Public Support for Gay Rights
Across Countries and Over Time

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Abstract

Objective. Support for gay rights has increased in the publics of many countries over recent decades, but the scholarship on the topic has been hindered by the limited available data on these trends in public opinion. The goal of the Support for Gay Rights (SGR) dataset is to overcome this problem. *Method.* The SGR dataset is constructed by combining a comprehensive collection of survey data with a latent-variable model to provide annual time-series estimates of public support for gay rights across 118 countries and over as many as 51 years that are comparable across space and time. *Results.* We show these data perform well in validation tests and demonstrate their potential by replicating the influential but recently questioned finding of Andersen and Fetner (2008) that more income inequality yields less tolerant and supportive attitudes toward gay people. *Conclusion.* We anticipate that the SGR data will become a crucial source for cross-national, cross-regional, and longitudinal research that improves our understanding of the sources and consequences of public support for gay rights.

Public attitudes toward gay rights have been changing toward greater support in many countries over the past several decades, and these often-rapid shifts have attracted sustained interest from researchers. The resulting scholarship has been hampered, however, by the limited available data on these trends in public opinion. Mirroring the coverage of the survey projects on which they were based, these works have either investigated the causes or consequences of dynamics in public opinion over time in only one country or region (see, e.g., Abou-Chadi and Finnigan 2019; Dotti Sani and Quaranta 2022), on the one hand, or differences in public opinion across a broad cross-regional sample of countries but in just a small number of years, on the other (see, e.g., Ayoub and Garretson 2017; Adamczyk 2017). Indeed, given the severe contraint of data availability on this topic, it is not at all surprising that there are also important contributions, even recently, that are limited in *both* space *and* time (see, e.g., Zhou and Hu 2020; Winkler 2021; Paradela-López, Antón, and Jima-González 2023). The paucity of comparable data that has shaped this literature undermines our confidence in our understanding not only because the data are scant in general but also because they are biased geographically. Naturally, the narrower the evidentiary base upon which conclusions are built, the more susceptible these conclusions will be to collapse (see King, Keohane, and Verba 2021, 23). This is especially true where, as here, what suitable data exist are geographically concentrated. There is much more data and hence research on public opinion regarding gay rights in the countries of Europe and North America than elsewhere (Adamczyk and Liao 2019, 410); this geographic bias makes scope conditions difficult to discern and so potentially leaves even theories that find empirical support less generally applicable than perhaps often assumed (see Wilson and Knutsen 2022, 1037).

To address these issues, we constructed the Support for Gay Rights (SGR) dataset. The SGR dataset combines a comprehensive collection of responses to national and cross-national surveys with recent developments in latent-variable modeling of public opinion to provide estimates of public attitudes toward gay rights that are comparable across many countries and over many years. These latent-variable estimates perform well in validation tests: they are very strongly correlated with single survey items tapping views on gay rights, and they

also relate strongly to other concepts thought causally connected to public opinion on gay rights. The SGR dataset provides a much firmer basis for testing the implications of theories by providing many more observations across a wider scope of countries and time than previously available sources. Along with our explanation of the process of constructing the SGR dataset, we demonstrate its potential in this regard by replicating the foundational but recently questioned finding of Andersen and Fetner (2008) that more income inequality yields less support for gay rights. We anticipate that the SGR data will become a crucial source for cross-regional, cross-national, and longitudinal research that improves our understanding of the sources and consequences of support for gay rights.[1]

Existing Data and Research on Attitudes Toward Gay Rights

The SGR dataset aims to address a shortcoming in the available datasets on public opinion regarding the rights of gays and lesbians: researchers have been forced to choose between studying support in many countries *or* over many years, but not both. Figure 1 illustrates the trade-off between the breadth of country coverage and the number of years available for each country. It plots, for each survey project in the SGR source data described below, the number of countries for which data on attitudes toward gay rights are available against the mean number of years these data are available per country. Some survey projects ask more

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[1]Although broader and more inclusive concepts such as 'LGBTQ+' have become more commonly used in recent years, the SGR dataset as its name suggests measures only attitudes regarding sexual orientation rather than also those regarding gender identity. First, from a theoretical perspective, Worthen (2013) argues prejudicial attitudes should be expected to vary by the target of prejudice and that attitudes toward, for example, gay people and transsexual individuals likely have different sources. Second, on a more practical perspective, even if a more inclusive concept were theoretically justifiable, the available survey data includes very few observations on attitudes toward transsexual people relative to questions on "gay," "lesbian," and "homosexual" individuals or "same-sex" couples. In light of this severe imbalance, including the former would do little to influence the resulting estimates, regardless of whether they reflect the same latent variable as the latter. Our focus on attitudes toward gay rights therefore maintains alignment with the available original survey questions and avoids misleading users as to their breadth.

than one question on the topic, but here only the most frequently asked single question on the topic is shown. An 'L' shape is readily evident. Many surveys, clustered in the lower left at the bend in the L, ask questions about support for gay rights in only a few different country-year contexts. Some though, such as the U.S. General Social Survey (GSS) and the British Social Attitudes (BSA) project in the top left, have fielded such questions repeatedly over many years in a single country, although even these efforts fall short of complete time series. Others, including the World Values Survey (WVS) and the Pew Global Attitudes project along the bottom and towards the right, provide information about many countries across one or a few years. The European Social Survey (ESS), which surveyed respondents in 39 countries in as many as ten years (mean: 6.6 years) over two decades, provides the most over-time data for the most countries, followed by the AmericasBarometer (AmB; 34 countries, mean years: 5.4). No single survey combines broad, cross-regional country coverage with longitudinal time-series data.
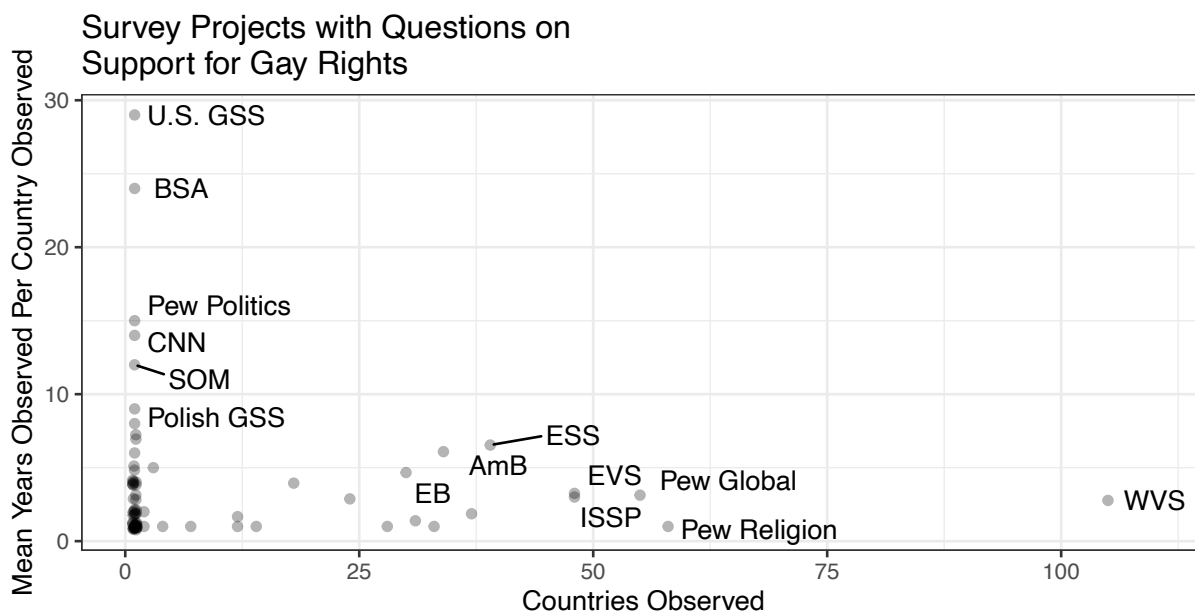
Notes: The number of countries and mean years observed are plotted only for the most frequently asked single question on attitudes toward homosexuality in each survey project.

