender inequalities and GBV, leading to school closures, and hindering access to care services ("COVID-19 hindering progress against female genital mutilation", 2021).

5.4 Alternative explanations

The evidence from Kenya points to democracy reducing FGM through various mechanisms. While the research design allows an assessment of the precise effect of democracy, alternative explanations should be considered.

FGM is part of a complex social dynamic, with many factors influencing its eradication (Abdulah et al., 2020). Strong social norms may not be influenced much by democracy, especially if FGM is not politicized, or shifting norms may reduce prevalence independently of democracy. In Kenya, however, majority support for ending FGM and open discourses enabled a normative shift, making this explanation unlikely.

Moreover, FGM rates vary across factors like ethnicity, region, or education. While these may influence FGM rates independently of democracy, they likely interact with it, given the statistical findings.

Additionally, (international) attention towards GBV, and FGM specifically, increased from the 1990s onwards (Weldon, 2006, p. 64). This attention shift coincides with democratization processes. However, I argue that democracy facilitated this attention shift by strengthening social movements, politicizing FGM, and increasing discussions in international fora. Specifically discussions representing a plurality of opinions and a majority preference can elicit dialogue on the national and international level.

6. Conclusion

The statistical results partially confirm my first hypothesis that democracy decreases the risk of being subjected to FGM. The evidence from Kenya shows that democracy can create an environment where a majority preference against FGM translates into political and legislative outcomes and individual rights are protected. Women's political and socioeconomic empowerment can decrease support for FGM. In contexts where a minority supports ending FGM, a plurality of opinions in open dialogues can change social norms, which can create a majority preference for ending FGM.

Democracy has a stronger decreasing effect on the risk of FGM for urban residents and educated women, compared to rural and uneducated ones, respectively, confirming my second and third hypotheses. This demonstrates that FGM prevalence is not just lower among urban and educated families but that the effect of democracy on it differs across different parts of the population.

These findings have several academic and societal implications. Firstly, my thesis advances research on FGM and women's health in developing countries and has addressed a literature gap.

Secondly, the conditional effect of democracy on FGM shows that it can put those with no education or potentially those in rural settings at a higher risk. This indicates that democracy is not a universal solution to human rights violations and public health risks and can have distributive

effects. Especially where it empowers a majority advocating for continuing harmful traditional practices, it can reinforce them and prevent progress.

Thirdly, exploring ways to reduce FGM is of intrinsic value, as it constitutes a threat to women's human rights and health (WHO, 2024). Reducing its prevalence could save millions of lives, spare women from pain, severe health complications, a violation of dignity, and lead to better educational, political and labor force participation outcomes (Poyker, 2016, p. 5; WHO, 2024).

Lastly, policymaking and anti-FGM initiatives could include promoting democratic practices. However, the conditional effect by country, residence, and education level highlights the need for tailored approaches across different contexts. To eradicate FGM most effectively, initiatives should focus on more vulnerable individuals, like those in rural areas and with no education, as democracy may worsen FGM outcomes in these contexts otherwise. Using democratic practices like participatory communication can change social norms and prevent communities from feeling left out by top-down approaches, as shown by successes in Kenya.

The strengths of this paper include the mixed-methods design, which both analyzes the effect of democracy on FGM statistically and the mechanisms behind it. Based on Harding's (2019) research design, the methodology enables a precise comparison of the risk of individuals being subjected to FGM based on under which regime type they were born. Showing that the effect of democracy is conditional on residence and education level highlights the complexity of relevant factors in addressing FGM and the conditional effects of democracy on public health (Harding, 2019).

However, it also has several limitations. Firstly, analyzing DHS data from other years and countries would strengthen the robustness of the findings by showing whether the findings hold over time and with a larger number of cases. Measurement consistency would improve if the years since democratization were the same across countries. The reason for only analyzing five country cases and differing time periods was limited data availability. Secondly, because the DHS relies on self-reported data, there is a risk of underreporting, especially if FGM is criminalized (UNICEF, 2021, p. 5). Thirdly, the processes observed in the case study are specific to Kenya and may not be generalizable, especially given cross-country variation in factors influencing FGM. Lastly, the mechanisms behind the effect of democracy may be limited if FGM is not strongly politicized.

This especially applies to national-level elections, as most dialogue around it happens in communities (Matanda et al., 2023, p. 9).

Future research is therefore encouraged to look at the impact of local-level democracy on FGM. Including more country cases and more consistent measurement regarding the time since democratization could test the robustness of the findings. Future work could also examine the mechanisms of how democracy affects FGM in other countries to increase the generalizability of the findings from Kenya.

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Appendix A: Additional information

Appendix A1: Preliminary cross-country analysis

Research Design

A preliminary cross-country linear regression analysis allows for a comparative assessment of how varying levels of democracy influence FGM prevalence. I included most countries where FGM is practiced, resulting in 22 cases after excluding missing values on all variables (Table B1). While this is not a large number of cases, FGM is only practiced in a limited number of countries (Figure 1), restricting data availability. The analysis distinguished between electoral and liberal elements of democracy to assess the impact of each on FGM independently of each other, as well as through a combined measure.

Operationalization

As no dataset includes indicators for the IV, DV, and control variables, I added data on FGM prevalence collected by UNICEF (2019) to the Quality of Governance (QoG) 2016 dataset (Teorell et al., 2016). For the measurement of democracy, I used three indicators from the V-Dem data, the Electoral Democracy Index, the Liberal Component Index, and the Liberal Democracy Index (Coppedge et al., 2015, pp. 43-45; Teorell et al., 2016, pp. 609-611). The indices are all measured continuously from 0 to 1, with 1 indicating a high level of democracy, and include data from 2012 (Coppedge et al., 2015, pp. 43-45; Teorell et al., 2016, pp. 609-611). This ensures that the IV is measured before the DV. Using three indicators allows a comparison between the effect of representative democracy and that of liberal democratic elements, as well as their combined effect.

The Electoral Democracy Index (vdem_polyarchy) indicates the extent to which rulers are responsive to citizens, achieved through electoral competition, extensive suffrage, freedom of operation for political and civil society organizations, clean elections, elections affecting the composition of the chief executive, freedom of expression, independent media (Coppedge et al., 2015, pp. 43-44; Teorell et al., 2016, p. 610-611). The indicator captures the majoritarian element of democracy. The focus on responsiveness to citizens makes the indicator a reflection of Dahl's (1971, p. 8) concept of polyarchy.

The Liberal Component Index (vdem_liberal) considers the extent to which individual and minority rights are protected from the state or the majority and the limits placed on the executive through constitutionally protected civil liberties, the rule of law, and an independent judiciary (Coppedge et al., 2015, p. 45; Teorell et al., 2016, p. 609). The indicator hence captures the liberal, rights-based elements of democracy. These are relevant when assessing both women's health more generally but also human and individual rights protections or violations, as in the case of FGM. They therefore offer an understanding of how norms and policies might influence FGM prevalence.

The Liberal Democracy Index (vdem_libdem) combines both measures (Coppedge et al., 2015, pp. 44-45; Teorell et al., 2016, p. 609). This makes it a comprehensive measure of the combined effect of both the level of electoral democracy and liberal components on FGM. Improvements in both elements of democracy may be required to achieve a change in FGM rates, as FGM may be both impacted by the majoritarian and rights-based elements of democracy.

To measure FGM prevalence, I used the percentage of girls and women aged 15-49 years who have undergone FGM in a country (UNICEF, 2019). The age group is restricted, as FGM is usually conducted during childhood, and those under 15 might still be at risk of being cut (Batyra et al., 2020, p. 3). UNICEF (2019) combined data from the Demographic and Health Surveys (DHS), the Multiple Indicator Cluster Surveys (MICS) program, and rarely other household-level surveys. The data refers to FGM prevalence rates between 2014 and 2022, depending on the time of the survey, and is measured continuously in percentages of the at-risk population.

Additionally, to minimize confounding and enhance the internal validity of the analysis, control variables for ethnic fractionalization, the level of urbanization, income, and adult literacy rate were included.

Ethnic fractionalization is negatively associated with FGM prevalence, as ethnicity may be an indicator of social norms, which may be questioned through exposure to other groups in which FGM is less common (Bicchieri & Marini, 2015, p. 22; UNICEF, 2013, p. 33). It may impact democratization processes either because of ethnic conflict or by increasing political diversity due to ethnic diversity (Fish & Brooks, 2004, p. 154). The indicator (fe_etfra) is "defined as the probability that two individuals selected at random from a country will be from different ethnic groups" (Fearon, 2003, p. 208; Teorell et al., 2016, pp. 268-269). It is measured continuously from

0 (perfectly homogenous) to 1 (highly fragmented) in 2016 (Fearon, 2003, p. 208; Teorell et al., 2016, pp. 268-269).

FGM is often more prevalent in rural areas (UNICEF, 2013, p. 36), and higher levels of urbanization are associated with more democratic governance because urban areas enable coordination of uprisings, and innovation and trade may lead to demands for democracy (Glaeser & Millett Steinberg, 2016, p. 3), which is why the level of urbanization was included. A measure of the urban population was included, measured in 2016 as the percentage of the total population (wdi_popurb; Teorell et al., 2016, p. 764; World Bank Group, 2015).

I included national income, measured as GDP per capita in current US Dollars between 2009 and 2013 (wdi_gdppccur; Teorell et al., 2016, p. 683; World Bank Group, 2015), as the analysis is interested in the well-being of individuals and GDP per capita is adjusted for the population size, and the measurement in current US Dollars is appropriate for a cross-sectional analysis. Apart from social norms, FGM is also a reflection of a family's socio-economic and women's societal status, so a change in economic well-being may affect FGM rates, e.g., by influencing the degree to which a family depends on their daughters' marriageability. The evidence for the effect of democracy on economic growth is mixed, but it may potentially have an influence (Knutsen, 2012, p. 410; Przeworski and Limongi, 1993).

More educated mothers may be less likely to have their daughters cut (Abdulah et al., 2020; Matanda et al., 2023, p. 13). Moreover, higher education levels of females might put them in a better economic situation, which leads to less dependence on marriage. The adult literacy rate of the population over 15 (une_litat; Teorell et al., 2016, p. 590; UNESCO, 2015), measured between 2010 and 2015, was added. Previous studies (e.g., Harding, 2019) have shown that democracy has a positive effect on education outcomes, so this may act as a moderator rather than a confounding variable.

Method of data analysis

An Ordinary Least Squares Regression with controls was used to estimate the effect of the level of democracy, measured by the three indicators, on FGM prevalence.

The linear regression assumptions of no excessive multicollinearity, linearity and additivity, homoskedasticity, normally distributed errors, and a limited impact of outliers were met for all models. Iraq was an influential case for all models (Appendix C1, Appendix C2, Appendix C3).

Results

On average, FGM prevalence decreases by -57.72 percentage points for every unit increase on the Electoral Democracy Index (Model 1, Table B2). For every unit increase on the Liberal Component Index, FGM prevalence, on average, decreases by -30.91 percentage points (Model 2, Table B2). For every unit increase on the Liberal Democracy Index, FGM prevalence on average decreases by -52.99 percentage points (Model 3, Table B2).

