Online Appendix

Sexuality, Migration, and LGB Policy: A Portrait of Immigrants in Same-Sex Couples in the United States

Contents

A Descriptive Statistics

Table A.1: Summary statistics for state-country-survey year analysis, the data used in Table 3 in the main paper.

Characteristic	N = 37,980
Percent in same-sex couples	0.00 (0.00, 0.00)
State LGB policy score	2 (0, 5)
Country LGB policy score	1 (0, 3)
Distance (km)	8,915 (7,411, 11,716)
Contiguous border	1,135 (3.0%)
Common official language	8,951 (24%)
Common ethnic language	17,070 (45%)
Ever colonial relationship	1,940 (5.1%)
Per-cap. GDP difference	29 (22, 32)
Unemployment difference	-1.5 (-5.4, 1.2)
Liberal democracy (V-Dem)	0.42 (0.21, 0.76)
Proportion same-country stock	0.003 (0.001, 0.009)
State unemployment rate	5.70 (4.26, 7.77)
State per-capita income	31.9 (28.8, 36.3)

[1] Median (IQR); n (%)

Table A.2: Summary statistics for individual-level dataset, with survey weights applied

Characteristic	Different-sex, N = 103,084,872	Same-sex, N = 700,596
Country LGB policy score	2 (0, 2)	2 (1, 4)
State LGB policy	3.00 (1.00, 5.00)	5.00 (2.00, 6.00)
Sex		
Female	54,857,930 (53%)	246,509 (35%)
Male	48,226,942 (47%)	454,087 (65%)
Age	41 (35, 49)	41 (34, 48)
Education		
< HS	23,598,638 (23%)	87,394 (12%)
college	39,942,602 (39%)	347,102 (50%)
HS	25,921,495 (25%)	151,375 (22%)
some col	13,622,137 (13%)	114,725 (16%)
Number of children	1 (0, 2)	0 (0, 1)
Annual gross income (thousands)	15 (3, 34)	21 (8, 46)
IHS-transformed income	3.42 (1.88, 4.23)	3.74 (2.74, 4.53)
No income	21,012,280 (20%)	96,324 (14%)
Year of immigration	2,001 (1,997, 2,007)	2,003 (1,998, 2,010)
Distance (km)	8,085 (2,468, 12,267)	7,437 (3,000, 11,183)
Contiguous border	28,442,441 (28%)	164,903 (24%)
Common official language	28,762,647 (28%)	202,054 (29%)
Common ethnic language	70,533,283 (68%)	473,882 (68%)
Ever colonial relationship	7,680,169 (7.5%)	97,684 (14%)
Per-cap. GDP difference	27 (23, 32)	26 (19, 31)
Unemployment difference	0.9 (-1.6, 2.2)	0.4 (-2.7, 1.9)
Liberal democracy (V-Dem)	0.42 (0.26, 0.57)	0.45 (0.30, 0.75)
Proportion same-country stock	0.03 (0.01, 0.20)	0.02 (0.00, 0.04)
State unemployment rate	5.72 (4.33, 7.98)	4.87 (4.14, 7.10)
State per-capita income	34.3 (31.0, 39.1)	35.7 (31.8, 41.1)

[1] Median (IQR); n (%)

B Additional Descriptive Trends

Figure B.1 examines within-country selection. For each immigrant in the dataset, it subtracts off their year- and country-level average for high school completion, college completion, annual income, and occupational prestige score. The figure displays results separately for immigrants in same- and different-sex couples. The lines for different-sex couples are nearly 0, since they are the overwhelming majority in the dataset. The lines for same-sex couples show clear positive selection relative to other immigrants from that country.

Figure B.2 relies on the data used in the regression models, with the vertical axis showing the proportion of immigrants from each country in same-sex couples in each state, in each survey year, from 2008 to 2019. In the left panel, the horizontal axis represents the origin country policy score in the mean year of immigration for that group, while the right panel's horizontal axis represents the state policy score in the survey year. The lines shows the bivariate regression lines.