Figure 1: Countries and Mean Years Observed in Survey Datasets

Figure 2 shows how the available data have influenced scholarship on the topic. Using the

Prominent Articles on
Public Opinion on Gay Rights

Notes: Citation counts as reported by the Web of Science on June 21, 2023. See the online appendix for details on the contruction of this sample of prominent articles.
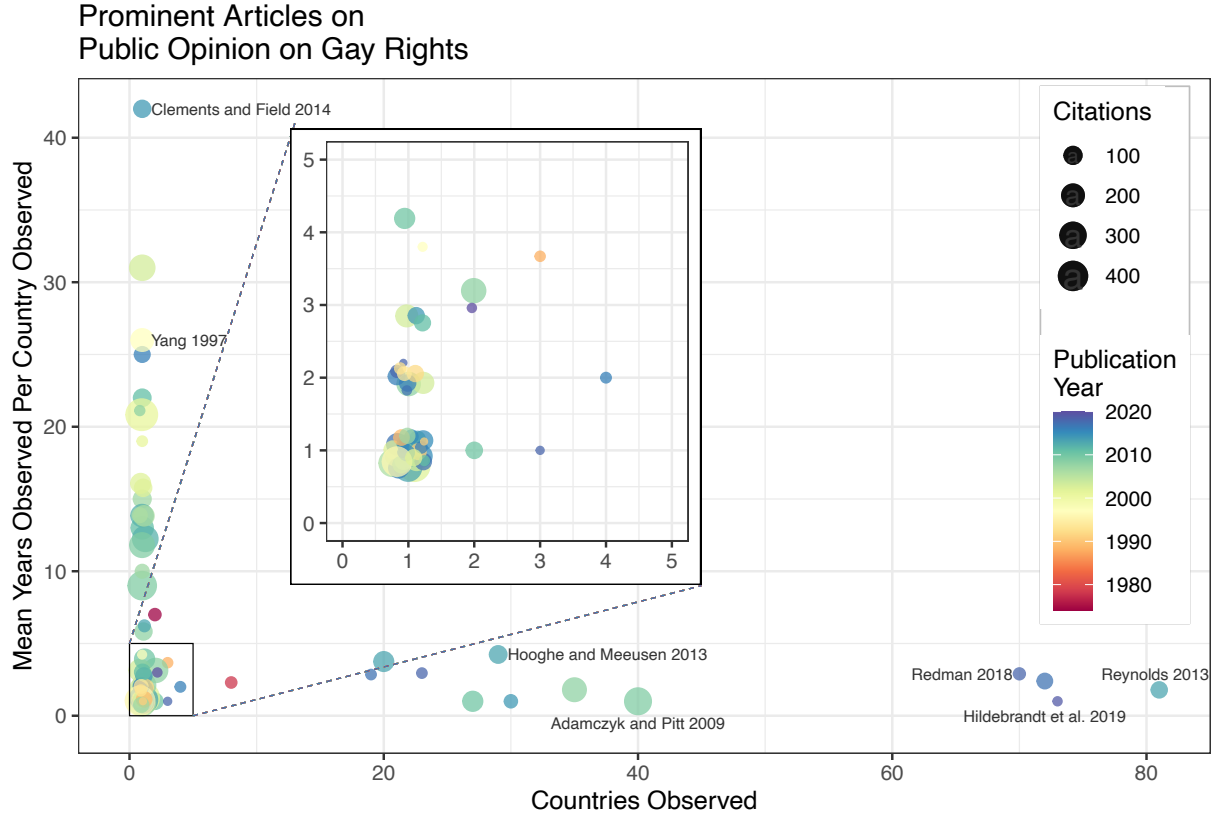
Figure 2: Countries and Mean Years Observed in Prominent Research

Web of Science and Google Scholar, we assembled a sample of prominent published articles on public opinion toward gay rights (see the online appendix for details). These articles had publication dates as early as 1974 and as late as 2020 (median: 2010) and were cited in the Web of Science from 2 to 490 times (median: 72.5). We then examined these articles to find the number of countries and years investigated in each. As the zoomed portion of the plot emphasizes, many of these articles might be described as using case-study or small-n research designs. Just over a third consider only a single year in a single country; together with works that study one country in just two years they comprise nearly half of our sample.

Among the works that investigate more contexts, the data employed tend to be longitudinal or cross-national, but only very rarely both. Roughly a fifth of these articles examine ten or more years of data within a single country. Clements and Field (2014), for example,

tracks changes in British attitudes in 13 different survey projects conducted in 42 different years; Yang (1997) similarly reports trends in public opinion in the United States drawing on many surveys conducted in 26 different years. Research considering data from more than five countries encompass less than a sixth of these articles. One recent piece, Hildebrandt, Truedinger, and Wyss (2019), draws on the fifth and sixth waves of the WVS to create a single cross-section of 73 countries and argues that modernization leads to more tolerance and in turn, in democracies, more support for gay rights; the influential work by Adamczyk and Pitt (2009) similarly employs a single cross-section of the WVS, in its case the fourth wave, to examine how individuals' religiosity and their countries' religious heritages shape their attitudes toward gay rights. Reynolds (2013) looks at the most countries of any of these prominent works, 81, combining WVS and Pew Global Attitudes data to obtain 146 observed country-years (mean observed years per country: 1.8) with which to evaluate how attitudes influence policy. The article examining the most country-years of public opinion in this sample is Redman (2018), an investigation of policy feedback on public opinion that uses the second through sixth WVS waves to provide a total of 203 country-years in 70 countries, that is, 2.9 observed years per country on average. Hooghe and Meeusen (2013), which also studies policy feedback, is the cross-national study with the most longitudinal data in the sample: it employs the first five waves of the ESS to provide a total of 123 country-years across 29 countries for a mean of 4.2 observed years per country. Within this sample of prominent works, none of the articles including five or more countries is able to examine public opinion in more than five years in any of the countries included in their analyses.

That these L-shaped distributions in the available datasets and the resulting analyses should limit our confidence in our conclusions should be readily evident. The single-country studies that make up the vertical part of the L, even those over many years, leave questions regarding the generalizability of their findings to other parts of the world (see, e.g., King, Keohane, and Verba 2021, 210). The cross-national analyses on the horizontal, with just one or at most a handful of time points to leverage, on the other hand, often raise concerns that differences across countries are being conflated with over-time causal processes (see,

e.g., Jackman 1985, 173–74). That a disproportionate share of research on public opinion regarding gay rights and of the available surveys on which this research is based focuses on Europe and North America (see Adamczyk and Liao 2019, 410) only compounds these issues. As Wilson and Knutsen (2022, 1037) points out, such geographic bias makes the scope conditions of even cross-national studies difficult to discern.

