

# POLARIZED PROGRESS

Social Acceptance of LGBT People in 141 Countries,  
1981 to 2014

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# EXECUTIVE SUMMARY

This report describes the development of a lesbian, gay, bisexual, and transgender (LGBT) Global Acceptance Index (GAI), which seeks to measure the relative level of social acceptance of LGBT people and rights in each country at a specific time period.

Understanding acceptance and rejection of LGBT people lies at the heart of understanding violence, discrimination, and the multitude of negative consequences arising from exclusion and unfair treatment. Sexual and gender minorities all over the world are heavily impacted by the attitudes and beliefs of those around them. Low levels of acceptance are tied to bullying and violence, physical and mental health problems, discrimination in employment, and underrepresentation in positions of civic leadership. Additionally, exclusion can result in lower levels of workforce productivity and decreased business profits.

[Development of the LGBT Global Acceptance Index.](#) Using an advanced statistical model, the authors developed the LGBT Global Acceptance Index (GAI) to measure acceptance in each country. Acceptance is the extent to which LGBT people are seen in ways that are positive and inclusive, both with respect to an individual's opinions about LGBT people and with regard to an individual's position on LGBT policy.

## KEY FINDINGS

Globally, the average level of acceptance has increased since 1980.

- 80 of 141 countries experienced increases in acceptance since 1980.
- 46 countries experienced a decline.
- 15 countries experienced no change.

In the past decade, the range of levels of acceptance has increased. Levels of acceptance have become more polarized:

- The most accepting countries have experienced increased levels of acceptance.
- The least accepting countries have experienced decreased levels of acceptance.
- Levels of acceptance in countries near the global average have stayed relatively stable.



# INTRODUCTION

## A. UNDERSTANDING ACCEPTANCE AND EXCLUSION

Public attitudes about LGBT people can heavily influence whether LGBT people are accepted or rejected by employers, family members, teachers, clergy, and society in general.<sup>1</sup> Negative beliefs about LGBT people can serve as the basis for the impulse to reject and exclude LGBT people,<sup>2</sup> all too often leading to violence and discrimination against LGBT people.<sup>3</sup> These shared beliefs are stigmas, which can be generally understood as a belief about a person based on a characteristic, or mark, of a person.<sup>4</sup> Powerful forces in society, such as tradition, religion, law, medicine, and the media can contribute to the existence of beliefs about LGBT people.<sup>5</sup> In some cultural settings, being LGBT carries with it the stigma that underlies a belief that the LGBT person is sick, immature, unskilled, sinful, or generally undesirable.<sup>6</sup>

Anti-LGBT stigma can lead to the exclusion of LGBT people from full participation in society. Not only can societal stigma affect how individuals view LGBT people, but it can also influence how people view laws and policies relevant to LGBT populations.<sup>7</sup> LGBT people may face rejection from others at an interpersonal level as well as exclusion because of stigmatizing and discriminatory laws and policies.<sup>8</sup>

LGBT acceptance, on the other hand, is the extent to which LGBT people are seen in ways that are positive and inclusive, both with respect to an individual's opinions about LGBT people and with regard to an individual's attitudes about LGBT rights. As defined here, LGBT acceptance is a broad concept that encompasses social beliefs about LGBT people as well as prevailing opinion about laws and policies relevant to protecting LGBT people from violence and discrimination, and promoting their equality and well-being.

The LGBT Global Acceptance Index (GAI) incorporates survey data about LGBT acceptance in order to come up with a single score for acceptance. Acceptance, as measured in the GAI, is a country's average

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<sup>1</sup> Gregory M. Herek, "Confronting Sexual Stigma and Prejudice: Theory and Practice." *Journal of Social Issues* 63, no. 4 (2007): 905-925.

<sup>2</sup> Gregory M. Herek, "Sexual Stigma and Sexual Prejudice in the United States: A Conceptual Framework," in *Contemporary Perspectives on Lesbian, Gay, and Bisexual Identities*, D. A. Hope (ed.), 54, p. 65-111 (New York, NY: Springer, 2009); Judit Takács, *Social Exclusion of Young Lesbian, Gay, Bisexual, and Transgender (LGBT) People in Europe* (Brussels, BE and Amsterdam, NL: ILGA-EUROPE and IGLYO, 2006).

<sup>3</sup> A. Theron, "Anti-Gay Violence and Discrimination: The Need for Legislation Against Anti-Gay Hate Crimes in the Sociopolitically Changing South Africa." *ACTA Criminologica* 7, no. 3 (1994): 107-114.

<sup>4</sup> Gregory M. Herek, "Confronting Sexual Stigma and Prejudice: Theory and Practice," Gregory M. Herek, "Sexual Stigma and Sexual Prejudice in the United States."

<sup>5</sup> Amy Adamczyk, *Cross-National Public Opinion about Homosexuality: Examining Attitudes across the Globe* (Berkeley and Los Angeles, CA: University of California Press, 2017).

<sup>6</sup> Erving Goffman, *Stigma: Notes on the Management of Spoiled Identity*, (New York, NY: Penguin, 1963).

<sup>7</sup> Gregory M. Herek. "Beyond 'Homophobia': Thinking about Sexual Prejudice and Stigma in the Twenty-First Century." *Sexuality Research & Social Policy* 1, no. 2 (2004): 6-24.

<sup>8</sup> Mark L. Haztenbuehler, K. M. Keyes, and D. S. Hayes. "State-level Politics and Psychiatric Morbidity in Lesbian, Gay, and Bisexual Populations." *American Journal of Public Health* 99, no. 12 (2009): 2275-2281.

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societal attitude toward LGBT people that is expressed in public attitudes and beliefs about LGBT people and rights.

### UNDERSTANDING THE CONSEQUENCES OF A LACK OF ACCEPTANCE AND EXCLUSION

The stigma faced by LGBT people has been linked to violence and discrimination against LGBT people<sup>9</sup> and decreases in economic growth and productivity.<sup>10</sup> In order to understand these linkages more deeply, development practitioners need data that is comparable both across different time points and also different countries. As explained below, the current survey data do not provide us with such an opportunity because of the variability in the ways surveys document public attitudes about LGBT people. The following kinds of inquiries are made more possible if there are data that can be consistently compared both across time and place.

**Physical and Mental Health:** The connection between stigma, prejudice, and health has been well-documented throughout the world. According to the minority stress model, developed by psychologist Ilan Meyer,<sup>11</sup> PhD, Williams Senior Distinguished Scholar, the stigma and prejudice experienced by sexual and gender minorities produces stress and anxiety that is different than the types of stress faced by most people in their everyday life.<sup>12</sup> In response to events of prejudice in their life, sexual and gender minorities frequently develop a fear and expectation that such events will happen again. This expectation leads to hypervigilance in one's surroundings, relationships, and interactions with others, even when stigma and prejudice may not be in operation.<sup>13</sup> The individual begins to develop additional coping mechanisms, such as identity concealment or other strategies to mitigate the negative consequences of stigma and prejudice. These processes can lead to internalization of social stigma, in the form of internalized homophobia or transphobia, where individuals begin to devalue themselves in a manner consistent with the prejudice being directed at them by others.<sup>14</sup>

The impact of minority stress on LGBT people is reflected in poor health outcomes. A systematic review of 199 studies in the Global North and South showed that sexual minorities were at increased risk for depression, anxiety, suicide attempts, or suicides.<sup>15</sup> However, such global reviews are rare. Though the connection between stigma and health outcomes is well established, there is still a great need to understand how stigma impacts specific populations at the national level. Establishing the GAI will enhance the ability of researchers to examine the stigma/health connection on a country-by-country basis, as well as across countries.

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<sup>9</sup> Gregory M. Herek, "Confronting Sexual Stigma and Prejudice: Theory and Practice;" Gregory M. Herek, "Sexual Stigma and Sexual Prejudice in the United States."

<sup>10</sup> M.V. Lee Baggett, Sheila Nezhad, Kees Waaldijk, and Yana van der Meulen Rodgers, *The Relationship between LGBT Inclusion and Economic Development: An Analysis of Emerging Economies* (Los Angeles, CA: The Williams Institute, 2014).

<sup>11</sup> Ilan H. Meyer, Williams Distinguished Senior Scholar for Public Policy, Williams Institute, UCLA School of Law.

<sup>12</sup> David M. Frost and Meyer, I.H., "Internalized Homophobia and Relationship Quality Among Lesbians, Gay Men, and Bisexuals," *Journal of Counseling Psychology* 56, no. 1(2009): 97-109.

<sup>13</sup> Jennifer Crocker. "Social Stigma and Self-Esteem: Situational Construction of Self-Worth." *Journal of Experimental Social Psychology* 35, no. 1 (1999): 89-107 cited in Ilan Meyer, "Prejudice, Social Stress, and Mental Health in Lesbian, Gay and Bisexual Populations: Conceptual Issues and Research Evidence," *Psychological Bulletin* 129, no. 5 (2003): 674-697.

<sup>14</sup> One of the first studies on this issue can be found at Gilbert H. Herdt. *Children of Horizons: How Gay and Lesbian Teens Are Leading a New Way Out of the Closet* (Boston: Beacon Press, 1996), 205.

<sup>15</sup> The study included 199 studies which had a heterosexual comparison group. 26 studies had nationally representative studies using clinical interviews. Martin Ploderl and Pierre Tremblay, "Mental Health of Sexual Minorities. A Systematic Review," *International Review of Psychiatry* 27, no. 5 (2015): 367-85.

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**Bullying and Violence:** Exclusion of LGBT people can also manifest in the form of bullying, violence, and harassment.<sup>16,17</sup> In a major study in Thailand, half of self-identified LGBT students report having been bullied, leading to absenteeism rates twice as high as other students, increased dropout rates, and mental and physical problems.<sup>18</sup> According to the Inter-American Commission, LGBT people face “high levels of cruelty and heightened levels of violence.”<sup>19</sup> The UN Independent Expert on the protection against violence and discrimination based on sexual orientation and gender identity reports that such violence occurs in all parts of the world.<sup>20</sup>

Though it is clear that violence against LGBT people exists, there is currently no method to track anti-LGBT violence on a country-by-country basis. We currently lack both a uniform definition of violence and a mechanism to collect statistics about violence worldwide and therefore are unable to examine its relationship with a country’s LGBT social acceptance. To the extent that violence is related to levels of acceptance of LGBT people, the creation of the GAI can help inform discussions about violence.

**Employment Discrimination:** The economic potential of LGBT people is also limited by exclusion from the workplace, educational opportunities, and economic advantages, which can be accessed by others.<sup>21</sup> An international review of studies reveals that sexual minorities face two kinds of discrimination. First, they face exclusion when seeking to enter into the workplace. Second, once on the job, LGBT people face harassment and few opportunities for advancement.<sup>22</sup> According to a global meta-analysis, gay men make 11 percent less than their heterosexual counterparts.<sup>23</sup> Though there is growing attention to the impact of employment discrimination, there has never been a study of the relationship between LGBT acceptance and employment discrimination experienced by LGBT people. The GAI makes such an inquiry possible.

**Civic Participation:** Finally, exclusion can limit the ability of LGBT people to participate in civic institutions and political leadership roles. For example, throughout the world, sexual and gender minorities are drastically underrepresented in elected positions. In one study, LGBT people occupied at most only six

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<sup>16</sup> Gregory M. Herek, “Confronting Sexual Stigma and Prejudice: Theory and Practice;” Gregory M. Herek, “Sexual Stigma and Sexual Prejudice in the United States.”

<sup>17</sup> Exclusion and stigma have been used interchangeably, see M.V. Lee Badgett, *The Economic Cost of Stigma and the Exclusion of LGBT People: A Case Study of India*. World Bank Group Working Paper, no. 94040 (Washington, DC: The World Bank Group, 2014).

<sup>18</sup> Pimpawun Boonmongkon et al., *Bullying Targeting Secondary School Students Who Are or Are Perceived to Be Transgender or Same-Sex Attracted: Types, Prevalence, Impact, Motivation and Preventive Measures in 5 Provinces of Thailand* (Salaya: Mahidol University, Plan International Thailand, United Nations Educational, Scientific and Cultural Organization (UNESCO) Bangkok Office, 2014), 81.

