

Working Paper No. 184

Curbing intolerance of persons in same-sex relationships in Ghana: The important role of education

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Abstract

This paper describes high levels of intolerance in Ghana toward persons in same-sex relationships, explores factors driving this intolerance, and makes some policy recommendations for increasing tolerance. Using 2014 Afrobarometer survey data, the descriptive analysis reveals that large majorities of Ghanaians reject persons in same-sex relationships as neighbours, co-workers, supervisors, and members of their religious group; would report them to the police; and would support criminalizing same-sex activity. Regression analysis shows that religion, religiosity, age, and rural residence are associated with higher intolerance, while education and mediated social contact measured by social media and Internet use are associated with reduced intolerance. Among these drivers of intolerance and tolerance, we argue that education is the main factor that lends itself to meaningful remedial policy interventions and recommend a number of formal and informal education and sensitization measures aimed at reducing Ghanaians' intolerance of people of different sexual orientation or identity.

Introduction

Recent decades have seen progress toward ensuring respect for the rights of lesbian, gay, bisexual, transgender, and queer (LGBTQ) people. Yet a number of United Nations (UN) member countries still criminalize consensual same-sex sexual acts, contrary to tenets of the UN Human Rights Council (2016) and in some cases national laws against discrimination and violence based on sexual orientation or gender identity. According to the International Lesbian, Gay, Bisexual, Trans and Intersex Association (ILGA), consensual same-sex sexual acts are criminalized in 70 UN member states¹ as well as some non-UN states such as Gaza, the Cook Islands, and certain provinces of Indonesia (Mendos, 2019).

In Africa, proscription of consensual same-sex sexual acts remains a commonplace – even though South Africa became the first country in the world to recognize same-sex relationships (in 1997) and same-sex spouses (in 2006) and other African states have decriminalized such acts (Lesotho and Seychelles in 2011, São Tomé and Príncipe in 2012, Mozambique in 2015, and Angola and Botswana in 2019). Of the continent's 54 countries, 32 have laws that explicitly criminalize same-sex relationships, while Egypt does so de facto. Efforts to advance LGBTQ rights have met with limited success on the African continent, and have even encountered new legislative barriers in Nigeria, Uganda, Tanzania, and Gabon (Mendos, 2019). In African countries where consensual same-sex sexual acts are criminalized, LGBTQ persons often face stigmatization and persecution. In Malawi, for instance, two men were convicted and jailed for 14 years with hard labour for engaging in “unnatural acts and gross indecency” (Guardian, 2010). In November 2019, two Zambian men were sentenced to 15 years in prison for same-sex sexual activity (Attitude, 2019).

In Morocco, a court convicted two men of homosexuality after a group of youths captured and paraded them naked in the street while filming and assaulting them (Refworld, 2017). Human-rights activists in Nigeria say a 2014 law against same-sex marriage appears to be legitimizing mob attacks, sexual abuse, unlawful arrests, torture, and police extortion targeting LGBTQ persons (Refworld, 2017).

The predominance of anti-LGBTQ legislation across Africa adds credence to the common view that Africans tend to be homophobic (Canavera, 2010). Indeed, the Afrobarometer survey² has consistently found that while large majorities of Africans express tolerance of people of a different ethnicity, religion, or nationality, the same is not true for people of a different sexual orientation (Dulani, Sambo, & Dionne, 2016).

Evidence from the Pew Research Center (2013) suggests that Africans are among the world's least tolerant people when it comes to homosexuality. Barriers to tolerance are often embedded in traditional, cultural, or religious values and beliefs that change slowly, if at all (Dionne & Dulani, 2013; Fisher, 2013; Sneed & Welsh, 2014). They may also reflect the belief that same-sex relationships are foreign imports, alien to African cultural values, although anthropological studies have shown that such relationships have long been part of the culture in a number of African countries (Murray & Roscoe, 1988; Dlamini, 2006; Kerrigan, 2013).

¹ In two of these countries (Egypt and Iraq), criminalization is de facto, i.e. while no laws explicitly prohibit consensual same-sex sexual acts, other legal provisions are used to prosecute people for such acts. In 26 of the 70 countries, laws proscribe only same-sex sexual acts between men; 44 have laws applying to both sexes.

² Afrobarometer heads a pan-African, non-partisan research network that conducts public attitude surveys on democracy, governance, economic conditions, and related issues across Africa. Its question related to tolerance of people of a different sexual orientation asks respondents whether they would like, dislike, or not care if they had homosexuals as neighbours.

Same-sex relationships and Ghana's criminal codes

Ghana is one of the African countries that has no explicit laws on same-sex relations but has legislation that can be interpreted as criminalizing such activity. The Republic of Ghana Criminal Offences Act of 1960 (Act 29), Article 104(1) of Chapter 6 states that "unnatural carnal knowledge" between consenting adults (age 16 and above) is a misdemeanour. Human-rights activists contend that Ghana's criminal code lacks clarity, and countless commentaries have argued both sides of the question of whether Ghana should legalize same-sex relationships.

For instance, the president of the Gays and Lesbians Association of Ghana has said the law is open to various interpretations and is used to prosecute homosexuals, who lack protection and may even have trouble finding lawyers willing to take on such cases (Refworld, 2006). Well-known human-rights lawyer Nana Oye Lithur has called on Ghanaians to respect provisions of the 1992 Constitution guaranteeing equality before the law for all (Ghanaweb, 2011). Another well-known lawyer, John Ndebugri, even argued that sexual acts between two women cannot be described as sexual intercourse or unnatural carnal knowledge as described in the Criminal Offences Act (Ghanaweb, 2013).

Former British Prime Minister David Cameron threw fuel on the fire with his suggestion, in 2011, that the United Kingdom would cut off aid to any country that failed to recognize gay rights (Mail Online, 2011). In 2012, then-UN Secretary General Ban Ki-Moon, while addressing the opening session of the African Union (AU) Summit, called on African countries to respect the rights of lesbian, gay, bisexual, and transgender persons (Deutsche Welle, 2012). Ghana's then-President John Evans Atta Mills, who was at the AU Summit, clarified his position upon his arrival home, saying, "The Ghanaian society frowns on homosexuality. If the people's interest

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is that we do not legalize homosexuality, I don't see how any responsible leader can decide to go against the wishes of his people" (Ghanaweb, 2012).

Indeed, Ghana's Constitution Review Commission (CRC), established in 2010 to collate public opinion on aspects of the 1992 Constitution, indicated that more than 98% of

public comments it received on the subject opposed legalizing same-sex relationships. Nonetheless, the CRC opposed adding explicit constitutional provisions outlawing same-sex relationships on the grounds that they would be considered reactionary and unworthy of a progressive state. The commission recommended that the country's Supreme Court rule on whether or not to legalize same-sex relationships (Republic of Ghana, 2011).

In its white paper on the CRC's report (Republic of Ghana, 2012), the government "took note" of the commission's recommendation – a position many saw as the safest thing to do in an election year.

In this paper, we examine data from Afrobarometer's Round 6 (2014) survey³ in Ghana to answer three questions related to Ghana's ongoing debate about same-sex relationships:

1. Are Ghanaians generally tolerant or intolerant of people in same-sex relationships?
2. What are factors that promote tolerance or intolerance of people in same-sex relationships among Ghanaians?
3. What policy options are available to proponents of LGBTQ rights for curbing intolerance or promoting tolerance?

³ We use Round 6 (2014) because unlike more recent survey rounds, it contained a number of country-specific questions on views related to same-sex relationships.

