The Fertility Gap and Economic Freedom

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Abstract

The difference between desired fertility and achieved fertility is called the fertility gap. This paper investigates the relationship between economic freedom and the fertility gap across the United States since greater economic freedom may empower individuals to choose work more compatible with their family goals. We test this hypothesis using individual measures of fertility preferences from a nationally representative survey of reproductive-aged women (2020-24) and find evidence that women are more likely to achieve their family goals in states with greater economic freedom. This effect is strongest when focusing on variation in labor market freedom.

Keywords: Fertility Gap; Economic Freedom; Family Economics

JEL Codes: D10; J13; H70

Abbreviations: None.

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"The family is the test of freedom"
– G.K. Chesterton

1 Introduction

The expansive economic growth of the past few centuries has benefited women in many ways. Life expectancy and female educational attainment have grown considerably during this period, while infant and maternal mortality have decreased (Hill and King, 1995; Weil et al., 2014; Dalgaard and Strulik, 2014). Increased standards of living may also have contributed to the recognition of women's economic and political rights (Doepke et al., 2022).

At the same time, global fertility has fallen below what the average reproductive-age woman says is her personal ideal number of children. For women entering their reproductive years in 2010, Stone (2019) estimates 270 million missing-but-desired births for the world on the whole if current fertility ideals and birth rates remain constant. These trends have also recently captured the attention of policymakers, as an increasing number of countries face below-replacement rates of total fertility (2.1 children per woman) and are experiencing, or about to experience, population decline.[1] This difference between desired fertility and achieved fertility – the fertility gap – seems to be the largest for highly educated women in developed countries (Beaujouan and Berghammer, 2019).

This project brings together research on the fertility gap, advances in family and gender economics, and the literature on economic freedom. While past research on the fertility gap has largely been descriptive or focused on demographic differences across women, we take an institutional approach by investigating how policy environments which give women more control over their economic choices relate to the gap between women's desired and actual fertility. In particular, the literature on family and gender economics has established that work-family compatibility is an important influence on fertility in developed countries today (Adsera, 2005; Goldin, 2021; Doepke et al., 2022). Although this compatibility is determined by many variables, economic freedom may improve the matching of people to jobs and the variety of work opportunities available, especially related to compensating differentials connected to family and work compatibility. If this is the case, then economic freedom may make it easier for women to find jobs with flexible schedules (for example), which would reduce the marginal cost of childbearing and childrearing, increasing the quantity of putatively "desired" children she in fact has.

Because average fertility desires are well above actual fertility, we predict that states with greater economic freedom would have a narrower fertility gap. There are two main reasons why

[1] See, for example: https://www.nytimes.com/2023/01/16/business/china-birth-rate.html.

we expect this to be the case: 1) economic freedom is positively associated with income, so couples would have more money to spend on children (the income effect), 2) economic freedom is positively associated with labor market freedom, so couples would face lower opportunity costs to raising children if they can sort into family-compatible work (the substitution effect). In societies where average fertility desires are appreciably below actual fertility rates, however, changes in economic freedom might actually reduce fertility. For example, weakening norms of women's economic seclusion almost definitionally increases economic freedom and would increase women's employment opportunities. Strong seclusion norms are most common in societies where fertility rates are very high, at or above the numbers women report desiring. And indeed, prior research shows that when seclusion norms are eroded, women's employment rises and fertility falls (Kabeer et al., 2018).

We test our hypothesis using survey-based data on individual fertility preferences across the fifty U.S. states (2020-2024), total fertility rates in each state (2020-2024), and various measures of economic freedom for each state (Gwartney et al., 2022; Ruger and Sorens, 2021). First, we document fertility desires across the fifty states and explore their relationship to a basic measure of economic freedom. Next, we estimate regressions and show that even after controlling for individual characteristics of age, race, relationship status, education, income, employment status, and concerns about childcare costs, as well as state-level measures of religiosity, urbanization, and the foreign-born population, the relationship between economic freedom and the fertility gap remains negative and significant. That is, more economic freedom is associated with fewer women falling short of their desired fertility. Specifically, a one standard deviation increase in economic freedom is associated with a 0.056 decrease in the fertility gap, amounting to more than a 6% standard deviation (0.92) decrease in the fertility gap. We further investigate these results to show that it is labor market freedom in particular which contributes to a smaller fertility gap.

2 Background

An individual might end up with a different number of children than they desire for a variety of reasons. First, it may be difficult to find a partner who shares one's family-size goals. Since a child generally requires cooperation from both a man and a woman (Doepke and Kindermann, 2019), individuals must expend resources to first discover and then bargain with one another. While in principle women could pursue child-bearing without a partner, in practice the difficulty of child-rearing is such that partnership remains a key part of the fertility decisionmaking process, even if partnership may not always imply formal marriage. Given that the status quo is not having a child, such coordination issues tend to bias fertility downward relative to desires and increase the fertility gap.

Second, an individual may encounter unexpected infertility. Relatively few women are aware of any possible biological impediments to fecundity prior to attempting to conceive, and as a result, individuals may only discover over time that they are unable to raise the number of children for which they had originally planned. Perhaps the most binding fertility constraint for the average contemporary woman is age. As Goldin (2021) points out: "the timing [of modern job promotions] is brutal. For women who want to have a family, waiting to their mid-thirties to have their first child is stacking the deck against succeeding at the family part and having the children" (p. 8). This would again bias fertility downward relative to fertility plans.

Third, there may be unexpected fertility, i.e., the failure of contraceptive methods. Men and women may discover that they are more fertile than they expected, and unplanned births may occur even though (or perhaps because) forms of contraception are widely used (Beauchamp and Pakaluk, 2019). This would bias fertility upward relative to fertility plans.

Finally, new information may cause individuals to change their minds. An extensive literature has studied patterns of change in fertility preferences. Overall, although fertility preferences do change over the life course, decades of longitudinal demographic research has found that stated fertility preferences are the strongest extant predictors of actual fertility behavior (Bumpass and Westoff, 1969; Coombs, 1979; Schoen et al., 1999; Gipson and Hindin, 2009; Miller et al., 2010; Cleland et al., 2020; Yeatman et al., 2020). Even in those studies which most emphatically highlight the variability and biases in stated fertility preferences, such as Müller et al. (2022), stated preferences remain extremely strongly correlated with subsequent behaviors and very stable across time at the population average.[2] Although economists tend to prefer measures of "revealed preference," in practice, women's stated preferences in surveys are stronger predictors of actual behavior than other variables like current contraceptive usage or current marital status.