Finally, Tables B.1 and B.2 show the top sending countries in the data by absolute numbers of

same- and different-sex couples. Although there are some differences, the most common sending countries for immigrants to the U.S. dominate the lists.

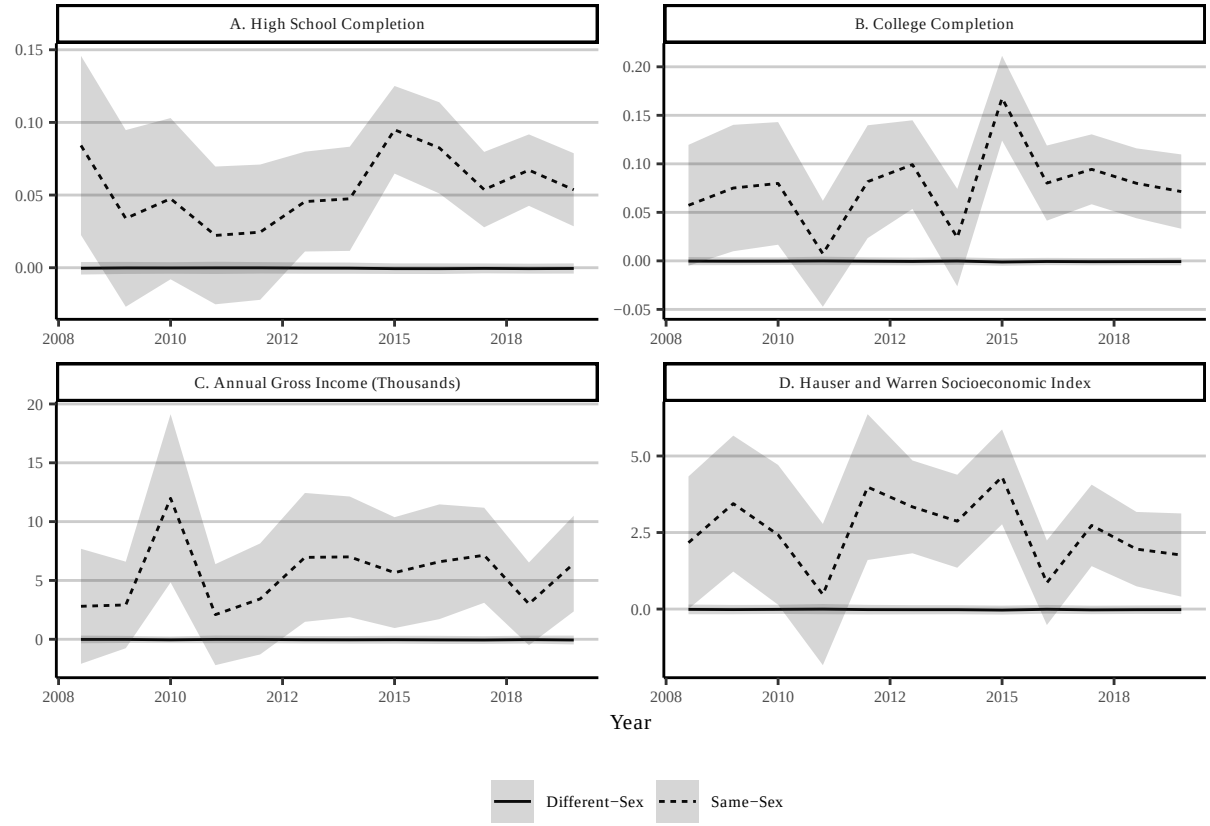

Figure B.1: Selection descriptive statistics for immigrants in couples 2008-2019, with survey weights and 95% confidence intervals. Each panel subtracts the ACS year- and country-level average from each immigrant originating from that country. Values above 0 indicate positive selection. All currency in 1000s of 1999 dollars.