<sup>19</sup> Inter-American Commission on Human Rights, “Press Release 153114: IACHR Expresses Concern over Pervasiveness of Violence against LGBTI Persons and Lack of Data Collection by OAS Member States” December 17, 2014, [http://www.oas.org/en/iachr/media\\_center/PReleases/2014/153.asp](http://www.oas.org/en/iachr/media_center/PReleases/2014/153.asp); Idem, “Press Release 153114, Annex: An Overview Of Violence Against LGBTI Persons,” December 17, 2014, <http://www.oas.org/en/iachr/lgtbi/docs/Annex-Registry-Violence-LGBTI.pdf>.

<sup>20</sup> Human Rights Council, United Nations General Assembly, Report of the Independent Expert on Protection Against Violence and Discrimination Based on Sexual Orientation and Gender Identity, 2017, A/HRC/35/36, Geneva, CH: Office of the High Commissioner for Human Rights, <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G17/095/53/PDF/G1709553.pdf?OpenElement>.

<sup>21</sup> Badgett, Nezhad, Waaldijk, and Rodgers, *The Relationship between LGBT Inclusion and Economic Development*.

<sup>22</sup> Ozeren Emir, “Sexual Orientation Discrimination in the Workplace: A Systematic Review of Literature. *Procedia, Sexual and Behavioral Sciences*,” *Procedia-Sexual and Behavioral Sciences* 109 (2014): 1203-1215, 1208-10.

<sup>23</sup> Marieka Klawitter, “Meta-Analysis of the Effects of Sexual Orientation on Earnings,” *Industrial Relations* 54, no. 1 (2014): 4-32, 21.

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percent of all seats in the upper legislative houses globally, and LGBT people generally remain greatly underrepresented in legislatures globally.<sup>24</sup> Socio-cultural factors including acceptance and dominant religious orientation of a country, and institutional factors such as representation systems, were major determinants of whether LGBT people were elected into legislative bodies.<sup>25</sup>

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<sup>24</sup> Andrew Reynolds. "Representation and Rights: The Impact of LGBT Legislators in Comparative Perspective." *American Political Science Review* 107, no. 2 (2013): 259-274.

<sup>25</sup> *Ibid.*



# DISCUSSION

## A. CURRENT PUBLIC OPINION DATA AND ITS SHORTCOMINGS

Global and regional social surveys have documented public attitudes toward various segments of LGBT people and policies. These surveys can provide a wealth of information. A single survey can provide snapshots of LGBT acceptance, and repeated surveys can convey whether public attitudes in certain countries have changed over time. Public opinion polls and social surveys offer an opportunity for the public to speak for themselves instead of having advocates, celebrities, or politicians speak on their behalf. In this way, polls can be a more accurate measure of public sentiment and the levels of acceptance experienced by LGBT people as they interact with those around them.

Surveys can inform an analysis of legal reform efforts as well. Some studies suggest that public attitudes and changes in public attitudes precede inclusion of LGBT people in public policy<sup>26</sup> or in political representation.<sup>27</sup> Understanding attitudes and attitude change may be a precursor to further inclusion of LGBT people in many areas of social, economic, and political life.

Unfortunately, very few of the surveys conducted about LGBT people or LGBT-related issues provide sufficient data for global, cross-national comparisons of public sentiment about LGBT people and their rights, especially for longitudinal comparisons. Such efforts are confounded by three challenges. First, current public opinion surveys use a variety of questions. In total, we identified 55 different questions that have been used in surveys. These surveys ascertain a range of responses, including the acceptability of homosexuals as elected leaders, the perceived prevalence of discrimination against LGBT people in the workplace, having gay or transgender friends, the perceived origin of diverse sexual orientations and gender identities, whether couples should have the right to marry, and whether homosexuals are desirable as neighbors.

Secondly, these inconsistencies are compounded by the nature of the issues involved in the survey. As an example, the Pew Global Survey asks questions about specific favorability for *policies* such as same-sex marriage as well as questions about whether homosexual conduct should be *accepted*.<sup>28</sup> The Gallup World Poll asks the respondents whether homosexual *acts* are *morally acceptable* or *morally wrong*. Some questions focus on policy, some on acts, and some on characteristics of homosexuals themselves.

In addition, some questions, such as the Gallup World Poll, ask the respondent to use morality as a criterion to arrive at an answer. However, moral opposition does not necessarily equate to lack of support for an individual or a policy, particularly in liberal democracies where questions of private morality may

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<sup>26</sup> Jeffrey R. Lax and Justin H. Phillips, "Gay Rights in the States: Public Opinion and Policy Responsiveness." *American Political Science Review* 103, no. 3 (2009): 367-386.

<sup>27</sup> Andrew Reynolds. "Representation and Rights."

<sup>28</sup> Andrew Kohut, *The Global Divide on Homosexuality: Greater Acceptance in More Secular and Affluent Countries* (Washington, DC: Pew Research Center, 2013).

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be distinct from policy discussions.<sup>29</sup> The World Values Survey has asked about whether or not homosexuality is ever *justified*: “Please tell me as to each of the following actions whether you think it can always be justified, never be justified, or something in between: homosexuality.” The notion of justification is odd because homosexuality is rarely seen in a framework of having to be proven. For some, justification may have a theological meaning of being declared righteous or guiltless.<sup>30</sup>

Thirdly, different questions have been used in different countries during different years. None of the surveys identified have ever asked the same question in the same year in every country in the world. The most extensive of the global survey programs, the World Values Survey, is deployed in roughly 50 countries each year. All other surveys were either regional, deployed in a small number of countries, or were one-time efforts in a single country.

As with all surveys, variability in content across surveys and among surveys over time is to be expected, and any studies based on surveys are constrained by such variability. Given these limitations and inconsistencies in survey data, a potential response might be to limit any analysis of LGBT stigma and acceptance to those countries where the same questions have been asked regularly. This type of criterion would seriously limit the scope of a study, both in the number of years studied and in the number of countries included. Imposing such a limitation would significantly restrict options for engaging in global cross-country comparisons and the only remedy would entail new, costly, and time-consuming data collection. Even such a remedy would be imperfect as it would be unable to understand longitudinal attitude change prior to the 2010s.

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<sup>29</sup> Carlos A. Ball, *The Morality of Gay Rights: An Exploration in Political Philosophy* (New York, NY: Routledge, 2003).

<sup>30</sup> Oxford Dictionaries, s.v. “justify,” accessed January 25, 2018, <https://en.oxforddictionaries.com/definition/justification>





# METHODOLOGY

## A. DESCRIPTION OF DATA. A NEW APPROACH TO MEASURE OPINION

By utilizing advanced statistical methods and computer modeling, we were able to analyze survey data from 141 different countries<sup>31</sup> to produce a single score that we will call the LGBT Global Acceptance Index (GAI), for each country for each year. The Williams Institute created a data archive, where we consolidated the results from cross-national, global, and regional surveys that measure attitudes toward LGBT people and rights. These surveys include: the America's Barometer (2014 and 2015), the Eurobarometer (1993-2015), the European Social Survey (2002-2012), the European Values Survey (1981-2010), the Gallup World Poll (2006-2012), the 2016 ILGA-RIWI Global Attitudes Survey (International Lesbian, Gay, Bisexual and Trans and Intersex Association, 2016), the International Social Survey Programme (1988-2010), Ipsos International (2013), the Latinobarómetro (2002-2010), the Pew Global surveys (2002-2013), and the World Values Surveys (1981-2014). Most of the questions contained in these surveys are subject-matter specific to homosexuality, but more recent surveys collected information pertaining specific to transgender people and rights.

The resulting dataset included 2,778 country-question-years (meaning results for a particular country in a particular year for a particular question) under analysis with 55 different question wordings, 141 different countries, and 33 years. The combined individual-level sample involves 1,426,000 responses to questions relating to LGBT people and rights. Though the questions varied in form and time period, they all related to a respondent's LGBT acceptance. An individual might have different answers to questions about the morality of homosexuality, the desirability of an LGBT person as a coworker, and the acceptability of discrimination. Nevertheless, all of the answers point to a respondent's acceptance of LGBT people, and collectively these answers help specify the degree to which a respondent accepts LGBT people. According to this approach, people's LGBT acceptance is considered a latent, unobserved variable which is related to survey responses that have been observed by these questions. *(Those readers who are less interested in methodological considerations might want to skip to the beginning of the next section.)*

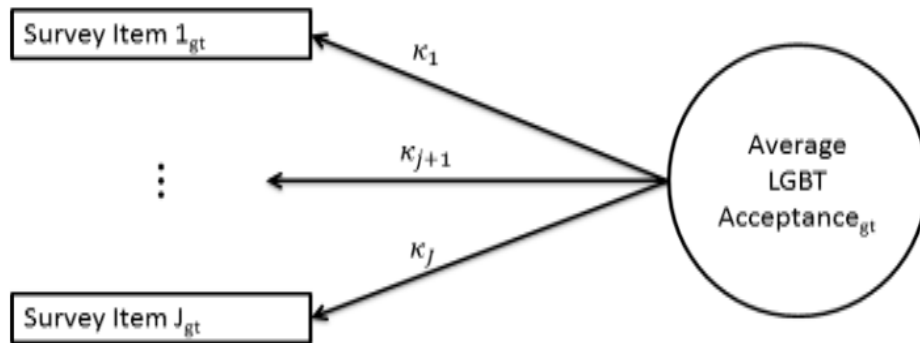
Figure 1 provides a conceptual schematic reflecting how LGBT social acceptance may be a latent, unobserved variable that accounts for a portion of the variation in responses to multiple survey items ( $j$ ) about LGBT people and rights, with country ( $g$ ) being asked a survey item at time ( $t$ ). Since not every survey item may equally measure LGBT acceptance, each item is allowed to have its unique relationship ( $\kappa$ ) with Average LGBT Acceptance where items that are weakly associated with Average LGBT Acceptance will contribute less to the overall score. This also means that longitudinal changes in responses to survey items that do not share the covariance of the other items may matter less than changes in other survey items that do share the covariance, such that when there is fluctuation in an

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<sup>31</sup> There are 141 unique countries, which includes Puerto Rico and some countries that no longer exist due to changing political circumstances (e.g., the Federation of Bosnia and Bosnia Srpska). We do not report results for these countries, but we include them in the measurement model because more information about question responses across contexts helps condition how much covariance certain questions have with LGBT Acceptance.

item that strongly covaries with the other items, the variation is more attributable to true changes in the GAI than other reasons (i.e., unique variation attributable to the question, the time period, or the survey vendor). Additionally, the model discounts respondents who are asked multiple questions about LGBT people and rights, such that a single survey that, for example, may ask 20 questions on this subject adequately takes into account that the same respondents answered those 20 questions.<sup>32</sup>

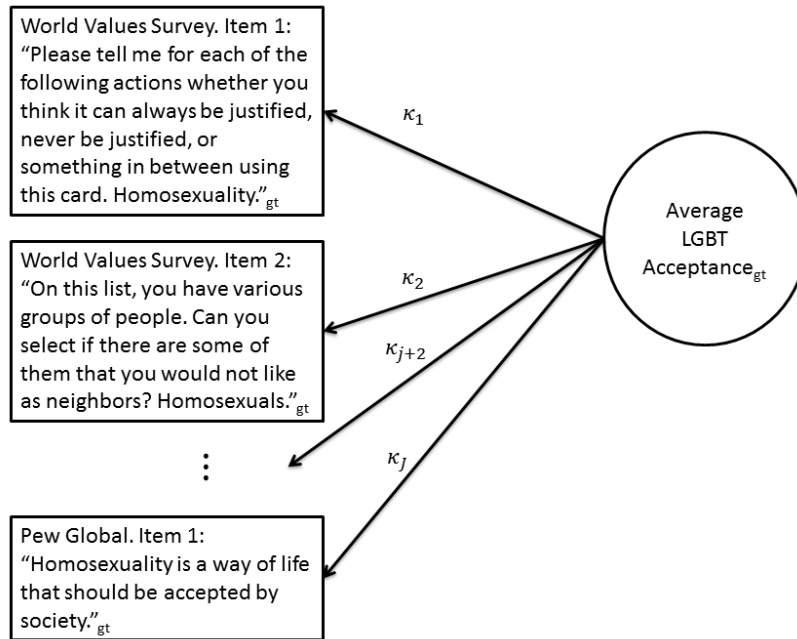
Figure 1. Conceptualizing LGBT acceptance in a country given specific survey items asked at a certain time



NOTE:  $\kappa_j$  is the relationship between Average LGBT Acceptance and the  $j$ th Survey Item,  $\kappa_j$  is the relationship for last Survey Item.