2.1 The fertility gap

The fertility gap is measured using survey data on the fertility preferences and plans of reproductive-aged women and then comparing these responses to a measure of achieved fertility, generally the total fertility rate (TFR) during the same time period. The TFR is a synthetic cohort measure of fertility, meaning it does not in fact measure actual achieved fertility, but likely future achieved fertility. Empirical assessment of the accuracy of this measure has found that although it is not a perfect measure, more sophisticated approaches to forecasting of fertility add relatively little pre-

[2] Müller et al. (2022) finds that even in a longitudinal survey population with very high rates of incorrect recall of past stated preferences, average preferences are 3.46, 3.29, and 3.39 across three survey waves in an 11-year range, and that women who reported desiring any additional children were twice as likely to have a child during the follow-up period, which did not cover their entire reproductive future. Even Müller et al. (2022) in fact concedes that finding a statistically strong relationship between stated preferences and subsequent behaviors is "consistent with most studies of reported fertility intentions and later reproductive outcomes."

dictive accuracy (Bohk-Ewald et al., 2018). As such, we consider TFR a suitable proxy measure for likely fertility achievements of women in our survey sample (women ages 18-44). Although these responses are one-sided (i.e., they exclude men) and probably understate the true fertility gap in society (Doepke and Kindermann, 2019), women generally bear most of the cost of fertility and so surveys and research have focused more on their preferences. Furthermore, men's fertility is not well-measured due to uncertain and unacknowledged paternity.

Depending on which fertility preference indicator from a survey is being used, different fertility gaps can be estimated. There are two main types. First, researchers may assess fertility desires or ideals relative to achieved fertility, which usually results in the largest fertility gap since it accounts for all the barriers to fertility outlined above. This measure is particularly helpful for the economic approach to fertility because it provides a more complete picture of the demand side – that is, how many more children parents would like to enjoy. Moreover, this question is helpful for policy considerations since it represents the maximum number of children reachable through pro-natal policy if persuasion about family size is undesirable to policymakers or believed to be unlikely, i.e., how many children a couple would welcome without a change of preferences or coercion. The preference for children seems to be largely stable over time in the United States (Hagewen and Morgan, 2005). For example, Gallup polls reveal that Americans have desired 2.5 children (on average) since the 1970s.[3] The variation in this fertility gap, then, will be due to variation in fertility achievement.

Second, researchers may assess fertility plans or intentions relative to achieved fertility, which results in a relatively smaller gap since this accounts for only unexpected barriers to fertility, and also invites respondents to consider compromises with reality. In other words, this kind of survey question is a weaker proxy for demand. Research has shown that this gap tends to be substantially lower in the United States than in other countries, which may come as a surprise given that the United States offers relatively fewer targeted fertility benefits than other countries (Morgan and Rackin, 2010).

There is substantial variation in fertility gaps across countries and demographic groups. Beaujouan and Berghammer (2019) take a cohort approach to the gap between fertility intentions and completed fertility in Europe and the U.S. and find that the fertility gap is largest (about 0.7 children) in Southern European countries like Spain and Italy, which is driven by a combination of relatively high fertility intentions and below-average mean numbers of children. The fertility gap is smallest (closer to 0.2) in the United States and France, places with average fertility intentions and relatively high fertility achievement. Their measure of excess childlessness – the number of women who plan to remain childless vs. the number of women who actually do – is also generally

[3] https://news.gallup.com/poll/164618/desire-children-norm.aspx

consistent with this pattern, although of greater magnitude.[4] Finally, they measure differences across educational attainment, finding "no consistent educational gradient in mean intended family size, although for most countries it is either U-shaped or negative. However, the educational gradient in completed fertility is clearly negative, and highly educated women generally show the largest gap between intended and realized fertility" (Beaujouan and Berghammer, 2019, p. 527). Their takeaway is that the fertility gap is largest in those countries where it is hardest to combine career with family.

2.2 Economic freedom and the fertility gap

Much of the economic literature on fertility is focused on its relationship to income (e.g., Jones and Tertilt (2008), Kearney and Wilson (2018), and Gallego and Lafortune (2021)). From the economic perspective, an increase in (earned) income has two effects on fertility: 1) it increases the amount of money available for a couple to spend on children (the income effect), and 2) it increases the opportunity cost of sacrificing working hours to take care of a child (the substitution effect). As female educational attainment and wages rose in recent history, the substitution effect appeared to dominate. However, recent research suggests that this is no longer true – fertility no longer has a strong relationship with income, and in some cases, it is even positive (Doepke et al., 2022). For example, Adsera (2005) shows that a country's total fertility rate and female labor force participation have been positively correlated since the late 1980s. This didn't occur because women in the formal labor force suddenly valued having children more than those without formal work, but rather because the conditions of some countries became more conducive to individual women achieving their goals (whether that be for careers and/or children).

As the literature on the gender wage gap has illuminated, women (particularly mothers) tend to value temporal flexibility more than men (Bertrand et al., 2010; Goldin, 2014). From the perspective of fertility, temporal flexibility means that work schedules can be arranged around the needs of the child (e.g., gig work or remote work) so that the opportunity cost of a woman's time need not be her full market wage (Alon et al., 2020). For instance, Doepke et al. (2022) point to many ways that the tradeoff between working and caring for children has diminished in recent years, such as with public education and quality childcare and household services available through the market.[5] On the other hand, as Adsera (2006) points out, careers that shelter individuals

[4]For example, "despite a low preference for staying childless, a significant share of women in Spain and Italy will eventually not have any children (around 22%), resulting in the largest excess childlessness in Europe (around 20 percentage points)" (Beaujouan and Berghammer, 2019, p. 527).

[5]Interestingly, immigration has a two-fold effect on fertility rates. First, immigrants generally have higher fertility rates (that more closely match their home countries). Second, immigrants often work in services that allow parents to outsource some aspects of childcare or home production. For instance, Furtado (2016) finds that college-educated native women in US cities with a greater inflow of immigrants respond to the greater availability

from the uncertainty of job turnover (e.g., university tenure) may encourage couples to undertake long-term investments, such as children, moving them closer to their ideal family size. For these reasons, economists now recognize that the compatibility between career and family is a key driver of fertility decisions (Goldin, 2021).