Table B.1: Top 10 sending countries of immigrants in same-sex couples in the American Community Survey 2008-2019

Birth country	n same-sex (unweighted)	n same-sex (weighted)
Mexico	1,170	129,124
Philippines	522	46,612
Canada	417	35,779
Brazil	321	29,536
China	311	27,824
India	264	25,474
Colombia	249	23,838
United Kingdom, ns	248	22,451
Germany	176	14,181
Vietnam	167	14,913

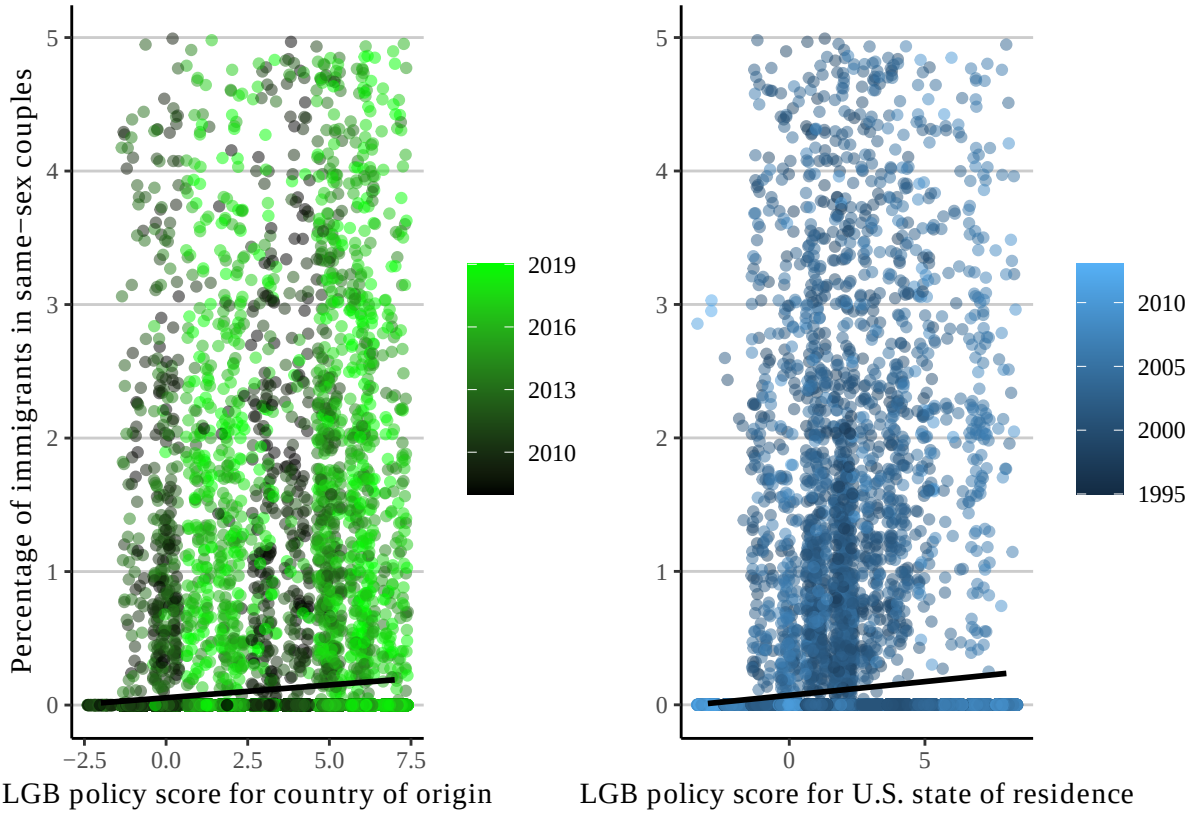

Figure B.2: Proportion of immigrants from each country in same-sex couples in each state, in each survey year, from 2008 to 2019. The left panel's horizontal axis represents the origin country policy score in the mean year of immigration for that group, while the right panel's horizontal axis represents the state policy score in the survey year. Points are jittered for clarity, and percentages above 5 are not shown.