A dataset that falls to the upper right of Figure 1 would address these issues and allow researchers to reach conclusions that are more robust. In the next section, we describe the national and cross-national surveys and the latent-variable model we use to this end, along with the resulting SGR dataset. But first we note that there has been a previous effort to use latent-variable modeling to meet this need, the Global Acceptance Index [GAI; Flores (2021)] which estimates public attitudes toward the LGBTQ community. The estimates we describe below have several modeling advantages over the GAI: they make use of a model that better fits ordinal survey data (see Solt 2020c), they avoid conflating attitudes regarding sexual orientation with those of gender identity (see Worthen 2013), and in many countries they draw on surveys conducted over longer time spans. Further, the GAI data do not include a measure of the estimates' uncertainty, which is crucial to include when working with latent variable estimates (see Tai, Hu, and Solt 2024). Most importantly for the purposes of our goal of providing data to allow researchers to examine many countries over many years, as Barrientos and González (2022, 199) has already pointed out, the GAI estimates are only available for a single cross-section, making analysis of change over time impossible.

Estimating Support for Gay Rights Across Space and Time

To generate estimates of support for gay rights cross-nationally and longitudinally that are comparable across space and over time, we first assembled a comprehensive collection of survey questions on the topic. Specifically, we collected four groups of questions that can capture publics' latent attitudes toward gay rights: questions about public approval and acceptance of homosexuals and homosexuality; questions exploring public support for the legalization of same-sex marriage; questions regarding public opinion on the rights of gay,

lesbian, and bisexual individuals, including rights equal to those of heterosexual individuals; and questions about attitudes for homosexual individuals' social and political roles, for instance, running for public office. We employed a double-entry process to ensure consistency in question selection. After one author initially selected and coded the relevant questions, another author reviewed them to confirm both accuracy and agreement on their inclusion in the raw data (for the importance of employing this double-entry method to avoid mistakes, see Hu, Tai, and Solt 2022). In cases where opinions differed, all authors discussed the discrepancies as a group and updated the question selection accordingly, ultimately incorporating only those questions for which consensus was reached. The complete list of survey items is included in the online appendix.

The relevant surveys are sparse, providing no relevant data for many countries and years, and incomparable, employing many different survey items, but collectively they have often asked questions about gay and lesbian rights over the past half-century. In all, we identified 51 items that were asked in no fewer than five country-years in countries surveyed at least three times; these items were drawn from 435 different national and cross-national survey datasets. Together, these items were asked in 118 different countries in at least three time points over the 51 years from 1973 to 2023, yielding a total of 3,639 country-year-item observations. Observations for every year in each country surveyed would total 6,018, and a complete set of country-year-items would include 306,918 observations. Viewed from this complete-data perspective, the sparsity of the available source data is readily evident. On the other hand, we do have in the source data 1,507 country-years for which there is at least *some* information about the extent of support for gay rights in the population, that is, very nearly 49% of the 3,080 country-years spanned by the data we collected. Still, the many different survey items employed render these data incomparable and so difficult to use together.

Consider the most frequently asked item in the data we collected, which asks respondents whether they think homosexuality "can always be justified, never be justified, or something in between," using a ten-point scale. Employed by the Asia Barometer, the European Values
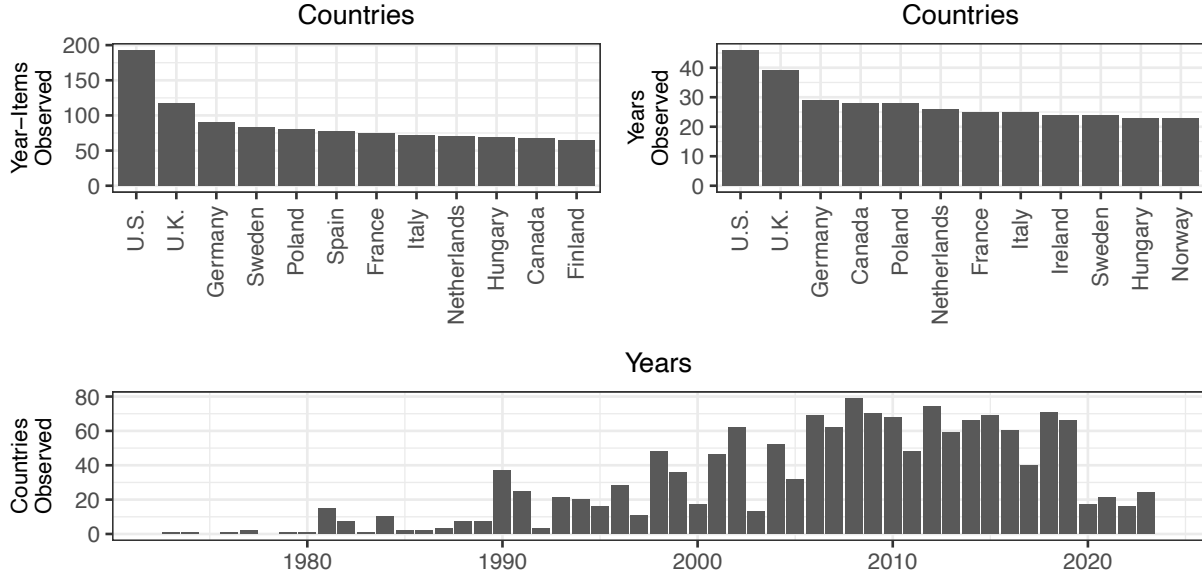
Figure 3: Countries and Years with the Most Observations in the Source Data

Survey, the Latinobarómetro, and the WVS, this question was asked in a total of 527 different country-years. Even this question, the *most common* survey item asked, constitutes only 17% of the country-years spanned by our data. The available public opinion data on this topic are very sparse as well as incomparable.

The upper left panel of Figure 3 shows the dozen countries with the highest count of country-year-item observations. The United States, with 193 observations, is far and away the best represented country in the source data, followed by the United Kingdom, Germany, Sweden, and Poland. Again we see how, as the review in Adamczyk and Liao (2019, 410) notes, more data has been collected in North America and Europe than in the rest of the world. At the other end of the spectrum, one country—Tajikistan—has only the minimum three observations required to be included in the source dataset at all. The upper right panel shows the twelve countries with the most years observed; this group is similar, but with Ireland and Norway joining the list and Spain and Finland dropping off. The bottom panel counts the countries observed in each year and reveals just how few relevant survey items were asked before 1990. Country coverage reached its peak in 2008, when surveys in 79 countries included items on attitudes toward the rights of gays and lesbians.

Latent variable models of public opinion drawing on cross-national survey data have attracted considerable attention in recent years (see Claassen 2019; Caughey, O'Grady, and Warshaw 2019; McGann, Dellepiane-Avellaneda, and Bartle 2019; Kolczynska et al. 2020). To estimate support for gay rights across countries and over time, we draw on the latest of these methods that is appropriate for data that is both sparse and incomparable, the Dynamic Comparative Public Opinion (DCPO) model (Solt 2020c). In brief, the DCPO model is a population-level two-parameter ordinal logistic item response theory (IRT) model with country-specific item-bias terms; for a detailed description, see the online appendix and Solt (2020c, 3–8). Here, we focus on how it deals with the principal issues raised by the survey data described above, incomparability and sparsity.