Intolerance of people in same-sex relationships in Ghana

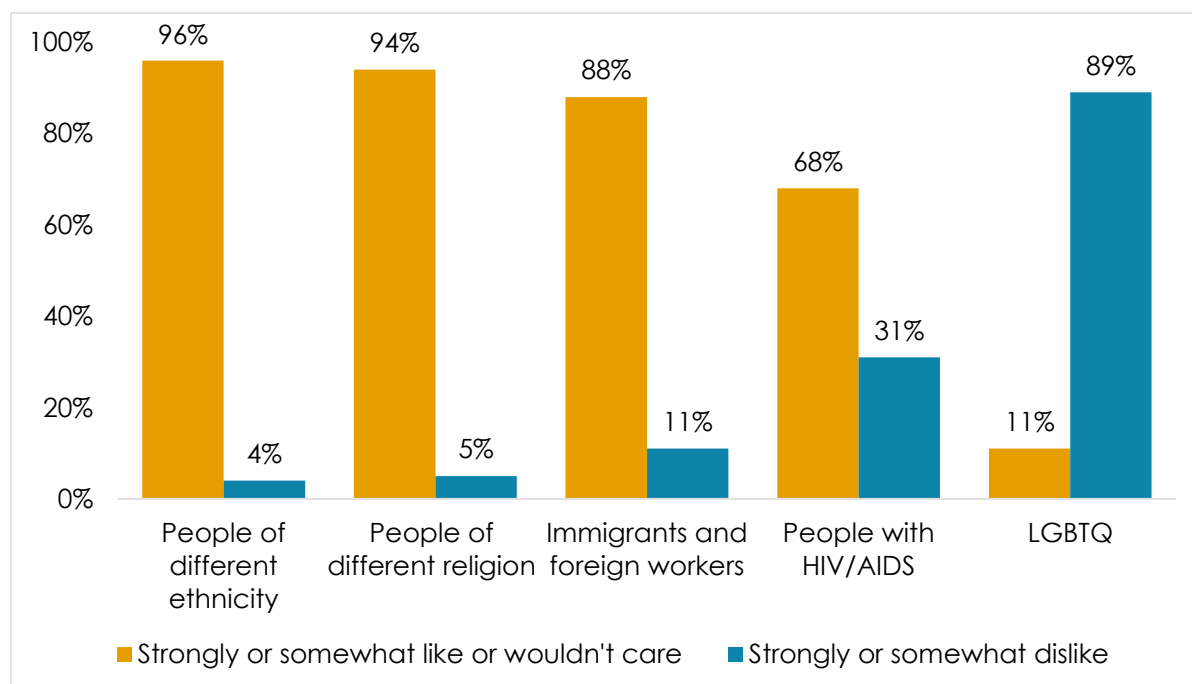
The stark evidence from the Afrobarometer public-attitude survey⁴ is that most Ghanaians do not want people in same-sex relationships⁵ as neighbours, co-workers, supervisors, or members of their religious community. Moreover, most Ghanaians would be inclined to report any individual they know to be involved in a same-sex relationship to the police or authorities, and would willingly support a government decision to promulgate a law criminalizing same-sex relationships.

Intolerance of people in same-sex relationships as neighbours

Nine out of 10 Ghanaians (89%) said they would “somewhat dislike” or “strongly dislike” living next door to people in same-sex relationships. Only 11% would not care or would like having such individuals as neighbours. In contrast, large majorities said they would not have any problem living next to people of different ethnicities (96%), religious faiths (94%), immigrants or foreign workers (88%), or persons living with HIV/AIDS (68%) (Figure 1).

In later survey rounds, “dislike/strongly dislike” for having homosexual neighbours changed little: 93% in Round 7 (2017) as well as Round 8 (2019).

Figure 1: Tolerance of various groups as neighbours | Ghana | 2014



Respondents were asked: For each of the following types of people, please tell me whether you would like having people from this group as neighbors, dislike it, or not care? (Note: Categories may not always add up to 100% because 1) percentages are rounded and 2) “Don’t know” and “Refused to answer” responses are not shown.)

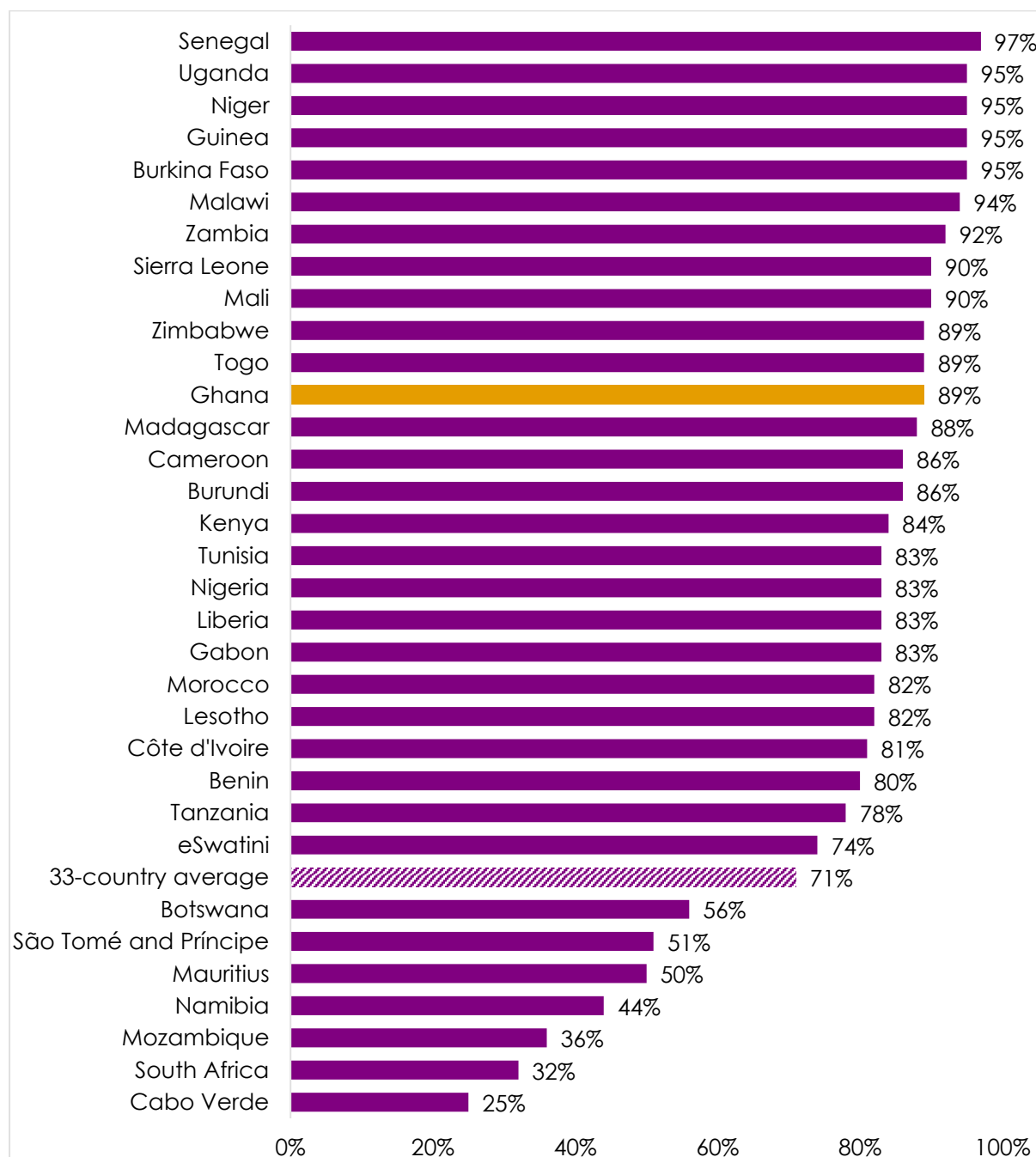
⁴ Afrobarometer’s Round 6 survey in Ghana was conducted by the Center for Democratic Development (CDD-Ghana), whose teams interviewed a nationally representative sample of 2,400 adult citizens in May-June 2014. A sample of this size yields results with a margin of error of +/-2 percentage points at a 95% confidence level.

⁵ The Afrobarometer question about neighbours used the word “homosexual” because it is widely understood and can be translated into local languages across Africa. The country-specific questions in Ghana about the workplace, religious groups, reporting people to the authorities, and support for a law referred to persons in “same-sex relationships.” In this report, we interpret responses to all these questions to apply to the broader category of LGBTQ persons.

The level of dislike of people in same-sex relationships as neighbours in Ghana was 18 percentage points higher than the average of 71% across 33 countries where this question was asked (Figure 2).