Table B.2: Top 10 sending countries of immigrants in different-sex couples in the American Community Survey 2008-2019

Birth country	n different-sex (unweighted)	n different-sex (weighted)
Mexico	201,042	25,973,611
India	99,990	11,427,502
China	63,656	6,498,909
Philippines	49,798	4,822,206
Vietnam	28,302	2,855,083
Canada	27,702	2,468,830
El Salvador	18,769	2,604,401
Colombia	17,332	1,951,142
Brazil	14,565	1,672,953
Other USSR/Russia	13,732	1,440,483

C Robustness Checks

C.1 Adjusting proportions based on empirical mismatch rates

Published papers using the ACS to study same-sex couples overwhelmingly use the method by Gates & Steinberger (2009) employed our main paper to adjust for misreporting, where we drop all respondents that had either their relationship or sex variable allocated by the Census Bureau. However here we implement a novel method to adjust proportions of estimated immigrants in same-sex couples, based on the estimated mismatch rates from two U.S. Census Bureau studies. Beginning in 2019, the ACS provides explicit categories for "Opposite-sex husband/wife/spouse," "Opposite-sex unmarried partner," "Same-sex husband/wife/spouse," and "Same-sex unmarried partner" (Walker & Taylor, 2021), so sex misreporting in the 2019 data is unlikely. Hence in most sensitivity analyses below, 2019 estimates are not adjusted for misreporting.

In a Census Bureau working paper, Kreider & Lofquist (2015) use personal information such as names and addresses match same-sex couples from the 2010 ACS to Social Security administrative data. They find that 57 percent of married couples coded as same-sex in the ACS are coded as different-sex in the administrative data. The corresponding sex mismatch rate for unmarried same-sex couples is 7 percent. (Our data include 4,632 married and 4,428 unmarried same-sex immigrant couples.) A follow-up study (Kreider et al., 2017) shows that these mismatch rates appear to have fallen: In a 2016 ACS test module that included explicit categories for different- and same-sex spouses and partners, 31 percent of married and 3 percent of unmarried same-sex couples had inconsistent sex responses. This decreasing mismatch rate may be due to the greater numbers of same-sex couples openly identifying themselves as well as the growing popularity of responding to the ACS via Internet (see Table C.1), a response mode introduced in 2013 which is now the default (U.S. Census Bureau, 2017). In the 2016 test of the ACS, the mismatch rate for mail-in responses was 47 and 6 percent for married and unmarried same-sex couples, respectively, whereas for Internet responses they were only 22 and 2.4 percent (Kreider et al., 2017). A computer-assisted telephone interviewing (CATI) or computer-assisted personal interviewing (CAPI) response mode is sometimes administered as well, but the 2016 study did not assess its error rate. In the 2010 ACS, Kreider & Lofquist (2015) find CATI/CAPI sex reporting mismatch for 46 and 13 percent for married and unmarried same-sex couples, respectively. In our sample of immigrants in same-

sex couples, 2,257 responded by mail, 1,202 responded by CAPI/CATI, and 3,618 responded by Internet survey. Response mode proportions by couple type are shown in Table C.1.

Table C.1: Response mode proportions for different- and same-sex couples, by survey year. Proportions are within columns.

Response mode	Couple type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
CATI/CAPI	Different-sex	0.455	0.443	0.409	0.423	0.400	0.356	0.351	0.335	0.317	0.291	0.265	0.234
Internet	Different-sex	0.000	0.000	0.000	0.000	0.000	0.443	0.466	0.498	0.530	0.562	0.589	0.626
Mail	Different-sex	0.545	0.557	0.591	0.577	0.600	0.200	0.184	0.166	0.152	0.147	0.146	0.139
CATI/CAPI	Same-sex	0.286	0.241	0.213	0.292	0.232	0.147	0.190	0.136	0.186	0.154	0.130	0.105
Internet	Same-sex	0.000	0.000	0.000	0.000	0.000	0.581	0.587	0.679	0.629	0.674	0.695	0.697
Mail	Same-sex	0.714	0.759	0.787	0.708	0.768	0.273	0.223	0.185	0.185	0.172	0.175	0.197

Figure C.1 takes Model 5 from Table 3 (which includes country and state controls and fixed effects) and reduces the proportions of same-sex couples in the data for pre-2019 data. It varies the percentage of misreported same-sex married couples from 0 to 90 percent and of unmarried couples from 0 to 14 percent; the horizontal axis shows a weighted average of misreporting between these two groups. Highlighted in dashed bars are the empirical mismatch rates found in the two studies by Kreider & Lofquist (2015) and Kreider et al. (2017). We see that even extremely high misreporting rates in the pre-2019 ACS do not render these coefficients insignificant.

