Online Appendix
Policy Effects on Mixed-Citizenship, Same-Sex Unions: A Triple-Difference Analysis

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A Sensitivity to Hypothetical Sex Misreporting

Published papers using the ACS to study same-sex couples overwhelmingly use the method by Gates and 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 and Taylor 2021), so sex misreporting in the 2019 data is unlikely, but we still adjust mismatch rates in these years as well.

   In a Census Bureau working paper, Kreider and 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 7 percent of unmarried couples coded as same-sex in the ACS are coded as different-sex in the administrative data, and 57 percent of married same-sex couples. A follow-up study (Kreider, Bates, and Mayol-García 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.

   To test the robustness of our results these levels of misreporting, we re-assign up to 60 percent of counts of individuals in same-sex couples to counts in different-sex couples, within state, year, and citizenship group. We then re-fit the models reported in the main paper, with state-level controls. Coefficients for the three-way interaction of interest are shown in Figure 1. Results are extremely robust to even high levels of sex misreporting. Since we model a relative rather than absolute change, this robustness makes sense.
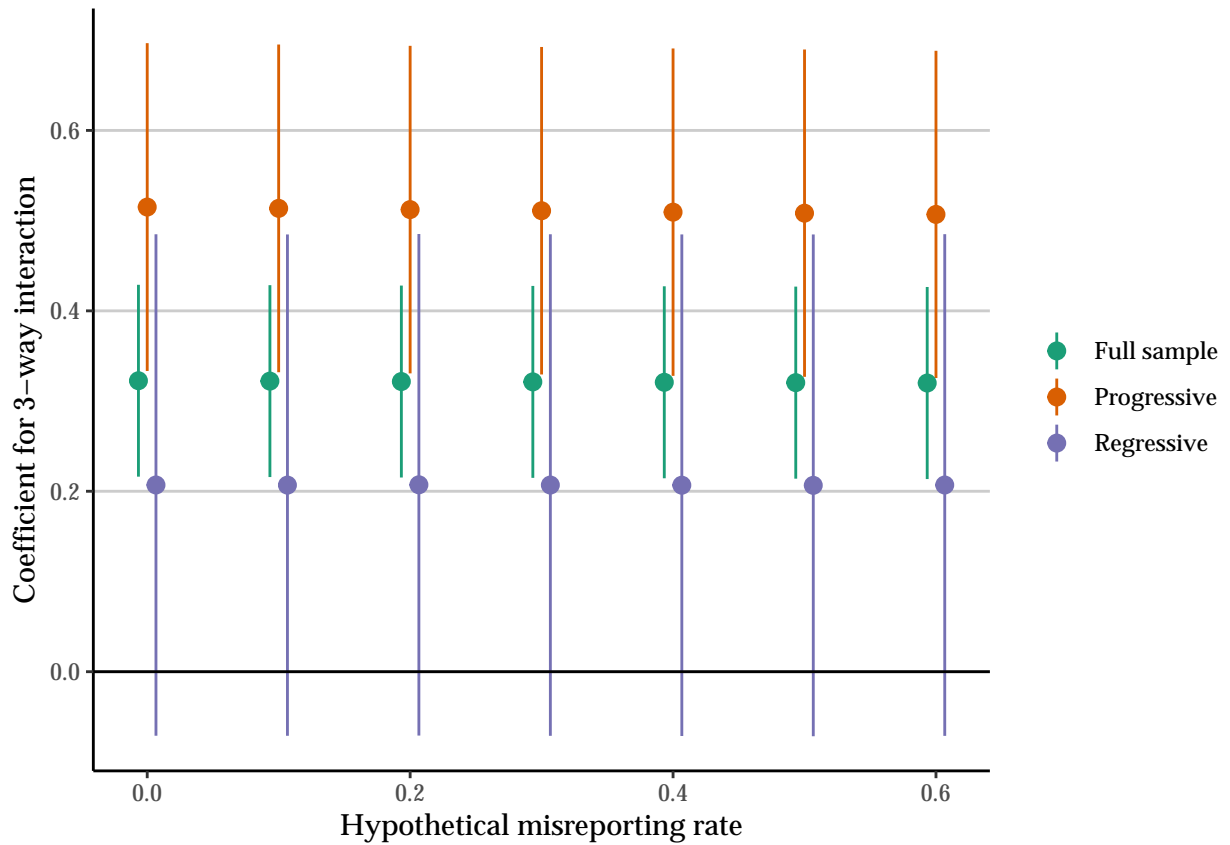
Figure 1: Coefficients for the three-way interaction between indicators for same-sex, mixed-citizenship, and post-2013 survey year from Table 5, with counts of individuals in same-sex couples in the sample reduced by 10 to 60 percent