The DCPO model accounts for the incomparability of different survey questions with two parameters. First, it incorporates the *difficulty* of each question's responses, that is, the amount of support for gay rights that is indicated by a given response. That each response evinces more or less of our latent trait is most easily seen with regard to the ordinal responses to the same question: to strongly agree with the statement "the law should recognise same-sex relationships," evinces more support than responding "agree," which is more tolerant than "neither agree nor disagree," which shows more support than "disagree," and in turn "strongly disagree." The same thing is true across questions. For example, strongly agreeing with the statement "homosexual couples should be able to adopt children" likely expresses more support than merely responding that same-sex relationships should be not be criminalized. Second, the DCPO model accounts for each question's *dispersion*, its noisiness with regard to our latent trait. A lower dispersion indicates that changes in responses to the question are more faithfully translated to changes in the underlying support for gay rights. These two parameters, difficulty and dispersion, together generate comparable estimates of the latent variable from source data questions that are not directly comparable.

In practice, once we identified the survey items and their question scales, we used the `DCPOtools` R package (Solt et al. 2019) to automatically calculate the number of responses in each country-year expressing support for gay rights at or above a response category higher

10

than the least supportive option. This number is modeled as the expected probability that a random individual in a specific country-year gives a response at least as supportive as the given category for a question. This expected probability, in turn, is modeled by the public's latent support for gay rights, the difficulty of the question, and the dispersion in responses. Ultimately, this approach allowed us to estimate the public's latent support for gay rights. A more detailed explanation of this technique can be found in online appendix C.

The sparsity in the source data—the interruptions in the time series of each country caused by unobserved country-years, and the fact that even many observed country-years have only one or few observed items—is addressed by the DCPO model using local-level dynamic linear models, also known as random-walk priors. This means that, for each country, each year's value of support is modeled as the previous year's estimate plus a random shock. These dynamic models smooth the estimates of support for gay rights over time and allow estimation even in years for which little or no survey data is available, albeit at the expense of greater measurement uncertainty.

We estimated the DCPO model on the source data using the `DCPO` and `cmdstanr` packages for R (Solt 2020a; Gabry and Češnovar 2022), running four chains for 2,000 iterations each and discarding the first half as warmup. All $\hat{R}$ diagnostics were below 1.02, which indicates that the model converged.

Despite the potential for divergences between responses to questions on the *morality* of homosexuality and those that more directly concern what rights are properly accorded lesbian and gay people, as Adamczyk and Liao (2019, 407) anticipated, "respondents across a range of different countries do not draw major distinctions between these two dimensions": the dispersion parameters indicate that all of the survey items load well on the single latent variable of support for gay rights (see Table A2 in the online appendix). The result is estimates for each of the 3,080 country-years spanned by the source data of mean support for gay rights, which together comprise the SGR dataset. With data on 118 countries for 6 to 51 years—a mean of 26.1 years—the SGR dataset is literally off the charts: it falls beyond the bounds of Figure 1.

Note: Gray whiskers represent 80% credible intervals.

Figure 4: SGR Scores, Most Recent Available Year

Figure 4 displays the most recent available SGR score for each of the 118 countries and territories in the dataset. Iceland, the Netherlands, Belgium, and the Scandinavian countries are the places where the public is most supportive of gay rights. The latest scores for Ethiopia, Armenia, Mali, Uganda, and Egypt indicate there is very little support in those countries. It should be note that some countries which do not recognize same-sex marriage such as Japan and India rank higher than other countries including Taiwan legalizing same-sex marriage. It is because the SGR index is to measure public opinion toward gay rights rather than the existence of laws for same-sex marriage.
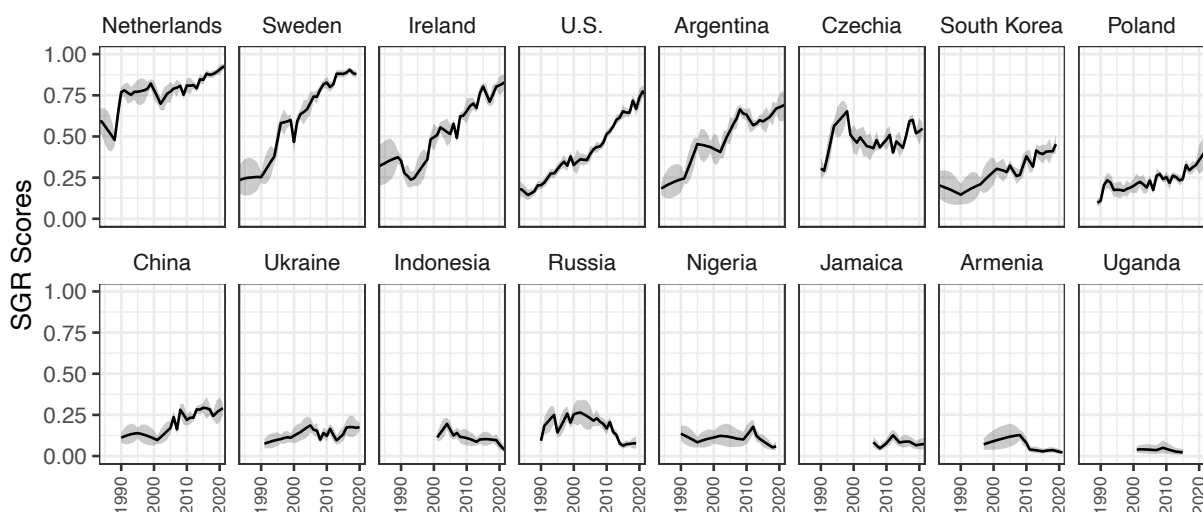
Note: Countries are ordered by their SGR scores in their most recent available year; gray shading represents 80% credible intervals.

Figure 5: Support Over Time Within Selected Countries

Figure 5 displays how SGR scores have changed over time in sixteen countries. It further underscores what is already evident in Figure 4: the cross-regional scope of the SGR dataset allows comparison of countries too often neglected in political science analyses (see Wilson and Knutsen 2022). The figure also shows that while public opinion toward gay and lesbian rights has grown rapidly more supportive in some countries, such as Sweden and the United States, attitudes have changed much more gradually over time in others, like Poland and China. Support has advanced and retreated somewhat as in Czechia and more completely as in Russia. And in countries such as Nigeria and Uganda, the extent of support for gay rights

in the public has been steadily scant. The breadth of these differences stand as a challenge to our explanations for the causes and consequences of public support for gay rights.