The effect of democracy on FGM was negative but not statistically significant for all three indicators, when including full controls ($p>0.1$). The scatterplots (Figure B1, Figure B2, Figure B3) also depict a negative relationship. This suggests that democracy may decrease FGM prevalence rates but that further investigation is needed, especially given the limited number of cases.

Appendix A2: Justification of year of democratization by country

Benin's first democratic election occurred in 1991, after the fall of General Kérékou's government and the subsequent adoption of democratic institutions the year before (Gisselquist, 2008, p. 794). Kenya held its first multiparty elections since 1963 in 1992, after decades of being a one-party state (IFES, 2008, p. 6). Nigeria's first democratic elections were in 1999, after years of military leadership and political violence (Koni Hoffmann & Wallace, 2023). While there were elections in Senegal since its independence, they were not judged free and fair by international observers or accompanied by a peaceful transfer of power until 2000 (Freedom House, 2001; Melly, 2012, p. 5). Tanzania's first democratic elections since independence were held in 1995 (Brown, 1998, p. 86).

Appendix A3: Comparable decline of FGM rates in Kenya, Tanzania, and Benin (justification of case selection for case study)

Figure 3 (The DHS Program, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e) shows that Kenya's FGM rates declined by 22.8 percentage points between 1998 and 2022, while they decreased by 9.7 percentage points between 1996 and 2022 in Tanzania, and by 9.5 percentage points in Benin between 2001 and 2012 (there is no comparable data available for a longer or earlier time period).

Appendix B: Results tables & figures

Table B1: Data frame of cases included in the cross-country regression analysis

	Country	Electoral_democracy_index	Liberal_component_index	Liberal_democracy_index	FGM_prevalence
1	Central African Republic	0.3704091	0.3608267	0.1796616	21.6
2	Chad	0.3454174	0.2021253	0.1159138	34.1
3	Benin	0.5988817	0.6883851	0.4367845	9.2
4	Ethiopia (1993-)	0.3038872	0.2730034	0.1269621	65.2
5	Gambia	0.3642851	0.3226297	0.1638293	72.6
6	Ghana	0.7951433	0.8154193	0.6617929	2.4
7	Guinea	0.3431910	0.3980787	0.1819893	94.5
8	Iraq	0.5234804	0.5863855	0.3427040	7.4
9	Cote d'Ivoire	0.5704989	0.5340381	0.3469675	36.7
10	Kenya	0.4649586	0.6434150	0.3310708	14.8
11	Liberia	0.7043314	0.7230868	0.5324425	31.8
12	Mali	0.3737833	0.6787094	0.2936268	88.6
13	Mauritania	0.5449095	0.3875629	0.2674642	63.9
14	Nigeria	0.5380451	0.5797158	0.3481618	15.1
15	Guinea-Bissau	0.4892426	0.4198220	0.2534387	52.1
16	Senegal	0.7486570	0.6611166	0.5327816	25.2
17	Sierra Leone	0.5946040	0.6048369	0.3944406	83.0
18	Togo	0.5045785	0.5130751	0.3003853	3.1
19	Uganda	0.4124908	0.5675322	0.2735191	0.3
20	Egypt	0.4408650	0.4441558	0.2402149	87.2
21	Tanzania	0.5300267	0.7232223	0.4058000	8.2
22	Burkina Faso	0.5684009	0.4578805	0.3112085	56.1

Table B2: Results table of cross-country analysis

Does democracy predict FGM prevalence?

	Model 1: Electoral democracy	Model 2: Liberal components of democracy	Model 3: Liberal Democracy
Constant	194.412***	179.685***	178.180***
	(34.146)	(33.157)	(31.941)
Electoral democracy	−57.715		
	(40.209)		
Ethnic fractionalization	−119.768***	−119.571**	−116.616**
	(39.337)	(42.030)	(40.397)
Urbanization	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Income (GDP per capita)	−0.008	−0.009	−0.009
	(0.006)	(0.006)	(0.006)
Literacy rate	−0.481	−0.443	−0.449
	(0.395)	(0.419)	(0.402)
Liberal components of democracy		−30.908	
		(36.869)	
Liberal democracy			−52.985
			(40.755)
Num.Obs.	22	22	22
R2	0.575	0.541	0.566
R2 Adj.	0.443	0.397	0.431
AIC	208.9	210.7	209.4
BIC	216.6	218.3	217.0
Log.Lik.	−97.467	−98.327	−97.695
RMSE	20.32	21.13	20.53

* p < 0.1, ** p < 0.05, *** p < 0.01

Coefficients with standard errors in parentheses.