<sup>32</sup> This is done by transforming the sample size  $n$  to  $n^* = \left\lceil \sum_{i=1}^{n_{gt}} 1 / (r_{i[gt]} d_{gt}) \right\rceil$ , where  $r_{i[gt]}$  is the number of questions answered by respondent  $i$  and  $d_{gt}$  is within-group variation in survey weights, and  $\lceil \cdot \rceil$  represents a ceiling function. Since all of the weighting strategies for these surveys are designed to generalize at the country-level,  $d_{gt} = 1$  in this context. If only one question is asked ( $r_{i[gt]} = 1$ ) and there is no within-group variation in the survey weights ( $d_{gt} = 1$ ), then  $n^* = n$ . Since the estimation process is an aggregation of multiple survey measures, the full sample size for a country in a survey is recovered in aggregation. For further details, see: Devin Caughey and Christopher Warshaw, "Dynamic Estimation of Latent Opinion using a Hierarchical Group-level IRT Model."

Figure 2. Conceptualizing LGBT acceptance in a given country given specific survey items asked at a certain time



Building on this conceptualization, our approach relies on the method of the Group-level Item Response Theory (G-IRT) model.<sup>33</sup> Readers interested in the full derivation of the G-IRT model should consult Caughey and Warshaw. This model uses item-response theory (IRT), which examines the relationship between a characteristic of a test subject (i.e., survey respondent) and the answers that they give to questions. IRT originated in educational psychology where focus was on the relationship between an individual's academic ability and responses to a test. IRT provides a family of analytical methods for modeling the individual probability that a person will answer a question correctly, which can be used to index or scale individuals based upon their ability (e.g., standardized test scores).<sup>34</sup>

A central concept of IRT is that each question requires differing levels of academic skill required to answer a question. If a test subject is given a collection of questions, some harder than others, the subject can be given a single score, or ideal point, that approximates their academic ability. A dynamic ideal point estimation process estimates academic ability and its change over time based on the subject's responses

<sup>33</sup> Devin Caughey and Christopher Warshaw, "Dynamic Estimation of Latent Opinion using a Hierarchical Group-level IRT Model."

<sup>34</sup> F.M. Lord. *Applications of Item Response Theory to Practical Testing Problems*. Hillsdale, NJ: Earlbaum (1980).

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over time. In social and political contexts, ideal point estimation processes can measure the liberalness or conservativeness of representatives,<sup>35</sup> Supreme Court justices,<sup>36</sup> and social attitudes.<sup>37</sup>

The IRT model has been extended to understand abilities for a grouping of subjects, aggregating responses to understand average abilities or attitudes of groups.<sup>38</sup> In the domain of social attitudes, Group-level IRT (G-IRT) can estimate the policy liberalism of geographic regions over time.<sup>39</sup> In the current study, the country serves as the grouping of subjects and country-level results in each survey serve as the responses, each response associated with a different level of LGBT acceptance. Through dynamic ideal point estimation, the executed model can identify the dynamic relationship between the country level responses in each survey and, based on this relationship, gives a value to each country's level of LGBT acceptance for each year.

The first step in the G-IRT is to transform the individual level survey data into a summary file for each country-question-year, which aggregates the individual-level survey data. The aggregation process identifies the number of weighted respondents who took a position supportive of LGBT people and/or rights and the total number of weighted respondents in the sample. The weighted sample size of every survey affects how reliable a survey estimate is, and conditions how influential a single poll result is to the overall model. Thus, the sample size is taken into account explicitly. While surveys may vary in their sampling strategy: face-to-face, telephone, or online panel, each survey attempts to adjust their data through weighting procedures. These procedures for probabilistic samples include the probability of selection. For empaneled online samples, the weighting process is a further effort to adjust the demographics of the sample to reach target demographics. If done appropriately, empaneled samples collected from samples that are not recruited in probabilistic ways (e.g., the 2016 ILGA-RIWI Global Attitudes Survey) can be adjusted to be as accurate as probabilistic samples.<sup>40</sup> Since duplicitous samples already are down-weighted in the estimation process and since the 2016 ILGA-RIWI Global Attitudes Survey data represent only one year, they should have minimal influence on the estimation process. Additionally, estimates are only reported up to 2014 out of concern for estimation accuracy after that year.<sup>41</sup> G-IRT does not assume that each question perfectly operationalizes the concept of acceptance. Each question shares a common portion of variation with the latent concept of acceptance while still having its own unique portion. This unique portion takes into account varying countries, varying survey vendors who may utilize different survey methodologies, and varying time points. The model is made dynamic by allowing a country's acceptance to be estimated for each year. Additionally, a country's score

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<sup>35</sup> Royce Carroll, Jeffrey B. Lewis, James Lo, Keith T. Poole, and Howard Rosenthal, "Measuring Bias and Uncertainty in DW-NOMINATE Ideal Point Estimates via the Parametric Bootstrap." *Political Analysis* 17, no. 3 (2009): 261-275.

<sup>36</sup> Andrew D. Martin and Kevin M. Quinn, "Dynamic Ideal Point Estimation via Markov Chain Monte Carlo for the U.S. Supreme Court, 1953-1999," *Political Analysis* 10, no. 2 (2002): 134-153.

<sup>37</sup> Devin Caughey and Christopher Warshaw, "Dynamic Estimation of Latent Opinion using a Hierarchical Group-level IRT Model.," Devin Caughey and Christopher Warshaw, "Policy Preferences and Policy Change: Dynamic Responsiveness in the American States, 1936-2014," *American Political Science Review* (2017) doi: 10.1017/S0003055417000533; Devin Caughey and Christopher Warshaw, "The Dynamics of State Policy Liberalism, 1936-2014," *American Journal of Political Science* 60, no. 4 (2016): 899-913.

<sup>38</sup> Robert J. Mislevy, "Item Response Models for Grouped Data." *Journal of Educational Statistics* 8, no. 4 (1983): 271-288.

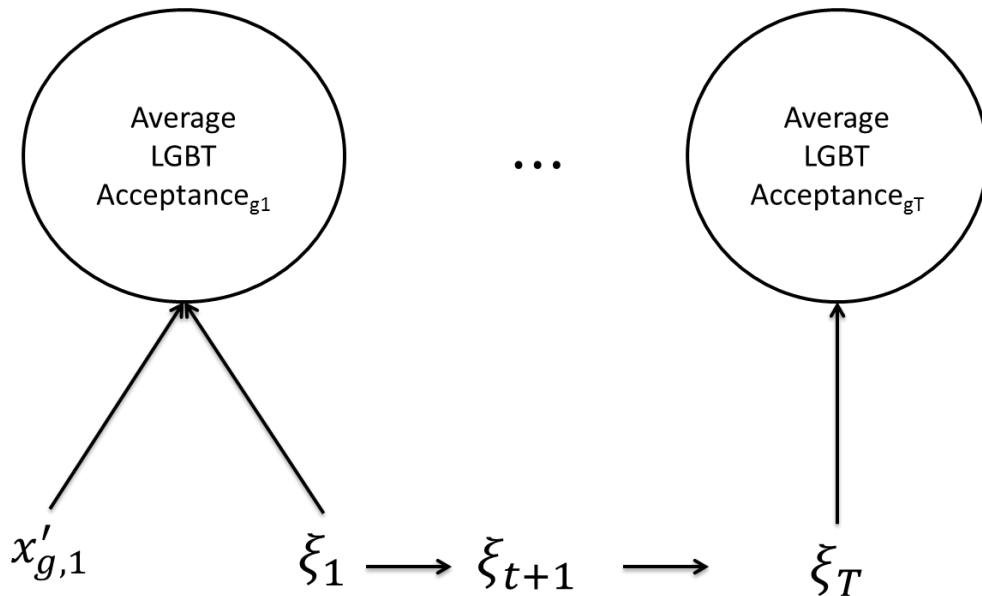
<sup>39</sup> Devin Caughey and Christopher Warshaw, "The Dynamics of State Policy Liberalism."

<sup>40</sup> Courtney Kennedy, Andrew Mercer, Scott Keeter, Nick Hatley, Kyle McGeeney, and Alejandra Gimenez. *Evaluating Online Nonprobability Surveys*. Washington, DC: Pew Research Center, 2016.

<sup>41</sup> Once survey data are released from multiple sources after 2014, then it will be more feasible to update and report on those estimates. We note the 2016 ILGA-RIWI Global Attitudes Survey as a part of our data collection, though we do not report results post-2014 for data accuracy.

in one year directly informs the estimate for a country in the subsequent year. This means that for years when there is no survey data for a country, a country's previous estimate is the source for the country's current estimate. This is represented in the schematic in Figure 2. The benefit of this approach is that it smooths the annual estimates over time and also fills in gaps when a country may not have been surveyed. This provides a more complete time series, where  $x'_{g,1}$  represents information about a country at the first time point in the estimation process and the average level of support at a time period is  $\xi_t$ .

Figure 3. Conceptualizing the dynamic portion of the model estimation



Countries are given a random-walking prior, such that their estimate in a prior year is determinative of their current estimate:  $\xi_t \sim N(\xi_{t-1}, \sigma_\gamma^2)$ , which assumes that a country's estimate is normally distributed about a country's estimate in the time period prior. The variance determines the influence of the data in period  $t$  relative to  $t-1$ , and if there are no new data in period  $t$ , then  $\xi_{t-1}$  acts predictively. It imputes the estimated value for  $\xi_t$ ,<sup>42</sup> and the imputation follows a normal distribution. In instances where no data exist at  $\xi_1$ , then a country's GDP provides some indication of a starting location. However, in the absence of data, the model is conservative and will tend to report a country's acceptance as the average (i.e., grand mean) of the acceptance index with a wide credible interval. This interval will narrow when new data are present to inform the estimate.

Having described the general analytical framework, a fuller discussion of the survey data is now provided. All of the individual-level survey data are coded dichotomously, such that a score of a one was given to any pro-LGBT position expressed in the survey, and the score of a zero for all other responses. This scoring

<sup>42</sup> Simon Jackman. *Bayesian Analysis for the Social Sciences*. Hoboken, NJ: Wiley and Sons, 2009.

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strategy is necessary to keep the polarity of the estimates correct. The dataset includes 2,778 country-question-years under analysis with 55 different question wordings, 141 different countries, and spans surveys fielded between 1981 and 2016. All of the questions cover some aspect of LGBT-related attitudes. The combined individual-level sample involves 1,426,000 responses to questions relating to LGBT people and rights. In a sample of 141 countries over 1981-2014 there are 4,653 possible country-years of data, but only 942 of those country-years have a measure of public opinion. This model used only a country's estimate of acceptance without consideration of gender, race or ethnicity, or other demographic factors. This was done, in part, due to the complexity of operationalizing some demographics across contexts (e.g., educational attainment).<sup>43</sup>

The estimates of the GAI range from 0 to 10 with a mean of 3.5 and standard deviation of 0.91.<sup>44</sup> The model diagnostics suggest the estimation procedure was successful, which means that the model estimates are reliable. We performed validity tests to ensure that out-of-sample comparisons reflected a country's GAI. We did this, for example, by comparing the GAI in the United States (US) to national survey data not included in the dataset used for estimation. We found a strong relationship between the GAI and the US national survey data. We were able to make within-country trend comparisons with the US, Great Britain, and France, which each had repeated survey questions on LGBT topics over time. In each, the GAI was strongly correlated with LGBT attitudes ( $r > 0.80$ , in each comparison).<sup>45</sup> For comparison, a GAI estimate of 5 corresponds to about 40 percent of American adults agreeing that homosexuality is "not wrong at all."<sup>46</sup> A GAI estimate of 5 also corresponds to about 40 percent of British adults agreeing that homosexuality is "not at all wrong."<sup>47</sup> A GAI estimate of 5 also corresponds to about 55 percent of French adults supporting marriage equality.<sup>48,49</sup>

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<sup>43</sup> A benefit of using no demographics is the model's simplicity; in addition, it does not assume that variables like gender are uniform across contexts. A very complex random effects approach could model demographics, though this would increase model complexity to the point that the process would likely fail on a standard computer.

<sup>44</sup> The original estimation had a mean of zero and standard deviation of one for model identification, though this was rescaled to fall within the interval of zero and ten. The score of ten occurred in the Czech Republic in 1995, which appears to be an outlier. It was confirmed that the estimate was not due to data errors in the original database, so it was likely a statistical anomaly as a result of the estimation process. For all of the figures in this report, we exclude this outlier. We note that future research on the estimation method might consider strengthening the smoothing over time in order to avoid such outliers. We did not pursue that here to be consistent with established methods.