Women are more likely to achieve compatibility between career and family when they are offered more flexibility in the economic sphere. One way to estimate the degree of flexibility available is to compare economic freedom scores, which summarize the degree to which the policies and institutions are supportive of economic freedom defined as personal choice, voluntary exchange, freedom to enter markets and compete, and security of the person and privately owned property (Gwartney et al., 2022). A large literature in economics relates economic freedom to a variety of beneficial outcomes: economic growth (Williamson and Mathers, 2011), lower levels of corruption (Goel and Nelson, 2005), higher educational attainment (Sart et al., 2022), greater intergenerational income mobility (Callais and Geloso, 2022), higher labor force participation and lower unemployment rates (Heller and Stephenson, 2014), and even happiness (Gropper et al., 2011). The novel approach of this project is to link the literature on fertility gaps with the consensus view that economic freedom increases the choice set available to individuals which – importantly for us – includes parents. In other words, if economic freedom increases the number of mutually beneficial trades that can be made, then women who value children and career will have a greater ability to customize their work choices in a way that accords with their desired fertility.

3 Data

3.1 Data sources

To estimate fertility preferences, we use proprietary access to responses from nine waves of a nationally representative online survey of women ages 18-44 (the Demographic Intelligence Family Survey or DIFS, n $\approx$ 10,000), which began collecting numerous different fertility preference measures in 2020 and is ongoing.[6] With this survey, we are also able to observe demographic variables such as age, race, and relationship status, as well as income, education, employment status, and concerns about childcare costs, all of which we employ as controls in our empirical analysis. We combine these survey responses over the years 2020-2024 to account for small sample sizes in

of childcare by increasing their fertility.

[6] Co-author Lyman Stone is a partner at the firm Demographic Intelligence, which funds and fields the survey to collect market research for a range of for-profit entities producing infant and maternity products. Survey waves of variable sizes are fielded in March/April and September/October each year. Survey and question design is by Lyman Stone. Data is the property of Demographic Intelligence. Data used for this publication can be shared upon reasonable request.

certain states for individual years, leaving us with rich cross-sectional variation.

We use a novel measure of fertility desires from the DIFS, which we refer to as *happiest parity*, to estimate an individual's desire for children. For this question, respondents report how happy they would be across family outcomes of 0 to 6 children, and these happiness levels are used as weights to assign their *happiest parity* outcome.[7] Because respondents describe their expected utility from a range of possible outcomes, this question provides a granular view of demand for children, allowing us to observe not only the mean number of children desired, but the slope of women's expected loss of happiness as expected parity deviates from their peak-desired parity, either higher or lower.

Crucially, this means our estimate of childbearing desire does not arise from women simply reporting a social norm of a two child family, but instead requires women to evaluatively consider a range of non-normative family outcomes. The resulting assessment then is resilient to many conventional critiques of stated fertility preferences, and is considerably less volatile across survey waves at the population mean than other fertility preference measures in the survey waves utilized for this paper. We compare this to the standard measure of expected fertility outcomes, the average total fertility rate (TFR) in each state over the years of the ongoing survey (2020-24).[8] This combination gives us individual variation in fertility gaps across the U.S. states. We also use another measure of the fertility gap from the DIFS – the gap between *intended* births and the TFR – as a robustness check.[9]

Our primary measure of economic freedom comes from the well-known "Economic Freedom of the World" report from the Fraser Institute (Gwartney et al., 2022). We use the EFW score of an individual state in 2020 to estimate the economic freedom experienced by women in that state. The subnational index assigns scores to jurisdictions based upon three different areas of economic freedom – government spending, taxation, and labor market freedom.[10] Government spending and taxation certainly impact the resources at the disposal of households, while labor market freedom may be particularly important for flexibility in career-family arrangements. To further interrogate the determinants of fertility gap variation across the states, we decompose the subnational index into its three components and test each separately as well. As another robustness check for our main results, we also average the EFW score over the previous ten years to estimate the experience of economic freedom enjoyed by the average woman in a given state during her reproductive years (reported in our Appendix).

In addition to the EFW index, we also test measures of policy variation from the "Freedom

[7] Exact question wording and response options are provided in our Appendix.
[8] The total fertility rate (TFR) is the average number of children a woman would give birth to during her lifetime if she were to pass through her reproductive years (15-49 years) experiencing the current age-specific fertility rates.
[9] We also include this question wording in the Appendix.
[10] A more detailed description of each measure can be found in the Appendix.

in the 50 States" report of the Cato Institute (Ruger and Sorens, 2021), encompassing more than 200 policy variables.[11] This comprehensive index of freedom across the fifty U.S. states is comprised of three components: 1) regulatory policy, 2) fiscal policy, and 3) personal freedom, from both a pro-life and pro-choice perspective.[12] We also use the Center for Religion, Culture & Democracy (CRCD)'s "Religious Liberty in the States" report to measure variation in religious freedom across the states. Finally, because we draw from different sources, we scale all index values for ease of comparison.

Past research has shown that religiosity (Zhang, 2008), urbanization (Jaffe, 1942), and immigration status Adserà and Ferrer (2015) are also determinants of fertility and fertility preferences. Religiosity is controlled for using the share of evangelical Christians (2014) in a state from the Pew Research Center. We control for urbanization and the share of a state's population that is foreign born using estimates from the American Community Survey (2020, 5-year estimates).

3.2 Descriptive Statistics

We begin by summarizing our main variables of interest. While the measures of fertility preferences and thus fertility gaps vary at the individual level, Table 1 reports the minimum, mean, standard deviation (SD), and maximum of each variable at the state level for ease of comparison.

For the *happiest parity* fertility preference measure, total fertility rate (TFR), and thus the *happiest parity* gap (*happiest parity* average of an individual woman minus the TFR in her state), we observe a large range of outcomes. First, it is notable that average fertility preferences are well above replacement level at 2.45 children on average, while actual fertility (TFR) is well below at 1.66 average children. This generates a positive fertility gap, indicating that the average woman in the United States is not expected to achieve her desired family size.

Economic freedom varies across the United States from New York (least free) to Florida (most free). Cato's freedom measure of regulatory and fiscal policy environments find California and Hawaii at the bottom with Kansas and Florida at the top, respectively. Finally, Michigan is the most free state when it comes to personal freedom (and New York the least) including a pro-life perspective on abortion policy, while Nevada is the most free state for personal freedoms using a pro-choice perspective (and New York the least). We also include the summary statistics for our state-level controls: religiosity (measured by the evangelical share), urban share, and foreign-born share. All of these exhibit substantial variation across the states.