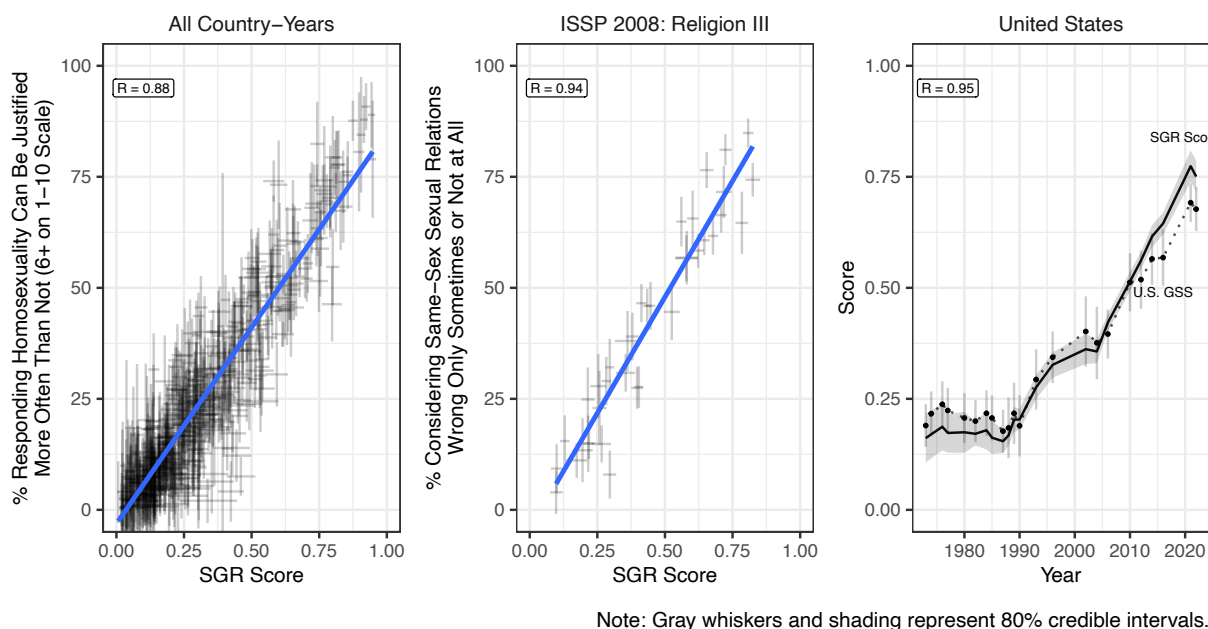## Validating the Support for Gay Rights Scores

Figure 6: Convergent Validation: Correlations Between SGR Scores and Individual Source-Data Survey Items

Before these estimates can be used, however, they must be validated: the mere fact that we can generate estimates for support for gay rights does not automatically mean that they are suitable for analysis. As is the case with any other new measure, validation tests of cross-national latent variables are crucially important (see, e.g., Hu et al. 2024). Figure 6 and Figure 7 provide evidence of this measure's validity with tests of convergent validation and construct validation. Convergent validation refers to tests of whether a measure is empirically associated with alternative indicators of the same concept (Adcock and Collier 2001, 540). In Figure 6, the SGR scores are compared to responses to individual source-data survey items that were used to generate them; this provides an 'internal' convergent validation test (see, e.g., Caughey, O'Grady, and Warshaw 2019, 689; Solt 2020c, 10). The

14

left panel is a scatterplot of country-years in which the SGR scores are plotted against the percentage of respondents who gave an accepting response to the most commonly asked item in the source data: whether homosexuality can always be justified, scored ten, never be justified, scored zero, or something in between. For this plot, responses of six or greater are considered as indicating that respondents consider homosexuality justified more often than not. The middle panel shows responses to the question with the most data-rich cross-section, "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?" in the International Social Survey Program's 2008 module on Religion, plotting our latent variable of support against the percentage who responded "wrong only sometimes" or "not at all." Finally, in the right panel, the U.S. General Social Survey's series on this same item—the longest of any item in any single country in the source data—was used to evaluate how well the SGR scores capture change over time. The correlations, estimated taking into account the uncertainty in the measures, are very strong in all three cases.

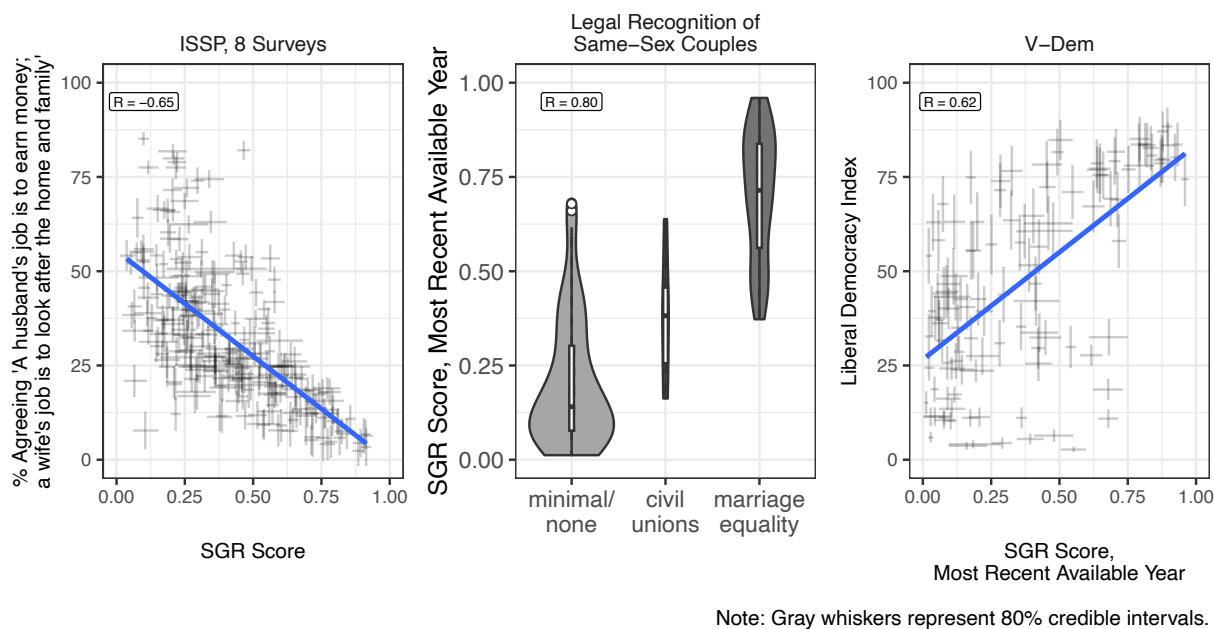Note: Gray whiskers represent 80% credible intervals.

Figure 7: Construct Validation: Correlations Between SGR Scores and Support for Gay Rights Survey Items

Figure 7 moves on, then, to construct validation. Construct validation refers to demonstrating, for some *other* concept believed causally related to the concept a measure seeks to represent, that the measure being tested is empirically associated with measures of that other concept (Adcock and Collier 2001, 542). More traditional attitudes toward gender roles are often argued to yield less support for gay rights (see, e.g., Brown and Henriquez 2008). The left panel compares traditional gender attitudes, measured as the percentage of those agreeing or strongly agreeing with the statement, "A husband's job is to earn money; a wife's job is to look after the home and family," in eight ISSP surveys (Family and Changing Gender Roles in 1988, 1994, 2002, and 2012; and Religion in 1991, 1998, 2008, and 2018), with the SGR scores. Consistent with theory, there is a clear, strong negative relationship between these two measures: when and where publics hold more traditional views of gender roles, they tend also to be less supportive of gay rights.