Figure B1: Scatterplot of Model 1

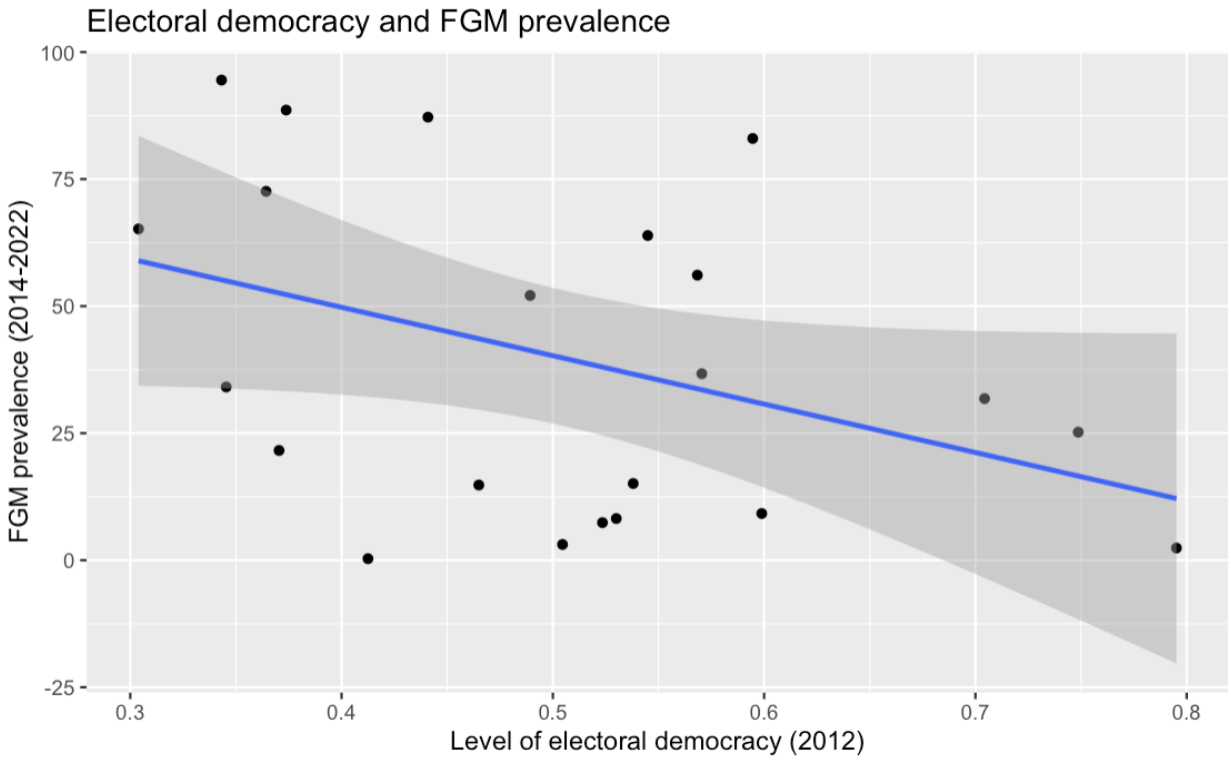


Figure B2: Scatterplot of Model 2

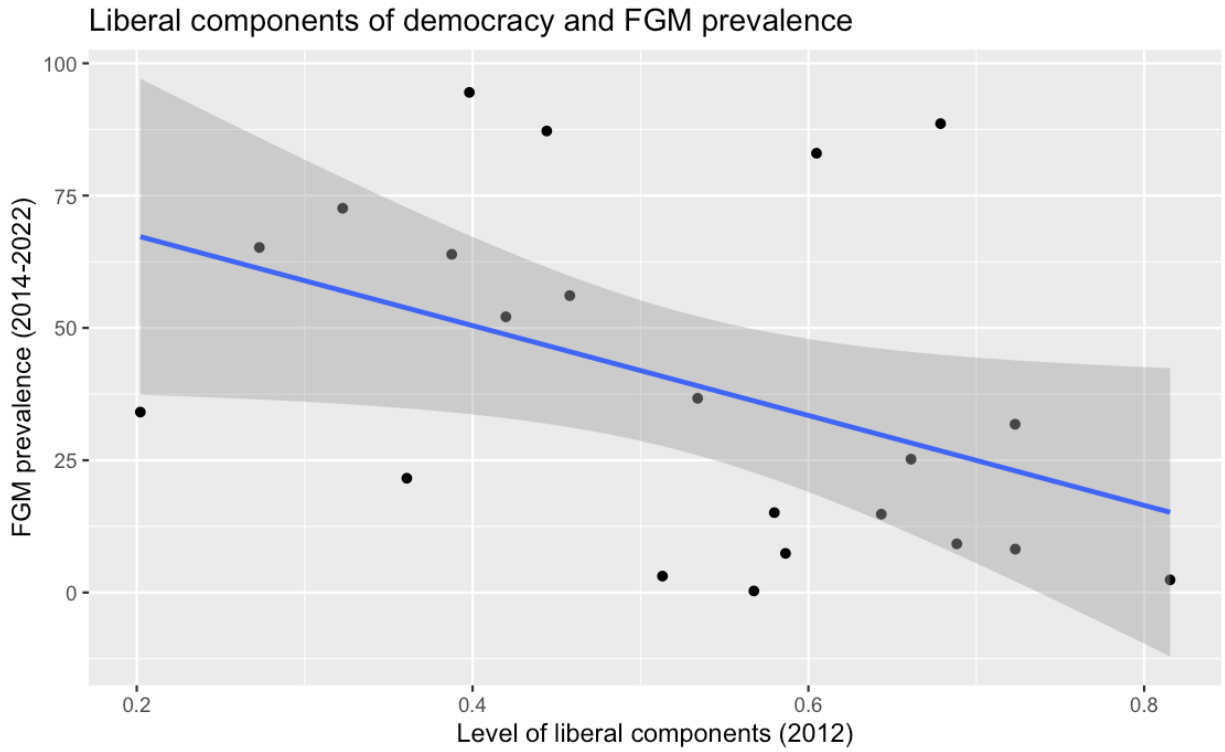


Figure B3: Scatterplot of Model 3

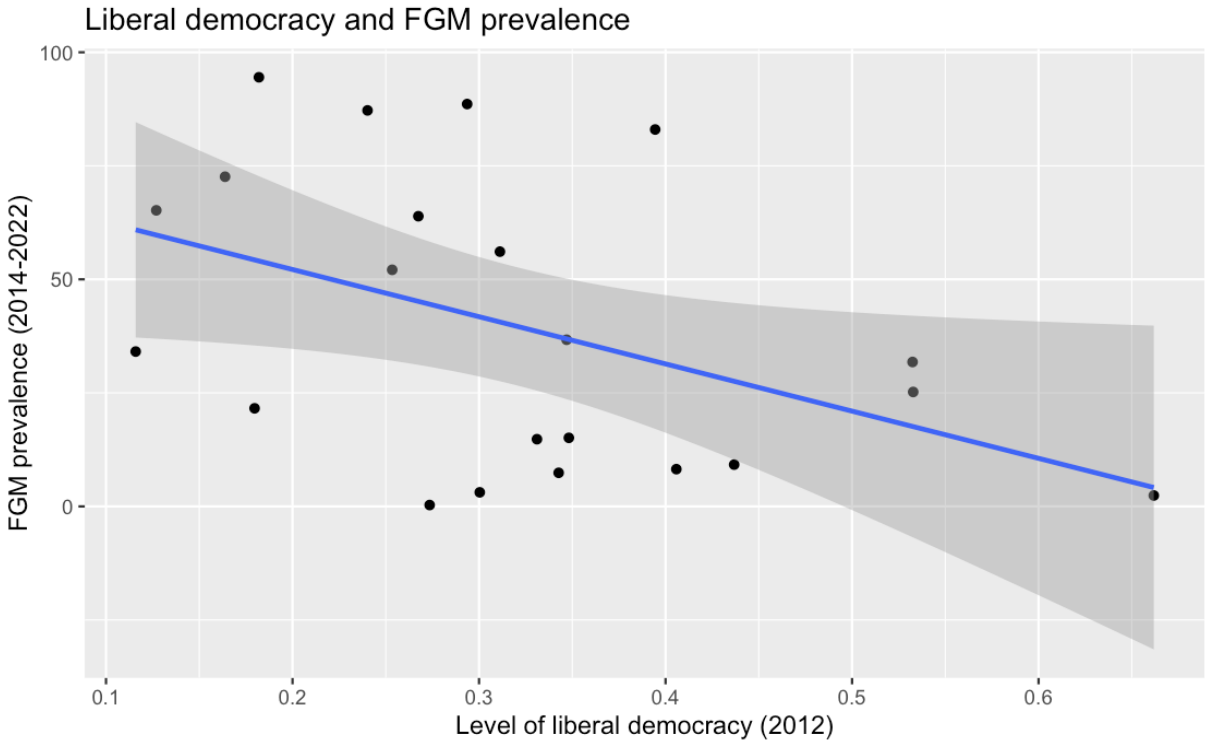


Table B3: Model 4, Average Marginal Effects

term	contrast	estimate	std.error	statistic	p.value	s.value	conf.low	conf.high
DEM	1 - 0	-0.011402498	0.0048862742	-2.33357722	1.961787e-02	5.67168774	-0.020979419	-0.001825577
V010	dY/dX	-0.004141096	0.0002130362	-19.43846512	3.649209e-84	277.17437635	-0.004558639	-0.003723553
country	Kenya - Benin	0.418604762	0.0095142126	43.99783546	0.000000e+00	Inf	0.399957248	0.437252276
country	Nigeria - Benin	0.220566235	0.0051104895	43.15951210	0.000000e+00	Inf	0.210549860	0.230582611
country	Senegal - Benin	0.374154395	0.0107038731	34.95504758	1.085318e-267	886.83668346	0.353175189	0.395133600
education	1 - 0	0.012937545	0.0046717561	2.76931095	5.617499e-03	7.47585623	0.003781072	0.022094019
education	2 - 0	-0.023700431	0.0047542063	-4.98514994	6.191378e-07	20.62323609	-0.033018504	-0.014382358
education	3 - 0	-0.067070386	0.0066540389	-10.07965045	6.796748e-24	76.96142956	-0.080112062	-0.054028709
ethnicity	Bariba - Adja	0.711003830	0.0531126587	13.38671133	7.231239e-41	133.34480908	0.606904932	0.815102728
ethnicity	Betamaribe - Adja	0.352029058	0.0584786315	6.01978961	1.746439e-09	29.09293644	0.237413047	0.466645070
ethnicity	Dendi - Adja	0.573995974	0.0536064719	10.70758725	9.377392e-27	86.46287175	0.468929220	0.679062728
ethnicity	Diola - Adja	0.259050182	0.0572339852	4.52616013	6.006508e-06	17.34504219	0.146873632	0.371226732
ethnicity	Ekoi - Adja	0.162378839	0.0705679714	2.30102745	2.139008e-02	5.54691434	0.024068157	0.300689522
ethnicity	Embu - Adja	-0.013316167	0.0566116952	-0.23521936	8.140385e-01	0.29683111	-0.124273051	0.097640717
ethnicity	Fon - Adja	-0.034726210	0.0591456007	-0.58713091	5.571158e-01	0.84395089	-0.150649457	0.081197037
ethnicity	Foreign ethnicity - Adja	0.228701575	0.1570147721	1.45656088	1.452376e-01	2.78351278	-0.079041723	0.536444874
ethnicity	Fulani - Adja	0.087220139	0.0547579534	1.59283052	1.111982e-01	3.16879445	-0.020103477	0.194543756
ethnicity	Hausa - Adja	0.224454290	0.0538820119	4.16566274	3.104494e-05	14.97528249	0.118847487	0.330061092
ethnicity	Ibibio - Adja	0.090666602	0.0590854380	1.53449995	1.249067e-01	3.00107716	-0.025138729	0.206471932
ethnicity	Igala - Adja	-0.085518386	0.0648202891	-1.31931509	1.870638e-01	2.41839774	-0.212563818	0.041527046
ethnicity	Igbo - Adja	0.398628428	0.0538718137	7.39957319	1.366229e-13	42.73486590	0.293041614	0.504215243
ethnicity	Ijaw/Izon - Adja	0.109846425	0.0588617173	1.86617772	6.201651e-02	4.01120395	-0.005520421	0.225213271
ethnicity	Kalenjin - Adja	-0.054357265	0.0539290259	-1.00794080	3.134829e-01	1.67354141	-0.160056214	0.051341683
ethnicity	Kamba - Adja	-0.127034619	0.0537442693	-2.36368679	1.809410e-02	5.78833662	-0.232371452	-0.021697787
ethnicity	Kanuri/Beriberi - Adja	-0.002527757	0.0569624603	-0.04437584	9.646048e-01	0.05199008	-0.114172128	0.109116613
ethnicity	Kikuyu - Adja	-0.112395739	0.0537587930	-2.09074149	3.655124e-02	4.77393571	-0.217761037	-0.007030441
ethnicity	Kisii - Adja	0.353545310	0.0560660747	6.30586877	2.865818e-10	31.70033405	0.243657822	0.463432797
ethnicity	Luhya - Adja	-0.156000898	0.0536256526	-2.90907226	3.625031e-03	8.10779110	-0.261105246	-0.050896551
ethnicity	Luo - Adja	-0.156160937	0.0536264315	-2.91201432	3.591062e-03	8.12137384	-0.261266811	-0.051055062
ethnicity	Maasai - Adja	0.227962753	0.0581476741	3.92041052	8.839825e-05	13.46562259	0.113995406	0.341930100
ethnicity	Mandingue - Adja	0.398221649	0.0564748176	7.05131359	1.772366e-12	39.03746097	0.287533040	0.508910257
ethnicity	Meru - Adja	-0.060663906	0.0543435630	-1.11630343	2.642923e-01	1.91979384	-0.167175332	0.045847521
ethnicity	Mijikenda/Swahili - Adja	-0.148686221	0.0536787498	-2.76992705	5.606885e-03	7.47858482	-0.253894637	-0.043477805
ethnicity	Other - Adja	0.107521650	0.0536985353	2.00231998	4.525033e-02	4.46592793	0.002274455	0.212768845
ethnicity	Other Bénois - Adja	0.651036106	0.0584221567	11.14365069	7.690105e-29	93.39291150	0.536530783	0.765541429
ethnicity	Other nationalities - Adja	0.512493149	0.0659208508	7.77437097	7.582323e-15	46.90628142	0.383290655	0.641695642
ethnicity	Peulh - Adja	0.701964175	0.0532730102	13.17673194	1.194543e-39	129.29873697	0.597550994	0.806377356
ethnicity	Poular - Adja	0.266232522	0.0555715524	4.79080592	1.661127e-06	19.19940578	0.157314281	0.375150763
ethnicity	Serer - Adja	-0.134492708	0.0537868499	-2.50047565	1.240267e-02	6.33320594	-0.239912997	-0.029072420
ethnicity	Somali - Adja	0.596536726	0.0566641052	10.52759457	6.446064e-26	83.68171198	0.485477121	0.707596332
ethnicity	Soninke - Adja	0.200023315	0.0610923576	3.27411354	1.059940e-03	9.88180153	0.080284495	0.319762136
ethnicity	Taita/Taveta - Adja	-0.050676768	0.0561449803	-0.90260550	3.667353e-01	1.44718893	-0.160718907	0.059365371
ethnicity	Tiv - Adja	-0.125018611	0.0552101166	-2.26441490	2.354861e-02	5.40821439	-0.233228451	-0.016808771
ethnicity	Wolof - Adja	-0.147001386	0.0536690771	-2.73903325	6.162014e-03	7.34238228	-0.252190845	-0.041811928
ethnicity	Yoa - Adja	0.659484357	0.0530513599	12.43105472	1.772797e-35	115.44145563	0.555505603	0.763463112
ethnicity	Yoruba - Adja	0.488145906	0.0534247150	9.13708021	6.416118e-20	63.75686115	0.383435389	0.592856423
residence	1 - 0	0.012031814	0.0036885204	3.26196205	1.106440e-03	9.81985965	0.004802446	0.019261181
wealthquintile	2 - 1	-0.026854343	0.0047923325	-5.60360602	2.099376e-08	25.50546418	-0.036247142	-0.017461544
wealthquintile	3 - 1	-0.045158225	0.0050312058	-8.97562682	2.817429e-19	61.62225433	-0.055019207	-0.035297243
wealthquintile	4 - 1	-0.076471891	0.0055795108	-13.70584137	9.367511e-43	139.61524239	-0.087407531	-0.065536250
wealthquintile	5 - 1	-0.126347992	0.0061172547	-20.65436195	8.919160e-95	312.42626124	-0.138337591	-0.114358394

Table B4: Models 6 & 7, logistic coefficients

Effect of democratic regime at birth on FGM risk by country

	Model 6 with country interactions (excluding Tanzania & full controls)	Model 7 with country interactions (all countries & full controls except ethnicity)
Constant	62.617***	45.240***
	(3.600)	(2.944)
Democracy	−1.148***	−0.861***
	(0.140)	(0.124)
Kenya	5.259***	1.215***
	(0.144)	(0.042)
Nigeria	3.403***	1.421***
	(0.120)	(0.039)
Senegal	4.568***	1.463***
	(0.153)	(0.040)
Birth year	−0.034***	−0.023***
	(0.002)	(0.001)
Type of place of residence (0 = urban, 1= rural)	0.099***	−0.441***
	(0.031)	(0.025)
Highest educational level: Primary	0.092**	−0.207***
	(0.038)	(0.028)
Highest educational level: Secondary	−0.204***	−0.224***
	(0.040)	(0.029)
Highest educational level: Higher	−0.546***	−0.438***
	(0.059)	(0.047)
Wealth quintile: Second	−0.210***	−0.546***
	(0.037)	(0.030)
Wealth quintile: Third	−0.358***	−0.779***
	(0.039)	(0.031)
Wealth quintile: Fourth	−0.607***	−1.136***
	(0.045)	(0.035)
Wealth quintile: Fifth	−1.055***	−1.641***
	(0.054)	(0.042)
Democracy x Kenya	0.588***	0.780***
	(0.148)	(0.127)
Democracy x Nigeria	1.433***	0.941***
	(0.151)	(0.135)
Democracy x Senegal	1.375***	1.195***
	(0.145)	(0.127)
Tanzania		0.058
		(0.063)
Democracy x Tanzania		0.390**
		(0.160)
Num.Obs.	56378	63064
Log Likelihood	−20633.115	−31759.086