[11] We document the variables captured by each freedom dimension in the Appendix.

[12] The pro-life personal freedom index considers more state restrictions on abortion as pro-freedom (including the lack of state subsidies for abortion through Medicaid), while the pro-choice personal freedom index views all limits on abortions as anti-freedom. We include both perspectives not only because there are always diverging views on what constitutes "true freedom," but because of the relevance of abortion policy for questions of fertility.

Table 1: Summary Statistics

Variable	Minimum	Mean (SD)	Maximum
Happiest Parity Fertility Preferences	1.95	2.45 (0.17)	2.97
Fertility Intentions	1.53	2.00 (0.29)	2.90
Total Fertility Rate	1.31	1.66 (0.16)	2.00
Happiest Parity Fertility Gap	0.41	0.80 (0.16)	1.20
EFW Economic Freedom Score	−2.07	0.00 (1)	1.80
Cato Regulatory Policy Score	−2.75	0.00 (1)	1.16
Cato Labor Market Freedom Score	−2.67	0.00 (1)	1.29
Cato Fiscal Policy Score	−2.72	0.00 (1)	2.27
Cato Personal Freedom Score (Pro-Life)	−1.44	0.00 (1)	1.93
Cato Personal Freedom Score (Pro-Choice)	−1.87	0.00 (1)	3.38
CRCD Religious Freedom Score	−2.33	0.00 (1)	3.10
Evangelical Share	7.00	26.08 (10.97)	52.00
Urban Share	35.10	73.03 (14.81)	94.20
Foreign-Born Share	1.60	9.32 (6.13)	26.60

Sources: Demographic Intelligence Family Survey (2020-24), Fraser Institute's Economic Freedom of the World report (2020), Cato Institute's Freedom in the 50 States report (2020), Center for Religion, Culture, and Democracy's Religious Liberty in the 50 States Report (2023), Pew Research (2014), and the American Community Survey (2020, 5-year estimates). All index values are reported at the state-level and scaled for ease of comparison.

We now investigate the geographic variation in fertility gaps across the United States. Figure 1 shows state-level fertility gap (2020-24) using the average *happiest parity* fertility preference combined with the state's total fertility rate (TFR).

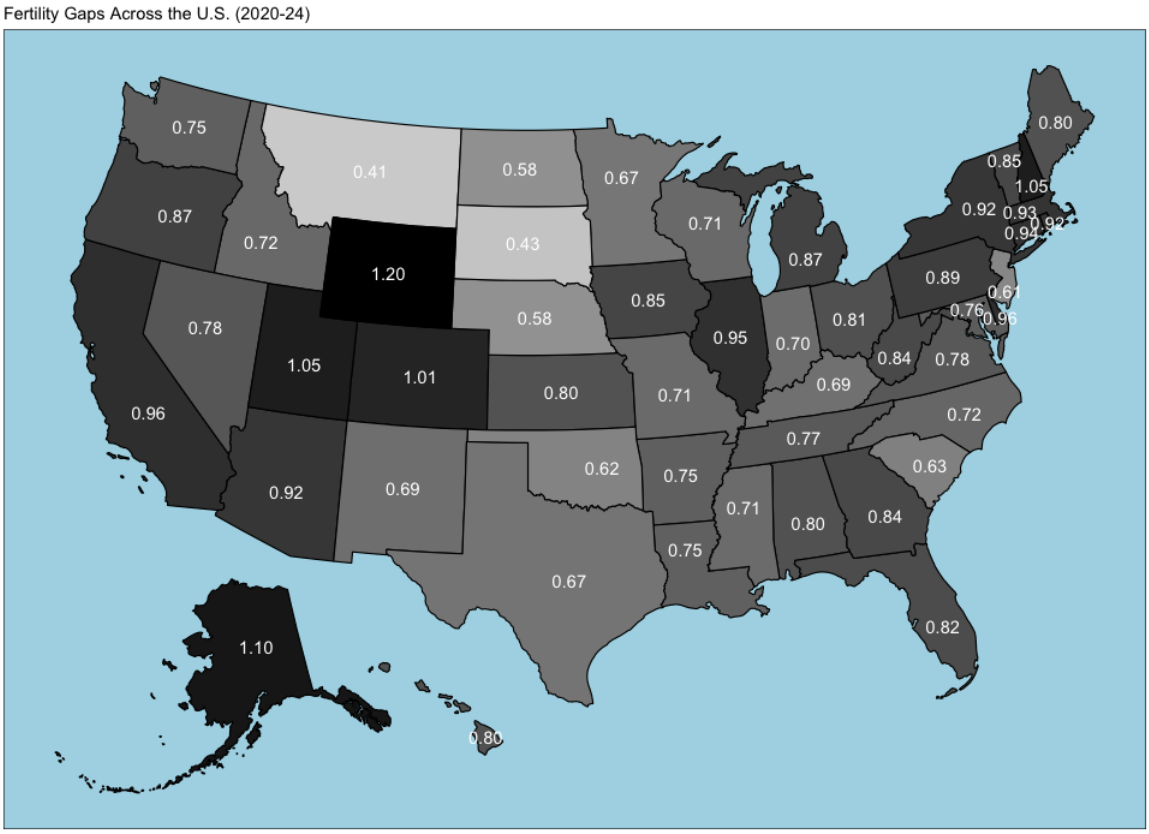

Figure 1: *Happiest Parity* Fertility Gaps Across the U.S. (2020-23)

Source: Demographic Intelligence Family Survey

The size of fertility gaps across the United States does not exhibit a clear geographic pattern. For example, Wyoming (1.2), Alaska (1.1), New Hampshire (1.05), and Utah (1.05) are home to the largest gaps between desired and actual fertility, while Montana (0.41) and South Dakota (0.43) have the smallest. Kansas, Maine, Hawaii, and Alabama (all 0.80) represent middling cases. This speaks to the usefulness of using the fertility gap as opposed to measures of actual fertility. While Utah has an unusually high total fertility rate and New Hampshire is home to one of the lowest, both exhibit similarly large fertility gaps as this takes variation in fertility preferences into account.

Next, Figure 2 plots the relationship between economic freedom and fertility preferences (top) and economic freedom and actual fertility (bottom).