Table C.2 shows the mismatch rates estimated by Kreider & Lofquist (2015) and Kreider & Lofquist (2015). In the analysis below (Table C.3), we use these apparent mismatch rates to adjust proportions used in models in Table 3 of the main paper. Each proportion is adjusted separately by marital status and response mode. For example, all internet respondents coded as being in married same-sex couples have their final proportion reduced by 22.5%. For mail-in responses, the proportions are reduced by the average between the two studies (53.2 percent for married and 6.3 percent for unmarried couples). Results are quite robust to high levels of misreporting.

Table C.2: Mismatch rates from Kreider & Lofquist (2015) and Kreider et al. (2017)

Study Year	Relationship	Mail	Internet	CAPI/CATI	Overall
2,010	Married	59%	NA	46%	57.3%
2,010	Unmarried Partner	7%	NA	13%	7%
2,016	Married	47.4%	22.5%	Unknown	35%
2,016	Unmarried Partner	5.6%	2.4%	Unknown	3.4%

Source: American Community Survey 2008-2019. Authors' calculations.

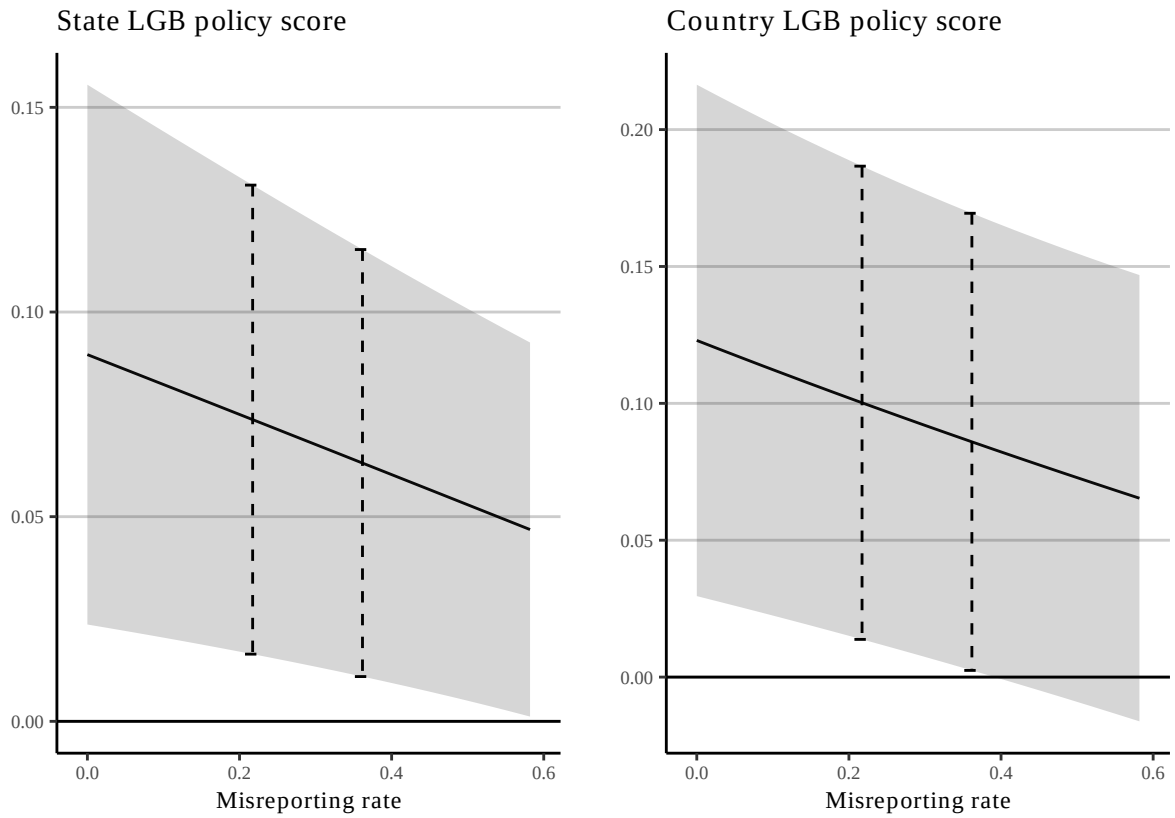

Figure C.1: Coefficients for sending-country and U.S. state LGB policy context for Model 5 from Table 3 in the main paper, adjusted for hypothetical misreporting rates of married and unmarried same-sex couples in pre-2019 data. Ribbon shows 95 percent confidence intervals and dashed bars show estimated misreporting from the 2010 and 2016 U.S. Census Bureau tests on the ACS.

Table C.3: Adjusted by rates of empirical sex mismatch by married, unmarried, and response mode. Percent same-sex in by country of origin, U.S. state, and survey year.

	Dependent variable:						
	Percent in same-sex couples by state-country-year						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Country LGB policy score	0.119***		0.116***	0.219**	0.139†	0.214**	0.133†
	(0.023)		(0.023)	(0.071)	(0.071)	(0.071)	(0.070)
State LGB policy score		0.087***	0.083***	0.112**	0.083*	0.102*	0.071†
		(0.017)	(0.016)	(0.035)	(0.037)	(0.040)	(0.042)
State score × country-score					0.020***		0.020***
					(0.006)		(0.006)
Post-2013						0.062	0.074
						(0.074)	(0.074)
State controls and FEs?	no	no	no	yes	yes	yes	yes
Country controls and FEs?	no	no	no	yes	yes	yes	yes
Observations	37,980	37,980	37,980	37,980	37,980	37,980	37,980

