

What Explains Educational Polarization Among White Voters?

William Marble

June 2021

Abstract

Over the past 40 years, college-educated white voters have defected from the Republican Party while the white working class has become a reliable source of Republican support. I study the issue basis of this educational realignment. To do so, I generate estimates of public opinion over four issue domains using survey data spanning 1984 to 2020. I use a simple spatial voting model to interpret the relationship between these issue attitudes and voting behavior. I find that both economic and non-economic issues have contributed to the realignment. College-educated white voters have become increasingly liberal on economic issues since the mid-2000s; they are now to the left of non-college whites on every issue domain. I document evidence that this trend is due to the growing divergence in economic well-being across educational groups. At the same time, the relative importance of non-economic issues has increased for working class whites. College-educated whites have based their votes on non-economic issues since the 1980s, whereas non-college whites placed lower weight on these issues until recent years. Educational polarization in presidential elections is thus explained by the growing relevance of non-economic issues pushing the white working class toward Republican candidates and the increasing economic liberalism of college-educated whites pushing them toward Democrats. Together, these findings suggest a nuanced role for economic and cultural issues in structuring political coalitions.

Since the 1990s, there has been a dramatic realignment in the social basis of party support: the Democratic party has been shedding white working-class voters. In 1992, George H.W. Bush captured about 45% of the two-party vote among white voters without a college degree — compared to 52% among white college-educated voters. In 2020, Donald Trump captured nearly 65% of the two-party vote among non-college whites, compared to just 42% among whites with college degrees.¹

Figure 1 documents the white working class's slow turn toward the GOP and evolution of college-educated whites into a reliable Democratic voting bloc. It plots net Republican votes within groups defined by race and education in presidential elections from 1984 to 2020.² Educational polarization among white voters was nearly non-existent in the 1984 election. In the elections between 1984 and 2000, white college-educated voters supported the Republican candidate at a higher rate than white non-college voters — though this group never supported Reagan's successor candidates at as high a rate. The 2000 election marked the beginning of a process of educational polarization among white voters that continued at least through 2020. While punditry during and after the 2016 election claimed that Donald Trump uniquely mobilized white working class voters, in reality, his strong performance among this group represents the continuation of a long-term trend (Carnes and Lupu, 2021).³

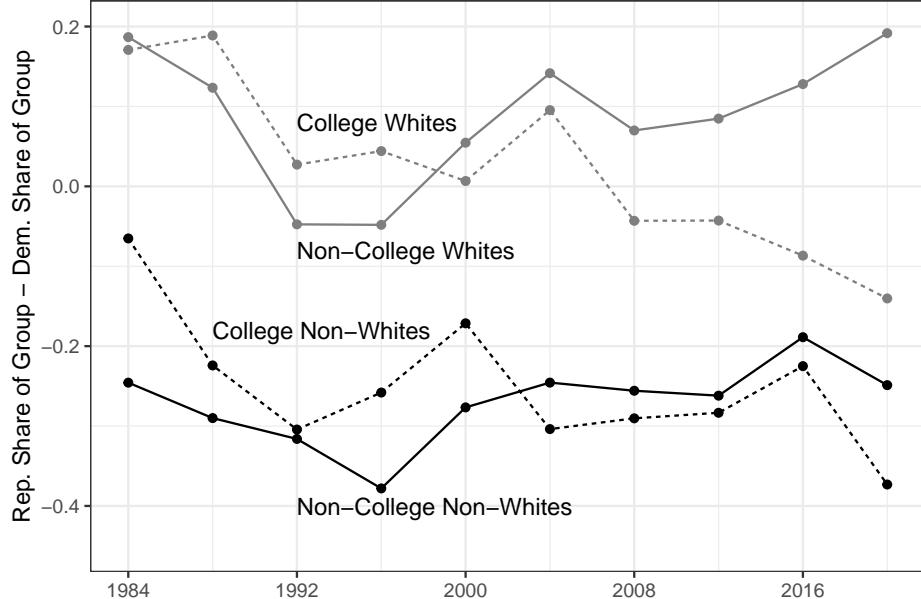
This realignment represents a substantial change in American electoral coalitions. The Democratic Party has traditionally been the party of labor and the working class, while the Republican Party has been the party of business and the upper class. What this realignment means for the American party system depends on the factors driving it. The realignment

¹This calculation, and subsequent statistics, are based on data from the ANES (1984-2020) and the CCES (2008-2020).