* p < 0.1, ** p < 0.05, *** p < 0.01

Logistic oefficients with clustered standard errors in parentheses. The reference category is Benin

Table B5: Model 8, exponentiated coefficients

Model 8: Effect of democratic regime at birth on FGM risk by residence

	(1)
Constant	176138637110876689526895411 2.00***
	[152778875890620239865446 4.00, 203070086112487758813033031 2704.00]
Democracy	0.78***
	[0.70, 0.87]
Type of place of residence (0 = urban, 1= rural)	1.03
	[0.97, 1.11]
Kenya	158.21***
	[120.37, 207.95]
Nigeria	33.47***
	[26.50, 42.26]
Senegal	112.35***
	[83.26, 151.59]
Birth year	0.97***
	[0.96, 0.97]
Highest educational level: Primary	1.11***
	[1.03, 1.19]
Highest educational level: Secondary	0.82***
	[0.76, 0.89]
Highest educational level: Higher	0.56***
	[0.50, 0.63]
Wealth quintile: Second	0.82***
	[0.76, 0.88]
Wealth quintile: Third	0.71***
	[0.66, 0.76]
Wealth quintile: Fourth	0.55***
	[0.50, 0.60]
Wealth quintile: Fifth	0.35***
	[0.32, 0.39]
Democracy x Type of place of residence	1.29***
	[1.16, 1.45]
Num.Obs.	56378
Log Likelihood	−20737.97

* p < 0.1, ** p < 0.05, *** p < 0.01

Odds ratios with 95% confidence intervals.

Table B6: Model 8, logistic coefficients

Model 8: Effect of democratic regime at birth on FGM risk by residence

	(1)
Constant	62.736***
	(3.597)
Democracy	−0.246***
	(0.053)
Type of place of residence (0 = urban, 1= rural)	0.034
	(0.035)
Kenya	5.064***
	(0.139)
Nigeria	3.511***
	(0.119)
Senegal	4.722***
	(0.153)
Birth year	−0.034***
	(0.002)
Highest educational level: Primary	0.100***
	(0.038)
Highest educational level: Secondary	−0.197***
	(0.039)
Highest educational level: Higher	−0.581***
	(0.058)
Wealth quintile: Second	−0.204***
	(0.037)
Wealth quintile: Third	−0.345***
	(0.039)
Wealth quintile: Fourth	−0.602***
	(0.045)
Wealth quintile: Fifth	−1.046***
	(0.054)
Democracy x Type of place of residence	0.258***
	(0.057)
Num.Obs.	56378
Log Likelihood	−20737.970

* p < 0.1, ** p < 0.05, *** p < 0.01

Logistic coefficients with clustered standard errors in parantheses.

Table B7: Model 9, exponentiated coefficients

Model 9: Effect of democratic regime at birth on FGM risk by education

	(1)
Constant	19736038479707046203512324096.00***
	[16704602848895804639281152.00, 233175980534147939539924360888832.00]
Democracy	1.35***
	[1.19, 1.53]
Highest educational level: Primary	1.17***
	[1.08, 1.27]
Highest educational level: Secondary	0.97
	[0.89, 1.05]
Highest educational level: Higher	0.67***
	[0.59, 0.75]
Kenya	154.94***
	[117.86, 203.70]
Nigeria	31.86***
	[25.22, 40.25]
Senegal	111.26***
	[82.48, 150.07]
Birth year	0.97***
	[0.96, 0.97]
Type of place of residence (0 = urban, 1= rural)	1.10***
	[1.03, 1.17]
Wealth quintile: Second	0.82***
	[0.76, 0.88]
Wealth quintile: Third	0.71***
	[0.65, 0.76]
Wealth quintile: Fourth	0.54***
	[0.50, 0.59]
Wealth quintile: Fifth	0.34***
	[0.31, 0.38]
Democracy x Highest educational level: Primary	0.70***
	[0.59, 0.82]
Democracy x Highest educational level: Secondary	0.55***
	[0.48, 0.64]
Democracy x Highest educational level: Higher	0.43***
	[0.33, 0.55]
Num.Obs.	56378
Log Likelihood	−20707.89

* p < 0.1, ** p < 0.05, *** p < 0.01

Odds ratios with 95% confidence intervals.

Table B8: Model 9, logistic coefficients

Model 9: Effect of democratic regime at birth on FGM risk by education level

	(1)
Constant	65.152***
	(3.610)
Democracy	0.301***
	(0.064)
Highest educational level: Primary	0.159***
	(0.042)
Highest educational level: Secondary	−0.035
	(0.044)
Highest educational level: Higher	−0.407***
	(0.062)
Kenya	5.043***
	(0.140)
Nigeria	3.461***
	(0.119)
Senegal	4.712***
	(0.153)
Birth year	−0.036***
	(0.002)
Type of place of residence (0 = urban, 1= rural)	0.092***
	(0.031)
Wealth quintile: Second	−0.197***
	(0.037)
Wealth quintile: Third	−0.347***
	(0.039)
Wealth quintile: Fourth	−0.613***
	(0.045)
Wealth quintile: Fifth	−1.074***
	(0.054)
Democracy x Highest educational level: Primary	−0.361***
	(0.081)
Democracy x Highest educational level: Secondary	−0.590***
	(0.072)
Democracy x Highest educational level: Higher	−0.854***
	(0.129)
Num.Obs.	56378
Log Likelihood	−20707.893

* p < 0.1, ** p < 0.05, *** p < 0.01

Logistic coefficients with clustered standard errors in parantheses.

Appendix C: Regression assumptions tests

Appendix C1: Model 1 linear regression assumptions tests

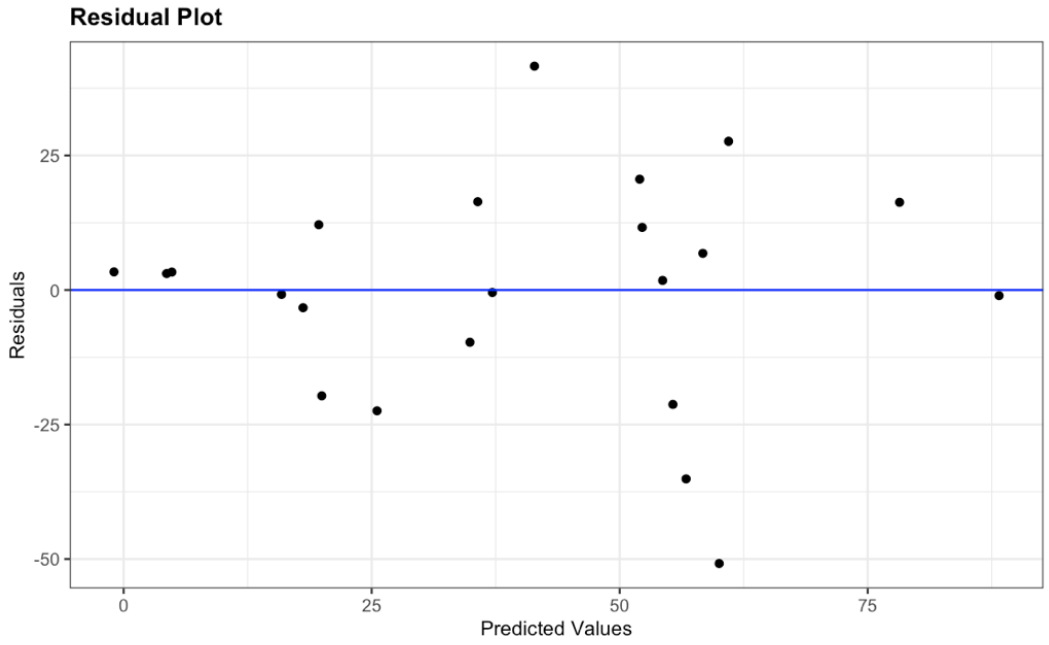
No excessive multicollinearity: Variance Inflation Factor

```
vif(Model1)
```

vdem_polyarchy	fe_etfra	wdi_popurb	wdi_gdppccur	une_litat
1.065024	1.552852	1.424878	2.379506	1.555188

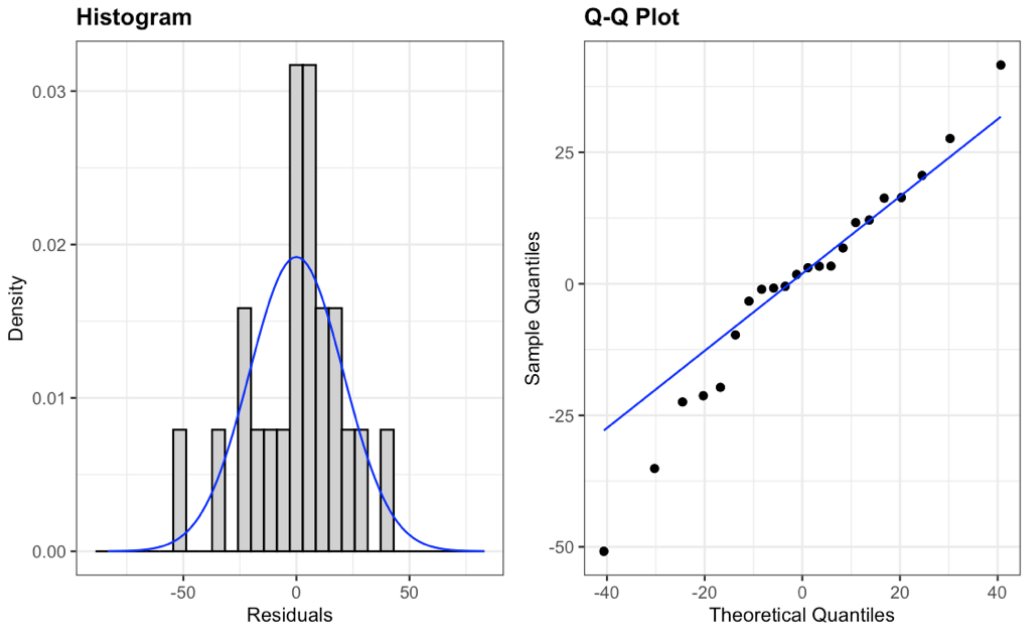
Linearity and additivity, homoskedasticity

```
resid_panel(Model1, plots = c("resid"))
```



Normally distributed errors

```
ggplot(data = Model1,
       mapping = aes(x = vdem_polyarchy)) +
  geom_histogram()
resid_panel(Model1, plots = c("hist", "qq"))
```