B   Alternative Outcome Variables

Table 1: Mixed vs. Same Nativity: Triple-difference (DDD), quasi-Poisson regressions of counts of individuals in mixed-nativity, same-sex couples couples, stratifying by state-country-year-group average policy environment

	Full sample	Progressive	Regressive
Post-2013 × Same-sex × Mixed-nativity	0.144 **	0.383 ***	0.067
	(0.050)	(0.081)	(0.076)
Post-2013 × Same-sex	0.372 ***	0.375 ***	0.375 ***
	(0.019)	(0.020)	(0.020)
Post-2013 × Mixed-nativity	0.150 ***	0.535 ***	0.122 ***
	(0.010)	(0.041)	(0.017)
Post-2013	-0.062 **	-0.089 ***	-0.093 ***
	(0.021)	(0.022)	(0.020)
State LGB policy	0.004	0.006	0.006
	(0.004)	(0.004)	(0.004)
State unemployment	0.001	-0.000	0.000
	(0.003)	(0.003)	(0.003)
State per-capita income	0.004	0.005 †	0.003
	(0.003)	(0.003)	(0.003)
Observations	2400	2400	2400

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. The "Regressive" sample includes only countries with a LGB policy score less than 0, and the "Progressive" sample includes only those with a score greater than 3. Group-clustered standard errors shown in parentheses. Source: American Community Survey 2008-2019. Authors' calculations.

Table 2: Immigrant-containing couples vs. two U.S.-born: Triple-difference (DDD), quasi-Poisson regressions of counts of individuals in immigrant-containing, same-sex couples couples, stratifying by state-country-year-group average policy environment

	Full sample	Progressive	Regressive
Post-2013 × Same-sex × Immigrant-containing	0.165 ***	0.343 ***	0.025
	(0.042)	(0.082)	(0.079)
Post-2013 × Same-sex	0.376 ***	0.376 ***	0.376 ***
	(0.019)	(0.020)	(0.020)
Post-2013 × Immigrant-containing	0.139 ***	0.618 ***	0.099 **
	(0.019)	(0.047)	(0.031)
Post-2013	-0.063 **	-0.091 ***	-0.093 ***
	(0.020)	(0.019)	(0.019)
State LGB policy	0.005	0.006	0.006 †
	(0.004)	(0.004)	(0.004)
State unemployment	0.002	0.000	0.000
	(0.003)	(0.003)	(0.003)
State per-capita income	0.001	0.004	0.003
	(0.003)	(0.003)	(0.002)
Observations	2400	2400	2400

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. The "Regressive" sample includes only countries with a LGB policy score less than 0, and the "Progressive" sample includes only those with a score greater than 3. Group-clustered standard errors shown in parentheses. Source: American Community Survey 2008-2019. Authors' calculations.