Note: †$p<0.1$; *$p<0.05$; **$p<0.01$; ***$p<0.001$. Country and state two-way clustered standard errors are shown in parentheses. State controls include unemployment rate and per-capita income. Country controls include population-weighted distance, contiguous border, common official language, common ethnic language, colonial relationship, per-capita GDP differential, unemployment differential, proportion same-country stock, and democracy.
Source: American Community Survey 2008-2019. Authors' calculations.

C.2 Alternate specifications

C.2.1 Relative immmigrant population-weighted regressions

Although our analysis for the most part has been at the country or state levels, there is the question of whether the results presented are driven by smaller, progressive countries that send relatively few immigrants. In Table C.4, we re-specify these models using Weighted Least Squares, weighting by the relative size of the immigrant stock in the average year of immigration. Coefficients for origin-country and state policy scores become insignificant in models with controls and fixed effects, but their interaction remains significant throughout.

Table C.4: Weighted regression of percent same-sex in by country of origin, U.S. state, and survey year.

	Dependent variable:						
	Percent in same-sex couples by state-country-year						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Country LGB policy score	0.142***		0.133***	0.227	0.134	0.228	0.134
	(0.026)		(0.025)	(0.226)	(0.222)	(0.228)	(0.225)
State LGB policy score		0.136***	0.133***	0.016	−0.029	0.018	−0.029
		(0.032)	(0.032)	(0.063)	(0.070)	(0.060)	(0.067)
State score × country-score					0.024***		0.024***
					(0.006)		(0.006)
Post-2013						−0.008	0.001
						(0.117)	(0.117)
State controls and FEs?	no	no	no	yes	yes	yes	yes
Country controls and FEs?	no	no	no	yes	yes	yes	yes
Observations	37,980	37,980	37,980	37,980	37,980	37,980	37,980

Note: †p<0.1; *p<0.05; **p<0.01; ***p<0.001. Country and state two-way clustered standard errors are shown in parentheses. State controls include unemployment rate and per-capita income. Country controls include population-weighted distance, contiguous border, common official language, common ethnic language, colonial relationship, wage differential, unemployment differential, proportion same-country stock, and democracy.
Source: American Community Survey 2008-2019. Authors' calculations.