Limited impact of outliers: Summary & frequency statistics for standardized residuals

```
data_Model1 <-augment(Model1)
summary(data_Model1$.std.resid)
data_Model1 <- data_Model1 |>
  mutate(SRE1.96 = case_when(
    .std.resid > 1.96 | .std.resid < -1.96  ~ 1,
    .std.resid > -1.96 & .std.resid < 1.96 ~ 0),
         SRE2.58 = case_when(
    .std.resid > 2.58 | .std.resid < -2.58  ~ 1,
    .std.resid > -2.58 & .std.resid < 2.58 ~ 0),
        SRE3.29 = case_when(
    .std.resid > 3.29 | .std.resid < -3.29  ~ 1,
    .std.resid > -3.29 & .std.resid < 3.29 ~ 0))

fre(data_Model1$SRE1.96)
fre(data_Model1$SRE2.58)
fre(data_Model1$SRE3.29)

mean(data_Model1$SRE1.96)
mean(data_Model1$SRE2.58)
mean(data_Model1$SRE3.29)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
-2.33761 -0.39251  0.12141  0.01043  0.60160  1.83173
```

data_Model1$SRE1.96	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	21	95.5	95.5	95.5	95.5
1	1	4.5	4.5	4.5	100.0
#Total	22	100.0	100.0	100.0	
<NA>	0		0.0		

data_Model1$SRE2.58	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	22	100	100	100	100
#Total	22	100	100	100	
<NA>	0		0		

data_Model1$SRE3.29	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	22	100	100	100	100
#Total	22	100	100	100	
<NA>	0		0		

```
[1] 0.04545455
[1] 0
[1] 0
```

Limited impact of influential cases: Summary statistics for Cook's D values & specific influential cases

```
summary(data_Model1$.cooksd)
data_Model1 |>
  filter(.cooksd > 1) |>
  select(cname, .cooksd)
```

```
    Min.  1st Qu.   Median     Mean  3rd Qu.     Max.
0.000009 0.004263 0.016880 0.088593 0.039237 1.361595
```

cname <chr>	.cooksd <dbl>
Iraq	1.858846

1 row

Appendix C2: Model 2 linear regression assumptions tests

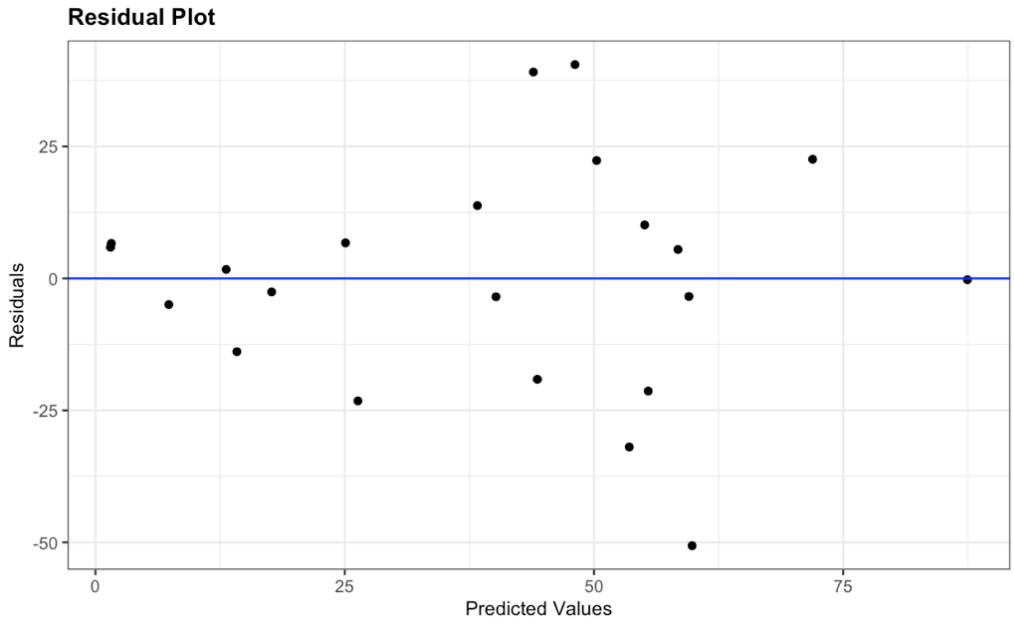
No excessive multicollinearity: Variance Inflation Factor

```
vif(Model2)
```

```
vdem_liberal      fe_etfra    wdi_popurb wdi_gdppccur     une_litat
    1.226383      1.639441      1.422554     2.360640      1.621020
```

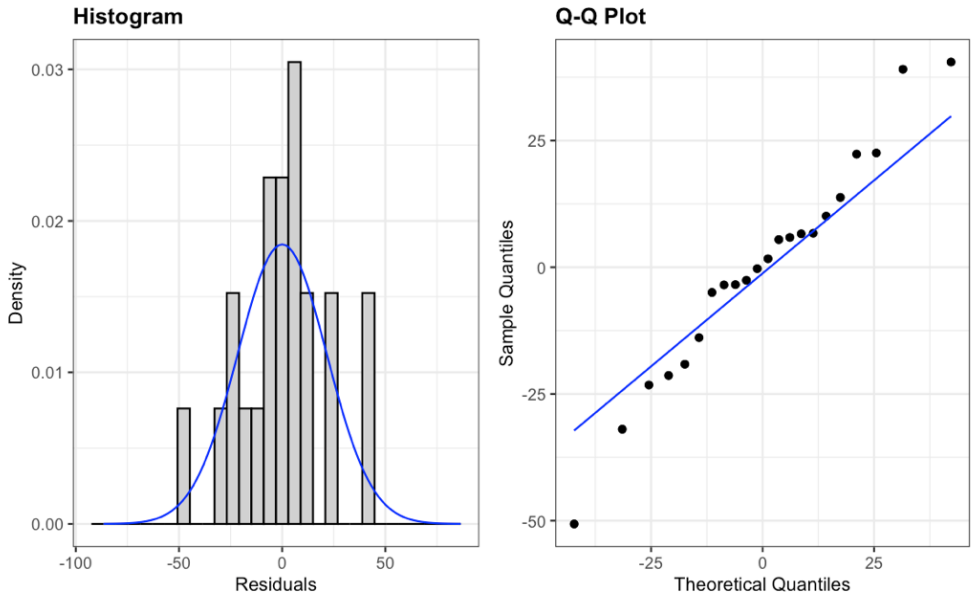
Linearity and additivity, homoskedasticity

```
resid_panel(Model2, plots = c("resid"))
```



Normally distributed errors

```
ggplot(data = Model2,
       mapping = aes(x = vdem_liberal)) +
  geom_histogram()
resid_panel(Model2, plots = c("hist", "qq"))
```



Limited impact of outliers: Summary & frequency statistics for standardized residuals

```
data_Model2 <-augment(Model2)
summary(data_Model2$.std.resid)
data_Model2 <- data_Model2 |>
  mutate(SRE1.96 = case_when(
    .std.resid > 1.96 | .std.resid < -1.96  ~ 1,
    .std.resid > -1.96 & .std.resid < 1.96 ~ 0),
         SRE2.58 = case_when(
    .std.resid > 2.58 | .std.resid < -2.58  ~ 1,
    .std.resid > -2.58 & .std.resid < 2.58 ~ 0),
        SRE3.29 = case_when(
    .std.resid > 3.29 | .std.resid < -3.29  ~ 1,
    .std.resid > -3.29 & .std.resid < 3.29 ~ 0))

fre(data_Model2$SRE1.96)
fre(data_Model2$SRE2.58)
fre(data_Model2$SRE3.29)

mean(data_Model2$SRE1.96)
mean(data_Model2$SRE2.58)
mean(data_Model2$SRE3.29)
```

```
    Min.  1st Qu.   Median     Mean  3rd Qu.     Max.
-2.36879 -0.55260  0.02422  0.01704  0.56086  1.84454
```

data_Model2$SRE1.96	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	21	95.5	95.5	95.5	95.5
1	1	4.5	4.5	4.5	100.0
#Total	22	100.0	100.0	100.0	
<NA>	0		0.0		

data_Model2$SRE2.58	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	22	100	100	100	100
#Total	22	100	100	100	
<NA>	0		0		

data_Model2$SRE3.29	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	22	100	100	100	100
#Total	22	100	100	100	
<NA>	0		0		

```
[1] 0.04545455
[1] 0
[1] 0
```

Limited impact of influential cases: Summary statistics for Cook's D values & specific influential cases

```
summary(data_Model2$.cooksd)
data_Model2 |>
  filter(.cooksd > 1) |>
  select(cname, .cooksd)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
0.0002483 0.0024896 0.0158345 0.1821589 0.0475374 2.9918389
```

cname <chr>	.cooksd <dbl>
Iraq	2.991839

1 row

Appendix C3: Model 3 linear regression assumptions tests

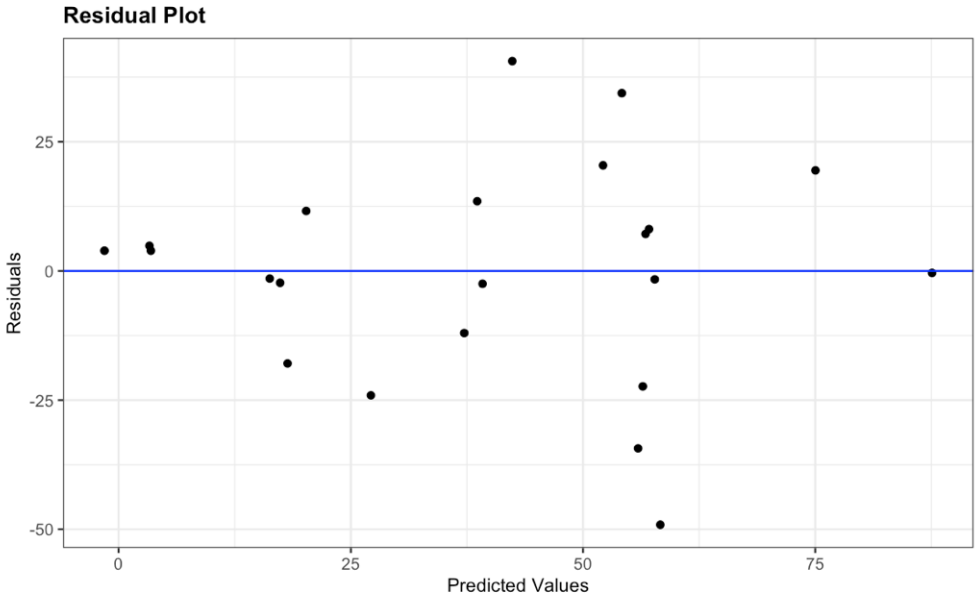
No excessive multicollinearity: Variance Inflation Factor

```
vif(Model3)
```

vdem_libdem	fe_etfra	wdi_popurb	wdi_gdppccur	une_litat
1.131970	1.604083	1.422159	2.371076	1.575478