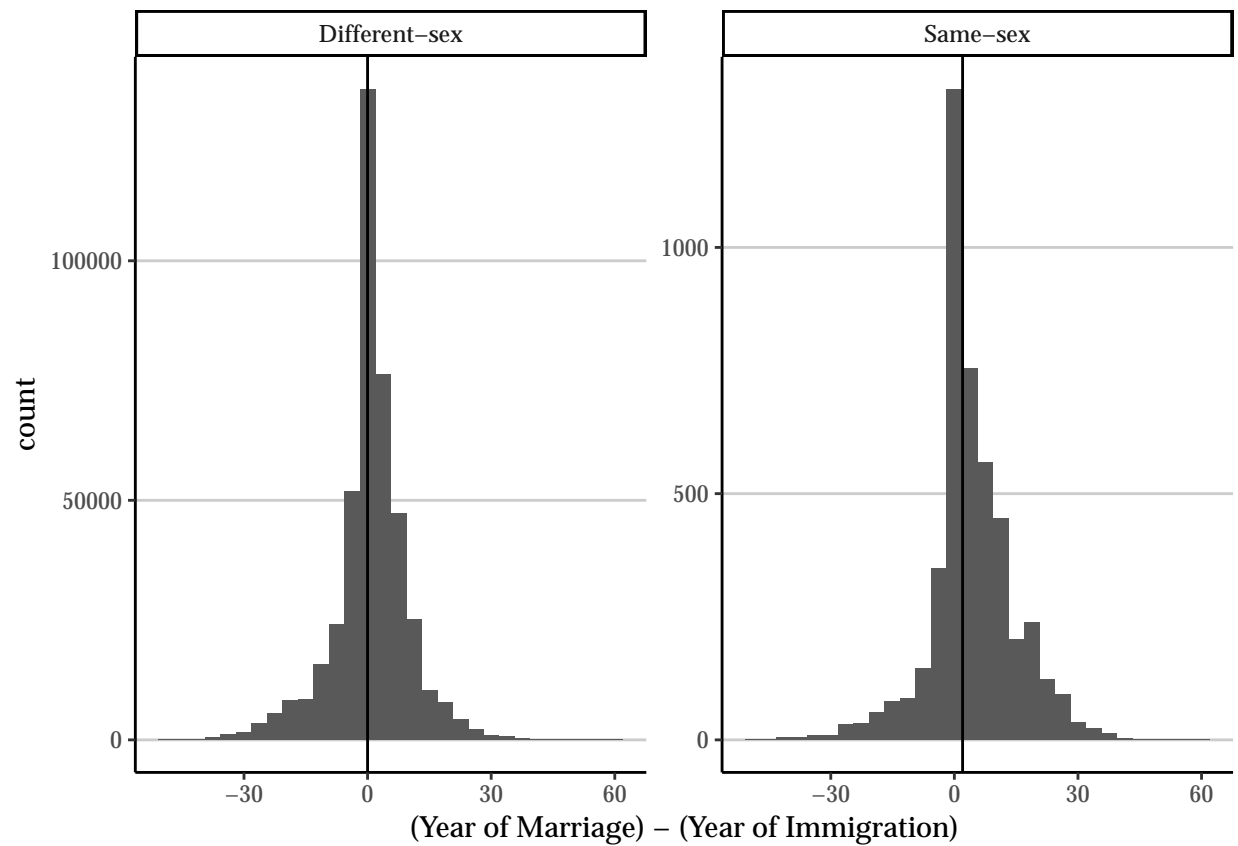# C   Timing of Migration and Union Formation