As a result of policy responsiveness, that is, the influence of public opinion on policy (see, e.g., Lax and Phillips 2009), and policy feedback, the influence of policy on public opinion (see, e.g., Abou-Chadi and Finnigan 2019; Earle et al. 2021), public support for gay rights is expected to be closely related to policies that recognize same-sex relationships. The figure's center panel presents violin plots of the distribution of SGR scores in the most recent available year across three groups of countries: those that currently have no or minimal legal recognition of same-sex relationships, those that recognize civil unions, and those with marriage equality. The gray-shaded 'violins' depict mirrored kernal density plots of the observations in each group; their areas are proportional to the number of observations. The violins are inset with box-and-whisker plots showing the 25th percentile, median, and 75th percentile as horizontal lines in a box; the dashed vertical whiskers then extend to the farthest observation within 1.5 times the interquartile range, that is, the height of the box; and all observations beyond that distance are shown individually as white circles (see Tukey 1977). This relationship is very strong.

A third often theorized relationship is that liberal democracies promote generally more tolerant attitudes that lead to greater support for gay rights (see, e.g., Adamczyk 2017).

The right panel of Figure 7 plots the SGR score of the most recent available year for each country against the V-Dem Liberal Democracy Index for that country-year. Here, too, the relationship is in the expected direction and strong. The evidence of construct validation in Figure 7, together with the evidence of convergent validation in Figure 6, demonstrates the validity of the SGR scores as measures of the public's support for gay rights.

Testing Theories of Support for Gay Rights: Revisiting 'Economic Inequality and Intolerance'

To illustrate the utility of the SGR data, we revisit Andersen and Fetner's (2008) foundational work on economic inequality and intolerance. That article argues that postmaterialist theory (see, e.g., Inglehart and Welzel 2005) implies that greater inequality should be expected to yield less tolerant and supportive attitudes toward gay rights: if economic prosperity is what provides societies with the security needed to leave traditional biases behind, then when a society's prosperity (and security) is not broadly shared, more tolerant and supportive attitudes will not be broadly shared either.[2] Supporting this view, its analysis found that more economic inequality leads to less positive attitudes toward gay and lesbian people, as measured by the ten-point WVS item on the justifiability of homosexuality mentioned above. Despite the article's influence, it was flagged in a recent review of the literature as a study for which "more research is needed to replicate and confirm [its] findings" (Adamczyk and Liao 2019, 415). Indeed, one recent work finds no support at all for the hypothesized relationship between inequality and attitudes toward gay people (Zhang and Brym 2019, 515).

One difference between these two works, Andersen and Fetner (2008) and Zhang and Brym (2019), that is potentially important to their diverging conclusions is the sample employed. Both works draw on WVS data, but the group of countries each examines differs

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[2]An alternate, possibly complementary, theory would be that greater inequality gives wealthier individuals both greater means and enhanced motive to promote religiosity among their fellow citizens (see, e.g., Solt, Habel, and Grant 2011; Solt 2014), and more religiosity in turn works to decrease support (see, e.g., Adamczyk and Pitt 2009). We leave distinguishing between these two theories to future research.

in size and in kind. Noting the particular importance to democracies of tolerance of social and political difference, Andersen and Fetner (2008) examined only democratic countries. The article's analyses included 35 countries, observed in just one to four years each, for a total of 63 country-years, that is, a mean of 1.8 years observed per country. The sample analyzed in Zhang and Brym (2019), on the other hand, incorporated a wider range of cases including non-democracies. This broader scope—along with the additional WVS survey waves conducted in the time between the two pieces' writing—yielded 88 countries and 214 country-year observations for an increased mean number of years observed of 2.4 per country. So although the different conclusion reached in Zhang and Brym (2019, 517) may, as the piece suggests, reflect the larger sample of countries that study included, it may have also resulted from the inclusion of non-democratic countries, revealing a scope condition to the theory presented in Andersen and Fetner (2008).

The SGR data allow us to revisit the Andersen and Fetner (2008) hypothesis with many, many more observations of economic inequality and attitudes toward gay people from a broader sample of countries than either of these two previous works and also to assess whether the patterns in these views in the advanced democratic countries are distinctively sensitive to income inequality. Our sample of democracies includes the 36 democratic countries of the OECD, each observed in 23 (Iceland) to 49 (the United States) consecutive years (mean: 34.7 years, median: 35.5 years), a total of 1250 country-year observations. The broader sample of all countries includes 113 countries, observed in 2 to 50 consecutive years each, for a total of 2720 country-year observations. That is, the SGR dataset provides a number of country-year observations for our sample of democracies that is some 20 times greater than that considered in Andersen and Fetner (2008), and it gives us a number of country-years in our sample of all countries that is about 13 times greater than that in the sample employed in Zhang and Brym (2019). This much larger evidentiary base provides us with a much firmer basis for drawing conclusions regarding both the theory and its potential scope conditions (see, e.g., King, Keohane, and Verba 2021, 23).

The independent variable, economic inequality, is measured using the Gini index of dis-

posable income inequality. The Gini index ranges from 0, indicating perfect equality in the distribution, in this case, of income after taxes and government transfers, to 100, indicating a perfectly unequal distribution in which a single household receives all such income. The data are drawn from the Standardized World Income Inequality Database (Solt 2020b).

We also include the country-year-level and country-level control variables included in the analysis in Andersen and Fetner (2008). Data on GDP per capita (in thousands of constant 2015 U.S. dollars) are provided by the World Bank's World Development Indicators (World Bank 2023). A series of dichotomous country-level variables identify each country's religious heritage—countries are coded as having alternately a Catholic, Orthodox, Eastern, or Islamic heritage, with those with a Protestant heritage treated as the reference category— and countries with a Communist history are also identified with such a variable (see Inglehart and Welzel 2005). Finally, although its presence does not impact the conclusions drawn below, we add a dichotomously-coded variable for the presence of marriage equality, which takes on a value one in country-years where same-sex marriage was legal and zero otherwise (at the time of publication of Andersen and Fetner (2008), only five countries had legalized same-sex marriage, and the data analyzed in that piece ended before any of those policy adoptions).

Shor et al. (2007) shows that the best way to analyze such pooled time series is by using a Bayesian multilevel model that includes varying intercepts for each country and for each year. Varying intercepts for each country account for heteroskedasticity across space due to, e.g., omitted variable bias, while permitting the inclusion of time-invariant predictors such as religious heritage and communist past. Varying intercepts for each year take into account 'time shocks' that operate on all countries simultaneously (Shor et al. 2007, 171–72). We further employ the 'within-between random effects' specification, meaning each of the time-varying predictors is decomposed into its time-invariant country mean and the time-varying difference between each country-year value and this country mean. The time-varying difference variables capture the short-term effects of the predictors, while the time-invariant country-mean variables reflect their—often different—long-run, "historical" effects (Bell and

Jones 2015, 137). This specification has been shown superior for addressing omitted variable bias and endogeneity to fixed effects and other commonly used specifications for time-series cross-sectional data like these (see Bell and Jones 2015). The measurement uncertainty in the data for both attitudes toward gay and lesbian people and income inequality was incorporated into the analysis as well (see Tai, Hu, and Solt 2024). The model was estimated using the `brms` R package (Bürkner 2017).