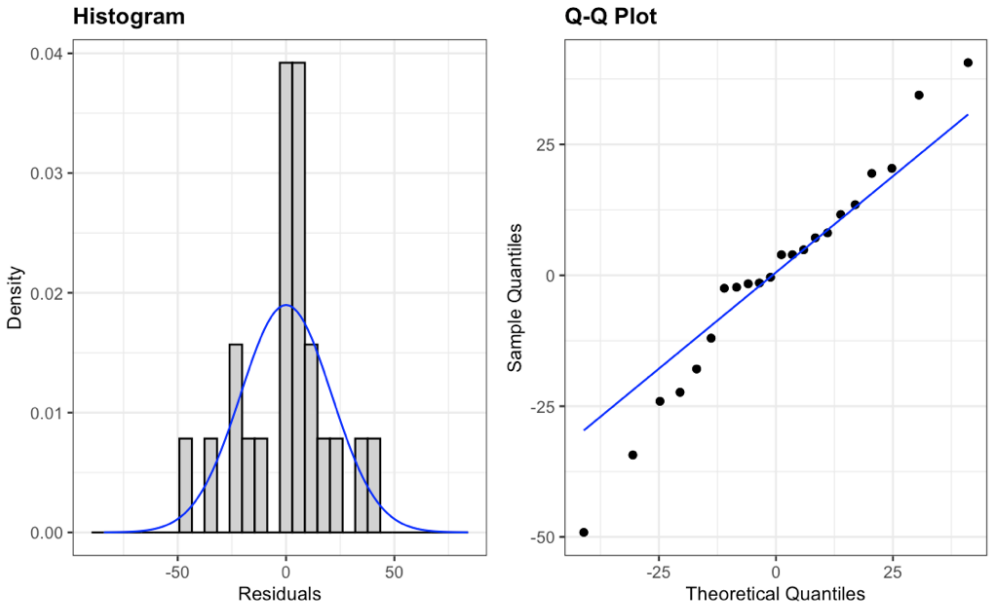
Linearity and additivity, homoskedasticity

```
resid_panel(Model3, plots = c("resid"))
```



Normally distributed errors

```
resid_panel(Model3, plots = c("hist", "qq"))
```



Limited impact of outliers: Summary & frequency statistics for standardized residuals

```
data_Model3 <-augment(Model3)
summary(data_Model3$.std.resid)
data_Model3 <- data_Model3 |>
  mutate(SRE1.96 = case_when(
    .std.resid > 1.96 | .std.resid < -1.96  ~ 1,
    .std.resid > -1.96 & .std.resid < 1.96 ~ 0),
         SRE2.58 = case_when(
    .std.resid > 2.58 | .std.resid < -2.58  ~ 1,
    .std.resid > -2.58 & .std.resid < 2.58 ~ 0),
        SRE3.29 = case_when(
    .std.resid > 3.29 | .std.resid < -3.29  ~ 1,
    .std.resid > -3.29 & .std.resid < 3.29 ~ 0))

fre(data_Model3$SRE1.96)
fre(data_Model3$SRE2.58)
fre(data_Model3$SRE3.29)

mean(data_Model3$SRE1.96)
mean(data_Model3$SRE2.58)
mean(data_Model3$SRE3.29)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
-2.289086 -0.505598  0.080402  0.008033  0.579526  1.765456
```

data_Model3$SRE1.96	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	21	95.5	95.5	95.5	95.5
1	1	4.5	4.5	4.5	100.0
#Total	22	100.0	100.0	100.0	
<NA>	0		0.0		

data_Model3$SRE2.58	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	22	100	100	100	100
#Total	22	100	100	100	
<NA>	0		0		

data_Model3$SRE3.29	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	22	100	100	100	100
#Total	22	100	100	100	
<NA>	0		0		

```
[1] 0.04545455
[1] 0
[1] 0
```

Limited impact of influential cases: Summary statistics for Cook's D values & specific influential cases

```
summary(data_Model3$.cooksd)
data_Model3 |>
  filter(.cooksd > 1) |>
  select(cname, .cooksd)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
0.0000989 0.0034685 0.0192109 0.1199387 0.0484165 1.8588464
```

cname <chr>	.cooksd <dbl>
Iraq	1.858846

1 row

Appendix C4: Model 4 logistic regression assumptions tests

No excessive multicollinearity: Variance Inflation Factor

```
vif(Model4)
```

```
                    GVIF Df GVIF^(1/(2*Df))
DEM                2.149462  1        1.466104
country          438.641053  3        2.756459
V010               2.393015  1        1.546937
residence          1.558754  1        1.248501
education          2.433540  3        1.159773
ethnicity        670.169317 38        1.089398
wealthquintile     2.134753  4        1.099432
```

Limited impact of outliers: Summary & frequency statistics for standardized residuals

```
Model4_augmented <- augment(Model4, data=All_data_mutated_exclTanz)
summary(Model4_augmented$.std.resid)



Model4_augmented <- Model4_augmented |>
  mutate(SRE1.96 = case_when(
    .std.resid > 1.96 | .std.resid < -1.96  ~ 1,
    .std.resid > -1.96 & .std.resid < 1.96 ~ 0),
         SRE2.58 = case_when(
    .std.resid > 2.58 | .std.resid < -2.58  ~ 1,
    .std.resid > -2.58 & .std.resid < 2.58 ~ 0),
        SRE3.29 = case_when(
    .std.resid > 3.29 | .std.resid < -3.29  ~ 1,
    .std.resid > -3.29 & .std.resid < 3.29 ~ 0))

fre(Model4_augmented$SRE1.96)
fre(Model4_augmented$SRE2.58)
fre(Model4_augmented$SRE3.29)

mean(Model4_augmented$SRE1.96)
mean(Model4_augmented$SRE2.58)
mean(Model4_augmented$SRE3.29)
```

```
    Min.  1st Qu.   Median     Mean  3rd Qu.     Max.
-2.92318 -0.61626 -0.16940 -0.06755  0.36158  3.70371
```

Model4_augmented$SRE1.96	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	55281	98.1	98.1	98.1	98.1
1	1097	1.9	1.9	1.9	100.0
#Total	56378	100.0	100.0	100.0	
<NA>	0		0.0		

Model4_augmented$SRE2.58	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	56214	99.7	99.7	99.7	99.7
1	164	0.3	0.3	0.3	100.0
#Total	56378	100.0	100.0	100.0	
<NA>	0		0.0		

Model4_augmented$SRE3.29	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	56356	100	100	100	100
1	22	0	0	0	100
#Total	56378	100	100	100	
<NA>	0		0		

```
[1] 0.01945794
[1] 0.002908936
[1] 0.0003902231
```

Limited impact of influential cases: Summary statistics for Cook's D values

```
summary(Model4_augmented$.cooksd)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
1.128e-07 2.234e-06 5.950e-06 1.584e-05 1.690e-05 7.525e-04
```

Appendix C5: Model 5 logistic regression assumptions tests

No excessive multicollinearity: Variance Inflation Factor

```
vif(Model5)
```

```
                    GVIF Df GVIF^(1/(2*Df))
DEM             2.299876  1        1.516534
country         1.665125  4        1.065813
V010            2.472417  1        1.572392
residence       1.528206  1        1.236206
education       1.835831  3        1.106553
wealthquintile  1.915950  4        1.084671
```

Limited impact of outliers: Summary & frequency statistics for standardized residuals

```
Model5_augmented <- augment(Model5, data=All_data_mutated_exclEthn)
summary(Model5_augmented$.std.resid)



Model5_augmented <- Model5_augmented |>
  mutate(SRE1.96 = case_when(
    .std.resid > 1.96 | .std.resid < -1.96  ~ 1,
    .std.resid > -1.96 & .std.resid < 1.96 ~ 0),
         SRE2.58 = case_when(
    .std.resid > 2.58 | .std.resid < -2.58  ~ 1,
    .std.resid > -2.58 & .std.resid < 2.58 ~ 0),
        SRE3.29 = case_when(
    .std.resid > 3.29 | .std.resid < -3.29  ~ 1,
    .std.resid > -3.29 & .std.resid < 3.29 ~ 0))

fre(Model5_augmented$SRE1.96)
fre(Model5_augmented$SRE2.58)
fre(Model5_augmented$SRE3.29)

mean(Model5_augmented$SRE1.96)
mean(Model5_augmented$SRE2.58)
mean(Model5_augmented$SRE3.29)
```

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
-1.5836 -0.7875 -0.5531 -0.1360 -0.2245  2.6623
```

Model5_augmented$SRE1.96	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	61587	97.7	97.7	97.7	97.7
1	1477	2.3	2.3	2.3	100.0
#Total	63064	100.0	100.0	100.0	
<NA>	0		0.0		

Model5_augmented$SRE2.58	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	63060	100	100	100	100
1	4	0	0	0	100
#Total	63064	100	100	100	
<NA>	0		0		

Model5_augmented$SRE3.29	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	63064	100	100	100	100
#Total	63064	100	100	100	
<NA>	0		0		

```
[1] 0.02342065
[1] 6.342763e-05
[1] 0
```

Limited impact of influential cases: Summary statistics for Cook's D values

```
summary(Model5_augmented$.cooksd)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
1.165e-07 2.336e-06 6.379e-06 1.586e-05 1.756e-05 2.288e-04
```

Appendix C6: Model 6 logistic regression assumptions tests

No excessive multicollinearity: Variance Inflation Factor

```
vif(interaction_Model6)
```

```
                    GVIF Df GVIF^(1/(2*Df))
DEM             22.789914  1        4.773878
country        529.157107  3        2.844008
V010             2.399504  1        1.549033
residence        1.559703  1        1.248881
education        2.493792  3        1.164510
wealthquintile   2.138714  4        1.099687
ethnicity      732.040787 38        1.090665
DEM:country     52.258500  3        1.933568
```

Limited impact of outliers: Summary & frequency statistics for standardized residuals

```
interaction_Model6_augmented <- augment(interaction_Model6, data=All_data_mutated_exclTanz)
summary(interaction_Model6_augmented$.std.resid)


interaction_Model6_augmented <- interaction_Model6_augmented |>
  mutate(SRE1.96 = case_when(
    .std.resid > 1.96 | .std.resid < -1.96  ~ 1,
    .std.resid > -1.96 & .std.resid < 1.96 ~ 0),
         SRE2.58 = case_when(
    .std.resid > 2.58 | .std.resid < -2.58  ~ 1,
    .std.resid > -2.58 & .std.resid < 2.58 ~ 0),
        SRE3.29 = case_when(
    .std.resid > 3.29 | .std.resid < -3.29  ~ 1,
    .std.resid > -3.29 & .std.resid < 3.29 ~ 0))

fre(interaction_Model6_augmented$SRE1.96)
fre(interaction_Model6_augmented$SRE2.58)
fre(interaction_Model6_augmented$SRE3.29)

mean(interaction_Model6_augmented$SRE1.96)
mean(interaction_Model6_augmented$SRE2.58)
mean(interaction_Model6_augmented$SRE3.29)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
-3.04410 -0.60754 -0.16270 -0.06631  0.36710  3.95807
```

interaction_Model6_augmented$SRE1.96	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	55334	98.1	98.1	98.1	98.1
1	1044	1.9	1.9	1.9	100.0
#Total	56378	100.0	100.0	100.0	
<NA>	0		0.0		

interaction_Model6_augmented$SRE2.58	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	56208	99.7	99.7	99.7	99.7
1	170	0.3	0.3	0.3	100.0
#Total	56378	100.0	100.0	100.0	
<NA>	0		0.0		

interaction_Model6_augmented$SRE3.29	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	56361	100	100	100	100
1	17	0	0	0	100
#Total	56378	100	100	100	
<NA>	0		0		