<sup>45</sup> There is an obvious limitation that these three countries are all western, industrialized countries. However, the presence of within-country repeated cross-sectional survey data is necessary for comparisons.

<sup>46</sup> Comparison made with the General Social Survey.

<sup>47</sup> Data compiled from Table 3 of Ben Clements and Clive D. Field, "Public Opinion Toward Homosexuality and Gay Rights in Great Britain." *Public Opinion Quarterly* 78, no. 2 (2014): 523-547.

<sup>48</sup> IFOP, *Les Français, l'homosexualité et la question du mariage et de l'adoption pour les couples homosexuels*. Retrieved from: [http://www.ifop.fr/media/poll/2042-1-study\\_file.pdf](http://www.ifop.fr/media/poll/2042-1-study_file.pdf).

<sup>49</sup> Note that the previous comparison are based on a four-point scale: "Always wrong", "almost always wrong", "wrong only sometimes", or "not wrong at all" compared to the marriage equality item, which is "yes" or "no." The percentage of the American population saying that homosexuality is "not wrong at all" has been less than that of those who support same-sex marriage. In total about 88 percent of the variation in GAI scores in France, Great Britain, and the United States can be explained by the repeated cross-sectional survey data referenced.

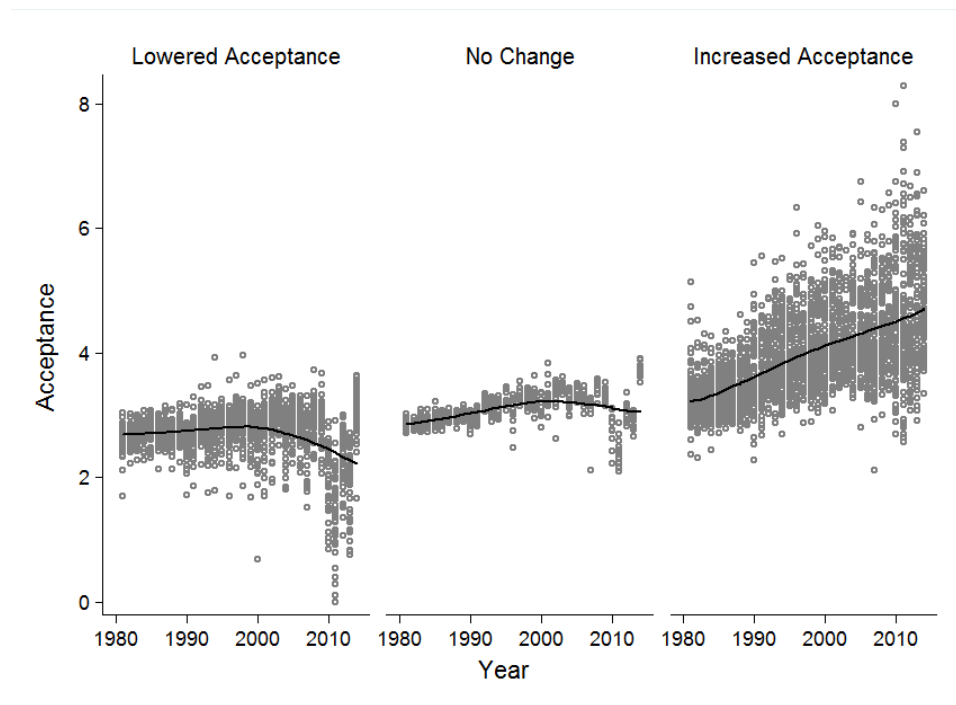


# FINDINGS

## A. POLARIZED IMPROVEMENT: PATTERNS IN ACCEPTANCE

Looking at the general trend of all countries for the entire period, Global LGBT Acceptance has increased. Figure 4 shows the GAI estimates for the countries comparing their initial position in 1981 to their final position in 2014 stratified by whether acceptance levels increased, decreased, or reflected little change. Each point in Figure 3 represents an estimate from the GAI for a certain country in a given year. A majority (57 percent) of countries experienced an increase in the GAI in this timeframe, 11 percent experienced no change, and 33 percent of the countries had a decrease in the GAI.

Figure 4. Trends in acceptance with a rolling average



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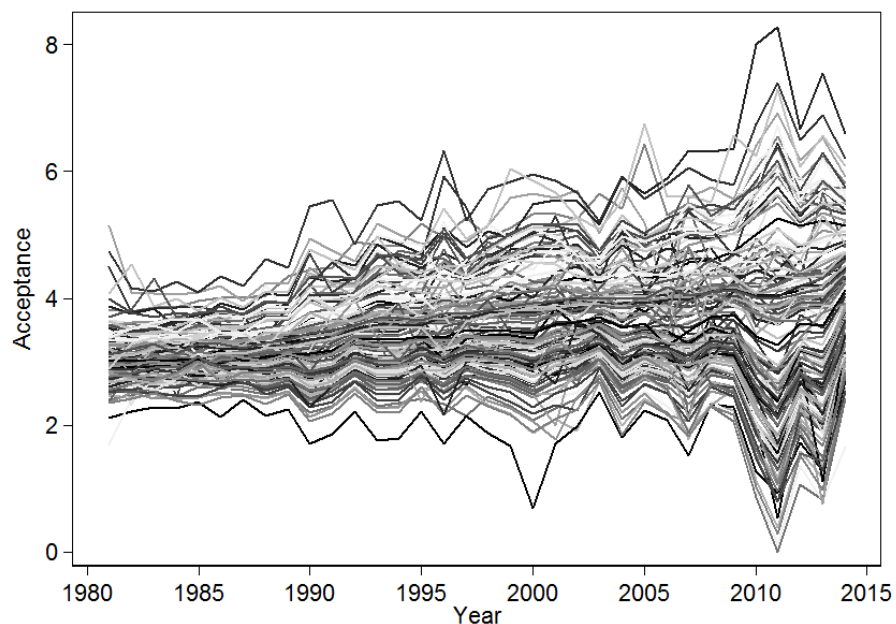
## B. MOST COUNTRIES EXPERIENCED SOME INCREASE IN ACCEPTANCE

Of the 141 countries examined, 57 percent experienced an increase in the GAI. This translates to:

- 80 countries experienced an increase in the GAI.
- 46 countries experienced a decline.
- 15 countries had less than an absolute change 0.2 between 1981 and 2014

Combined as in Figure 4, it is clear that there is a great deal of diversity in the trends in the GAI. The estimates also do not appear to be overly smoothed over time.

Figure 5. Acceptance trends. Each line represents a single country estimate from 1981-2014

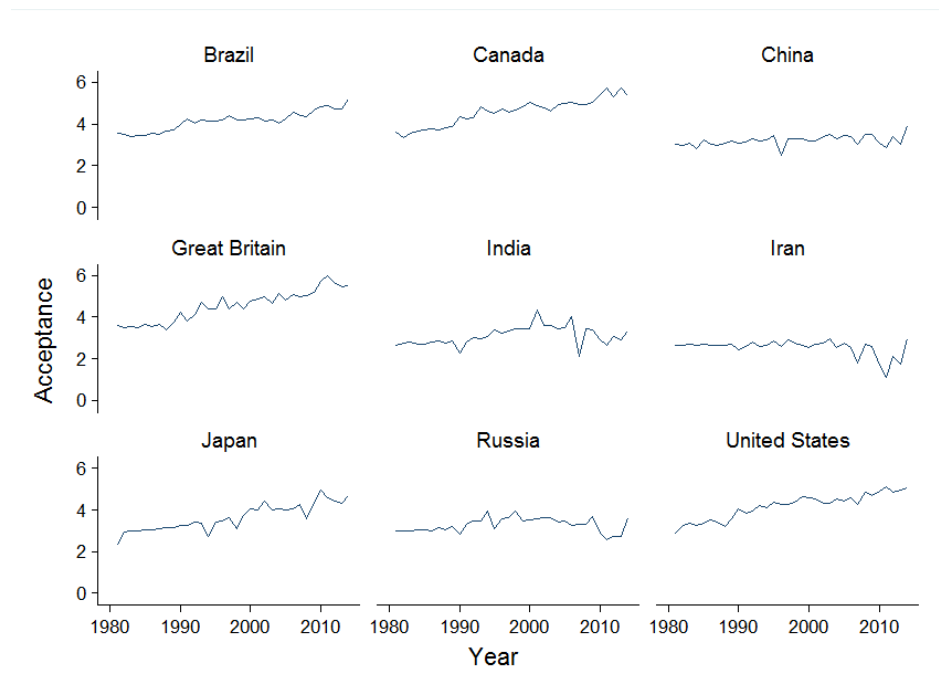


These trends can be further characterized by highlighting particular countries. Figure 5 plots nine countries and their trends in the GAI. Brazil, Canada, Great Britain, Japan, and the United States have all increased their GAI estimates. Canada, Japan, and the United States have had a steady increase in the GAI, whereas Brazil and Great Britain appear to have punctuated equilibriums (i.e., static change over a period time followed by a sudden shift that is the new static position). China, Iran, and Russia appear to have had little change in the GAI over time, and there appears to be a decline in the GAI around 2010. These trends appear to have returned to their previous position by 2014. India appears to have improved in its attitudes until the mid-2000s where there has since been a decline in LGBT acceptance. As these trends show, countries have not had a uniform change in acceptance of LGBT people and rights over time, leaving open questions about why countries have had different trajectories (see Appendix 3 for trends for each country).



Explaining the decline in the GAI in the mid-2000s is, in part, potentially related to the richness of the data. Newer questions were being asked with a greater frequency across more countries. The presence of greater data allows a GAI estimate to be more confident in its scoring of a country. This is also why fluctuations in the data occur in the same year; a new survey was published that provided a substantial update to a country's level of acceptance. This has less to do with what question was being asked, in part because each question is weighted by the GAI, such that if a question is "easier" to agree to (e.g., surveys tend to show a high level of support for broad sexual orientation employment non-discrimination policies, though such support is less when asked about *specific* occupations), the GAI will take a question's difficulty as a part of the estimation process. It is much more to do with more data to draw upon to produce an estimate.

Figure 6. Trends in acceptance for nine specific countries



### C. THE MOST ACCEPTING COUNTRIES ARE BECOMING MORE ACCEPTING

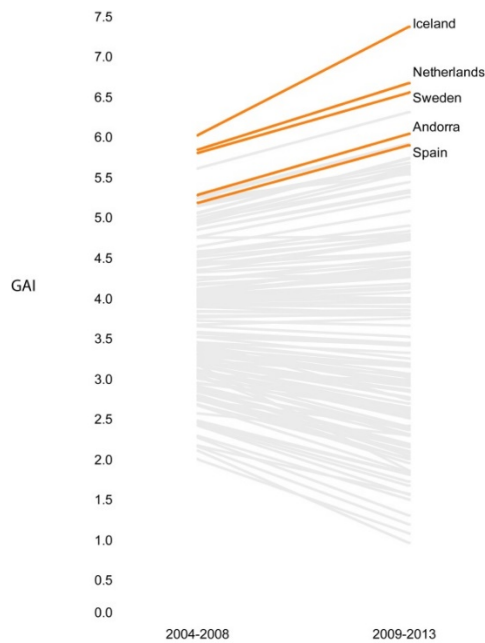
In general, the most accepting countries are becoming more accepting, the least accepting countries are becoming less accepting, and those in the middle stay in the middle. By comparing five-year averages of the GAI between 2004-2008 and 2009-2013, Table A2 shows the results for all countries for these two time periods. These results are plotted in Figure 6.

Iceland, the Netherlands, Sweden, Denmark, Andorra, and Norway were the most accepting during the first time period. The GAI in these countries, as well as in Spain improved, and these improvements were statistically significant (see Appendix 3). A common pattern among these countries is that they are some

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of the most accepting countries in both the 2004-2008 time period and the 2009-2013 time period. These countries are also clustered in Western Europe, except for Iceland, which is a close neighbor in the Nordic region. As studies show that a country's economy and religious orientation may affect how accepting people are within that country,<sup>50</sup> these trends might further suggest that growth in LGBT acceptance is potentially related to regional, economic, and religious characteristics. Cross-sectional studies have found that these characteristics explain a country's LGBT acceptance. The GAI offers a chance to examine dynamic explanations for countries that have differing trajectories in LGBT acceptance.