Notes: Dots indicate posterior means; whiskers, from thickest to thinnest, describe 80%, 90%, and 95% credible intervals; shading depicts the posterior probability density function.
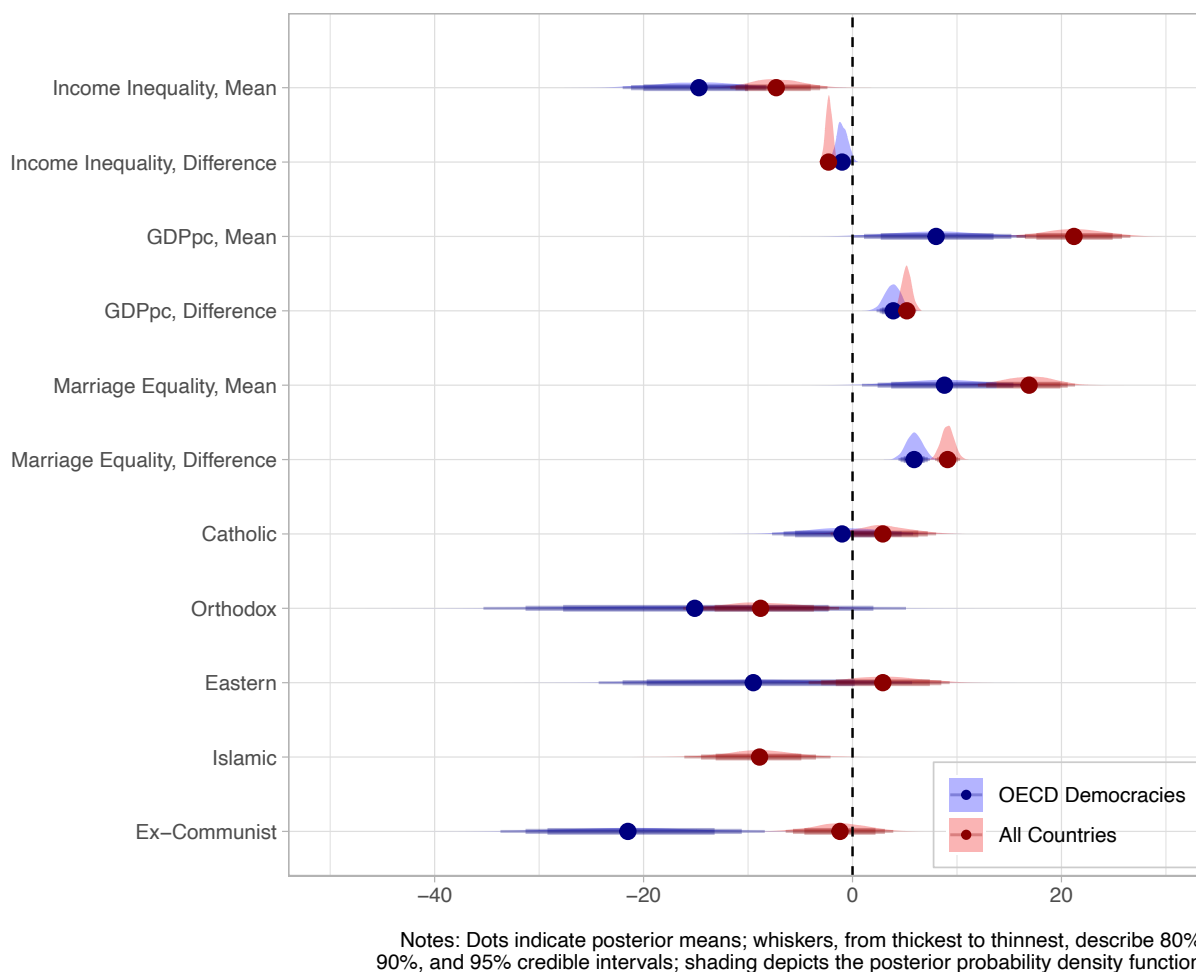
Figure 8: Predicting Support for Gay Rights

The results are presented in Figure 8. Greater income inequality is associated with less support for gay rights, both in the long run and in the short term, in both samples of countries. Looking at the 'historical,' long-run effect of income inequality, we see that in

the democratic sample, a two-standard deviation increase in a country's mean inequality is associated with 14.7 points less support (95% credible interval: -22 to -6.6 points), while across all countries this estimated difference was -7.3 (95% c.i.: -11.7 to -2.4) points. In the short run, a two-standard-deviation year-to-year change was found to decrease support by 1 point (95% c.i.:-2 to 0) among democracies. If anything, the estimated short-run decline was even larger when all countries are considered: 2.3 (95% c.i.: -2.9 to -1.7) points. Having much more data on attitudes toward gay rights provides strong evidence that income inequality decreases supportive public opinion toward gay and lesbian people and that democracies are not particularly sensitive to this effect.

Conclusion

The SGR dataset, by combining a comprehensive collection of the available survey data with recent advances in latent variable modeling, provides a new window on public opinion toward gay rights across space and time. Until now, scholars interested in how and why public opinion towards gay rights has shifted in recent decades and the ramifications of these shifts have struggled with the limited availability of data. Surveys with relevant items are sparse, not asked in all countries every year; incomparable, not asking the same questions; and, compounding these two issues, geographically concentrated. As a result, research on the topic has been limited, at best, to longitudinal studies of single countries and regions that may not generalize elsewhere or to cross-sections and small panels that offer little leverage against conflating differences across countries with changes over time. Our understanding has consequently suffered. The SGR dataset offers a means of overcoming these problems and gaining a better grasp of the causes and consequences of the extent of support for gay rights in publics around the world.

This does not mean that the SGR dataset is flawless. Even though the SGR dataset improves data availability with a wide coverage regarding both breadth of years and number of countries, the data coverage of each country differs according to the available sources of survey data. In addition, researchers attempting to use the SGR data should note that

21

there are quantified uncertainties in the estimates. Thus, it is essential to incorporate the uncertainty into account.

Researchers can access the SGR data in two ways. For those interested in using the SGR estimates in statistical analyses, the entire dataset may be downloaded from the Harvard Dataverse. And quick comparisons are facilitated by a user-friendly web application on the SGR website that plots support over time for up to four countries. Updates to the dataset will be released as new survey data on support for gay rights are made available. Current and future versions of the SGR should enable a wave of new research on what factors lead a public to hold greater support for gay rights and how more supportive public views influence other social and political phenomena.

References

Abou-Chadi, Tarik, and Ryan Finnigan. 2019. "Rights for Same-Sex Couples and Public Attitudes Toward Gays and Lesbians in Europe." *Comparative Political Studies* 52 (6): 868–95.

Adamczyk, Amy. 2017. *Cross-National Public Opinion About Homosexuality: Examining Attitudes Across the Globe.* Oakland: University of California Press.

Adamczyk, Amy, and Yen-Chiao Liao. 2019. "Examining Public Opinion about LGBTQ-Related Issues in the United States and Across Multiple Nations." *Annual Review of Sociology* 45 (1): 401–23.

Adamczyk, Amy, and Cassady Pitt. 2009. "Shaping Attitudes about Homosexuality: The Role of Religion and Cultural Context." *Social Science Research* 38 (2): 338–51.

Adcock, Robert, and David Collier. 2001. "Measurement Validity: A Shared Standard for Qualitative and Quantitative Research." *American Political Science Review* 95 (3): 529–46.

Andersen, Robert, and Tina Fetner. 2008. "Economic Inequality and Intolerance: Attitudes Toward Homosexuality in 35 Democracies." *American Journal of Political Science* 52 (4): 942–58.

Ayoub, Phillip M., and Jeremiah Garretson. 2017. "Getting the Message Out: Media Context and Global Changes in Attitudes Toward Homosexuality." *Comparative Political Studies* 50 (8): 1055–85.