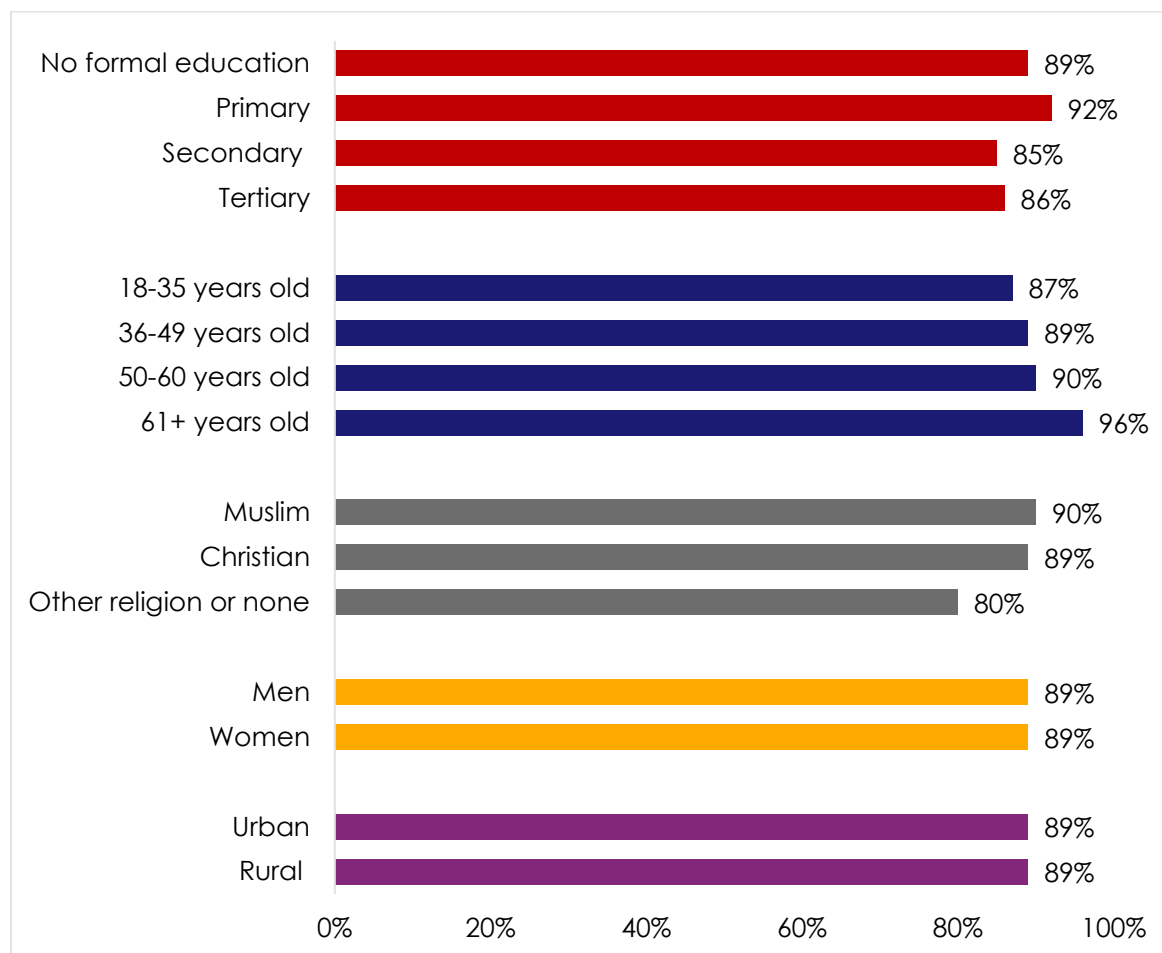
Dislike of people in same-sex relationships as neighbours was pervasive across key socio-demographic groups in Ghana. Younger respondents, those with at least a secondary education, and those who are neither Christian nor Muslim were slightly less likely to express intolerance than were older, less-educated, and Christian or Muslim respondents (Figure 3).

Figure 2: Rejection of people in same-sex relationships as neighbours | 33 countries | 2014/2015



Respondents were asked: For each of the following types of people, please tell me whether you would like having people from this group as neighbors, dislike it, or not care: Homosexuals? (% who say "somewhat dislike" or "strongly dislike") (This question was not asked in Algeria, Egypt, and Sudan because research partners deemed it too sensitive.)

Figure 3: Rejection of people in same-sex relationships as neighbours | by socio-demographic group | Ghana | 2014



Respondents were asked: For each of the following types of people, please tell me whether you would like having people from this group as neighbors, dislike it, or not care: Homosexuals? (% who say "somewhat dislike" or "strongly dislike")

Intolerance of people in same-sex relationships in the workplace and religious groups

Similarly, most Ghanaians said they would not want to associate with persons in same-sex relationships in the workplace or in religious organizations. Almost nine out of 10 respondents "disagreed" or "strongly disagreed" with the idea that they would "not mind" having persons in same-sex relationship as co-workers (88%), work supervisors (88%), or members in their religious community (87%).

As on the question about neighbours, rejection of persons in same-sex relationships in the workplace and religious organizations cut across key socio-demographic groups. Expressions of intolerance were slightly less pronounced among urban residents, men, and younger and better-educated respondents, as well as those who identify neither as Christian nor as Muslim (Table 1).

Table 1: Rejection of people in same-sex relationships in the workplace and religious organizations | by socio-demographic group | Ghana | 2014

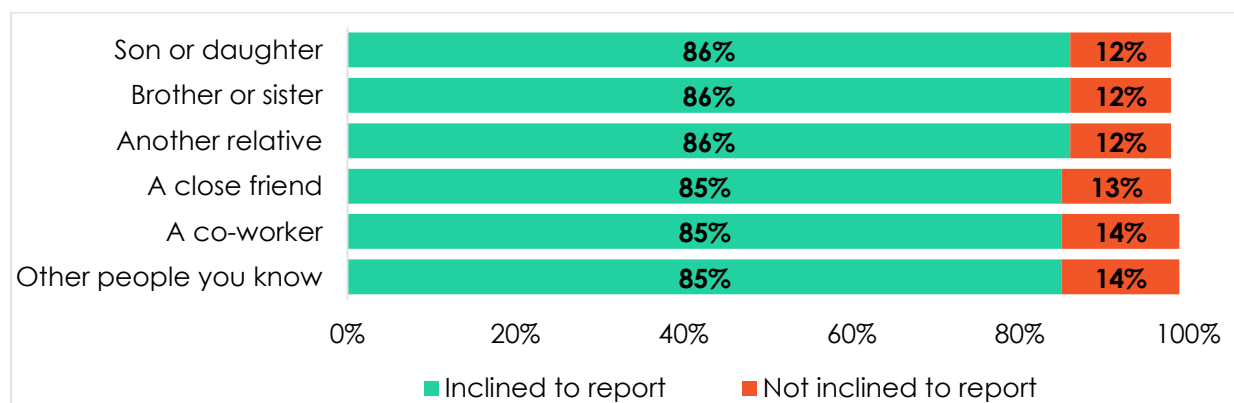
		As co-worker	As supervisor	As member of religious group
Settlement type	Urban	85%	85%	84%
	Rural	92%	92%	90%
Gender	Men	86%	86%	86%
	Women	90%	90%	87%
Age	Youth (18-35 years)	86%	86%	86%
	Young adults (36-49 years)	90%	89%	88%
	Older adults (50-60 years)	90%	91%	87%
	Elderly (61 years or more)	92%	90%	90%
Education	No formal education	93%	93%	92%
	Primary	89%	90%	88%
	Secondary	84%	83%	83%
	Tertiary	78%	79%	78%
Religion	Muslim	90%	90%	90%
	Christian	88%	88%	87%
	Other religion or none	83%	83%	82%
National average		88%	88%	87%

Respondents were asked: For each of the statements below, please tell me whether you disagree or agree:
 I would not mind having someone in a same-sex relationship as a co-worker in my workplace.
 I would not mind having someone in a same-sex relationship as my supervisor in my workplace.
 I would not mind having someone in a same-sex relationship as a member in my religious community.
 (% who “disagree” or “strongly disagree”)

Willingness to report persons in same-sex relationships to police or other authorities

Strikingly, an overwhelming majority (85%-86%) of Ghanaians said they would be inclined to report their own children – as well as other relatives and friends – to the police or other authorities if they discovered that they were in same-sex relationships. Only about one in eight (12%-14%) said they would not take such action (Figure 4).