```
[1] 0.01851786
[1] 0.003015361
[1] 0.0003015361
```

Limited impact of influential cases: Summary statistics for Cook's D values

```
summary(interaction_Model6_augmented$.cooksd)
```

```
      Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
0.000e+00 1.200e-07 2.975e-06 1.810e-05 1.250e-05 9.951e-03
```

Appendix C7: Model 7 logistic regression assumptions tests

No excessive multicollinearity: Variance Inflation Factor

```
vif(interaction_Model7)
```

```
                    GVIF Df GVIF^(1/(2*Df))
DEM            31.625154  1        5.623625
country         4.701412  4        1.213469
V010            2.490847  1        1.578242
residence       1.528105  1        1.236166
education       1.886434  3        1.111579
wealthquintile  1.918682  4        1.084864
DEM:country    85.787013  4        1.744527
```

Limited impact of outliers: Summary & frequency statistics for standardized residuals

```
interaction_Model7_augmented <- augment(interaction_Model7, data=All_data_mutated_exclEthn)
summary(interaction_Model7_augmented$.std.resid)


interaction_Model7_augmented <- interaction_Model7_augmented |>
  mutate(SRE1.96 = case_when(
    .std.resid > 1.96 | .std.resid < -1.96  ~ 1,
    .std.resid > -1.96 & .std.resid < 1.96 ~ 0),
        SRE2.58 = case_when(
    .std.resid > 2.58 | .std.resid < -2.58  ~ 1,
    .std.resid > -2.58 & .std.resid < 2.58 ~ 0),
       SRE3.29 = case_when(
    .std.resid > 3.29 | .std.resid < -3.29  ~ 1,
    .std.resid > -3.29 & .std.resid < 3.29 ~ 0))

fre(interaction_Model7_augmented$SRE1.96)
fre(interaction_Model7_augmented$SRE2.58)
fre(interaction_Model7_augmented$SRE3.29)

mean(interaction_Model7_augmented$SRE1.96)
mean(interaction_Model7_augmented$SRE2.58)
mean(interaction_Model7_augmented$SRE3.29)
```

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
-1.5527 -0.7981 -0.5559 -0.1345 -0.1852  2.7705
```

```
| interaction_Model7_augmented$SRE1.96 | Count | Valid percent | Percent | Responses, % | Cumulative responses, % |
| ------------------------------------ | ----- | ------------- | ------- | ------------ | ----------------------- |
|                                    0 | 61640 |          97.7 |    97.7 |         97.7 |                    97.7 |
|                                    1 |  1424 |           2.3 |     2.3 |          2.3 |                   100.0 |
|                              #Total | 63064 |         100.0 |   100.0 |        100.0 |                         |
|                                <NA> |     0 |               |     0.0 |              |                         |

| interaction_Model7_augmented$SRE2.58 | Count | Valid percent | Percent | Responses, % | Cumulative responses, % |
| ------------------------------------ | ----- | ------------- | ------- | ------------ | ----------------------- |
|                                    0 | 63026 |          99.9 |    99.9 |         99.9 |                    99.9 |
|                                    1 |    38 |           0.1 |     0.1 |          0.1 |                   100.0 |
|                              #Total | 63064 |         100.0 |   100.0 |        100.0 |                         |
|                                <NA> |     0 |               |     0.0 |              |                         |

| interaction_Model7_augmented$SRE3.29 | Count | Valid percent | Percent | Responses, % | Cumulative responses, % |
| ------------------------------------ | ----- | ------------- | ------- | ------------ | ----------------------- |
|                                    0 | 63064 |           100 |     100 |          100 |                     100 |
|                              #Total | 63064 |           100 |     100 |          100 |                         |
|                                <NA> |     0 |               |       0 |              |                         |
[1] 0.02258024
[1] 0.0006025625
[1] 0
```

Limited impact of influential cases: Summary statistics for Cook's D values

```
summary(interaction_Model7_augmented$.cooksd)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
1.128e-07 2.234e-06 5.950e-06 1.584e-05 1.690e-05 7.525e-04
```

Appendix C8: Model 8 logistic regression assumptions tests

No excessive multicollinearity: Variance Inflation Factor

```
vif(Model8)
```

```
                    GVIF Df GVIF^(1/(2*Df))
DEM                3.631079  1        1.905539
residence          1.902205  1        1.379204
country          439.235408  3        2.757081
V010               2.387199  1        1.545056
education          2.435314  3        1.159914
ethnicity        680.646921 38        1.089621
wealthquintile     2.143875  4        1.100018
DEM:residence      2.898298  1        1.702439
```

Limited impact of outliers: Summary & frequency statistics for standardized residuals

```
Model8_augmented <- augment(Model8, data=All_data_mutated_exclTanz)
summary(Model8_augmented$.std.resid)

Model8_augmented <- Model8_augmented |>
  mutate(SRE1.96 = case_when(
    .std.resid > 1.96 | .std.resid < -1.96  ~ 1,
    .std.resid > -1.96 & .std.resid < 1.96 ~ 0),
         SRE2.58 = case_when(
    .std.resid > 2.58 | .std.resid < -2.58  ~ 1,
    .std.resid > -2.58 & .std.resid < 2.58 ~ 0),
        SRE3.29 = case_when(
    .std.resid > 3.29 | .std.resid < -3.29  ~ 1,
    .std.resid > -3.29 & .std.resid < 3.29 ~ 0))

fre(Model8_augmented$SRE1.96)
fre(Model8_augmented$SRE2.58)
fre(Model8_augmented$SRE3.29)

mean(Model8_augmented$SRE1.96)
mean(Model8_augmented$SRE2.58)
mean(Model8_augmented$SRE3.29)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
-2.92299 -0.61815 -0.16978 -0.06759  0.36870  3.73321
```

Model8_augmented$SRE1.96	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	55299	98.1	98.1	98.1	98.1
1	1079	1.9	1.9	1.9	100.0
#Total	56378	100.0	100.0	100.0	
<NA>	0		0.0		

Model8_augmented$SRE2.58	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	56207	99.7	99.7	99.7	99.7
1	171	0.3	0.3	0.3	100.0
#Total	56378	100.0	100.0	100.0	
<NA>	0		0.0		

Model8_augmented$SRE3.29	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	56357	100	100	100	100
1	21	0	0	0	100
#Total	56378	100	100	100	
<NA>	0		0		

```
[1] 0.01913867
[1] 0.003033098
[1] 0.0003724857
```

Limited impact of influential cases: Summary statistics for Cook's D values

```
resid_panel(Model8, plots = c("cookd"))
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
0.000e+00 1.410e-07 2.906e-06 1.801e-05 1.278e-05 1.015e-02
```

Appendix C9: Model 9 logistic regression assumptions tests

No excessive multicollinearity: Variance Inflation Factor

```
vif(Model9)
```

```
                    GVIF Df GVIF^(1/(2*Df))
DEM                5.072297  1        2.252176
education          5.067187  3        1.310573
country          441.274154  3        2.759210
V010               2.406602  1        1.551323
residence          1.558220  1        1.248287
ethnicity        701.665980 38        1.090057
wealthquintile     2.159762  4        1.101034
DEM:education      8.785501  3        1.436463
```

Limited impact of outliers: Summary & frequency statistics for standardized residuals

```
Model9_augmented <- augment(Model9, data=All_data_mutated_exclTanz)
summary(Model9_augmented$.std.resid)

Model9_augmented <- Model9_augmented |>
  mutate(SRE1.96 = case_when(
    .std.resid > 1.96 | .std.resid < -1.96  ~ 1,
    .std.resid > -1.96 & .std.resid < 1.96 ~ 0),
         SRE2.58 = case_when(
    .std.resid > 2.58 | .std.resid < -2.58  ~ 1,
    .std.resid > -2.58 & .std.resid < 2.58 ~ 0),
        SRE3.29 = case_when(
    .std.resid > 3.29 | .std.resid < -3.29  ~ 1,
    .std.resid > -3.29 & .std.resid < 3.29 ~ 0))

fre(Model9_augmented$SRE1.96)
fre(Model9_augmented$SRE2.58)
fre(Model9_augmented$SRE3.29)

mean(Model9_augmented$SRE1.96)
mean(Model9_augmented$SRE2.58)
mean(Model9_augmented$SRE3.29)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
-2.90300 -0.61826 -0.16776 -0.06736  0.35608  3.73116
```

Model9_augmented$SRE1.96	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	55312	98.1	98.1	98.1	98.1
1	1066	1.9	1.9	1.9	100.0
#Total	56378	100.0	100.0	100.0	
<NA>	0		0.0		

Model9_augmented$SRE2.58	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	56209	99.7	99.7	99.7	99.7
1	169	0.3	0.3	0.3	100.0
#Total	56378	100.0	100.0	100.0	
<NA>	0		0.0		

Model9_augmented$SRE3.29	Count	Valid percent	Percent	Responses, %	Cumulative responses, %
0	56359	100	100	100	100
1	19	0	0	0	100
#Total	56378	100	100	100	
<NA>	0		0		

```
[1] 0.01890808
[1] 0.002997623
[1] 0.0003370109
```

Limited impact of influential cases: Summary statistics for Cook's D values

```
summary(Model9_augmented$.cooksd)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
0.000e+00 1.340e-07 2.897e-06 1.800e-05 1.265e-05 9.677e-03
```

Appendix D: Interview with Sarah Mbira, Macheo Children's Organisation

The answers and informed consent were received by email on December 13, 2024.

1.How do you perceive the role of governance and democracy in addressing female genital mutilation (FGM) in the communities you work with?

In Kenya, governance and democracy play a critical role in addressing Female Genital Mutilation (FGM) in Kenya by enacting relevant laws, promoting accountability, and encouraging community participation. Democratic governance creates an environment where human rights are upheld, enabling the implementation of legal frameworks such as the Prohibition of Female Genital Mutilation Act of 2011, the Kenya Constitution (2010), and the Children Act (2022). These structures also foster partnerships between the government and civil society organizations, which are essential for advocacy and raising awareness. Moreover, a participatory governance model ensures that affected communities are actively involved in decision-making processes, supporting culturally sensitive and sustainable approaches to eliminating FGM.

2.How strongly is FGM politicized? Do you see the topic being brought up by political parties, in political campaigns or the legislature? Why or why not?

The topic of Female Genital Mutilation (FGM) is not a dominant issue in Kenyan political discourse. It occasionally arises in legislative debates and advocacy efforts, particularly when linked to broader themes such as women's rights, education, and health. Many politicians avoid addressing FGM directly due to its cultural sensitivity, especially in communities where the practice is deeply rooted in cultural and religious beliefs. However, discussions tend to surface in instances where FGM results in harm to children or during international observances such as the International Day of Zero Tolerance for FGM, when political leaders often reaffirm their commitment to eradicating the practice.

3. Have you seen a change in the way FGM has been addressed since Kenya's democratization, compared to the period before democratization?

Democratization in Kenya began in December 1991, when Kenya officially repealed Section 2A of its Constitution, which had established a one-party system under the Kenya African National Union (KANU). This paved the way for the reintroduction of multiparty democracy, and increased advocacy for human rights. Since then, there has been a notable shift in addressing FGM including the establishment of laws explicitly prohibiting FGM. Civil society organizations have also become more active in leveraging democratic freedoms to advocate for gender equality and mobilize communities. The shift from a top-down approach to a more participatory, rights-based framework is one of the most significant changes observed. Before democratization, efforts to address FGM were limited, uncoordinated, and lacked robust legislative support.