Barrientos, Jaime, and Bladimir González. 2022. "Measuring Global Attitudes Toward Homosexuality: A Critical Review of LGBT Indexes." In *Mapping LGBTQ Spaces and Places*, 197–220. Cham, Switzerland: Springer.

Bell, Andrew, and Kelvyn Jones. 2015. "Explaining Fixed Effects: Random Effects Modeling of Time-Series Cross-Sectional and Panel Data." *Political Science Research and Methods* 3 (1): 133–53.

Brown, Michael J., and Ernesto Henriquez. 2008. "Socio-Demographic Predictors of Attitudes Towards Gays and Lesbians." *Individual Differences Research* 6 (3): 193–202.

Bürkner, Paul-Christian. 2017. "brms: An R Package for Bayesian Multilevel Models Using Stan." *Journal of Statistical Software* 80: 1–28.

Clements, Ben, and Clive D. Field. 2014. "Public Opinion Toward Homosexuality and Gay Rights in Great Britain." *Public Opinion Quarterly* 78 (2): 523–47.

Dotti Sani, Giulia M., and Mario Quaranta. 2022. "Mapping Changes in Attitudes Towards Gays and Lesbians in Europe: An Application of Diffusion Theory." *European Sociological Review* 38 (1): 124–37.

Earle, Megan, Mark Romeo Hoffarth, Elvira Prusaczyk, Cara MacInnis, and Gordon Hodson. 2021. "A Multilevel Analysis of LGBT (Lesbian, Gay, Bisexual, Transgender) Rights Support Across 77 Countries: The Role of Contact and Country Laws." *British Journal of Social Psychology* 60 (3): 851–69.

Flores, Andrew R. 2021. "Social Acceptance of LGBTI People in 175 Countries and Locations, 1981-2020." Available at `https://williamsinstitute.law.ucla.edu/publications/global-acceptance-index-lgbt/`.

Gabry, Jonah, and Rok Češnovar. 2022. *Cmdstanr: R Interface to "CmdStan"*.

Hildebrandt, Achim, Eva-Maria Truedinger, and Dominik Wyss. 2019. "The Missing Link? Modernization, Tolerance, and Legislation on Homosexuality." *Political Research Quarterly* 72 (3): 539–53.

Hooghe, Marc, and Cecil Meeusen. 2013. "Is Same-Sex Marriage Legislation Related to Attitudes Toward Homosexuality? Trends in Tolerance of Homosexuality in European Countries Between 2002 and 2010." *Sexuality Research and Social Policy* 10 (4): 258–68.

Hu, Yue, Yuehong Cassandra Tai, Hyein Ko, Byung-Deuk Woo, and Frederick Solt. 2024. "An Incomplete Recipe: Unidimensional Latent Variables Do Not Capture the Full Flavor of Democratic Support." SocArXiv. https://osf.io/preprints/socarxiv/rym8g/.

Hu, Yue, Yuehong Cassandra Tai, and Frederick Solt. 2022. "On Data 'Janitor Work' in Political Science: The Case of Thermostatic Support for Democracy." SocArXiv. https://doi.org/10.31235/osf.io/kd7mu.

Inglehart, Ronald, and Christian Welzel. 2005. *Modernization, Cultural Change, and Democ-*

racy. Cambridge: Cambridge University Press.

Jackman, Robert W. 1985. "Cross-National Statistical Research and the Study of Comparative Politics." *American Journal of Political Science* 29 (1): 161–82.

King, Gary, Robert O Keohane, and Sidney Verba. 2021. *Designing Social Inquiry: Scientific Inference in Qualitative Research.* New edition. Princeton: Princeton University Press.

Lax, Jeffrey R., and Justin H. Phillips. 2009. "Gay Rights in the States: Public Opinion and Policy Responsiveness." *American Political Science Review* 103 (3): 367–86.

Paradela-López, Miguel, José-Ignacio Antón, and Alexandra Jima-González. 2023. "How Much Have We Changed? Long-Term Determinants of Attitudes Toward Homosexuality in Chile." *Latin American Research Review* 58 (3): 1–20.

Redman, Shane M. 2018. "Effects of Same-Sex Legislation on Attitudes Toward Homosexuality." *Political Research Quarterly* 71 (3): 628–41.

Reynolds, Andrew. 2013. "Representation and Rights: The Impact of LGBT Legislators in Comparative Perspective." *American Political Science Review* 107 (2): 259–74.

Shor, Boris, Joseph Bafumi, Luke Keele, and David Park. 2007. "A Bayesian Multilevel Modeling Approach to Time-Series Cross-Sectional Data." *Political Analysis* 15 (2): 165–81.

Solt, Frederick. 2014. "Reversing the Arrow? Economic Inequality's Effect on Religiosity." In *Religion and Inequality in America: Research and Theory on Religion's Role in Stratification*, 337–53. Cambridge University Press.

———. 2020a. "DCPO: Dynamic Comparative Public Opinion." Available at the Comprehensive R Archive Network (CRAN). `https://CRAN.R-project.org/package=DCPO`.

———. 2020b. "Measuring Income Inequality Across Countries and Over Time: The Standardized World Income Inequality Database." *Social Science Quarterly* 101 (3): 1183–99.

———. 2020c. "Modeling Dynamic Comparative Public Opinion." SocArXiv. https://doi.org/10.31235/osf.io/d5n9p.

Solt, Frederick, Philip Habel, and J. Tobin Grant. 2011. "Economic Inequality, Relative Power, and Religiosity." *Social Science Quarterly* 92 (2): 447–65.

Solt, Frederick, Yuehong Cassandra Tai, Yue Hu, Hyein Ko, and Byung-Deuk Woo. 2019. "DCPOtools: Tools for Preparing Survey Data for DCPO."

Tai, Yuehong 'Cassandra', Yue Hu, and Frederick Solt. 2024. "Democracy, Public Support, and Measurement Uncertainty." *American Political Science Review* 118 (1): 512–18.

Tukey, John W. 1977. *Exploratory Data Analysis.* Reading, MA: Addison-Wesley.

Wilson, Matthew Charles, and Carl Henrik Knutsen. 2022. "Geographical Coverage in Political Science Research." *Perspectives on Politics* 20 (3): 1024–39.

Winkler, Stephen. 2021. "Media's Influence on LGBTQ Support Across Africa." *British Journal of Political Science* 51 (2): 807–26.

World Bank. 2023. *World Development Indicators.* https://data.worldbank.org/indicator/NY.GDP.PCAP.KD.

Worthen, Meredith G. F. 2013. "An Argument for Separate Analyses of Attitudes Toward Lesbian, Gay, Bisexual Men, Bisexual Women, MtF and FtM Transgender Individuals." *Sex Roles* 68: 703–23.

Yang, Alan S. 1997. "Trends: Attitudes Toward Homosexuality." *Public Opinion Quarterly* 61 (3): 477–507.

Zhang, Tony Huiquan, and Robert Brym. 2019. "Tolerance of Homosexuality in 88 Countries: Education, Political Freedom, and Liberalism." *Sociological Forum* 34 (2): 501–21.

Zhou, Min, and Tianyang Hu. 2020. "Social Tolerance of Homosexuality: A Quantitative Comparison of Mainland China, Singapore, and Taiwan." *Chinese Sociological Review* 52 (1): 27–55.