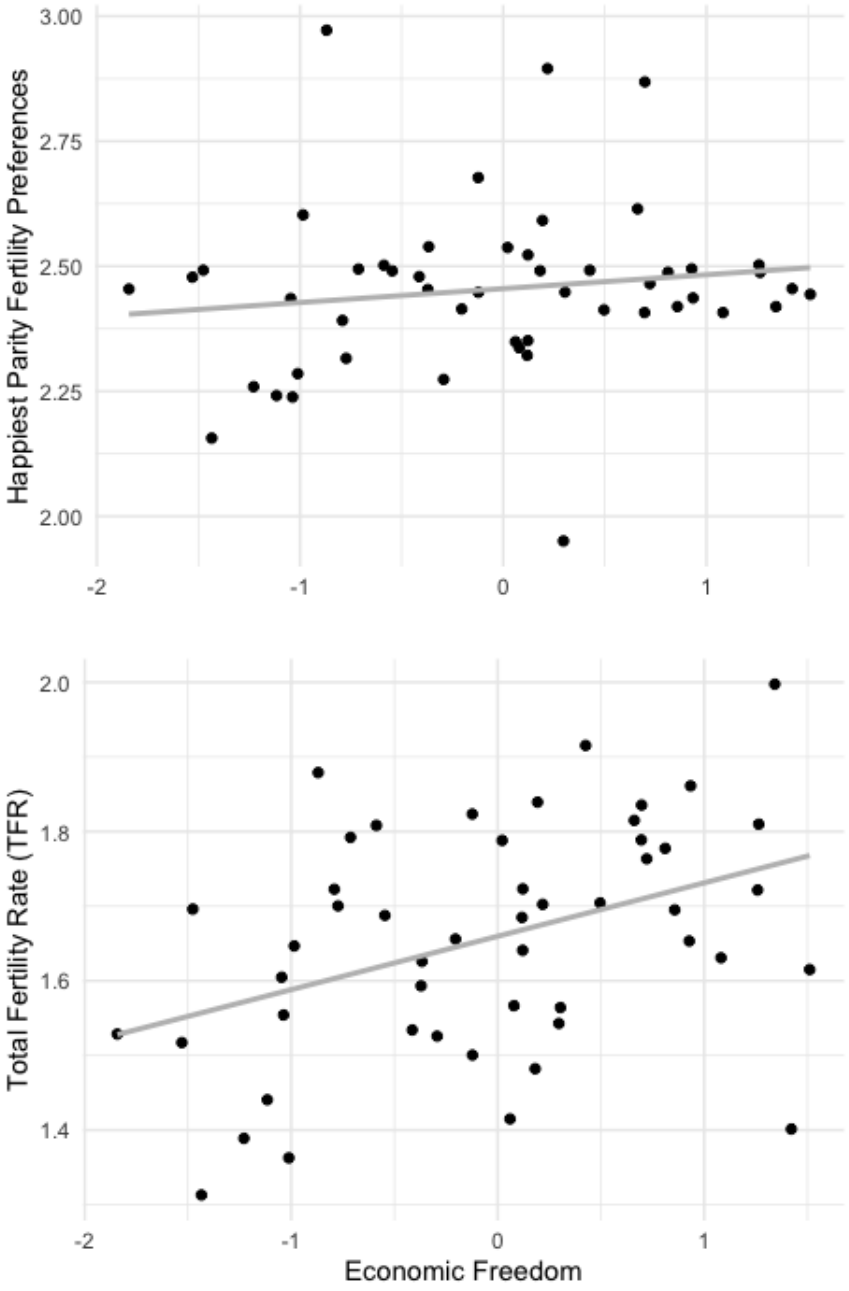

Figure 2: Economic Freedom, Fertility Preferences, and Total Fertility Rates

The results are striking. While economic freedom is weakly associated with higher fertility preferences (0.14 correlation), it is strongly associated with higher actual fertility (0.40 correlation). This suggests that our hypothesis of greater economic freedom fostering an environment conducive to smaller fertility gaps has some validity. However, it may be that states with greater economic freedom also have other characteristics (e.g., higher rates of marriage or more immigration) that lead to them having higher fertility relative to preferences as well. Because of this, we next turn to testing our hypothesis using regression analysis with a rich set of controls.

4 Results

4.1 Empirical strategy

We test the hypothesis that the fertility gap is partially determined by the conditions of economic freedom experienced by reproductive-aged women using individual data on fertility preferences (2020-24) matched with the state-level total fertility rate (2020-24) and measures of state economic freedom (2020).[13] By explaining variation in fertility gaps from individual survey responses using state economic freedom scores, we follow an approach similar to that of Hall et al. (2018).

The OLS regression is specified as follows:

$$Y_{ist} = \beta_1 X_s + \beta_2 D_{ist} + \beta_3 M_s + \lambda_t + \epsilon \tag{1}$$

where Y_{ist} is the predicted fertility gap of respondent i in state s and year t, X_s refers to a measure of economic freedom in state s, D_i controls for a battery of individual characteristics for respondent i in state s and year t, M_s indicates a set of state-level controls, and λ are year fixed effects. Our individual characteristics include demographic variables (age, race, and relationship status) as well as economic variables (income, education, employment status, and whether or not the respondent is concerned about childcare costs). State-level controls are included for religiosity, urbanization, and foreign-born share. All errors are clustered by state.

[13] While panel data is preferable for an investigation like this, several data limitations prevent us from going beyond cross-sectional estimation at this point. First and most importantly, the DIFS survey does not generate large enough sample sizes in individual years for all U.S. states. Second, our measure of economic freedom is more limited in recent years than our fertility gap data so we cannot yet match economic freedom scores over the full 2020-24 time frame. However, because we do estimate fertility preferences and actual fertility over a range of years, we include time fixed effects in our specification. This also mitigates concerns about unusual confounding from COVID-19 during some years in this timeframe.

4.2 Economic freedom and the fertility gap

Our primary empirical analysis investigates the relationship between the Economic Freedom of the World (EFW) subnational economic freedom score in an individual U.S. state and the predicted fertility gap of a woman living in that state. We report these results in Table 2.