Figure 4: Reporting persons in same-sex relationship to police or authorities | Ghana | 2014

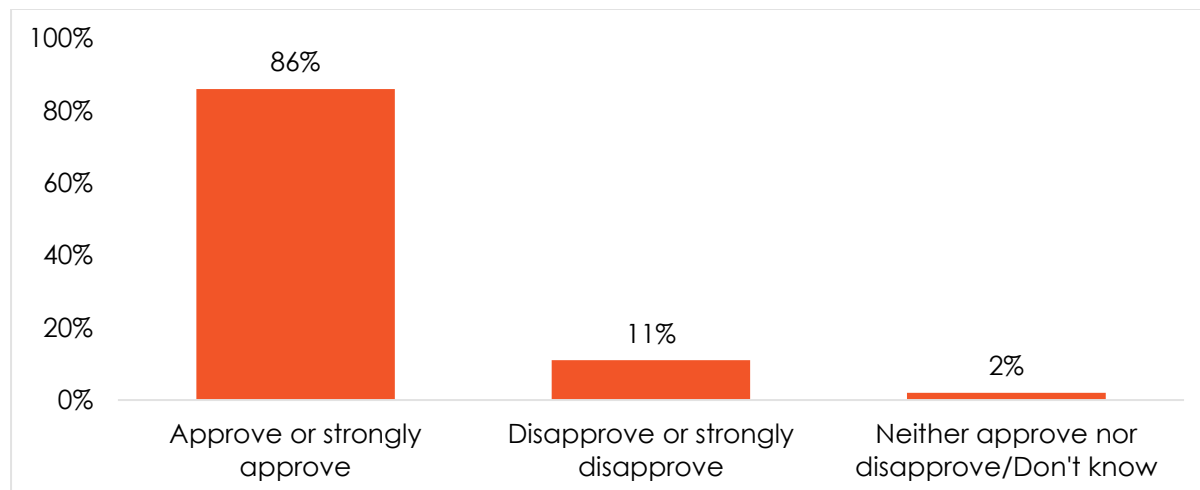


Respondents were asked: Would you be inclined to report to the police or any official if you discover that the following individual is in a same-sex relationship: (a) Your son or daughter? (b) Your brother or sister? (c) Another relative? (d) A close friend? e) A co-worker? (f) Other people that you know?

Broad support for a law criminalizing same-sex relationships

An overwhelming majority (86%) of Ghanaians said they would approve of a decision by government to criminalize same-sex relationships, including 71% who said they feel “strongly” about this issue. Only about one in 10 (11%) said they would oppose such a law (Figure 5). Across all key socio-demographic groups, more than three-fourths of respondents expressed support for criminalizing same-sex relationships.

Figure 5: Support for legislation criminalizing same-sex relationships | Ghana | 2014



Respondents were asked: *If government decides to pass a law making same-sex relationships illegal in the country, would you approve or disapprove of it?*

Potential drivers of intolerance of persons in same-sex relationships

Given Ghanaians' high levels of intolerance of persons in same-sex relationships, what are factors that might contribute to or mitigate these attitudes? A literature review turns up little research dealing specifically with Ghana but allows us to tease out a number of potentially relevant factors.

Religion

The effect of religion on attitudes toward persons in same-sex relationships has been examined with regard to religion in general and to affiliation with particular religious denominations or ideologies. At the general level, the integration theory focuses on the way socializing agents such as religious and educational institutions influence people's moral attitudes by exposing them to social norms and values to which the individual is expected to conform (see, for example, van den Akker, van der Ploeg, & Scheepers, 2013).

Religious denomination or ideology shapes people's attitudes in specific ways regarding the morality of same-sex relationships and support for policies intended to promote tolerance (Cadge, Olson, & Wildeman, 2008; van Geest, 2007). Commentators have noted that the tendency to believe and teach that same-sex activity is morally wrong, and thus not to be tolerated, is particularly strong among sectarian Protestant denominations and evangelicals (and Catholics in Latin America), while atheists and agnostics are typically less likely to express intolerance (van Geest, 2008; Jelen, 1982; Lodola & Corral, 2010; Finlay & Walther, 2003).

In a more recent study, Grossman (2015) notes that unlike discussions of LGBTQ rights in the context of human rights in the Western world, in Africa these issues are generally discussed within the framework of threats to public morality, African values, national integrity, and sovereignty. He argues that rapidly growing Pentecostal, evangelical, and related renewalist (i.e. “spirit-filled”) churches have been able to join with other Christian groups to mobilize

support for state regulation on issues of morality, such as homosexual behaviour. His analysis found a positive and significant relationship between the share of renewalist Christians in a country and the saliency of LGBTQ issues, an effect that increases with the level of political competition.

Religiosity

Religiosity refers to the importance individuals attach to the tenets and practices of their religion. It is often measured on the basis of the regularity of one's involvement in religious activities, such as attending religious gatherings and reading religious publications. Like religion, religiosity has been found to be an important driver of negative attitudes toward same-sex relationships and other LGBTQ rights (Whitehead, 2010; Jones, 2010; Olson, Cadge, & Harrison, 2006; Fisher, Derison, Polley, Cadman, & Johnston, 1994).

Social contact or mediated social contact

Studies have shown that, for heterosexuals, contact with those of different sexual orientations can reduce prejudice. The underlying idea is that personal interaction with a member of a minority group offers insights and personal connection, leading to a gradual shift toward acceptance. Writing about prejudice in general, Allport (1954) stressed the importance of majority-minority group contact in reducing prejudice against the minority when specific optimal conditions exist, such as equal group status, common goals, inter-group cooperation, and authority support. In a meta-analysis, Pettigrew and Tropp (2006) confirmed the important influence of contact or interaction but argued that Allport's optimal conditions are not essential. Other studies have confirmed this effect on attitudes toward LGBTQ persons among various groups of heterosexuals, including college students, adolescents, and evangelical Protestants (Herek & Glunt, 1993; Herek & Capitano, 1996; Cotten-Huston & Waite, 2000; Wills & Crawford, 2000; Raiz, 2006; Heinze & Horn, 2009). Lemm (2006) went a step further to argue that it is not just contact that is important in building positive attitudes but also the degree of closeness (e.g. friends vs. acquaintances). However, Broockman and Kalla (2016) demonstrated with a door-to-door canvassing intervention that even a 10-minute conversation can reduce anti-transgender prejudice.

Adapting the contact theory to new technological realities, some scholars have argued that mediated contact through social media and the Internet may also reduce prejudice. These new media facilitate interaction among users, some of whom may be of different sexual orientations, while overcoming logistical, financial, and other challenges of face-to-face contact (Amichai-Hamburger & McKenna, 2006). Schwab and Greitemeyer (2015) found that exposure to out-group cultures on Facebook is associated with positive attitudes toward members of such groups. Similarly, based on a Web-based survey of 980 heterosexual social media users in China, Wu, Mou, Wang, and Atkin (2017) concluded that mediated contact with lesbian and gay celebrities on social media platforms lowered stigmatization of such persons. Regarding Internet use, Díez and Dion (2018) analyzed 2010, 2012, and 2014 AmericasBarometer survey data from 18 countries and found that exposure to the Internet is associated with a higher probability of support for same-sex marriage. Other studies have found similar effects on tolerance of homosexuality in China (Zhou & Hu, 2019) and on levels of support for same-sex marriage in Singapore (Panchapakesan, Li, & Ho, 2014).

Education

Education level is well-documented as a predictor of people's attitudes toward LGBTQ rights. The underlying argument is that, as major socializing agents, educational institutions build liberal attitudes and values in people, making them more supportive of minority rights. A number of studies have confirmed this effect with regard to LGBTQ rights in the Americas and Europe (Decoo, 2014; Lodola & Corral, 2010; Ohlander, Batalova, & Treas, 2005).

Chong (1993) argues that higher education makes people better at distinguishing between their personal feelings toward specific groups, which may in some cases be negative, and those groups' entitlement to rights and liberties.

Other researchers have argued that the influence of education on attitudes toward LGBTQ rights are a result of encounters associated with the process of getting education, i.e. that interacting with progressive students and teachers, or diverse ideas and lifestyles, makes people more open-minded and leads them to challenge previously held viewpoints (Patrick et al., 2013; Stubager, 2008; Andersen & Fetner, 2008; Lambert, Ventura, Hall, & Cluse-Tolar, 2006).

Zhang and Brym (2019), however, argue that the consistent positive correlation found between education and tolerance of LGBTQ rights may apply only to wealthy Western democracies, where political agendas have a liberalizing effect on educational curricula. Analyzing data on educational attainment and tolerance of homosexuality from 88 countries over the period 1981-2014, they found that, in relatively free countries, education was associated with greater tolerance, while in relatively unfree countries, it had no relationship and in some cases was even associated with intolerance. They conclude that education tends to be associated with tolerance of LGBTQ rights only when political regimes actively promote liberal-democratic values.

Age

The influence of age on attitudes toward LGBTQ rights has been explained within the context of two theories: life-cycle changes and generational changes.

The theory of life-cycle changes argues that, as people age, they become more conservative in outlook (Mayer, 1992). The generational-change theory proposes instead that as older generations are replaced, public opinion in general begins to resemble that of the generations replacing them (Quillan, 1996; Wilson, 1994; Davis, 1992; Firebaugh & Davis, 1988). The key idea underpinning this theory is that sexual attitudes are strongly influenced by cohort membership and the influence of the social and ideational context of that cohort. Indeed, Keleher and Smith (2008) reason that life-cycle effects cannot explain recent positive shifts in U.S. attitudes toward LGBTQ rights because if previously tolerant young people became more conservative and less tolerant as they aged, the net effect over time would be zero change. Instead, they argue that as younger, more-tolerant Americans have replaced their less-tolerant elders, overall attitudes have become more tolerant.