**Figure 7. Five countries that had the greatest increase**



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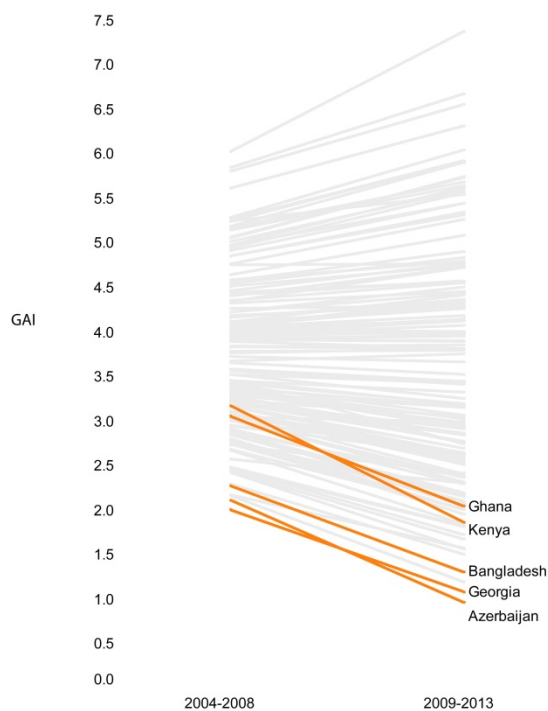
<sup>50</sup> Robert Andersen and Tina Fetner, "Economic Inequality and Intolerance: Attitudes toward Homosexuality in 35 Democracies." *American Journal of Political Science* 52, no. 4 (2008): 942-958.

## D. THE LEAST ACCEPTING COUNTRIES ARE BECOMING LESS ACCEPTING

The countries that were the least accepting in 2009-2013 were Azerbaijan, Georgia, Saudi Arabia, Bangladesh, and Egypt, and they each became less accepting compared to their level of acceptance in 2004-2008. The countries that experienced the greatest decreases in the GAI were Azerbaijan, Bangladesh, Georgia, and Ghana. These decreases were on magnitude larger than the increases observed among the top five most accepting countries. These decreases were statistically significant for Azerbaijan, Georgia, Ghana, and Bangladesh, but these decreases were not significantly different for Saudi Arabia, Kenya, or Egypt (see Appendix 3).

While theories may exist that explain the stratification of countries in their LGBT acceptance, there are fewer explanations for why countries would decrease in their LGBT acceptance. The most prominent theory, the one of backlash, would suggest that there would have to be some form of advancement of LGBT rights in order for a negative downturn in social acceptance. But is this the case in these countries? The GAI offers an opportunity to unpack these unique trajectories, providing a more comprehensive understanding in the ways countries accept LGBT people, in future research studies.

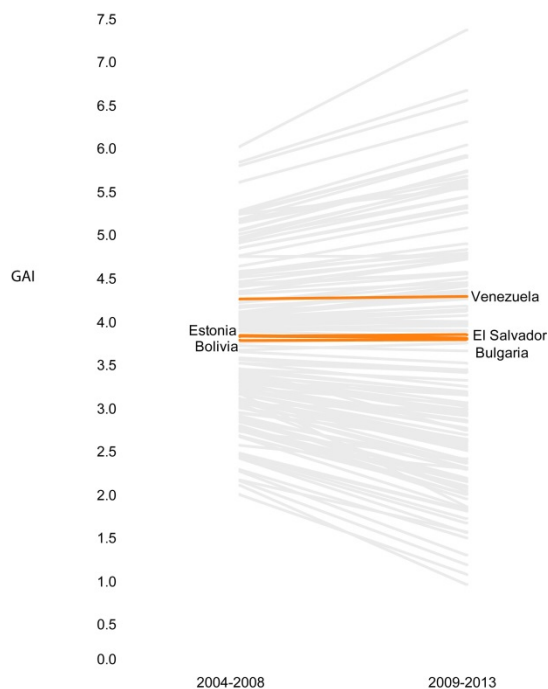
Figure 8. Five countries that had the greatest decrease



## E. COUNTRIES NEAR THE AVERAGE STAYED THE SAME

Some countries experienced little change in the GAI the decade between 2004 and 2013. The five countries that had the least change in the GAI are highlighted in Figure 8. Bolivia, Bulgaria, El Salvador, Estonia, and Venezuela each had very little change in the GAI between 2004 and 2013. These countries are not the most accepting or unaccepting countries in the scale. They are, in fact, near the average location for all countries in this time interval.

Figure 9. Five countries that had the least amount of change



What is clear, however, is that countries have somewhat diverged in the 2009-2013 time period compared to the 2004-2008 time period. That is, average levels of LGBT acceptance increased in some countries, but decreased in others. The gap between the most and least accepting has widened. The countries that have experienced little change do not follow either of those trends. These countries may be useful comparison cases for countries that did experience changes.



## FUTURE RESEARCH

The GAI utilizes the most comprehensive collection of social attitudes data about LGBT people and rights. As such, numerous future studies can utilize this metric, and its underlying methods, to examine the global position of LGBT people in societies:

- Contours, characteristics, and dynamics that explain country-, regional-, and/or global-level changes in LGBT acceptance, which may involve political, economic, sociological, and/or regional dynamics, among others
- The relationship between LGBT acceptance and
  - violence faced by LGBT people
  - discrimination faced by LGBT people
  - LGBT physical and mental health issues
  - economic outcomes for LGBT people
  - LGBT policy inclusiveness
  - psychiatric morbidity in LGBT populations
  - the probability that LGBT people have a higher level of representation in a country's policymaking institutions

Further development on the estimation approach should also consider: updating the estimation procedure with the most recent global surveys, examining changes in the estimates to the addition of time-varying covariates (i.e., using a time-series variable known to be associated with social attitudes about LGBT people), and examining whether using a reverse random walking prior is more appropriate, considering that more data are available in recent years, it may improve the estimates.

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# APPENDICES

## APPENDIX 1: QUESTION WORDINGS FROM GLOBAL AND REGIONAL SURVEY DATA

Table A.1 provides the survey sources and question wordings for all of the questions used in the measurement of the GAI. While some questions may not necessarily seem to be related to LGBT acceptance, some of them may serve as a proxy for LGBT acceptance. All of these questions, which are based on prior scholarly studies, have been shown to be related to a person's level of acceptance of LGBT people and rights. For example, people who are more accepting of LGBT people and rights tend to acknowledge the presence of discrimination against LGBT people in society; those who are less accepting are less likely to acknowledge such discrimination. Our coding categorized responses that inferred a favorable attitude toward LGBT people as a one and all other attitudes (neutral or antagonistic) as a zero.

We also examined estimation sensitivity by removing a number of questions that may lack face validity. These were items from the Eurobarometer, including: "Do you think that diversity is sufficiently reflected in the media in terms of Sexual orientation (being gay, lesbian, or bisexual)?", "Do you think that in COUNTRY, measures to fight the economic crisis and policies to promote recovery are excluding people from each of the following groups? People with a different sexual orientation than the majority of the population.", "Do you think that in COUNTRY, measures to fight the economic crisis and policies to promote recovery are excluding people from each of the following groups? Transgender or transsexual people.", and "There are differing views about whether people inherit particular characteristics or whether they acquire them mainly from their upbringing or conditions in which they lived. Please tell me whether you think each of the following characteristics is mainly inherited or mainly the result of upbringing and living condition. Homosexual tendencies." We removed these items from the database and re-estimated the GAI. These new estimates had a correlation of  $r = 0.76$  with the GAI as presented and, thus, we concluded that the model that included all items listed in Table A.1 was adequate.

Table A.1. Question wordings from the global and regional survey data

America's Barometer	
	<ul style="list-style-type: none"> <li>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?</li> </ul>
Eurobarometer	
	<ul style="list-style-type: none"> <li>Adoption of children should be authorized for homosexual couples throughout Europe.</li> <li>And to what extent do you agree or disagree with each of the following statements? School lessons and material should include information about diversity in terms of gender identity (transgender or transsexual people).</li> <li>And to what extent do you agree or disagree with each of the following statements? School lessons and material should include information about diversity in terms of sexual orientation (gay, lesbian, or bisexual people).</li> <li>And using a scale from 1 to 10, please tell me how you would feel about having a person from each of the following groups in the highest elected political position in OUR COUNTRY? A homosexual.</li> <li>And using a scale from 1 to 10, please tell me how you would feel about having someone from each of the following categories in the highest elected political position in OUR COUNTRY? A homosexual.</li> <li>And using a scale from 1 to 10, please tell me how you would feel about having someone from each of the following groups in the highest elected political position in OUR COUNTRY? A homosexual.</li> <li>Discrimination can happen outside working life. For example, in education, when people go shopping, visit restaurants/bars, try to rent an accommodation or buy a property, go to a doctor or to a hospital. Could you please tell me whether, in your opinion, discrimination outside working life is very widespread, fairly rare, or very rare in COUNTRY? Discrimination on the basis of Sexual orientation.</li> <li>Do you have friends or acquaintances who are [Gay, lesbian, or bisexual]?</li> <li>Do you think that diversity is sufficiently reflected in the media in terms of Sexual orientation (being gay, lesbian, or bisexual)?</li> <li>Do you think that homosexual couples should, or should not, have the right to adopt children?</li> <li>Do you think that homosexual couples should, or should not, have the right to inherit from one another, in the same way as married couples?</li> <li>Do you think that homosexual couples should, or should not, have the right to live together, without being married, but with the same advantages as married couples?</li> <li>Do you think that homosexual couples should, or should not, have the right to marry each other?</li> <li>Do you think that in COUNTRY, measures to fight the economic crisis and policies to promote recovery are excluding people from each of the following groups? People with a different sexual orientation than the majority of the population.</li> </ul>



- Do you think that in COUNTRY, measures to fight the economic crisis and policies to promote recovery are excluding people from each of the following groups? Transgender or transsexual people.
- Do you think that the economic crisis is contributing to an increase in discrimination on the basis of [Sexual Orientation (being gay, lesbian, or bisexual)] in the labor market?
- Do you think that transgender or transsexual persons should be able to change their civil documents to match their inner gender identity?
- For each of the following propositions, tell me if you Totally agree/Tend to agree/Tend to disagree/ Totally disagree/Don't know. Homosexual marriages should be allowed throughout Europe.
- For each of the following situations, please tell me using the scale from 1 to 10 how you would personally feel about it. On this scale, "1" means that you would be "very uncomfortable" and "10" means that you would be "totally comfortable" with the situation. Having a homosexual as a neighbor.
- For each of the following types of discrimination, could you please tell me whether, in your opinion, it is very widespread, fairly widespread, fairly rare, or very rare in (OUR COUNTRY)? Discrimination on the basis of sexual orientation.
- If you compare the situation with 5 years ago, would you say that the following types of discrimination are more common or less common in COUNTRY? Discrimination on the basis of sexual orientation (for example being gay or lesbian).
- In COUNTRY when a company wants to hire someone and has the choice between two candidates with equal skills and qualifications, which of the following criteria may, in your opinion, put one candidate at a disadvantage? The Candidate's gender identity.
- In COUNTRY when a company wants to hire someone and has the choice between two candidates with equal skills and qualifications, which of the following criteria may, in your opinion, put one candidate at a disadvantage? The Candidate's sexual orientation.
- In the past 12 months, have you personally felt discriminated against or harassed on one or more of the following grounds? Gender identity (being transgender or transsexual).
- In the past 12 months, have you personally felt discriminated against or harassed on one or more of the following grounds? Sexual orientation (being gay, lesbian, or bisexual).
- In the past 12 months, have you witnessed someone being discriminated against or harassed on the basis of one or more of the following grounds? Was it discrimination on the basis of [Sexual orientation (being gay, lesbian, or bisexual)]?
- Regardless of whether you have children or not, please tell me, using a scale from 1 to 10, how comfortable you would feel if one of your children was in a love relationship with a person from each of the following groups. A homosexual.
- Regardless of whether you have children or not, please tell me, using a scale from 1 to 10, how comfortable you would feel if one of your children was in a love relationship with a person from each of the following groups. A transgender or transsexual person.
- There are differing views about whether people inherit particular characteristics or whether they acquire them mainly from their upbringing or conditions in which they lived. Please tell me whether you think each of the following characteristics is mainly inherited or mainly the result of upbringing and living condition. Homosexual tendencies.

## Eurobarometer

- There are differing views about whether people inherit particular characteristics or whether they acquire them mainly from their upbringing or conditions in which they lived. Please tell me whether you think each of the following characteristics is mainly inherited or mainly the result of upbringing and living condition. Homosexual tendencies.
- To what extent do you agree or disagree with each of the following statements? Gay, lesbian, and bisexual people should have the same rights as heterosexual people.
- To what extent do you agree or disagree with each of the following statements? Same sex marriages should be allowed throughout Europe.
- To what extent do you agree or disagree with each of the following statements? There is nothing wrong in a sexual relationship between two persons of the same sex.
- Using a scale from 1 to 10, please tell me how comfortable you would feel with people in each of the following groups showing affection in public (e.g. kissing or holding hands). Homosexuals.