Table 2: Evaluating the Effect of Economic Freedom on the Fertility Gap

	Happiest Parity Fertility Gap			
	(1)	(2)	(3)	(4)
EFW Economic Freedom	-0.056^{***}	-0.065^{***}	-0.069^{***}	-0.056^{***}
	(0.017)	(0.019)	(0.018)	(0.019)
Evangelical Share				-0.002
				(0.002)
Urban Share				0.006^{***}
				(0.002)
Foreign-Born Share				-0.005
				(0.004)
Demographic Controls		yes	yes	yes
Economic Controls			yes	yes
Year FE				yes
Observations	10,425	10,425	10,425	10,425
Adjusted R^2	0.004	0.032	0.047	0.075
Note:				$^{**}p < 0.05;^{***} p < 0.01$

Sources: Demographic Intelligence Family Survey, Economic Freedom of the World Gwartney et al. (2022), Pew Research, and the American Community Survey. "Economic freedom" refers to the standardized subnational economic freedom score of each state in 2020. Demographic controls include relationship status, race, and age. Economic controls include income, education, employment status, and concerns about childcare costs. "Evangelical Share" refers to the share of people in each state identifying as evangelical in 2014. "Urban Share" refers to the share of a state's population living in urban areas in 2020. "Foreign-Born Share" refers to the share of a state's population that were not U.S. citizens at birth in 2020. Errors are clustered at the state level.

We begin with a raw regression of state economic freedom scores on the *happiest parity* fertility gap, as measured by the difference between the total fertility rate (TFR) and the *happiest parity* measure of fertility desires from individual survey respondents (column 1). The coefficient is negative and statistically significant (99% level): women in states with greater economic freedom experience a smaller divergence between desired and actual fertility on average. We then introduce individual demographic controls for relationship status, race, and age (column 2). The coefficient grows in magnitude, indicating that a one standard deviation increase in economic freedom leads to a -0.065 reduction in the standard deviation of the fertility gap. Next, we include controls for individual economic variables such as income, educational attainment, employment status, and concerns about childcare costs, which further increases the magnitude of the coefficient (column 3) and maintains its significance. Now that we account for a respondent's annual income, which is measured across eight levels (e.g., "under 15k," "15-30k," and so forth), our results provide a clean estimate of the substitution effect of economic freedom on fertility.

Finally, we add our state-level control variables for religiosity, urbanization, and the foreign-born share as well as year fixed effects since our survey data covers 2020-24. Of these state controls, only urbanization seems to matter (slightly exacerbating the fertility gap). The coefficient on economic freedom shrinks slightly but remains significant at the 99% level (column 4). Now with the full set of controls, we report that a one standard deviation increase in economic freedom is associated with a -0.056 reduction in the standard deviation of the fertility gap. This is economically significant, amounting to more than a 6% reduction in the standard deviation (0.92) of the fertility gap. This result is also practically meaningful, since it means that women are more likely to achieve their personal fertility goals in states with greater economic freedom, even controlling for many key influences on fertility such as marriage and age.

The EFW subnational scores can be broken-down into three areas: 1) government spending, 2) taxation, and 3) labor market freedom.[14] To further investigate the relationship between fertility gaps and different aspects of economic freedom, we test the relationship of each individual area to the fertility gap in Table 3, including our full set of controls in each column.

[14]See our Appendix for a full description of each area of economic freedom.

Table 3: The Effect of Economic Freedom Components on the Fertility Gap

	Happiest Parity Fertility Gap		
	(1)	(2)	(3)
Government Spending (EFW Area 1)	−0.053***		
	(0.016)		
Taxation (EFW Area 2)		−0.038	
		(0.027)	
Labor Market Freedom (EFW Area 3)			−0.042**
			(0.020)
Evangelical Share	−0.004**	−0.003	−0.003
	(0.002)	(0.002)	(0.002)
Urban Share	0.005**	0.005	0.004**
	(0.002)	(0.003)	(0.002)
Foreign-Born Share	−0.003	−0.004	−0.002
	(0.003)	(0.005)	(0.004)
Full Controls	yes	yes	yes
Year FE	yes	yes	yes
Observations	10,425	10,425	10,425
Adjusted R^2	0.076	0.073	0.074
Note:			**p<0.05; ***p<0.01

Sources: Demographic Intelligence Family Survey, Economic Freedom of the World Gwartney et al. (2022), Pew Research, and the American Community Survey. Each economic freedom area corresponds to the standardized subnational score of each state in 2020. Full controls include the respondent's relationship status, race, age, income, education, employment status, and concerns about childcare costs, plus the evangelical share, foreign-born share, and urban share of the state. Errors are clustered at the state level.

While all areas of economic freedom exhibit a negative effect on the fertility gap, government spending and labor market freedom (Areas 1 and 3) are statistically significant (at the 99% and 95% levels respectively). Similar to the overall measure, a standard deviation increase in economic freedom in either Area 1 or Area 3 is associated with a 5-6% reduction in the standard deviation of the fertility gap. This suggests that women living in states with fewer government transfers (which may themselves distort the labor market) and less labor market regulation (which may restrict a couple's access to different kinds of work) are more likely to achieve their desired levels

of fertility.

4.3 Economic Freedom or Just Freedom?

In this section, we test the alternative hypothesis that it is freedom per se – not just economic freedom – which is related to a smaller fertility gap. We draw from the Cato Institute's report "Freedom in the 50 States" (Ruger and Sorens, 2021) which ranks the states according to three policy areas: 1) regulatory policy, 2) fiscal policy, and 3) personal freedom. Regulatory policy includes the subcomponent of labor market freedom, which we also isolate because our hypothesis about the relationship between economically free environments and the fertility gap focuses on work-family compatibility. The report includes both a pro-life and pro-abortion perspective on laws that increase personal freedom, both of which we include. We also use the Center for Religion, Culture, and Democracy's report "Religious Liberty in the States" (2023) to measure religious liberty for the reason that religiosity tends to be associated with higher fertility, so we might be omitting a key part of the policy environment associated with smaller fertility gaps. As before, we include the full set of controls across each specification.

Additionally, the Cato data also allows us to validate our results that economic freedom is associated with a smaller fertility gap using an alternative measures of economic freedom, which Cato calculates using the combined regulatory policy and fiscal policy freedom scores. This is possible because the Fraser Institute's measure of economic freedom is strongly but not perfectly correlated with Cato's fiscal or regulatory policy measure (0.82 and 0.76, respectively), while being less related to their measures of pro-life or pro-choice personal freedom (0.55 and 0.10, respectively). Table 4 presents these results.