²Net Republican votes is the share of a group that voted for the Republican minus the share that voted for the Democrat. This outcome measure is affected by both turnout and vote choice and is more relevant for assessing a group's contribution to election outcomes than vote share among those who turn out (Axelrod, 1972; Grimmer and Marble, 2019).

³Over the same time period, educational polarization among non-whites is relatively muted, and has in fact declined compared to its peak in the early 1980s. While non-white college-educated now support Democratic candidates at a higher rate than non-white non-college voters, these differences are small compared to the extent of educational polarization among white voters.

Figure 1: Net Republican Votes in Presidential Races, By Race and Education



Notes: “Net Republican votes” is defined as the proportion of a group that votes for the Republican candidate minus the proportion that votes for the Democratic candidate. Source: ANES (1984-2020) and CCES (2008-2020). All estimates include survey weights.

is surprising when viewed through the lens of economic voting. The economic prospects of non-college-educated workers have stagnated (Autor, 2019), which might be expected to push non-college educated voters leftward to demand higher levels of redistribution. However, researchers have also documented a growing role for cultural issues, such as moral traditionalism and racial identity, in structuring party cleavages (Sides, Tesler and Vavreck, 2019; Frank, 2004; Ballard-Rosa, Scheve and Jensen, 2021; Baccini and Weymouth, 2021).

Ultimately, there is little research explaining the sources of the growing educational divide among white voters over time. Noting that “we still have a lot to learn about the white working class’s slow move towards the GOP,” Carnes and Lupu (2021, 67) pose a question that I tackle in this paper: “Are there particular issues or policies that Republican candidates have emphasized that are attracting the white working class?”

I study the issue basis of the educational realignment in American politics over the past four decades. I use survey data from the ANES and CCES to generate issue-specific ideal

point estimates on four broad issue areas: economics, moral and social values, race and civil rights, and foreign policy. These issue domains cover many of the salient political issues over the past 40 years of electoral politics, including taxation and spending, LGBT rights, abortion access, immigration, foreign wars, and affirmative action. These issue preference estimates enable me to track trends in public opinion over time.

To interpret the importance of these trends for structuring electoral coalitions, I outline a multidimensional spatial voting model. The model suggests that, within elections, differences in voting patterns across groups can be due to either (1) differences in the distribution of preferences across groups or (2) differences in the weights that groups attach to different issues. Across elections, an additional source of changes in group voting patterns is (3) changes in candidate position. I use this framework to interpret regressions of vote choice on issue attitudes. I show the coefficients from this regression represent a combination of issue weights and candidate platforms. Without data on candidate platforms, issue weights are not identifiable. However, *differences* in issue weights across subgroups of the electorate are identifiable under certain assumptions, enabling analysis of which groups care more or less about certain issues.

My empirical analyses are structured by this theoretical framework. I first investigate trends in issue attitudes. I then turn to the relationship between these issue attitudes and vote choice, and differences in this relationship across educational subgroups. I present four primary findings about the education divide among white voters since 1984.

First, white working class voters have long held more conservative views than white college-educated voters on issues related to moral values, race, and foreign policy — consistent with prior accounts of class dynamics. Second, in recent decades, there is growing polarization over economic issues as well, with white college-educated voters expressing more liberal economic views than non-college voters. College-educated whites voters are now consistently more liberal — on both economic and cultural issues — than non-college-educated whites.