4. What are the challenges you observe when combatting FGM?

Some of the challenges includes:

- **Cultural Resistance**: FGM is deeply rooted in certain cultural and religious practices, , posing significant challenges to its elimination.
- **Lack of enforcement:** Despite the presence of legal frameworks, enforcement remains sporadic, particularly in remote regions.
- **Community Mistrust**: Initiatives driven by external organizations are often viewed with skepticism or as attempts to impose foreign values.
- **Limited Resources**: Efforts to combat FGM are often hindered by insufficient funding and support.
- **Social stigma**: Individuals who oppose FGM or have survived it frequently face exclusion or backlash in communities where it is widely accepted.

5. What do you think causes these challenges? Are they related to institutional constraints, ideas/norms, interests of particular groups, or something else?

The challenges are rooted in multiple factors:

- **Cultural Norms and Beliefs**: some communities view FGM as a rite of passage, a moral obligation, or a religious requirement, perpetuating its practice.eg Somali, Borana, and Rendille communities in northern Kenya, where FGM is often justified on religious grounds. Maasai and Samburu communities in the Rift Valley, where FGM is viewed as a rite of passage to womanhood. Kuria and Kisii communities in western Kenya, where the practice persists due to cultural traditions and social pressure.
- **Institutional Constraints**: Weak enforcement of anti-FGM laws due to insufficient capacity in law enforcement and judicial systems
- **Economic Interests**: In some cases, traditional circumcisers rely on FGM as a source of livelihood, creating resistance to its eradication.
- **Geographic Barriers**: Remote and rural areas, where FGM is most prevalent, often lack access to education and legal systems.
- **Patriarchal Structures:** Societal norms that reinforce gender inequality perpetuate practices like FGM.

Addressing these challenges requires a holistic, multi-stakeholder approach that incorporates education, community engagement, strengthened institutions, and sustainable alternative livelihoods.

6. Which groups support and oppose FGM? Are there any specific interest groups? Who is asking for help in the eradication of FGM?

Supporters of FGM

Communities that view FGM as a cultural rite of passage or religious obligation often uphold the practice. Key supporters include older generations, traditional leaders, and circumcisers who gain financial income or social status from performing the procedure.

Opponents of FGM

Opposition comes from a range of actors, including civil society organizations such as AMREF and Equality Now, government agencies like the Anti-FGM Board, and international organizations

like UNICEF and UNFPA. Local activists and religious groups advocating for gender equality and human rights also play critical roles in combating FGM eg Alternative Rite of Passage (ARP) Programs: Initiatives led by organizations like AMREF, Health Africa in Maasai communities provide culturally sensitive alternatives to FGM ceremonies, preserving the celebratory aspect while eliminating the cutting. Ntanira Na Mugambo (We Speak Out): A grassroots group from the Meru community Kenya educates about the harmful effects of FGM and advocates against the practice and Local Chiefs and Elders: Progressive leaders like Chief Kachindamoto in the Rift Valley have publicly opposed FGM, using their authority and Youth-Led Movements: Young activists, including school-based clubs, use their platforms to challenge FGM through education and advocacy campaigns.

Who is Asking for Help?

Requests for assistance typically come from survivors, young girls at risk, and progressive community members seeking alternatives to FGM. Grassroots organizations and local leaders also seek resources and training to enhance the effectiveness of anti-FGM campaigns.

7. How do grassroots movements and local leadership in democratic contexts influence the fight against FGM? Or on the contrary, have you seen instances where democracy has empowered those advocating for the continuation of FGM?

Grassroots movements play a pivotal role by fostering community-led initiatives to fight FGM. Democracy provides a platform for grassroots organizations to leverage freedoms of speech and assembly to mobilize communities, raise awareness, and advocate for legislative changes. Local movements can use participatory structures to engage citizens and amplify the voices of survivors and activists. Progressive local leaders specifically women leaders, including chiefs , are key allies in shifting cultural narratives and promoting alternative rites of passage. . In democratic contexts, they use their influence to challenge harmful traditions, foster dialogue, and support alternative rites of passage. Democracy ensures avenues for lobbying the government to enact and enforce anti-FGM laws. Civil society organizations and local activists often use democratic institutions, such as the judiciary and parliamentary petitions, to advocate for stronger protections against

FGM. Media freedom in a democracy allows activists to use platforms like radio, television, and social media to challenge pro-FGM narratives and spread awareness about its health risks and human rights implications

However, In a democratic setup, groups advocating for the continuation of FGM can also organize and use the same participatory platforms to defend the practice as a cultural or religious right. They may lobby for leniency in enforcement or portray anti-FGM campaigns as an attack on their identity. For instance, political decentralization sometimes strengthens local leaders who defend FGM as a cultural tradition, using democratic platforms to resist external interventions. Politicians seeking votes in regions where FGM is deeply entrenched may avoid taking strong anti-FGM stances to avoid alienating their constituents. Some may even tacitly support FGM to secure electoral support. In some cases, local leaders have resisted anti-FGM efforts, citing autonomy or local customs.

8. How do political debates and discussions in democratic settings, both on the national and community levels, challenge or reinforce the cultural norms that support FGM?

In democratic settings, political debates can challenge FGM by amplifying voices advocating for gender equality and human rights. Legislators and policymakers can propose anti-FGM laws and policies, bringing the issue to the forefront.

Conversely, these discussions can sometimes reinforce cultural norms if politicians, seeking votes from communities that support FGM, avoid addressing the issue or subtly endorse it under the guise of cultural preservation.

9. What role does the media play in raising awareness or advocating for or against FGM?

The media plays a critical role in raising awareness about FGM, highlighting its harmful effects, and showcasing success stories of eradication efforts. National and international media outlets often collaborate with advocacy groups to disseminate anti-FGM messages through radio, television, and social media.

However, in some cases, local media outlets may inadvertently reinforce FGM by portraying it as a cultural norm, especially if influenced by local leadership or public opinion. Nevertheless, the overall role of the media leans heavily toward advocacy against the practice.

10. How do you perceive the advancement of women's political empowerment in Kenya?

Women's political empowerment in Kenya has advanced significantly in recent years, with an increased number of women taking up leadership roles. The Constitution of Kenya (2010) introduced a two-thirds gender rule to promote women's representation in decision-making bodies. Programs and advocacy efforts have also focused on building women's leadership capacity.

However, challenges persist, including patriarchal attitudes, limited access to resources, and political violence against women candidates. While progress has been made, achieving full gender parity remains a work in progress.

11. In instances where women have been empowered politically, has this led to them advocating for the eradication or continuation of FGM?

Empowered women leaders in Kenya have been at the forefront of anti-FGM efforts. For instance Leaders such as Hon. Linah Jebii Kilimo, who chairs the Anti-FGM Board, have been vocal advocates for eradicating the practice.

Female Members of Parliament have played a significant role in passing laws, such as the Prohibition of FGM Act (2011), and mobilizing communities for awareness campaigns.

In general, politically empowered women have overwhelmingly advocated for the eradication of FGM, leveraging their positions to promote gender equality and protect girls' rights.

12. Have you observed a connection between the presence of female leaders in government and the introduction of anti-FGM policies?

There is a notable connection between the presence of female leaders in government and the introduction of anti-FGM policies in Kenya. Women leaders have championed the fight against FGM by:

- Proposing and supporting legislation targeting harmful cultural practices.
- Leading advocacy campaigns at national and community levels.
- Ensuring budget allocations for programs addressing FGM prevention and survivor support.
- The leadership of women like Linah Jebii Kilimo has been instrumental in creating a framework for addressing FGM through both policy and grassroots initiatives.

13. Have you observed an increase in women's socioeconomic status through democratization? If yes, has this influenced FGM rates or the population's support for the practice in any way?

- Democratization in Kenya has contributed to improving women's socioeconomic status, particularly through access to education, entrepreneurship opportunities, and representation in governance.
- Through access to education for all, there is ncreased enrollment of girls in schools that has led to greater awareness of the harms of FGM, resulting in declining support for the practice among educated families.
- Through economic empowerment, Women have gained greater economic independence are less likely to conform to harmful cultural norms, including FGM.
- With rising socioeconomic status, communities are increasingly questioning the necessity of FGM, and its prevalence has declined in urban and peri-urban areas.

14. Have you noticed a relationship between women's access to education and a decline in FGM prevalence in democratic countries?

Yes, there is a clear relationship between women's access to education and a decline in FGM prevalence in Kenya. Education equips women and girls with knowledge about their rights, the health risks associated with FGM, and alternative life paths that do not require conformity to harmful practices. Educated women are more likely to resist cultural pressures and advocate for

the protection of their daughters. Furthermore, education fosters critical thinking, which helps communities question outdated traditions. This trend is especially evident in urban and peri-urban areas where educational access is more widespread.

15. How does economic empowerment for women, such as increased access to jobs or financial resources, affect their ability to resist cultural pressures related to FGM?

Economic empowerment enhances women's ability to resist cultural pressures related to FGM. With access to jobs and financial resources, women gain independence and a stronger voice in household and community decisions. Empowered women can invest in their children's education, advocate for alternative rites of passage, and influence others by demonstrating the benefits of abandoning FGM. Additionally, they are less reliant on male-dominated structures that perpetuate harmful cultural norms

16. Does the protection of individual rights in democratic systems make it easier for women and girls to refuse FGM or enhance protection against it? Has there been an increased emphasis on bodily autonomy under a democratic regime that may have supported the eradication of FGM?

Democratic systems in Kenya have strengthened the protection of individual rights, making it easier for women and girls to refuse FGM. The Constitution of Kenya (2010) explicitly protects the rights to equality, human dignity, and bodily integrity, reinforcing the legal and moral grounds to resist FGM. The emphasis on bodily autonomy has been a cornerstone of advocacy campaigns, encouraging communities to view FGM as a violation of fundamental rights. Democratic freedoms have allowed anti-FGM activists to amplify their voices and challenge harmful practices more effectively.

17. Have you observed instances where the legal protection of individual rights in democracies has successfully prevented FGM?

Kenya has seen instances where legal protections have successfully prevented FGM. The Prohibition of Female Genital Mutilation Act (2011) has been instrumental in prosecuting cases of

FGM and deterring its practice. Increased awareness among law enforcement and communities has led to arrests and convictions, especially in cases where children are at risk. However, the success of these protections is more pronounced in urban areas than in remote regions where enforcement is limited.

18. In what way might this be hindered by a cultural backlash, i.e. the local population resisting "imported" norms around democracy, human rights and women's rights, specifically related to FGM

Efforts to eradicate FGM in Kenya have occasionally faced resistance from communities that perceive anti-FGM campaigns as imposing "Western" values on local traditions. This cultural backlash often manifests as:

- Defiance against laws and programs perceived as external interference.
- A shift to clandestine practices, where FGM is performed secretly to avoid detection.
- Increased tension between progressive activists and conservative leaders defending cultural heritage.

Such resistance underscores the importance of culturally sensitive approaches, where anti-FGM efforts are led by trusted local voices and framed within the context of preserving positive cultural elements while abandoning harmful practice