## European Social Survey

- Gay men and lesbians should be free to live their own life as they wish.

## European Values Survey

- Could you please mention any that you would not like to have as neighbors? Homosexuals.
- How would you feel about the following statements? Do you agree or disagree with them? Homosexual couples should be able to adopt children.
- Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between using this card. Homosexuality.

## Gallup World Poll

- Next, I'm going to read you a list, for each item on the list, please tell me whether you personally believe that it is morally acceptable or morally wrong. How about homosexual acts?

## ILGA

- Do you strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, or strongly disagree that same-sex relations are a Western world phenomenon?
- How comfortable would you be if you found out your neighbor was a homosexual, would you be very uncomfortable, somewhat uncomfortable, or would you have no concerns?
- Regardless of how you feel about LGBTI people, do you strongly agree, agree, neither agree nor disagree, somewhat disagree, or strongly disagree that it should be a crime to be LGBTI?

## International Social Survey Programme

- And what about sexual relations between two adults of the same sex, is it always wrong, almost always wrong, wrong only sometimes, or not wrong at all?
- Homosexual couples should have the right to marry one another.

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## Ipsos

- Same-sex couples are just as likely as other parents to successfully raise children.
- Same-sex couples should have the rights to adopt children as heterosexual couples do.
- Same-sex marriage is or could be harmful to society.
- When you think about the rights of same-sex couples, which of the following comes closest to your personal opinion?

## Latinobárometro

- Do you strongly agree, agree, disagree, or strongly disagree with the following statements I am going to read. Homosexual Marriage.
- On this list, you have various groups of people. Can you select if there are some of them that you would not like as neighbors? Homosexuals.
- Please tell me for the following statement whether you think it can always be justified, never be justified, or something in between. Homosexuality.

## Pew

- Homosexuality is a way of life that should be accepted by society.

## World Values Survey

- Could you please mention any that you would not like to have as neighbors? Homosexuals.
- I'd like to ask you about some groups that some people feel are threatening to the social and political order in this society. Would you please select from the following list the one group or organization that you like least? Homosexuals.
- On this list, you have various groups of people. Can you select if there are some of them that you would not like as neighbors? Homosexuals.
- Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between using this card. Homosexuality.

## APPENDIX 2: FIVE-YEAR AVERAGES IN GLOBAL ACCEPTANCE INDEX FOR EACH COUNTRY

Table A.2. Ranking countries by their LGBT Global Acceptance Index (GAI) score

Country	LGBT Acceptance Index Score (2004-2008)	Country	LGBT Acceptance Index Score (2009-2013)
Iceland	6.02	Iceland	7.37
Netherlands	5.84	Netherlands	6.67
Sweden	5.80	Sweden	6.55
Denmark	5.61	Denmark	6.31
Andorra	5.28	Andorra	6.04
Norway	5.26	Norway	5.92
Cape Verde	5.24	Belgium	5.92
Belgium	5.24	Spain	5.90
Spain	5.18	France	5.74
Ireland	5.17	Switzerland	5.73
Luxembourg	5.14	Ireland	5.68
Switzerland	5.06	Luxembourg	5.64
France	5.05	Germany	5.62
Great Britain	5.01	Great Britain	5.59
Australia	4.97	Uruguay	5.56
Germany	4.97	Cape Verde	5.54
Uruguay	4.94	Australia	5.44
Canada	4.91	Canada	5.44
New Zealand	4.85	New Zealand	5.34
Argentina	4.85	Argentina	5.31
Finland	4.76	Finland	5.26
Brazil	4.75	Malta	5.08
Malta	4.64	United States	4.90
Namibia	4.58	Chile	4.83
United States	4.57	Namibia	4.79
Chile	4.54	Italy	4.77
Portugal	4.51	Brazil	4.76
Italy	4.46	Portugal	4.74
Mexico	4.44	Czech Republic	4.72
Mauritius	4.41	Philippines	4.72
Philippines	4.40	Mauritius	4.57
Austria	4.35	Mexico	4.56
Czech Republic	4.34	Austria	4.55
Mozambique	4.32	Japan	4.50

Country	LGBT Acceptance Index Score (2004-2008)	Country	LGBT Acceptance Index Score (2009-2013)
Venezuela	4.26	Mozambique	4.45
Japan	4.22	Slovenia	4.43
Slovenia	4.22	Israel	4.41
Botswana	4.18	Dominican Republic	4.36
Dominican Republic	4.16	Panama	4.34
Israel	4.11	Cyprus	4.31
Costa Rica	4.11	Botswana	4.30
Greece	4.09	Venezuela	4.29
Cyprus	4.08	Taiwan	4.29
Panama	4.07	Costa Rica	4.27
Taiwan	4.06	Greece	4.26
Nicaragua	4.05	Colombia	4.18
Colombia	4.05	Sao Tome and Principe	4.14
South Africa	4.03	Hong Kong	4.14
Sao Tome and Principe	4.01	Singapore	4.12
Hong Kong	4.00	Nicaragua	4.12
Singapore	3.98	Vietnam	4.07
Poland	3.98	South Africa	4.00
Vietnam	3.97	Paraguay	4.00
Paraguay	3.95	Poland	3.99
Peru	3.92	Bahrain	3.98
Ecuador	3.92	Peru	3.96
Honduras	3.92	Honduras	3.95
Hungary	3.91	Hungary	3.90
Jamaica	3.91	Ecuador	3.89
Guatemala	3.89	Jamaica	3.89
Bahrain	3.89	El Salvador	3.85
Bolivia	3.84	Guatemala	3.81
El Salvador	3.83	Northern Cyprus	3.81
Estonia	3.83	Bolivia	3.81
Bulgaria	3.78	Estonia	3.81
Northern Cyprus	3.76	Bulgaria	3.79
Croatia	3.72	Slovakia	3.75
Slovakia	3.67	Croatia	3.66
Trinidad and Tobago	3.65	Trinidad and Tobago	3.52
Lithuania	3.58	Lithuania	3.44
Latvia	3.56	Swaziland	3.42
Swaziland	3.52	Latvia	3.41
Romania	3.52	Thailand	3.32

Country	LGBT Acceptance Index Score (2004-2008)	Country	LGBT Acceptance Index Score (2009-2013)
Thailand	3.45	Romania	3.25
China	3.45	South Korea	3.19
Tanzania	3.45	China	3.18
South Korea	3.42	Cote d'Ivoire	3.16
Ukraine	3.40	Benin	3.15
Serbia	3.38	Ukraine	3.06
Cote d'Ivoire	3.37	Lesotho	3.05
Lebanon	3.36	Lebanon	3.02
Albania	3.35	India	2.99
Belarus	3.34	Gabon	2.98
Benin	3.31	Serbia	2.95
Gabon	3.30	Belarus	2.94
Montenegro	3.29	Albania	2.92
Uzbekistan	3.26	Russia	2.91
Lesotho	3.23	Liberia	2.86
Russia	3.21	Uzbekistan	2.85
Liberia	3.21	Malaysia	2.84
Malaysia	3.20	Macedonia	2.77
Macedonia	3.20	Montenegro	2.75
Yemen	3.17	Tanzania	2.74
Kenya	3.17	Yemen	2.69
Bosnia & Herzegovina	3.16	Kazakhstan	2.69
Kazakhstan	3.16	Kyrgyzstan	2.64
Libya	3.11	Togo	2.64
Kyrgyzstan	3.10	Burundi	2.63
Moldova	3.10	Bosnia & Herzegovina	2.63
Cameroon	3.09	Cameroon	2.62
Turkey	3.09	Mali	2.61
Madagascar	3.09	Libya	2.58
Kuwait	3.07	Moldova	2.55
Ghana	3.05	Madagascar	2.52
India	3.04	Turkey	2.51
Kosovo	3.02	Zambia	2.41
Pakistan	3.01	Kuwait	2.40
Ethiopia	3.01	United Arab Emirates	2.37
Togo	3.00	Ethiopia	2.37
Mali	2.95	Pakistan	2.36
Burundi	2.94	Kosovo	2.31
Tunisia	2.91	Malawi	2.30

Country	LGBT Acceptance Index Score (2004-2008)	Country	LGBT Acceptance Index Score (2009-2013)
Zimbabwe	2.90	Tunisia	2.29
United Arab Emirates	2.87	Algeria	2.19
Algeria	2.87	Nigeria	2.17
Palestine	2.87	Palestine	2.15
Nigeria	2.84	Sierra Leone	2.15
Morocco	2.80	Iraq	2.10
Qatar	2.79	Qatar	2.08
Armenia	2.78	Ghana	2.04
Sierra Leone	2.77	Zimbabwe	2.04
Iraq	2.77	Burkina Faso	2.01
Niger	2.74	Morocco	2.00
Zambia	2.73	Niger	2.00
Burkina Faso	2.68	Armenia	1.95
Iran	2.67	Kenya	1.86
Malawi	2.57	Iran	1.84
Jordan	2.48	Jordan	1.82
Guinea	2.46	Guinea	1.81
Uganda	2.46	Uganda	1.72
Indonesia	2.43	Indonesia	1.67
Rwanda	2.42	Senegal	1.57
Egypt	2.29	Rwanda	1.56
Bangladesh	2.27	Egypt	1.50
Senegal	2.17	Bangladesh	1.30
Saudi Arabia	2.16	Saudi Arabia	1.19
Azerbaijan	2.11	Georgia	1.08
Georgia	2.00	Azerbaijan	0.96

### APPENDIX 3: TRENDS IN ACCEPTANCE FOR EACH COUNTRY

Plots are provided in Figure A.1-A.16 for each country's estimated GAI between 1981 and 2014. An 80 percent confidence interval is plotted about the trends to represent estimation error.