Other studies in the United States and Canada have confirmed that younger birth cohorts are more accepting of LGBTQ rights than older birth cohorts (Decoo, 2014; Anderson & Fetner, 2008).

Gender

Gender has also been found to be influential in shaping attitudes toward LGBTQ rights. In a meta-analysis, Oliver and Hyde (1995) found that men in the United States and Canada held more negative attitudes toward LGBTQ rights than women, a finding confirmed by other researchers (Herek, 2002; Hinrichs & Rosenberg, 2002; Lodola & Corral, 2010). These differences could be a result of the gender of the target (i.e. gay men or lesbian women). Several studies have found that heterosexual men are more likely than heterosexual women to hold intolerant attitudes toward LGBTQ persons of their own sex (Schope & Eliason, 2004; Kite & Whitley, 1996; Logan, 1996).

One possible explanation offered for these gender differences in attitudes toward LGBTQ rights is based on different perceptions of gender roles. Whitley and Ægisdóttir (2000) found that individuals who are inclined to emphasize traditional gender-role stereotypes tend to see same-sex relationships as a threat to their gender belief system, and therefore to dislike them. Related arguments explore men's tendency to take violations of traditional gender roles more seriously than women (Whitley & Kite, 1995) and society's strict expectations

regarding masculinity, which may lead men who display “feminine” traits to be at the receiving end of more negative reactions than women who display “masculine” traits (Herek, 1986).

Urban vs. rural settlement location

Attitudes toward LGBTQ rights may also be influenced by geographical location. In the United States, studies have established that people living in urban areas tend to be more tolerant than their counterparts in suburban and rural areas (Herek, 1994; Yang, 1998). Baunach (2012) corroborated this finding in his study of changing attitudes toward same-sex marriage in the United States between 1988 and 2010.

In fact, the existing literature suggests that rural environments pose more challenges for gay and lesbian persons than do urban environments (Leedy & Connolly, 2007; Bell & Valentine, 1995). Amid the sparse populations and traditional cultures of most rural areas, LGBTQ persons may be more likely to face social isolation and hostility (Kramer, 1995; Eldridge, Mack, & Swank, 2006).

While factors affecting attitudes toward LGBTQ rights have received a fair amount of research attention in the West, they have not been extensively explored in Ghana or elsewhere in Africa, a fact that adds importance to the current study.

Research hypotheses

Based on factors highlighted in the preceding literature review, we test the following hypotheses with the aim of identifying drivers of Ghanaians' intolerance of persons in same-sex relationships:

H₁: *Adherence to a religion is associated with greater intolerance of persons in same-sex relationships.*

H₂: *Religiosity is associated with greater intolerance of persons in same-sex relationships.*

H₃: *Mediated contact is associated with reduced intolerance of persons in same-sex relationships.*

H₄: *Higher levels of education are associated with reduced intolerance of persons in same-sex relationships.*

H₅: *Older Ghanaians are more intolerant of persons in same-sex relationships than young Ghanaians are.*

H₆: *Men are more intolerant of persons in same-sex relationships than women are.*

H₇: *Intolerance of persons in same-sex relationships is higher in rural than in urban settlements.*

Empirical analysis

Consistent with the analytical approach used by other researchers as established in the literature review, a regression analysis was considered the most suitable method for evaluating these hypothesized relationships. Consequently, we fit two forms of a multiple regression model to the 2014 Ghana Round 6 Afrobarometer survey data.

The first form of the model (“primary model”) has religion, level of education, and age as categorical, scale, and continuous variables, respectively. The second form of the model (“secondary model”) has religion, education, and age variables decomposed into cohort dummies to explore possible variations in effects of the different cohorts of these variables on intolerance of persons in same-sex relationships.⁶ We use the ordinary least squares (OLS)

⁶ See Appendix 2 for full regression models.

method to estimate the models. Regression analysis and OLS estimation enable us to determine the nature and significance of the effect of each predictor variable on the outcome or dependent variable while controlling for the effects of other predictors.

Data and measurement

Prior to data analysis, some variables in the conceptual models had to be operationalized. This involved re-coding some variables and constructing scales.

Dependent variable: Intolerance of persons in same-sex relationships scale

A number of approaches have been used to measure tolerance, among them the “fixed-group approach,” which asks survey respondents whether a number of minority groups at the peripheries of politics should be permitted to play an active part in political activities (Stouffer, 1955), and the “least-liked approach,” which presents respondents with a list of groups, asks them to identify the groups they dislike most, and then asks whether they would tolerate a number of political activities by the groups they dislike (Sullivan, Piereson, & Marcus, 1982).

In this paper, we adapt the “least-liked approach,” using four variables to construct a scale of intolerance of persons in same-sex relationships: disagreement with having persons in same-sex relationships as co-workers, workplace supervisors, and members of the same religious group, and dislike of homosexuals as neighbours.

A factor analysis confirms that these variables can be combined to construct a valid scale, and a reliability analysis shows that this scale largely measures the underlying concept of interest.⁷

Independent variables

Level of education scale: Education is coded in the primary model as a nine-point scale ranging from “0=No formal education” to “8=Post-graduate education.” To explore how different levels of education affect intolerance of persons in same-sex relationships, in the secondary model we use dummies representing four levels of education, namely, “no education,” “primary education,” “secondary education,” and “tertiary education.” The “no education” category (the excluded reference category) includes respondents who had no education at all, had only informal education, or did not complete primary school; “primary education” consists of those who completed primary school but did not complete secondary school; “secondary education” includes those who completed secondary school; and “tertiary education” includes those with partial or full post-secondary, university, or post-graduate education. This coding approach assumes that a person with some (but not completed) primary education is not very different from someone with no formal education.

Religion: Afrobarometer asked citizens, “What is your religion, if any?” Due to the small sample sizes for certain religious groups in Ghana, the analysis of religion is restricted to contrasting adherents of the two largest religions – Christianity (constituting 79% of the population) and Islam (16%) with an additional category comprising persons with no religion and adherents of traditional or other religions (consisting of 2.4% no religion, 2.8% traditionalists, and 0.2% Hindus).

For the primary model, we create a categorical variable that combines Christians and Muslims (coded as 1) and distinguishes them from those with no religion or adhering to a smaller religious group (coded as 0). In the secondary model, we use separate dummy variables for Christians and Muslims to determine whether each of the major religions has a distinct influence (with no/small religious group as the excluded or reference category during estimation).

⁷ See Appendix 1, Table A.1 for details of the factor and reliability analyses for the intolerance scale.

Religiosity: Afrobarometer asked respondents how often they engage in religious practices such as praying, reading religious books, and attending religious services or meetings aside from weddings and funerals. We use this single question item to gauge religiosity, measured on a seven-point scale: 0=never; 1=a few times a year; 2=about once a month; 3=about once a week; 4=a few times a week; 5=about once a day; and 6=more than once a day.

Age, gender, and settlement type: In the primary model, age is included as a simple continuous numeric variable. In the secondary model, to test generational effects, age is re-coded into four age-group dummies – 18-35 years, 36-49 years, 50-60 years, and 61 years and above, with 18-35 as the excluded reference category. In both the primary and secondary models, gender and settlement type are included as categorical variables (male=1 and female=0, rural=1 and urban=0).

Mediated-contact scale: As explained above, contact theory is one major explanation for increasing tolerance for LGBTQ persons. However, Afrobarometer does not provide data for tracking social contact with people from the LGBTQ community. As a rough proxy, we use data on reported use of social media and the Internet to track mediated contact, with the logic that those who use social media and the Internet more will be more exposed to perspectives of people with experiences different than their own. However, we caution that, since we do not know what kind of content people are exposed to when using social media and the Internet, no firm conclusions should be drawn from any results. A correlation analysis shows a strong positive and statistically significant association between reported use of social media and the Internet ($r=0.909$, $p\text{-value}=0.000$, 2-tailed test). We pool scores for the two indicators on a five-point scale (0=never, 1=less than once a month, 2=a few times a month, 3=a few times a week, and 4=daily) to create a unique scale, which we use as a control factor in the analysis.

Results

Descriptive statistics of variables in the model

Table 2 shows basic descriptive statistics for key variables in the models.