Third, the growing liberalism of college-educated voters may be driven by divergence in labor market outcomes between college-educated and non-college workers. Using administrative data on wages, I find that counties with increases in educational inequality have larger education gaps on economic policy. Inequality appears to fuel polarization on economic issues; but rather than the working class moving leftward, it is the professional class that is becoming more liberal.

Finally, I show that there has been a convergence in the importance that college- and non-college-educated voters place on different issues. In the 1990s, college-educated white voters were more consistently “issue voters” than non-college educated voters — in that their vote choice depended more heavily on their issue attitudes compared to non-college voters. This was especially true for moral issues. In recent years, however, non-college white voters have become issue voters. Since 2008, the weight placed on each of the four issues has been nearly identical among college and non-college voters.

The fact that white working class voters did not place much weight on non-economic issues in the past, relative to college-educated whites, hampered Republicans’ ability to translate their conservative attitudes on non-economic issues to votes. Similarly, economic issues prevented Democrats from converting college-educated whites. Over the past 20 years, however, the steady increase in the relevance of non-economic issues for working class whites and the increasing economic liberalism of college-educated whites have helped drive the educational realignment.

These findings yield support for some prominent theories about the realignment of American politics over the past several decades, while adding a new explanation for the growing educational divide. Scholars and pundits debated the extent to which cultural and moral issues were supplanting economic issues in the early 2000s (e.g., Frank, 2004; Bartels, 2006; Hillygus, 2005; Gelman, 2009). My findings suggest that these issues have been important for college-educated white voters since at least the 1980s. But they have become relatively more important to non-college-educated voters, contributing to educational polarization among

whites.

Non-economic issues are only part of the story. The findings on economic issues have been less recognized previously. Instead of growing economic inequality leading the highly educated to the economic right and the working class to the left (McCarty, Poole and Rosenthal, 2016), I find the opposite. College-educated voters have become more liberal on economic issues, aligning their economic preferences with their cultural preferences. Zooming into local labor markets, this pattern appears strongest where college-educated workers are faring well relative to non-college workers. This trend is inconsistent with standard models of redistribution (Meltzer and Richard, 1983), but is consistent with other political economy arguments focusing on insurance motivations for public spending or a desire to avoid negative externalities associated with inequality (Moene and Wallerstein, 2001; Rueda and Stegmüller, 2016). It is also consistent with a smaller public opinion literature documenting liberal economic views among the economically well-off (Gilens and Thal, 2017; Broockman, Ferenstein and Malhotra, 2019).

The rest of the paper is structured as follows. First, I review potential explanations for the growing education gap. Next, in Section 2, I outline a simple multidimensional spatial voting model. The model suggests that differences in voting behavior across groups can naturally be decomposed into differences in issue attitudes and differences in the weights placed on different issues. Section 3 introduces the survey data and measurement strategy that form the empirical core of this paper. Sections 4 and 5 analyze issue attitudes by education group. Section 6 analyzes the weights attached to different issues in voting decisions. Section 7 discusses issues in interpreting the results. Finally, I conclude.

1 Morals, Race, and Economics as Drivers of Electoral Outcomes

What explains the growing educational divide among white voters? Various strands of the literature argue that some combination of moral values, race-based identity concerns, and economic decline are responsible for changing voting patterns. While each of these

accounts has evidence in its favor, their relative importance for explaining macro-level trends is unclear. I briefly review these perspectives, then argue that comprehensive over-time data on issue attitudes are necessary for parsing out the relative explanatory power of these accounts.

Prominent research and punditry in the early 2000s claimed that poor or working class whites were moving to the Republican Party due to religious and cultural issues. Frank (2004) exemplifies this analysis, arguing that Republicans have captured the votes of less well-off citizens by appealing to “cultural wedge issues like guns and abortion and the rest whose hallucinatory appeal would ordinarily be far overshadowed by material concerns” (254). This analysis sparked an important debate, which broadly concluded that while moral and cultural issues are relevant, they are more important in explaining the voting patterns of the relatively well-off, rather than the working class (Bartels, 2006; Gelman, 2009; Hillygus, 2005).