Table 4: The Effect of Alternative Measures of Freedom on the Fertility Gap

	Happiest Parity Fertility Gap					
	(1)	(2)	(3)	(4)	(5)	(6)
Cato Fiscal Freedom	−0.025					
	(0.014)					
Cato Regulatory Freedom		−0.042				
		(0.031)				
Cato Labor Market Freedom			−0.058***			
			(0.019)			
Cato Personal Freedom (Pro-Life)				−0.052**		
				(0.024)		
Cato Personal Freedom (Pro-Choice)					0.034	
					(0.023)	
CRCD Religious Freedom						0.004
						(0.023)
Full Controls	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Observations	10,425	10,425	10,425	10,425	10,425	10,425
Adjusted R^2	0.073	0.073	0.075	0.075	0.074	0.073
Note:						**p<0.05; ***p<0.01

Sources: Demographic Intelligence Family Survey, Freedom in the 50 States (Ruger and Sorens, 2021), Religious Liberty in the States (Estelle, 2022), Pew Research, and the American Community Survey. Full controls include the respondent's relationship status, race, age, income, education, employment status, and concerns about childcare costs, plus the evangelical share, foreign-born share, and urban share of the state. Errors are clustered at the state level.

First, the alternative measures of economic freedom from Cato (fiscal and regulatory freedoms) confirm our hypothesis that economic freedom is associated with smaller fertility gaps and that this effect is particularly concentrated in ways that the government may distort the labor market (column 3). This aligns with our theory of work-life compatibility influencing fertility gaps, since the labor market freedom component includes policies like right-to-work laws and occupational licensing requirements. Of the other freedoms, personal freedom (pro-life) has a negative and statistically significant coefficient, meaning states that allow for more expanded personal freedoms

(including a pro-life perspective on abortion policy) also have smaller fertility gaps. This might be because states with a more "pro-life" abortion policy also provide greater material resources to pregnant and postpartum women and their children (Brown and Malec, 2024). We do not find compelling evidence that religious freedom is associated with smaller fertility gaps, likely because our measure of the fertility gap already takes into account fertility preferences, the channel by which religious freedom may have an effect. Again, since all specifications control for income, we are isolating the substitution effect of economic freedom on fertility.

4.4 Fertility Intentions or Just Desires?

In this section, we test a second competing hypothesis: perhaps economic freedom decreases the fertility gap relative to fertility desires, but not intentions. If reported fertility intentions more closely represent a respondent's realistic family goals, this would weaken our case that economic freedom is important for achieving desired family size. We investigate the relationship between the intended parity fertility gap and economic freedom (and its subcomponents) in Table 5.

Economic freedom and each subcomponent exhibits a negative coefficient with respect to the intended parity fertility gap. Only the coefficient on labor market freedom (Area 3) is somewhat statistically significant (at the 10% level), indicating that a one standard deviation increase in labor market freedom is associated with a 0.041 decrease in a standard deviation of the intended parity fertility gap (1.59). However, this result is still practically meaningful since it represents more than a 2 percent reduction in the standard deviation of the gap. Put differently, reproductive-aged women living in environments of greater labor market freedom are more likely to achieve their intended family size. We see the strongest statistical significance in column (2) for the coefficient on Evangelical Share. This suggests that, controlling for government spending as well as individual demographic and economic differences, religiosity as captured by the share of Evangelical Christians in the state can help to narrow the gap between fertility intentions and achievements. Also, we note that the number of observations has dropped since we do not observe fertility intentions for as many women in the sample as with the other fertility preferences.

Finally, we recognize that cross-sectional data without a research design enabling causal inference precludes us from making very strong judgements about the causal effect of economic freedom on the fertility gap. Moreover, because we lack any truly exogenous variation, we cannot infer any specific chain of causality in our data. It would be surprising if reverse causality existed, i.e. if small fertility gaps caused higher economic freedom (especially since fertility gaps were measured at a later date than economic freedom), but we cannot rule out the possibility of an omitted third cause of both variables. Unfortunately, state-level fertility preference data is noisily estimated (due to small cell size for low-population states) and available over such a short time

Table 5: The Effect of Economic Freedom on the Intended Fertility Gap

	Intended Parity Fertility Gap			
	(1)	(2)	(3)	(4)
EFW Economic Freedom	−0.027			
	(0.028)			
Government Spending (EFW Area 1)		−0.013		
		(0.022)		
Taxation (EFW Area 2)			−0.018	
			(0.040)	
Labor Market Freedom (EFW Area 3)				−0.041
				(0.023)
Evangelical Share	−0.006	−0.007**	−0.006	−0.005
	(0.003)	(0.003)	(0.003)	(0.003)
Urban Share	−0.001	−0.002	−0.001	−0.001
	(0.004)	(0.004)	(0.005)	(0.004)
Foreign-Born Share	−0.003	−0.001	−0.003	−0.003
	(0.006)	(0.006)	(0.007)	(0.005)
Full Individual Controls	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Observations	9,555	9,555	9,555	9,555
Adjusted R^2	0.118	0.118	0.118	0.119
Note:				**p<0.05; ***p<0.01

Sources: Demographic Intelligence Family Survey, Economic Freedom of the World Gwartney et al. (2022), Pew Research, and the American Community Survey. Each economic freedom area corresponds to the standardized subnational score of each state in 2020. Full individual controls include relationship status, race, age, income, education, employment status, and concerns about childcare costs. Errors are clustered at the state level.

span that panel analysis is not possible yet. We include further robustness checks by varying the timing of our measure of economic freedom and and aggregating all variables to the state-level in our Appendix (Tables 6 and 7).

5 Conclusion

Recent work on the economics of fertility has highlighted the significance of the relationship between career and family. We investigate variation in the fertility gap across the United States and find that variation in economic freedom can help explain the difference. In particular, we show that a one standard deviation increase in a state's economic freedom score is associated with a 0.056 decrease in the fertility gap. This difference is economically significant, as it amounts to more than a 6% of a standard deviation decrease in the fertility gap.

Overall, we conclude that greater economic freedom is associated with smaller fertility gaps, and we regard reverse causality as unlikely. We test specific channels through which economic freedom might influence the fertility gap, and find that labor market policy is strongly associated with smaller fertility gaps, while fiscal policy and personal freedom have little influence. We hypothesize that improved work-family balance related to improved job-matching, especially related to family-related compensating differentials, may be one area for further exploration.