C.2.2 Married, one-immigrant, and two-immigrant couples

We assess whether the results in Table 3 are driven by trends for married couples or those with one U.S.-born partner. Table C.5 restricts the sample to only married couples, Table C.6 to only couples with one immigrant and one U.S.-born member, and Table C.7 to only couples consisting of two immigrants. Results are substantively the same for married and one-immigrant couples, and less strong for two-immigrant couples. This implies that married and mixed-nativity couples are driving the main results.

Table C.5: Only married couples: Alternate specifications of OLS regressions of percent same-sex in by country of origin, U.S. state, and survey year.

	Dependent variable:						
	Percent in same-sex couples by state-country-year						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Country LGB policy score	0.094***		0.090***	0.242***	0.179***	0.227***	0.161***
	(0.016)		(0.016)	(0.048)	(0.049)	(0.047)	(0.048)
State LGB policy score		0.097***	0.093***	0.103***	0.080*	0.067*	0.042
		(0.013)	(0.013)	(0.030)	(0.032)	(0.034)	(0.035)
State score × country-score					0.016**		0.016**
					(0.005)		(0.005)
Post-2013						0.218***	0.228***
						(0.059)	(0.058)
State controls and FEs?	no	no	no	yes	yes	yes	yes
Country controls and FEs?	no	no	no	yes	yes	yes	yes
Observations	37,980	37,980	37,980	37,980	37,980	37,980	37,980

Note: †p<0.1; *p<0.05; **p<0.01; ***p<0.001. Country and state two-way clustered standard errors are shown in parentheses. State controls include unemployment rate and per-capita income. Country controls include population-weighted distance, contiguous border, common official language, common ethnic language, colonial relationship, wage differential, unemployment differential, proportion same-country stock, and democracy.
Source: American Community Survey 2008-2019. Authors' calculations.

Table C.6: Only one-immigrant couples: Alternate specifications of OLS regressions of percent same-sex in by country of origin, U.S. state, and survey year.

	Dependent variable:						
	Percent in same-sex couples by state-country-year						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Country LGB policy score	0.094*		0.086*	0.335***	0.261**	0.316***	0.240**
	(0.039)		(0.039)	(0.071)	(0.081)	(0.071)	(0.078)
State LGB policy score		0.192***	0.189***	0.203**	0.170*	0.161*	0.125†
		(0.038)	(0.039)	(0.071)	(0.073)	(0.075)	(0.074)
State score × country-score					0.019†		0.019†
					(0.011)		(0.011)
Post-2013						0.260	0.271
						(0.168)	(0.165)
State controls and FEs?	no	no	no	yes	yes	yes	yes
Country controls and FEs?	no	no	no	yes	yes	yes	yes
Observations	27,836	27,836	27,836	27,836	27,836	27,836	27,836

Note: †$p<0.1$; *$p<0.05$; **$p<0.01$; ***$p<0.001$. Country and state two-way clustered standard errors are shown in parentheses. State controls include unemployment rate and per-capita income. Country controls include population-weighted distance, contiguous border, common official language, common ethnic language, colonial relationship, wage differential, unemployment differential, proportion same-country stock, and democracy.
Source: American Community Survey 2008-2019. Authors' calculations.

Table C.7: Only two-immigrant couples: Alternate specifications of OLS regressions of percent same-sex in by country of origin, U.S. state, and survey year.

	Dependent variable:						
	Percent in same-sex couples by state-country-year						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Country LGB policy score	0.074***		0.071**	0.106	0.039	0.100	0.032
	(0.022)		(0.022)	(0.075)	(0.067)	(0.074)	(0.066)
State LGB policy score		0.067***	0.064***	0.091*	0.070	0.076	0.054
		(0.015)	(0.014)	(0.043)	(0.046)	(0.050)	(0.054)
State score × country-score					0.016**		0.016**
					(0.006)		(0.006)
Post-2013						0.090	0.100
						(0.114)	(0.114)
State controls and FEs?	no	no	no	yes	yes	yes	yes
Country controls and FEs?	no	no	no	yes	yes	yes	yes
Observations	30,535	30,535	30,535	30,535	30,535	30,535	30,535

Note: †p<0.1; *p<0.05; **p<0.01; ***p<0.001. Country and state two-way clustered standard errors are shown in parentheses. State controls include unemployment rate and per-capita income. Country controls include population-weighted distance, contiguous border, common official language, common ethnic language, colonial relationship, wage differential, unemployment differential, proportion same-country stock, and democracy.
Source: American Community Survey 2008-2019. Authors' calculations.