Figure 2: Distribution of difference in year of marriage and year of immigration for the noncitizen in mixed-citizenship couples
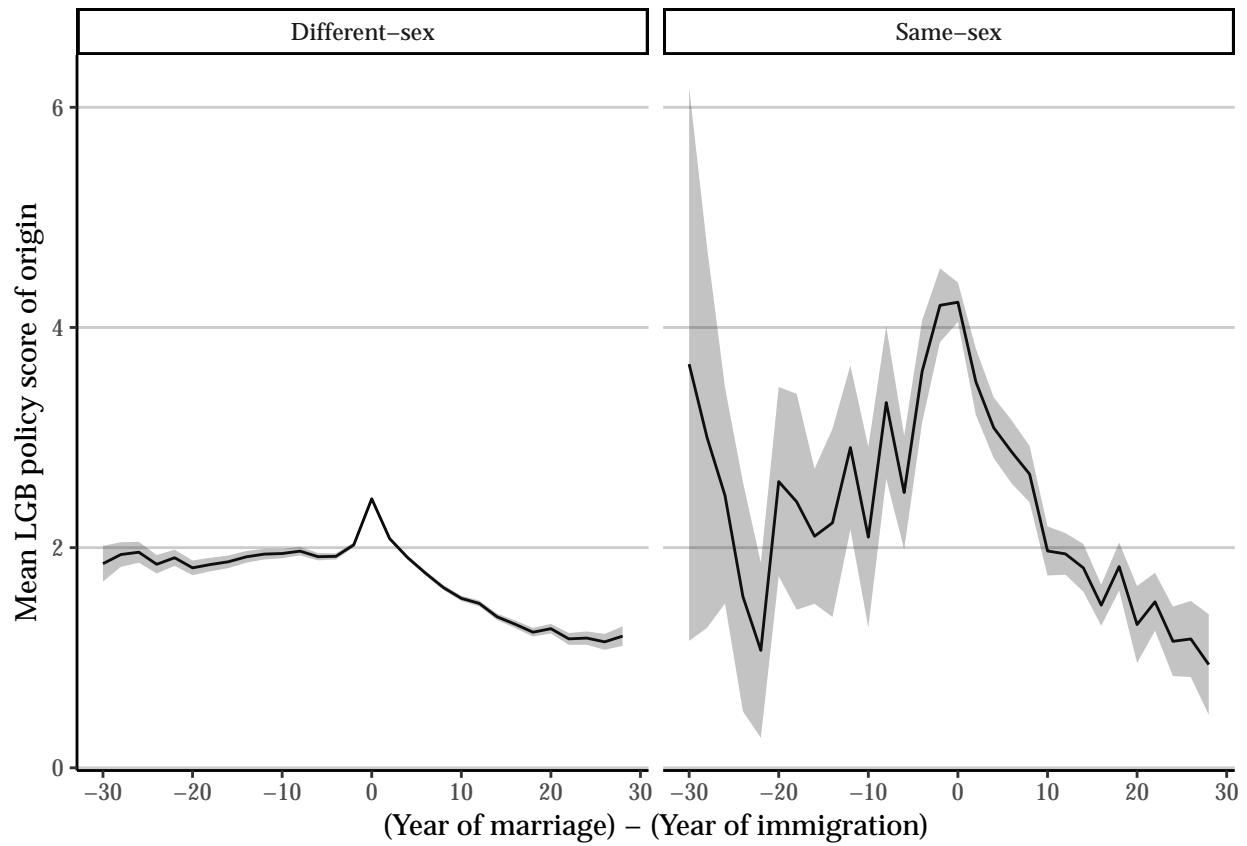
Figure 3: Mean LGB policy score over difference in year of marriage and year of immigration. Lines are smoothed by categorizing data into two-year bins.

Table 3: Among married, mixed-citizenship couples, counts of same-sex and different-sex couples that were married before and after immigration.