Figure A.1. Trends in acceptance

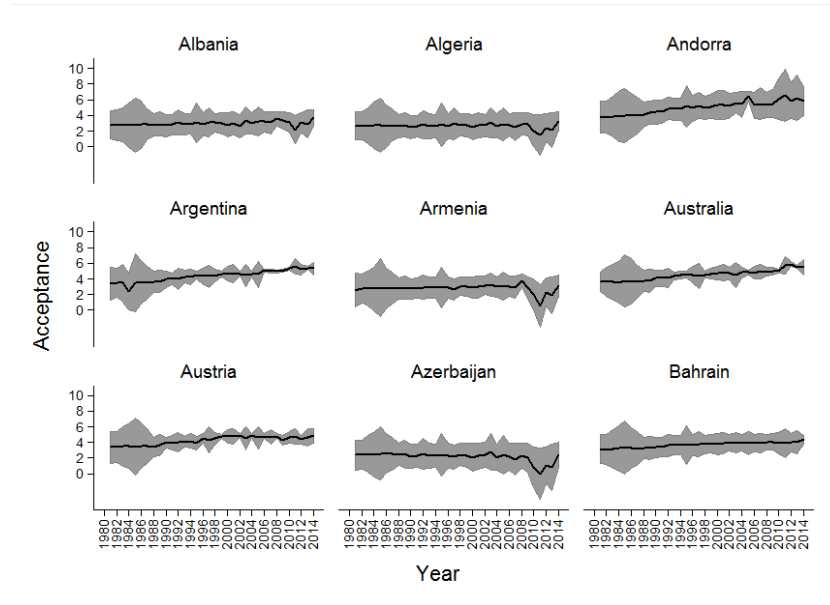


Figure A.2. Trends in acceptance

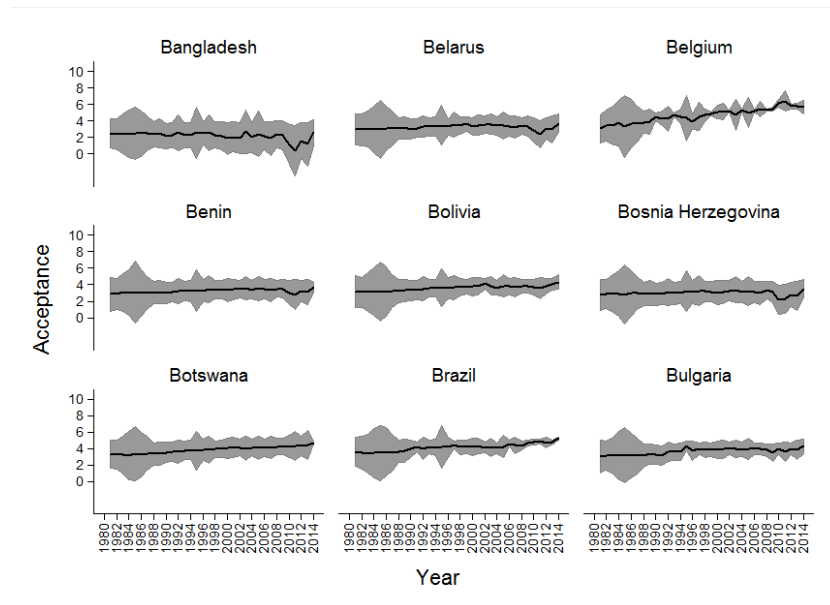




Figure A.3. Trends in acceptance

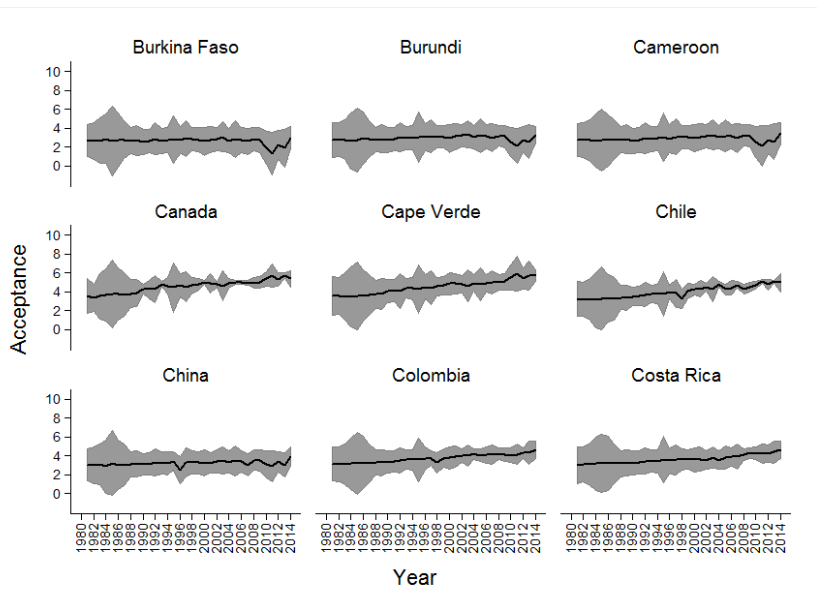
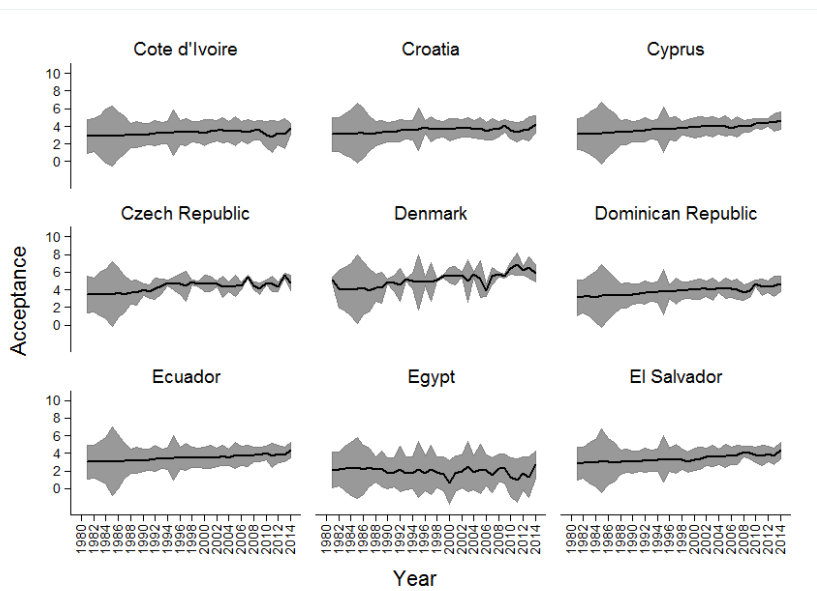


Figure A.4. Trends in acceptance



NOTE: Czech Republic had an outlier estimate of 10 for 1995, which was removed from this plot and summary plots.