Table 2: Descriptive statistics of variables | Ghana | 2014

	Min.	Max.	Mean	Standard deviation
Intolerance of persons in same-sex relationships scale	0.5	3.5	2.93	0.55
Level of education	0	8.0	2.62	1.80
Mediated-contact scale	0	4.0	0.67	1.34
Religion (1=Muslim or Christian, 0=Other or no religion)	0	1.0	0.95	0.22
Religiosity	0	6.0	3.47	1.83
Age	18.0	105.0	38.31	15.19
Gender (1=Male, 0=Female)	0	1.0	0.50	0.50
Settlement type (1=Rural, 0=Urban)	0	1.0	0.46	0.50

Correlation between dependent and independent factors

A bivariate analysis offers initial insight into the nature of the relationship between the dependent variable (*intolerance of persons in same-sex relationships scale*) and each independent variable in the primary model. We calculate the Pearson's correlation where

both factors are continuous variables⁸ and the point bi-serial correlation where one factor is a continuous variable and the other a dichotomous variable.

In Table 3, the Pearson's correlation coefficients show that intolerance of persons in same-sex relationships correlates negatively with Internet and social media use (again, a rough proxy for mediated contact) ($r=-0.148$) and education ($r=-0.125$) but positively with age ($r=0.091$) and religiosity ($r=0.089$). These correlations are highly statistically significant at the 99% confidence level and are consistent with the hypotheses laid out above, i.e. that mediated contact and education are associated with less intolerance, while age and religiosity are associated with greater intolerance.

The point bi-serial correlations also show that intolerance is correlated positively with rural settlement location ($r_{pb}=0.081$) as well as religion ($r_{pb}=0.034$), again consistent with our hypotheses. But contrary to our hypothesis, intolerance resonates negatively with being a man ($r_{pb}=-0.041$). Again, these correlations are statistically significant at either the 99% or 95% confidence level.⁹

Table 3: Correlation between intolerance and predictors | Ghana | 2014

	Correlation coefficients	
	Pearson	Point bi-serial
Level of education	-0.125**	--
Mediated-contact scale	-0.148**	--
Religion (1=Muslim or Christian, 0=Other or no religion)	--	0.034*
Religiosity	0.089**	--
Age	0.091**	--
Gender (1=Male, 0=Female)	--	-0.041*
Settlement type (1=Rural, 0=Urban)	--	0.081**

* Significant at the 0.05 level (1-tailed); ** Significant at the 0.01 level (1-tailed)

Estimating regression models to evaluate hypotheses

Having established significant associations between intolerance of persons in same-sex relationships and its identified predictors, we proceed to estimate the primary and secondary multiple regression models. From the empirical findings in most of the literature reviewed, we anticipated that religion, religiosity, age, being male, and rural residence would drive intolerance upward (i.e. positively signed coefficients), while education and mediated contact would drive it downward (i.e. negatively signed coefficients). The results of the estimates are presented in Table 4.¹⁰

The first hypothesis (**H₁**) states that adherence to a religion is associated with intolerance of persons in same-sex relationships. As expected, the coefficient estimate for religion in the primary model, which considers the effects of being either Christian or Muslim in contrast to belonging to a smaller or no religious group, is positive (0.094) and significant at the 90% confidence level. Thus, holding all other predictors in the model constant, being an adherent of either Christianity or Islam raises intolerance of persons in same-sex relationships by 0.094 points on the intolerance scale. In the secondary model, where we kept the smaller or no religion group as the reference category, the decomposed religion variables – Christianity

⁸ The religiosity, education, and Internet/social media use variables are ordinal. However, in conducting the correlation analysis, we treated them as continuous.

⁹ See Appendix 1, Table A.2 for detailed inter-correlation results.

¹⁰ See Appendix 1, Table A.3 and Table A.4 for detailed results.

and Islam – maintain the observed positive impact and level of significance in the primary model. Thus the primary and secondary model findings confirm the first hypothesis that adherence to a religion is associated with greater intolerance of persons in same-sex relationships.

Concerning the second hypothesis (**H₂**), the estimates of the primary and secondary models show that a unit increase on the religiosity scale is associated with increases of 0.026 and 0.025, respectively, on the intolerance scale. These estimates are also statistically significant at the 99% confidence level and thus confirm the second hypothesis that religiosity is associated with greater intolerance of persons in same-sex relationships.

Regarding the third hypothesis (**H₃**), as expected the coefficients of the mediated-contact scale carry a negative sign in both primary (-0.042) and secondary (-0.039) models. These coefficients are also statistically significant at the 99% confidence level. The magnitude of the coefficients indicates that a unit increase on the mediated-contact scale is associated with a decrease on the intolerance scale of 0.042 or 0.039 points. The third hypothesis, which presumes that mediated contact (as measured through Internet and social media use) is associated with reduced intolerance of persons in same-sex relationships, is therefore supported within the Ghanaian social environment.

Table 4: OLS estimates of the primary model for intolerance | Ghana | 2014

	Primary model		Secondary model	
	B	Sig.	B	Sig.
Constant	2.756	0.000	2.794	0.000
Religion (1=Muslim or Christian, 0=Other or no religion)	0.094	0.078	--	--
Christian	--	--	0.089	0.095
Islamic	--	--	0.099	0.103
Level of education	-0.020	0.008	--	--
Primary	--	--	-0.009	0.746
Secondary	--	--	-0.101	0.006
Tertiary	--	--	-0.118	0.009
Age	0.002	0.029	--	--
Young adults (36-49 years)	--	--	0.019	0.495
Older adults (50-60 years)	--	--	0.024	0.508
Elderly (61 years or more)	--	--	0.062	0.123
Religiosity	0.026	0.000	0.025	0.000
Mediated-contact scale	-0.042	0.000	-0.039	0.000
Gender (1=Male, 0=Female)	-0.011	0.633	-0.011	0.648
Settlement location (1=Rural, 0=Urban)	0.054	0.023	0.054	0.024
R ²	0.041		0.043	
Adj. R ²	0.038		0.038	
Standard error of the estimate	0.530		0.530	
F-statistic	14.112		8.576	
F-significance	0.000		0.000	

Note: Dependent variable is intolerance of persons in same-sex relationships scale. The model has no problem of multicollinearity, as the variance inflation factors (VIFs) for the predictors range from 1.099 to 1.421 for the primary model and 1.105 to 3.890 for the secondary model.

In assessing the fourth hypothesis (**H₄**), we see from the regression results of the primary model that the coefficient of education variable is negative (-0.020) and significant at the 99% confidence level. This means an improvement in the level of education is associated with a 0.02-point decrease on the intolerance scale. The coefficient estimates for the education

dummies and their corresponding significance in the secondary model uphold the finding of the former model. In fact, primary, secondary, and tertiary education dummies are all negative (-0.009, -0.101, and -0.118, respectively), with secondary and tertiary education dummies reaching statistical significance at the 99% confidence level. The implication of this finding is that intolerance scores among individuals with secondary and tertiary education are lower by 0.101 and 0.118 points, respectively, relative to the reference category (no education). Thus, the fourth hypothesis that higher levels of education are associated with lower levels of intolerance of persons in same-sex relationships is upheld by the data. The insignificance of the coefficient of primary education means there is no estimated difference in tolerance between persons without formal education and those with primary education.

The fifth hypothesis (**H₅**), that younger people are less intolerant of persons involved in same-sex relationships than their elders, is confirmed by the positive coefficients of age variables in both models. However, it is only in the primary model that the coefficient of the age variable is statistically significant. Each additional year of age is associated with an increase of 0.002 points on the intolerance scale.

According to the sixth hypothesis (**H₆**), men are more likely than women to be intolerant of persons in same-sex relationships. Contrary to our expectation, the variable shows a negative and statistically insignificant effect in both models. We thus find no evidence of significant differences between men and women in their levels of intolerance.

Finally, intolerance is hypothesized to be higher in rural than in urban settlements (**H₇**), and this is strongly confirmed by the results of the two models.

Discussion

This study explores factors associated with intolerance in Ghana of persons in same-sex relationships. Results of the multiple regression analysis are generally consistent with research findings from other countries. The regression estimates show that religion, religiosity, rural settlement location, and age are associated with increased intolerance of persons in same-sex relationships, while education and mediated contact (measured through Internet and social media exposure) are linked with less intolerance.

The observed influence of religion in Ghana is consistent with findings of other researchers (see Jelen, 1982; Lodola & Corral, 2010; Olson et al., 2006). Religions promote ideologies regarding the morality of certain behaviours. If a given religion preaches intolerance of same-sex activity, it is likely that its adherents will, at least to some extent, adopt these attitudes. In Ghana, a number of religious leaders have made pronouncements that openly show their opposition to the legalization of same-sex activity.