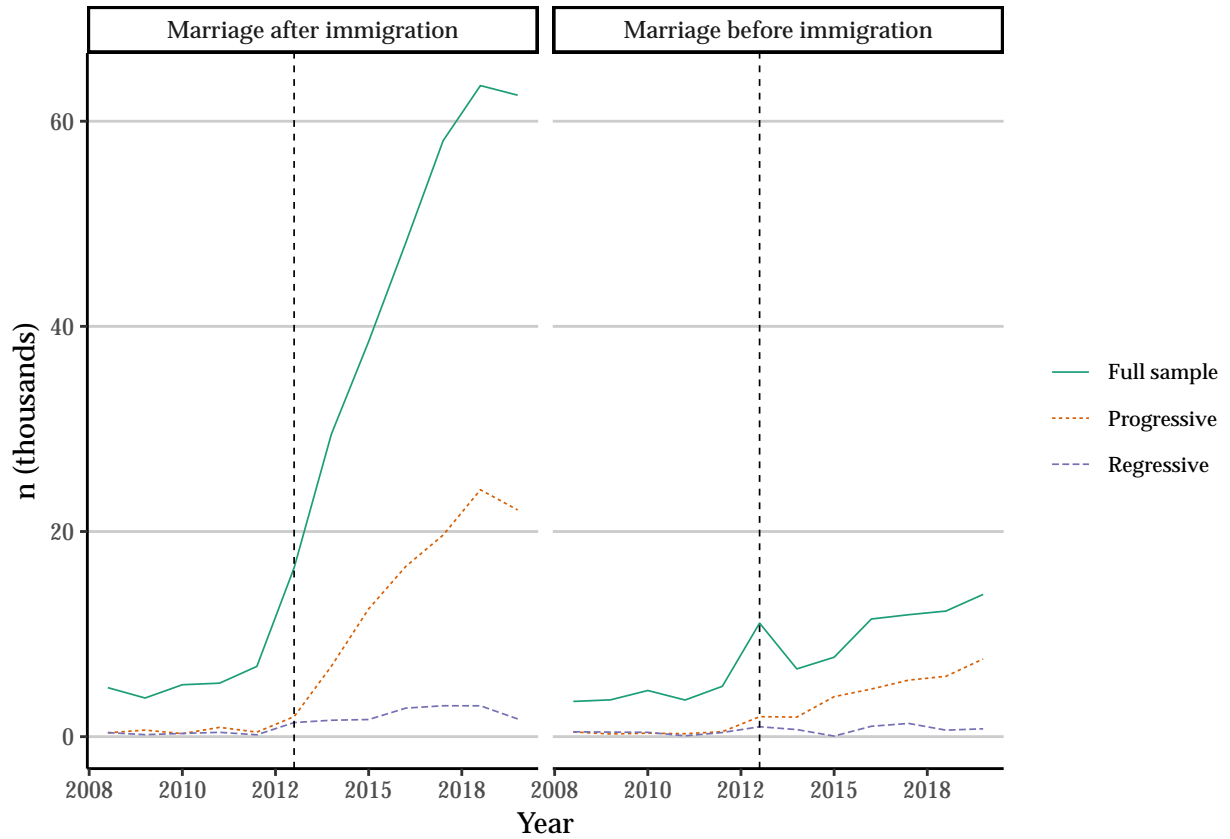| Same-sex	Married before immigration	n (unweighted)	n (weighted)
FALSE	FALSE	276,366	29,498,152
FALSE	TRUE	140,068	14,910,950
TRUE	FALSE	3,225	306,086
TRUE	TRUE	622	58,129

Figure 4: Estimated counts of individuals in mixed-citizenship, same-same, married couples from the American Community Survey, stratified by whether couples married before or after immigration of the non-citizen partner. The Regressive sample includes only countries with a LGB policy score less than 0, and the Progressive sample includes only those with a score greater than 3.

Table 4: Married before immigration: Triple-difference (DDD), quasi-Poisson regressions of counts of individuals in mixed-citizenship, same-sex couples, stratifying by state-country-year-group average policy environment. Models include controls for state LGB policy, state unemployment, and state per-capita income. The full sample is limited to married couples, and the mixed-citizenship sample is limited to couples where the non-citizen partner immigrated after marriage.