This paper makes two primary original contributions. Ours is the first study to quantitatively link an empirical measure of the policy context to the size of fertility gaps. Very little prior literature has explored fertility gaps at all despite their possible importance to policymakers, and so we expand on that literature. Second, we demonstrate a strong linkage between economic freedom and an unconventional outcome: the extent to which families achieve their not-strictly-economic childbearing objectives. Linking economic freedom to this more distant outcome demonstrates the importance of economic freedom not only for proximate outcomes like growth or employment, but more distal outcomes nonetheless closely tied to basic questions of human flourishing. At the societal level, understanding the constraints to the achievement of desired fertility can help policymakers alleviate the pressures of a declining population. At the individual level, we discover another important benefit to living under economically free conditions, namely, the ability to fulfill fertility desires and plans.

Being the first study to connect research on economic freedom with that of the fertility gap, we conclude by highlighting some avenues for future research. First, the actual mechanism behind our results merit deeper study. For instance, does economic freedom's effect operate through differences in labor market matching, or differences in employer provision of family-friendly work environments, or something else entirely? As "pro-family" policies become more popular,

uncovering the non-economic drivers of the fertility gap will become increasingly important.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Appendix

5.1 Demographic Intelligence Family Survey (2020-2023) Questions:

- *Happiest Parity* Measure:

  "Often, a decision about how many children someone would like to have is more complicated than just a number. People often do not have exactly the number of children they want to have. So for this question think about what life might be like for you with different numbers of children.

  Then, rate each number of children [1-6] by **how much you would like to have that number of children**, on a scale from 'I would never want to end up with this many children' (zero stars) to 'Having this many children would make me extremely happy'"

- Intended Total Fertility: Biological Children Ever Had + Current Pregnancy + Number More Children Intended.
  - "How many biological children have you ever had? Please select the number below." (Options: 0-20 or more)
  - "Are you currently pregnant?" (Yes or No)
  - "Do you intend to have any (additional) children (beyond your current pregnancy)?" (Options: Yes, No, Not sure; if it happens it happens)
  - "Thinking about your own future plans, how many (more) children do you intend to have, not including any children or pregnancy you may currently have?" (Options: 0-10 more children, or "I'm not sure")

5.2 Economic Freedom of the World Components (Subnational Index, 2022):

1. Government Spending: (a) general consumption expenditures by government as a percentage of income, (b) transfers and subsides as a percentage of income, and (c) insurance and retirement payments as a percentage of income
2. Taxation: (a) income and payroll tax revenue as a percentage of income, (b) top marginal income tax rate and the income threshold at which it applies, (c) property tax and other taxes as a percentage of income, and (d) sales taxes as a percentage of income
3. Labor Market Freedom: (a) full-time minimum wage income as a percentage of per capita income, (b) government employment as a percentage of total state/provincial employment, and (c) union density

5.3 Freedom in the 50 States Components (2021):

1. Fiscal Policy: (a) state tax revenues, (b) government consumption, (c) local tax revenues, (d) government employment, (e) government debt, and (f) cash and security assets

2. Regulatory Policy: (a) land-use freedom and environmental policy, (b) health insurance freedom, (c) labor-market freedom, (d) lawsuit freedom, (e) occupational freedom, (f) miscellaneous regulations that do not fit under another category (such as certificate-of-need requirements), and (g) cable and telecommunications freedom

3. Personal Freedom: (a) incarceration and arrests for victimless crimes, (b) gambling freedom, (c) gun rights, (d) marriage freedom, (e) educational freedom, (f) tobacco freedom, (g) alcohol freedom, (h) marijuana freedom, (i) asset forfeiture, (j) other mala prohibita and miscellaneous civil liberties, (k) travel freedom, and (l) campaign finance freedom

5.4 Further Robustness Checks

Table 6: Evaluating the Effect of Economic Freedom (2010-2020) on the Fertility Gap

	Happiest Parity Fertility Gap			
	(1)	(2)	(3)	(4)
EFW Economic Freedom (2010-2020)	−0.057***	−0.065***	−0.067***	−0.057***
	(0.016)	(0.018)	(0.018)	(0.018)
Evangelical Share				−0.002
				(0.002)
Urban Share				0.006**
				(0.002)
Foreign-Born Share				−0.005
				(0.004)
Demographic Controls		yes	yes	yes
Economic Controls			yes	yes
Year FE			yes	yes
Observations	10,425	10,425	10,425	10,425
Adjusted R^2	0.004	0.032	0.047	0.075
Note:				$^*p < 0.1;^{**} p < 0.05;^{***} p < 0.01$

Sources: Demographic Intelligence Family Survey, Economic Freedom of the World Gwartney et al. (2022), Pew Research, and the American Community Survey. "Economic freedom" refers to the standardized subnational economic freedom score of each state in 2020. Demographic controls include relationship status, race, and age. Economic controls include income, education, employment status, and concerns about childcare costs. "Evangelical Share" refers to the share of people in each state identifying as evangelical in 2014. "Urban Share" refers to the share of a state's population living in urban areas in 2020. "Foreign-Born Share" refers to the share of a state's population that were not U.S. citizens at birth in 2020. Errors are clustered at the state level.

Table 7: Evaluating the Effect of Economic Freedom on the Fertility Gap (State-Level)

	Happiest Parity Fertility Gap		
	(1)	(2)	(3)
EFW Economic Freedom	−0.038*	−0.035	−0.038*
	(0.021)	(0.022)	(0.023)
Married Share		0.019**	0.019**
		(0.008)	(0.008)
Share 18 and Over		0.026**	0.031**
		(0.013)	(0.015)
Evangelical Share			−0.0005
			(0.002)
Urban Share			0.005***
			(0.002)
Foreign Born Share			−0.009*
			(0.005)
Observations	50	50	50
Adjusted R^2	0.040	0.145	0.198
Note:	*p<0.1; **p<0.05; ***p<0.01		

Sources: Demographic Intelligence Family Survey, Economic Freedom of the World Gwartney et al. (2022), Pew Research, and the American Community Survey. "Economic freedom" refers to the standardized subnational economic freedom score of each state averaged across 2010-2020. "Married Share" refers to the share of people who were married in each state in 2020. "Share 18 and Over" refers to the share of people who were 18 and older in each state in 2020. "Evangelical Share" refers to the share of people in each state identifying as evangelical in 2014. "Urban Share" refers to the share of a state's population living in urban areas in 2020. "Foreign-Born Share" refers to the share of a state's population that were not U.S. citizens at birth in 2020. Standard errors are heteroskedasticity robust.