Figure A.5. Trends in acceptance

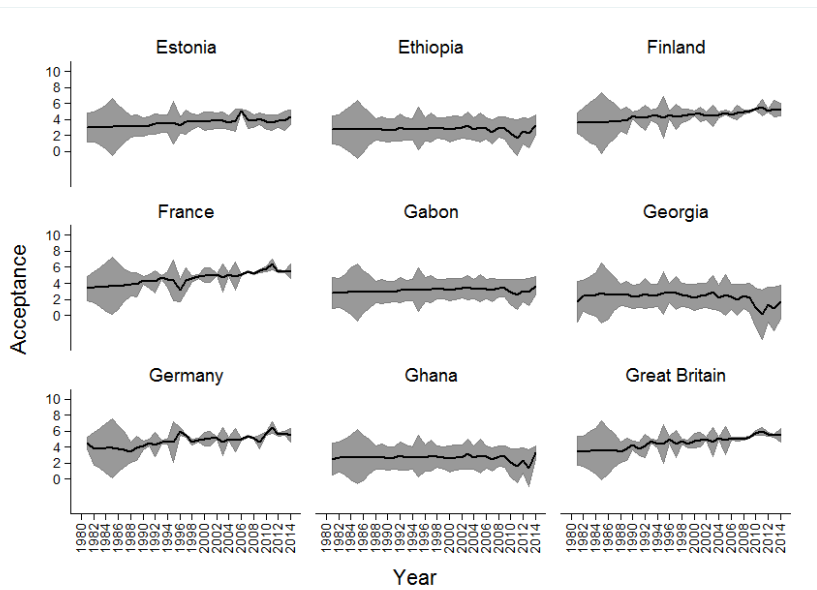


Figure A.6. Trends in acceptance

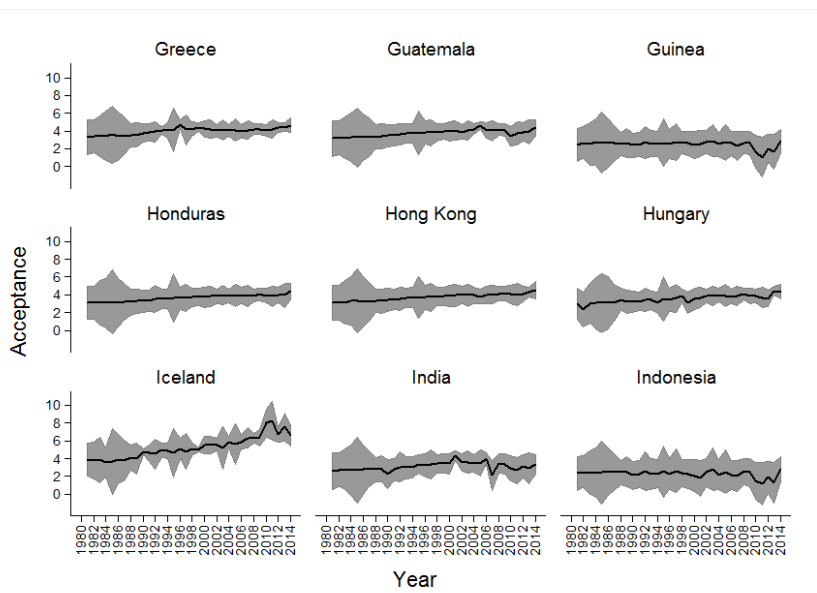


Figure A.7. Trends in acceptance

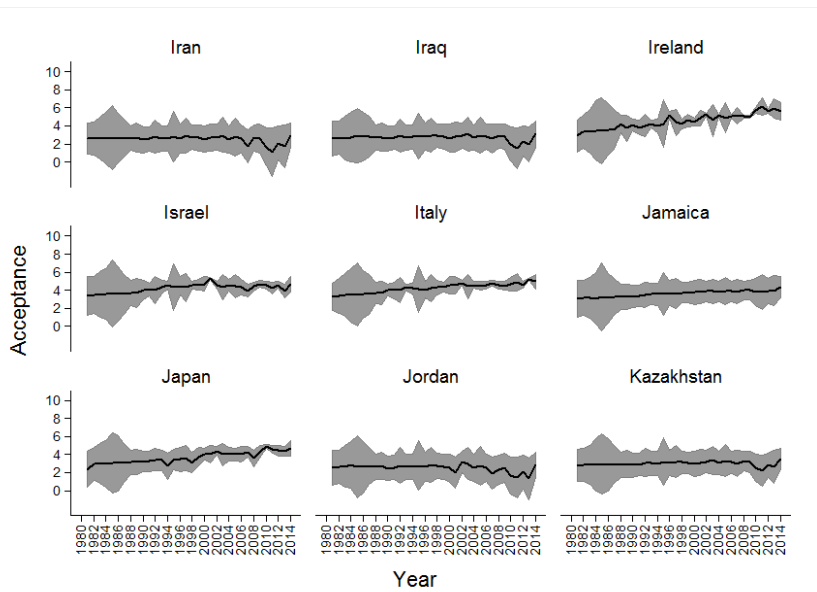


Figure A.8. Trends in acceptance

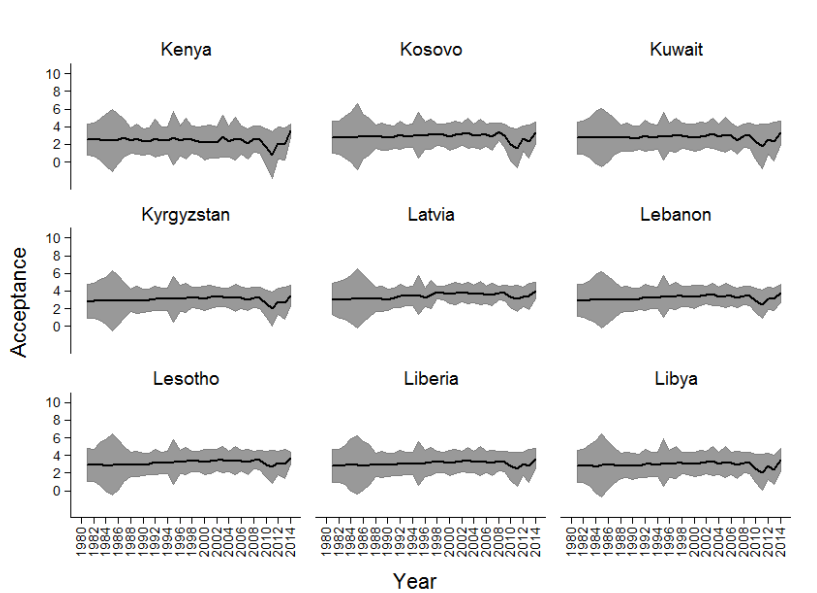


Figure A.9. Trends in acceptance

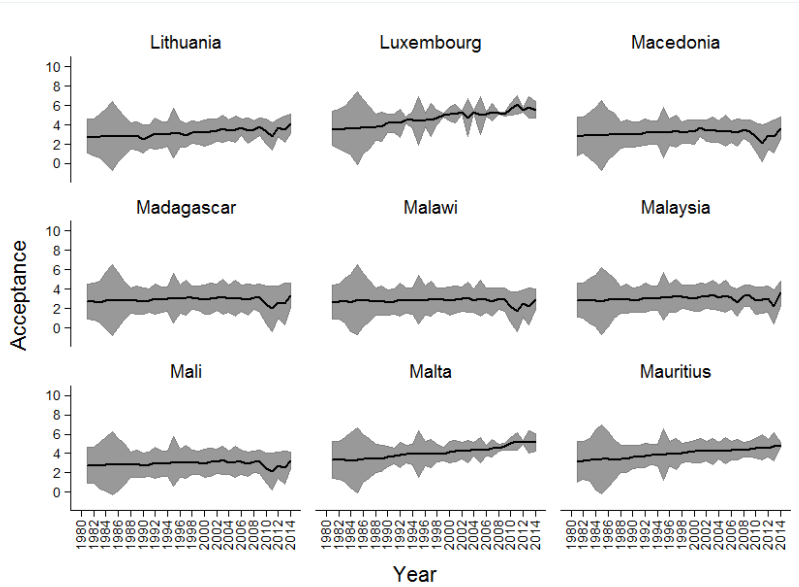


Figure A.10. Trends in acceptance

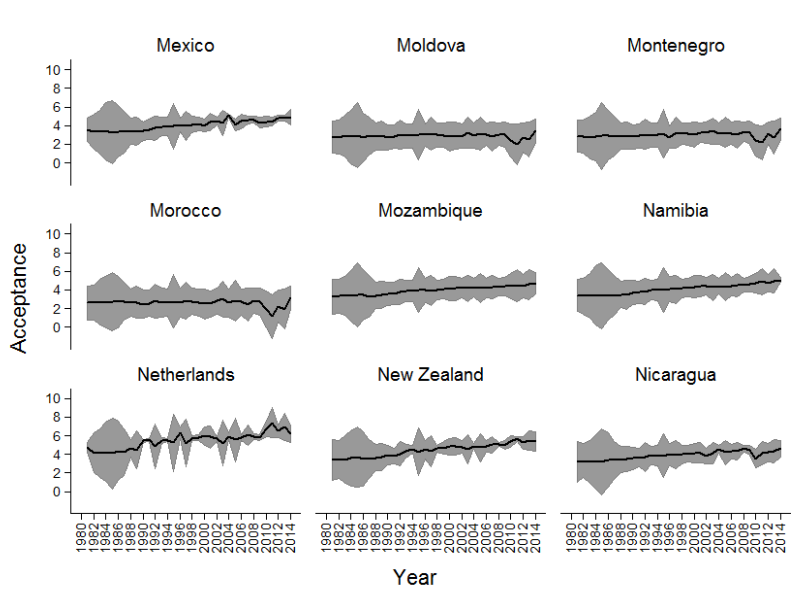


Figure A.11. Trends in acceptance

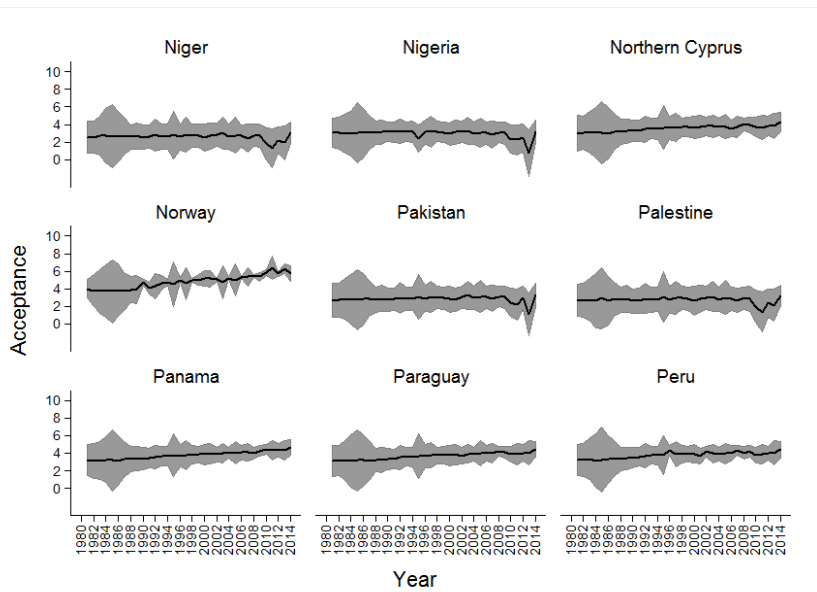


Figure A.12. Trends in acceptance

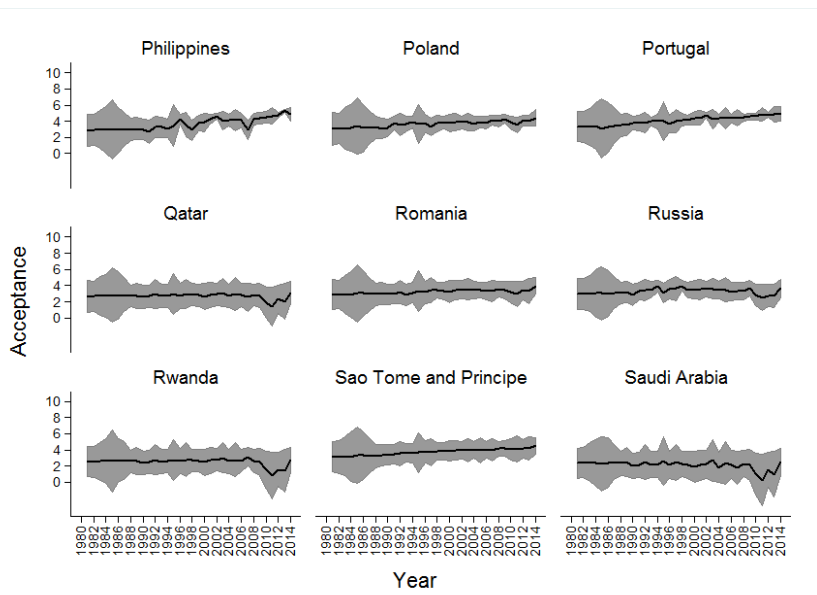


Figure A.13. Trends in acceptance

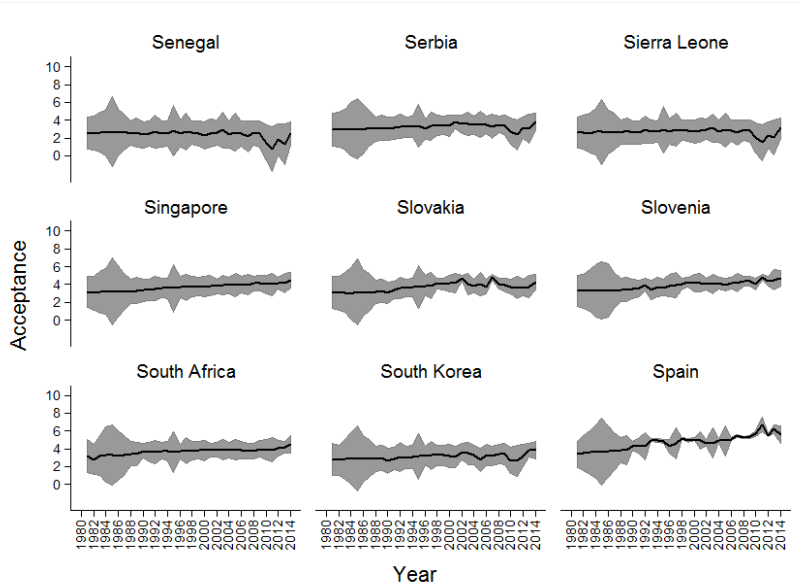


Figure A.14. Trends in acceptance

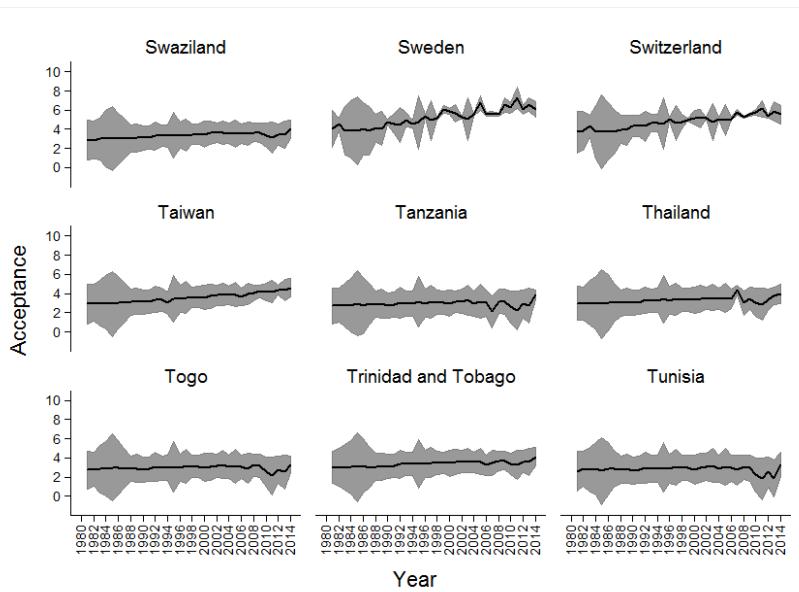


Figure A.15. Trends in acceptance

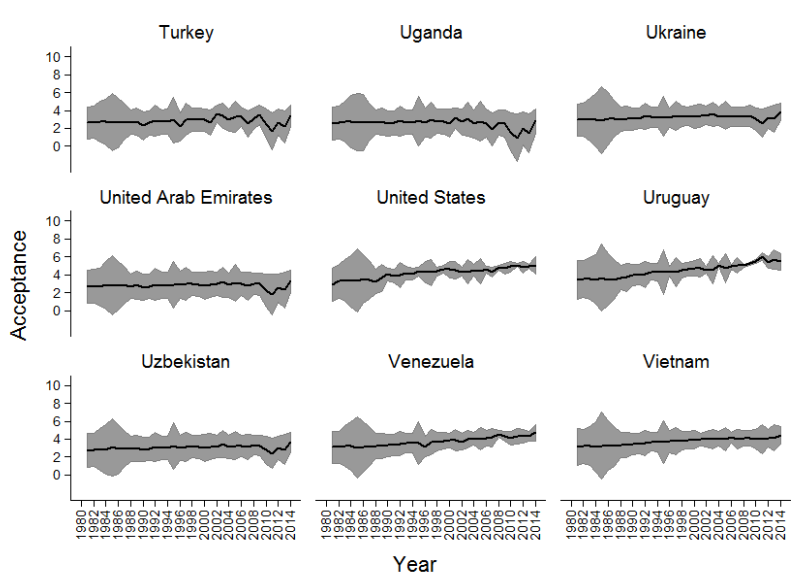
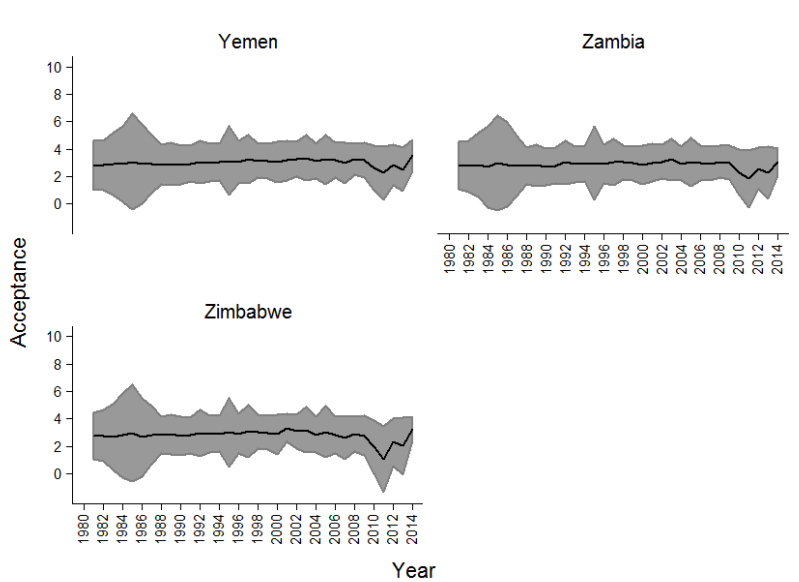


Figure A.16. Trends in acceptance



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## APPENDIX 4: SIGNIFICANCE TEST OF FIVE YEAR AVERAGES

To evaluate the statistical significance of the difference between average acceptance scores, mean difference tests were conducted for each posterior draw. The model stored a total of 936 draws from the posterior distribution. As such the five-year average was evaluated for its difference from the other five-year average within each posterior draw, and the test statistic was stored from each evaluation. The average t-test from these multiple difference tests is reported in Table A.3, as well as, the corresponding p-value. Since each t-test is evaluated as the difference between an average score of five years, the p-value for the average t-test uses 4 degrees of freedom.

Table A.3. Differences in five-year Global Acceptance Index (GAI) averages

Country	Global Acceptance Index Average	P-value (one-tailed)
Iceland	2.73	0.026
The Netherlands	2.09	0.052
Sweden	2.32	0.040
Denmark	2.12	0.051
Andorra	1.61	0.091
Norway	2.33	0.040
Spain	2.45	0.035
Azerbaijan	-2.54	0.032
Georgia	-2.49	0.034
Saudi Arabia	0.31	0.385
Bangladesh	-1.87	0.068
Egypt	-1.13	0.160
Ghana	-1.99	0.059
Kenya	-1.32	0.129