	Full sample	Progressive	Regressive
Post-2013 × Same-sex × Mixed-citizenship	-1.401 ***	-0.794 ***	-1.737 ***
	(0.125)	(0.160)	(0.300)
Post-2013 × Same-sex	1.972 ***	2.043 ***	2.036 ***
	(0.067)	(0.069)	(0.071)
Post-2013 × Mixed-citizenship	0.192 ***	0.729 ***	0.179 ***
	(0.026)	(0.060)	(0.051)
Post-2013	-0.100 ***	-0.129 ***	-0.133 ***
	(0.025)	(0.024)	(0.022)
State LGB policy	0.003	0.005	0.005
	(0.004)	(0.004)	(0.004)
State unemployment	0.001	0.000	0.001
	(0.004)	(0.004)	(0.004)
State per-capita income	0.004	0.005	0.003
	(0.003)	(0.003)	(0.003)
Observations	2400	2400	2400

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. The "Regressive" sample includes only countries with a LGB policy score less than 0, and the "Progressive" sample includes only those with a score greater than 3. Group-clustered standard errors shown in parentheses. Source: American Community Survey 2008-2019. Authors' calculations.

Table 5: Married after immigration: Triple-difference (DDD), quasi-Poisson regressions of counts of individuals in mixed-citizenship, same-sex couples, stratifying by state-country-year-group average policy environment. The full sample is limited to married couples, and the mixed-citizenship sample is limited to couples where the non-citizen partner immigrated before or in the same year as marriage.

	Full sample	Progressive	Regressive
Post-2013 × Same-sex ×			
Mixed-citizenship	-0.043	0.624 ***	-0.271
	(0.095)	(0.160)	(0.286)
Post-2013 × Same-sex	1.968 ***	2.046 ***	2.032 ***
	(0.069)	(0.069)	(0.070)
Post-2013 ×			
Mixed-citizenship	0.080 ***	0.466 ***	0.034
	(0.016)	(0.049)	(0.043)
Post-2013	-0.101 ***	-0.129 ***	-0.133 ***
	(0.024)	(0.024)	(0.022)
State LGB policy	0.004	0.005	0.005
	(0.004)	(0.004)	(0.004)
State unemployment	0.001	0.000	0.000
	(0.004)	(0.004)	(0.004)
State per-capita income	0.005	0.005 †	0.003
	(0.003)	(0.003)	(0.003)
Observations	2400	2400	2400

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. The "Regressive" sample includes only countries with a LGB policy score less than 0, and the "Progressive" sample includes only those with a score greater than 3. Group-clustered standard errors shown in parentheses. Source: American Community Survey 2008-2019. Authors' calculations.

D Lagged Origin-Country LGB Policy Score

```
## Error in `filter()`:
## ! Problem while computing `..1 = eval(rlang::parse_expr(condition))`.
## Caused by error:
## ! object 'origin_score_lag1' not found

## Error in `filter()`:
## ! Problem while computing `..1 = eval(rlang::parse_expr(condition))`.
## Caused by error:
## ! object 'origin_score_lag1' not found

## Error in is.data.frame(data): object 'count_origin_high' not found

## Error in is.data.frame(data): object 'count_origin_low' not found
```

Table 6: Country-of-origin LGB policy score lagged by one year: triple-difference (DDD), quasi-Poisson regressions of counts of individuals in mixed-citizenship, same-sex couples, stratifying by state-country-year-group average policy environment

	Full sample	Progressive	Regressive
Post-2013 × Same-sex ×			
Mixed-citizenship	0.323 ***	0.624 ***	-0.271
	(0.054)	(0.160)	(0.286)
Post-2013 × Same-sex	0.368 ***	2.046 ***	2.032 ***
	(0.018)	(0.069)	(0.070)
Post-2013 ×			
Mixed-citizenship	0.104 ***	0.466 ***	0.034
	(0.016)	(0.049)	(0.043)
Post-2013	-0.061 **	-0.129 ***	-0.133 ***
	(0.022)	(0.024)	(0.022)
State LGB policy	0.004	0.005	0.005
	(0.004)	(0.004)	(0.004)
State unemployment	0.001	0.000	0.000
	(0.003)	(0.004)	(0.004)
State per-capita income	0.004	0.005 †	0.003
	(0.003)	(0.003)	(0.003)
Observations	2400	2400	2400

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. The "Regressive" sample includes only countries with a LGB policy score less than 0, and the "Progressive" sample includes only those with a score greater than 3. Group-clustered standard errors shown in parentheses. Source: American Community Survey 2008-2019. Authors' calculations.