In 2017, President Nana Addo Dankwa Akufo-Addo, speaking on a television talk show, said that legalizing same-sex activity is not on his government's agenda because the country's social and cultural environment does not support such a change, and that he believes it would take a strong popular coalition, similar to one that led to changes in laws in the United Kingdom, to bring about such a change in Ghana (Joy Online, 2017a). In the religious community this remark was widely seen as encouraging such social mobilization for change, and the then-general secretary of the Christian Council of Ghana, an umbrella group uniting 31 orthodox, charismatic, and Pentecostal churches and religious organizations, strongly criticized the president for not clearly stating opposition to legalization (Joy Online, 2017b).

In April 2018, the Parliamentary Christian Fellowship also condemned what it described as moves to force Ghana to legalize same-sex activity after British Prime Minister Theresa May called on Commonwealth countries to bring an end to the legacy of discrimination (Pulse, 2018). The speaker of Parliament, a religious leader, indicated that he would resign should anyone bring a proposal to legalize same-sex activity to Parliament (Ghanaweb, 2018).

The findings of Whitehead (2010) and Olson et al. (2006) that religiosity is also a highly significant driver of opposition to LGBTQ rights also hold in Ghana. People who exhibit high religiosity are likely to be more dedicated to the ideologies and beliefs espoused by their

religious leaders. To the extent that their religion or religious leaders are less tolerant, they are also likely to be less accepting of same-sex relationships.

Our finding that higher age is associated with greater intolerance of persons in same-sex relationships is consistent with the work of Anderson and Fetner (2008) and Decoo (2014), in which younger age cohorts are found to be more supportive of LGBTQ rights.

The significant influence of rural settlement in Ghana on intolerance of persons in same-sex relationships is consistent with findings in the United States by Herek (1994), Yang (1998), and Baunach (2012). Like religion, cultural norms or traditions shape people's opinions, attitudes, and behaviours. In rural Ghana, adherence to cultural values and norms is quite strong. These values and norms frown on same-sex activity. In contrast, the cosmopolitan nature of urban centers tends to replace individuals' loyalty to these cultural values and norms with less-restrictive ideas.

Similarly, the significant association of mediated contact with reduced intolerance in Ghana conforms with research in the Americas, China, and Singapore (Díez & Dion, 2018; Wu et al., 2018; Zhou & Hu, 2019; Panchapakesan et al., 2014).

Estimates from both models confirm that education promotes more liberal attitudes toward persons in same-sex relationships, a finding that is well-documented by other researchers (Decoo, 2014; Lodola & Corral, 2010). Our data do not allow us to tease out whether that is because higher levels of education promote better cognitive abilities (Ohlander et al., 2005), give people better understanding of other groups' rights (Chong, 1993), offer greater exposure to a diversity of ideas and lifestyles (Patrick et al., 2013; Stubager, 2008; Andersen & Fetner, 2008; Lambert et al., 2006), or perhaps some combination of these explanations.

To show the substantive effects of education, we carry out some simulation exercises to predict levels of intolerance. The first exercise uses the primary model and assumes that there are two men whose levels of mediated contact and religiosity are equal to the mean values of these variables in Table 2 above (i.e. 0.67 and 3.47, respectively). Their age is also equal to the mean (38.31 years), and they are Christians living in urban settlements. One is educated (i.e. has completed primary school or higher), and the other is not. The predicted values show that the uneducated man would be more intolerant than the educated man, with scores of 2.901 vs. 2.881 on the intolerance scale.

The second exercise uses the secondary model and also assumes two men with the same levels of mediated contact, religiosity, age, religion (Islam), and residential setting (urban), with one being a university graduate and the other not educated. The predicted values again show a higher intolerance score for the uneducated man (2.962 vs. 2.844).

The one place where our Ghana findings do not correspond with those from other countries is with respect to the impact of gender. Contrary to patterns observed elsewhere, Ghanaian men are not significantly less tolerant than women.

Conclusion and policy recommendations

This paper has sought to answer three principal questions: 1) Are Ghanaians generally tolerant or intolerant of persons in same-sex relationships? 2) What factors promote tolerance or intolerance of people in same-sex relationships among Ghanaians? 3) What policy options are available to proponents of LGBTQ rights for curbing intolerance or promoting tolerance?

Our descriptive analysis establishes that Ghanaians are generally intolerant of persons in same-sex relationships, rejecting them as co-workers, supervisors, members of their religious group, and neighbours. Large majorities say they would report persons they know to be in same-sex relationships to the police, and they would support a government move to criminalize same-sex relationships.

Our inferential analysis establishes that Ghanaians' intolerance of persons in same-sex relationships declines as people attain higher levels of education and use social media and

the Internet. In contrast, intolerance tends to be higher among older and rural residents and among people who adhere to a religion and exhibit religiosity.

Curbing Ghanaians' high levels of intolerance of persons in same-sex relationships will require that policy-makers and activists for LGBTQ rights work at reducing the influence of factors fueling intolerance and/or promoting those that aid in building tolerance.

It would be absurd to consider interfering with people's religion or religiosity. As a strategy for increasing support for LGBTQ rights, this would seem about as promising as preventing people from aging or moving everyone from rural areas to the cities.

Compelling mediated contact or interaction also seems less than promising as a policy action on a mass scale, although programs promoting mediated contact between individuals or small groups might be a fruitful approach. (In that regard, rural and religious leaders – or perhaps *future* rural and religious leaders – might be seen as high-value – if long-shot – targets for such interaction.)

But the major driver of intolerance that could be the target of policy programming aimed at shaping Ghanaians' attitude toward persons in same-sex relationships is education. Both formal and informal education significantly influence all facets of an individual's life. Education is a key mechanism for introducing people to a diversity of ideas and lifestyles and ultimately making them more accepting and tolerant of people who are different from themselves. Any attempt to address Ghanaians' high intolerance of persons in same-sex relationships should start with the re-orientation of citizens – especially young citizens – through both formal and informal modes of education.

It is therefore recommended that:

1. Starting at the basic level, education policies and strategies should be designed to teach tolerance and promote non-discrimination against people, including persons of different sexual orientation or identity. In this regard, school authorities themselves will need some orientation to prepare them to pass on such information and attitudes to pupils or students. Policies must encourage positive intervention by education authorities whenever any form of harassment or discrimination occurs at an educational institution.

Furthermore, education policy makers should encourage the incorporation of a rights-based approach to persons of different sexual orientation or identity in education programs and practices. This will help build a core of future adults who will be more tolerant of persons in same-sex relationships on the basis of human rights and liberties.

Additionally, education policies and strategies should encourage and support the formation of school-based clubs to help educate students on the rights and liberties of all persons, irrespective of sexual orientation or identity.
2. In addition to policies targeting formal educational institutions, the National Commission for Civic Education (NCCE), collaborating with the media and other stakeholders promoting the rights and liberties of LGBTQ persons, should intensify information, communication, and education/sensitization activities directed at the larger society with the aim of increasing appreciation and respect for the rights and freedoms of minority groups, including persons in same-sex relationships.
3. Finally, LGBTQ activities are at variance with the teachings of many faith-based organizations in Ghana. Nevertheless, the teachings of such organizations call for respect for the dignity of every human being. Given the popular trust, influence, and authority that these institutions and their leaders enjoy among a large segment of the population, they should be seen as key potential allies in the fight to curb intolerance of any person in Ghana. Policy makers and advocates for respect and dignified treatment of LGBTQ persons should work to form strategic alliances with faith-based groups and leaders and encourage them to use their platforms to teach tolerance and respect for all, regardless of difference.