D Full Regression Table

Table D.1: Percent same-sex in by country of origin, U.S. state, and survey year.

	Dependent variable:						
	Percent in same-sex couples by state-country-year						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Country LGB policy score	0.140***		0.136***	0.244***	0.156*	0.231***	0.141*
	(0.025)		(0.026)	(0.068)	(0.068)	(0.067)	(0.066)
State LGB policy score		0.106***	0.101***	0.139***	0.108*	0.109*	0.075
		(0.020)	(0.020)	(0.040)	(0.042)	(0.047)	(0.049)
State score × country-score					0.022***		0.022***
					(0.007)		(0.007)
Post-2013						0.183*	0.196*
						(0.089)	(0.089)
Distance (km)				0.005***	0.005***	0.005***	0.005***
				(0.001)	(0.001)	(0.001)	(0.001)
Contiguous border				7.500	3.750	8.890	5.210
				(14.700)	(14.700)	(14.700)	(14.800)
Common official language				−50.000***	−48.100***	−50.500***	−48.600***
				(8.150)	(7.810)	(8.310)	(7.970)
Common ethnic language				26.100***	25.100***	26.300***	25.400***
				(4.150)	(3.990)	(4.220)	(4.060)
Ever colonial relationship				34.500***	33.000***	35.000***	33.500***
				(5.140)	(4.870)	(5.300)	(5.030)
Per-cap. GDP difference				−0.009	−0.011	−0.011	−0.012
				(0.023)	(0.023)	(0.023)	(0.023)
Unemployment difference				−0.005	0.00004	−0.008	−0.003
				(0.018)	(0.018)	(0.018)	(0.018)
Liberal democracy (V-Dem)				0.267	0.307	0.220	0.257
				(0.661)	(0.658)	(0.659)	(0.656)
Proportion same-country stock				−1.370	11.400	−6.130	6.430
				(57.000)	(57.300)	(57.100)	(57.400)
State unemployment rate				0.028	0.026	0.045†	0.044†
				(0.022)	(0.022)	(0.023)	(0.023)
State per-capita income				0.071**	0.069**	0.067**	0.065*
				(0.026)	(0.026)	(0.026)	(0.026)
Constant	0.680***	0.632***	0.429***	−47.900***	−45.900***	−48.400***	−46.400***
	(0.065)	(0.054)	(0.064)	(7.690)	(7.350)	(7.830)	(7.490)
State controls and FEs?	no	no	no	yes	yes	yes	yes
Country controls and FEs?	no	no	no	yes	yes	yes	yes
Observations	37,980	37,980	37,980	37,980	37,980	37,980	37,980

Note: †p<0.1; *p<0.05; **p<0.01; ***p<0.001. Country and state two-way clustered standard errors are shown in parentheses.
Source: American Community Survey 2008-2019. Authors' calculations.

E References

Gates, G. J., & Steinberger, M. D. (2009). Same-sex unmarried partner couples in the American Community Survey: The role of misreporting, miscoding and misallocation. *Annual Meetings of the Population Association of America, Detroit, MI.*

Kreider, R. M., Bates, N., & Mayol-García, Y. (2017). Improving measurement of same-sex couple households in Census Bureau surveys: Results from recent tests. *PAA 2017 Annual Meeting.*

Kreider, R. M., & Lofquist, D. A. (2015). *Matching survey data with administrative records to evaluate reports of same-sex married couple households* ({{SEHSD Working Paper}} No. 2019-30).

U.S. Census Bureau. (2017). *American Community Survey Information Guide.* U.S. Census Bureau.

Walker, L., & Taylor, D. (2021). *Same-Sex Couple Households: 2019* (American {{Community Survey Briefs}} ACSBR-005). U.S. Census Bureau.