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## Error in `filter()`:
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## Error in `filter()`:
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## Error in is.data.frame(data): object 'count_origin_high' not found

## Error in is.data.frame(data): object 'count_origin_low' not found
```

Table 7: Country-of-origin LGB policy score lagged by two years: triple-difference (DDD), quasi-Poisson regressions of counts of individuals in mixed-citizenship, same-sex couples, stratifying by state-country-year-group average policy environment

	Full sample	Progressive	Regressive
Post-2013 × Same-sex ×			
Mixed-citizenship	0.323 ***	0.624 ***	-0.271
	(0.054)	(0.160)	(0.286)
Post-2013 × Same-sex	0.368 ***	2.046 ***	2.032 ***
	(0.018)	(0.069)	(0.070)
Post-2013 ×			
Mixed-citizenship	0.104 ***	0.466 ***	0.034
	(0.016)	(0.049)	(0.043)
Post-2013	-0.061 **	-0.129 ***	-0.133 ***
	(0.022)	(0.024)	(0.022)
State LGB policy	0.004	0.005	0.005
	(0.004)	(0.004)	(0.004)
State unemployment	0.001	0.000	0.000
	(0.003)	(0.004)	(0.004)
State per-capita income	0.004	0.005 †	0.003
	(0.003)	(0.003)	(0.003)
Observations	2400	2400	2400

*** p < 0.001; ** p < 0.01; * p < 0.05; † p < 0.1. The "Regressive" sample includes only countries with a LGB policy score less than 0, and the "Progressive" sample includes only those with a score greater than 3. Group-clustered standard errors shown in parentheses. Source: American Community Survey 2008-2019. Authors' calculations.

```
## Error in `filter()`:
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## Caused by error:
## ! object 'origin_score_lag5' not found

## Error in `filter()`:
## ! Problem while computing `..1 = eval(rlang::parse_expr(condition))`.
## Caused by error:
## ! object 'origin_score_lag5' not found