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Appendix 1

Table A.1: Factor and reliability analyses statistics for the intolerance scale | Ghana | 2014

	Component matrix	Extraction communalities	Eigenvalues		Cronbach's alpha
			Total	% variance	
Intolerance of persons in same-sex relationships scale	--	--	2.742	68.546	0.828
Disagree: Person in same-sex relationship as co-worker at workplace	0.938	0.880	--	--	--
Disagree: Person in same-sex relationship as supervisor at workplace	0.936	0.877	--	--	--
Disagree: Person in same-sex relationship as member in religious community	0.894	0.798	--	--	--
Dislike homosexuals as neighbours	0.432	0.187	--	--	--

Extraction method: principal component analysis

Table A.2: Inter-correlation among variables in primary model | Ghana | 2014

	1	2	3	4	5	6	7	8
1. Intolerance scale	1.000	--	--	--	--	--	--	--
2. Mediated-contact scale	-0.148**	1.000	--	--	--	--	--	--
3. Age	0.091**	-0.292**	1.000	--	--	--	--	--
4. Religiosity	0.089**	0.050**	-0.024	1.000	--	--	--	--
5. Education	-0.125**	0.458**	-0.231**	0.118**	1.000	--	--	--
6. Religion	0.034*	0.086**	-0.066**	0.284**	0.148**	1.000	--	--
7. Gender	-0.041*	0.192**	0.061**	-0.034*	0.207**	-0.044*	1.000	--
8. Settlement type	0.081**	-0.253**	0.040*	-0.082**	-0.311**	-0.133**	0.005	1.000

** Correlation is significant at the 0.01 level (1-tailed). * Correlation is significant at the 0.05 level (1-tailed).

Table A.3: OLS estimates of the primary model for intolerance | Ghana | 2014

	B	Std. error	Beta	Sig.
Constant	2.756	0.065	--	0.000
Religion (1=Muslim or Christian, 0=Other or no religion)	0.094	0.053	0.038	0.078
Religiosity	0.026	0.006	0.086	0.000
Mediated-contact scale	-0.042	0.010	-0.104	0.000
Education	-0.020	0.007	-0.065	0.008
Age	0.002	0.001	0.048	0.029
Gender (1=Male, 0=Female)	-0.011	0.023	-0.010	0.633
Settlement location (1=Rural, 0=Urban)	0.054	0.024	0.050	0.023

Note: Dependent variable is intolerance of persons in same-sex relationships scale. $R^2=0.041$; adj. $R^2=0.038$; standard error of the estimate=0.530; F-statistic=14.112; and F-significance=0.000. The model has no problem of multicollinearity as the variance inflation factors (VIFs) for the predictors range from 1.099 to 1.421.

Table A.4: OLS estimates of the secondary model for intolerance | Ghana | 2014

	B	Std. error	Beta	Sig.
Constant	2.794	0.058	--	0.000
Christianity	0.089	0.053	0.067	0.095
Islam	0.099	0.061	0.066	0.103
Religiosity	0.025	0.007	0.085	0.000
Mediated-contact scale	-0.039	0.010	-0.097	0.000
Primary education	-0.009	0.029	-0.009	0.746
Secondary education	-0.101	0.037	-0.074	0.006

Tertiary education	-0.118	0.045	-0.071	0.009
Age 36-49 years	0.019	0.027	0.015	0.495
Age 50-60 years	0.024	0.037	0.015	0.508
Age 61 years and older	0.062	0.040	0.034	0.123
Gender (1=Male; 0=Female)	-0.011	0.023	-0.010	0.648
Settlement location (1=Rural; 0=Urban)	0.054	0.024	0.050	0.024

Note: Dependent variable is intolerance of persons in same-sex relationships scale. $R^2=0.043$; $adj. R^2=0.038$; standard error of the estimate=0.530; F -statistic=8.576; and F -significance=0.000. The model has no problem of multicollinearity as the variance inflation factors (VIFs) for the predictors range from 1.105 to 3.890.

Appendix 2

Conceptual regression model used in analysis and simulation exercises

Primary model

$$IPSS = \beta_0 + \beta_1(EDU) + \beta_2(MCS) + \beta_3(CHRISL) + \beta_4(RGIO) + \beta_5(AGE) + \beta_6(GEN) + \beta_7(STL) + \varepsilon_t$$

Where

- IPSS = Intolerance of persons in same-sex relationships scale
- EDU = Level of education
- MCS = Mediated-contact scale
- CHRISL = Christian and Islamic religion
- RGIO = Religiosity
- AGE = Age of respondents
- GEN = Gender
- STL = Settlement type
- β_0 = Constant of the model
- β_s = Coefficients of predictors in the model
- ε_t = Error term

Simulating the effects of education with the above primary model using two hypothetical individuals – Chris and George – who share common characteristics except level of education as shown in the table below.

Chris

1. Male (GEN=1)
2. Mediated-contact scale (mean of MCS=0.67)
3. Level of religiosity (mean of RGIO=3.47)
4. Age (mean of AGE=38.31)
5. Christian (CHRISL=1)
6. Living in urban settlement (STL=0)
7. Educated (EDU=1)

George

1. Male (GEN=1)
2. Mediated-contact scale (mean of MCS=0.67)
3. Level of religiosity (mean of RGIO=3.47)
4. Age (mean of AGE=38.31)
5. Christian (CHRISL=1)
6. Living in urban settlement (STL=0)
7. No education (EDU=0)

Chris (educated) level of intolerance:

$$IPSS = 2.756 + (-0.020)(1) + (-0.042)(0.67) + 0.094(1) + 0.026(3.47) + 0.002(38.31) + (-0.011)(1) + \beta_7(0) + \varepsilon_t$$

$$IPSS = 2.756 - 0.020 - 0.02814 + 0.094 + 0.09022 + 0.07662 - 0.011 + 0 = \mathbf{2.881}$$

George (uneducated) level of intolerance:

$$IPSS = 2.756 + (-0.020)(0) + (-0.042)(0.67) + 0.094(1) + 0.026(3.47) + 0.002(38.31) + (-0.011)(1) + \beta_7(0) + \varepsilon_t$$

$$IPSS = 2.756 - 0 - 0.02814 + 0.094 + 0.09022 + 0.07662 - 0.011 + 0 = \mathbf{2.901}$$

Secondary model¹¹

$$IPSS = \beta_0 + \beta_1(PEDU) + \beta_2(SEDU) + \beta_3(TEDU) + \beta_4(MCS) + \beta_5(CHR) + \beta_6(ISL) + \beta_7(RGIO) + \beta_8(YAD) + \beta_9(OAD) + \beta_{10}(SCS) + \beta_{11}(GEN) + \beta_{12}(STL) + \varepsilon_t$$

Where

IPSS	= Intolerance of persons in same-sex relationships scale
CHR	= Christian religion
ISL	= Islamic religion
RGIO	= Religiosity
MCS	= Mediated-contact scale
PEDU	= Primary education
SEDU	= Secondary education
TEDU	= Tertiary education
YAD	= Young adults
OAD	= Old adults
SCS	= Senior citizens
GEN	= Gender
STL	= Settlement type
β_0	= Constant of the model
β_s	= Coefficients of predictors in the model
ε_t	= Error term

Simulating the effects of education with the secondary model using two hypothetical individuals – Kenneth and Bobby – who share common characteristics except level of education as shown in the table below.

Kenneth

1. Male (GEN=1)
2. Mediated-contact scale (mean of MCS=0.67)
3. Level of religiosity (mean of RGIO=3.47)
4. Young adult (YAD=1)
5. Muslim (ISL=1)
6. Living in urban settlement (STL=0)
7. University graduate (TEDU=1)

Bobby

1. Male (GEN=1)
2. Mediated-contact scale (mean of MCS=0.67)
3. Level of religiosity (mean of RGIO=3.47)
4. Young adult (YAD=1)
5. Muslim (ISL=1)
6. Living in urban settlement (STL=0)
7. No education (EDU=0)

Kenneth (university graduate) level of intolerance:

$$IPSS = 2.794 + (-0.009)(0) + (-0.101)(0) + (-0.118)(1) + (-0.039)(0.67) + 0.089(0) + 0.099(1) + 0.025(3.47) + 0.019(1) + 0.024(0) + 0.062(0) + (-0.011)(1) + 0.054(0) + \varepsilon_t$$

$$IPSS = 2.794 - 0 - 0 - 0.118 - 0.02613 + 0 + 0.099 + 0.08675 + 0.019 + 0 + 0 - 0.011 + 0 = \mathbf{2.844}$$

Bobby (uneducated) level of intolerance:

$$IPSS = 2.794 + (-0.009)(0) + (-0.101)(0) + (-0.118)(0) + (-0.039)(0.67) + 0.089(0) + 0.099(1) + 0.025(3.47) + 0.019(1) + 0.024(0) + 0.062(0) + (-0.011)(1) + 0.054(0) + \varepsilon_t$$

$$IPSS = 2.794 - 0 - 0 - 0 - 0.02613 + 0 + 0.099 + 0.08675 + 0.019 + 0 + 0 - 0.011 + 0 = \mathbf{2.962}$$

¹¹ In the secondary model, the components representing the youth, persons considered to be lacking formal education, and those who are not Christian or Muslim were excluded to avoid dummy variable trap during estimation. Dummy variable trap is a scenario in which two or more independent variables are highly correlated and as such the effect of one dummy variable when dropped from the model (i.e. the reference category) can be predicted from the others.

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