## Error in is.data.frame(data): object 'count_origin_high' not found

## Error in is.data.frame(data): object 'count_origin_low' not found
```

Table 8: Country-of-origin LGB policy score lagged by five years: triple-difference (DDD), quasi-Poisson regressions of counts of individuals in mixed-citizenship, same-sex couples, stratifying by state-country-year-group average policy environment

	Full sample	Progressive	Regressive
Post-2013 × Same-sex ×			
Mixed-citizenship	0.323 ***	0.624 ***	-0.271
	(0.054)	(0.160)	(0.286)
Post-2013 × Same-sex	0.368 ***	2.046 ***	2.032 ***
	(0.018)	(0.069)	(0.070)
Post-2013 ×			
Mixed-citizenship	0.104 ***	0.466 ***	0.034
	(0.016)	(0.049)	(0.043)
Post-2013	-0.061 **	-0.129 ***	-0.133 ***
	(0.022)	(0.024)	(0.022)
State LGB policy	0.004	0.005	0.005
	(0.004)	(0.004)	(0.004)
State unemployment	0.001	0.000	0.000
	(0.003)	(0.004)	(0.004)
State per-capita income	0.004	0.005 †	0.003
	(0.003)	(0.003)	(0.003)
Observations	2400	2400	2400

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$. The "Regressive" sample includes only countries with a LGB policy score less than 0, and the "Progressive" sample includes only those with a score greater than 3. Group-clustered standard errors shown in parentheses. Source: American Community Survey 2008-2019. Authors' calculations.
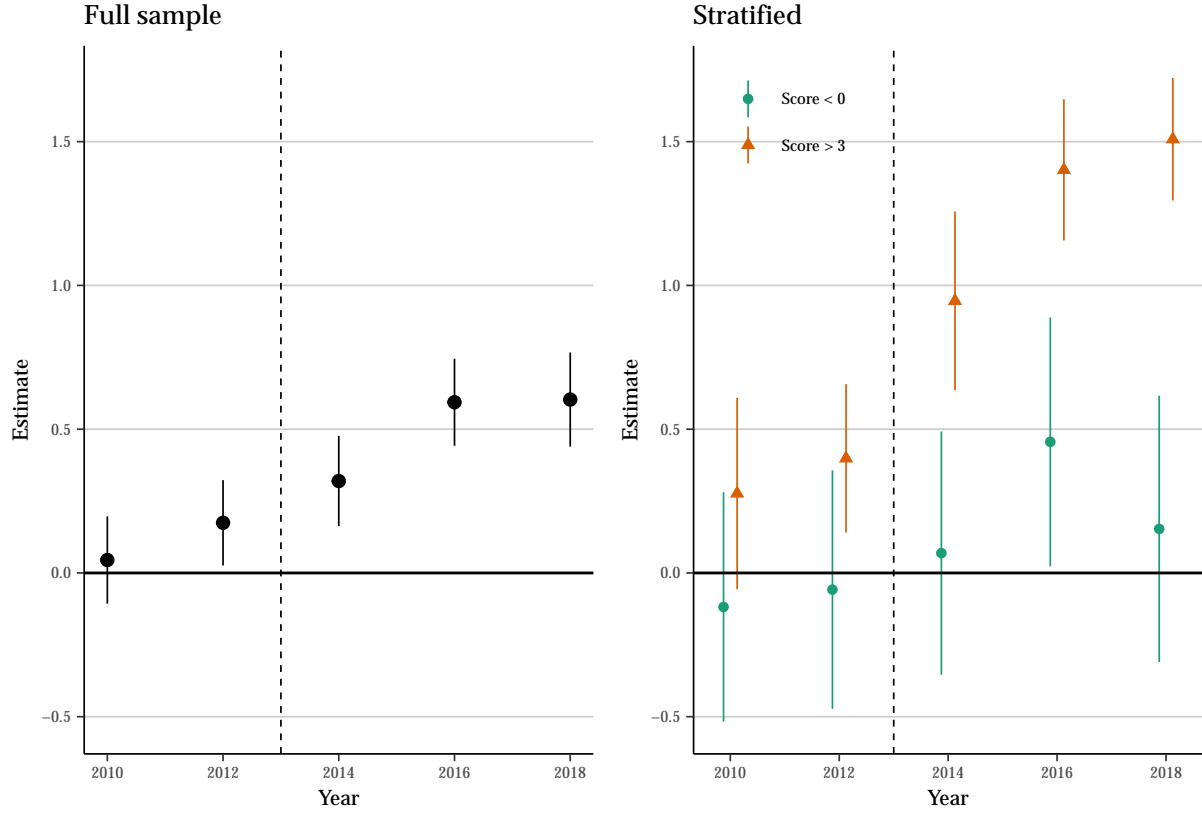
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D.1 Parallel Trends Assumption for DD Model

Figure 5: Dynamic specification of DD quasi-Poisson regression with two-way fixed effects, displaying the coefficient for the Year × Mixed-citizenship interaction. Survey years are aggregated into pairs, with 2008-2009 as the base category.

For the DD dynamic models, we test that coefficients for 2010 and 2012 are both equal to 0, $\delta_{2010} = \delta_{2012} = 0$. This pre-trend test follows a χ^2 distribution. For the full sample, the χ^2 value is 3.9 with a p-value of 0.14. Unlike for the triple-difference model, the pre-trend test for the DD model for the full sample fails; we reject the hypothesis that parallel trends hold before 2013. For the progressive subsample, the χ^2 value is 3.6 with a p-value of 0.16; here the pre-trend test provides evidence of parallel trends.

References

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Walker, Laquitta, and Danielle Taylor. 2021. *Same-Sex Couple Households: 2019. American {{Community Survey Briefs}}.* ACSBR-005. U.S. Census Bureau.