This literature on moral values voting appeared midway through the process of educational realignment. Writing in 2006, Bartels notes that white college graduates supported Republicans at a higher rate than non-college whites from the 1950s through the 1970s. Since 1980, he writes, “there has been no consistent difference in voting behavior between whites with college degrees and whites without college degrees. From this perspective, class . . . has become much *less* politically relevant over the past half-century” (207). As seen in Figure 1, that conclusion came at the midpoint of a realignment process, rather than a steady state of educational depolarization. It is thus worth revisiting the role of cultural and moral values in educational realignment in historical perspective.

More recently, a second account argues that the realignment in American politics is due not merely to moral issues, but to racial identity-based concerns in particular. For example, Sides, Tesler and Vavreck (2019) argue that demographic changes have threatened whites’ position as the dominant group in society. White people have responded to these changes by increasing their identification with their racial group (Jardina, 2019). Populist politicians

such as Donald Trump have then capitalized on these fears, making identity concerns central to their politics and positioning themselves as protectors of traditionalist white Americans (Smith and King, 2021). In this account, attitudes on racial issues are primary drivers of the populist turn among working class whites (Mutz, 2018; Reny, Collingwood and Valenzuela, 2018).

A third account emphasizes economic changes in explaining electoral change. Over the past half-century, the working class has seen its relative status decline. Globalization has led to offshoring of jobs (Autor, Dorn and Hanson, 2013), computers have replaced mid-level professional jobs that did not require a college degree (Autor and Dorn, 2013; Autor, 2019), and labor unions have lost power (Farber et al., 2021). Research has found that areas most exposed to these trends have responded electorally by punishing incumbents, electing more extreme legislators, and rewarding politicians with more protectionist stances (Jensen, Quinn and Weymouth, 2017; Che et al., 2016; Feigenbaum and Hall, 2015; Autor et al., 2020). In the U.S. and other industrialized countries, such areas have voted for right-wing populist candidates at high rates (Autor et al., 2020; Colantone and Stanig, 2018).

Finally, a growing literature seeks to unify the identity- and economics-based accounts. The declining economic status of the white working class may lead them to emphasize other aspects of their identity that help them preserve psychological status — such as white identity or authoritarian cultural values (Shayo, 2009; Ballard-Rosa, Scheve and Jensen, 2021; Baccini and Weymouth, 2021). Rather than understanding economic insecurity and identity concerns as competing explanations, they are mutually reinforcing.

While each of these arguments finds empirical support, it is difficult to assess the relative importance of each mechanism for generating realignment. Researchers often study each of these phenomena in isolation and in a limited number of years. This approach often generates stronger claims to internal validity, but it leaves unresolved the question of how much each mechanism can explain macro-level trends. Moreover, different arguments have different levels of specificity about the underlying mechanisms. The moral values explanation, for

instance, has clear individual-level empirical implications: namely, that citizens' attitudes on moral issues should be increasingly correlated with their vote choice over time. In contrast, studies about the effects of economic change are often conducted at an aggregate level. This leaves open the possibility for multiple mechanisms, such as retrospective evaluation or issue voting concentrated on trade.

This paper makes two contributions to help overcome these limitations. First, I develop over-time measures of issue attitudes that are comparable over several decades. This over-time data allows me to take a longer view on the question of electoral realignment than most studies. Second, I rely on a theoretical framework that clearly specifies the relationship between issue attitudes and vote choice. This framework helps to distinguish between changes in public opinion that are and are not important for generating educational realignment, and clarifies the interpretation of correlations between vote choice and issue attitudes.

2 Theoretical Framework

In this section, I introduce a multidimensional spatial model of voting, which can be used to characterize sources of differences in groups' voting patterns. In the model, voters choose the candidate whose platform is closest to them in multidimensional issue space. Different dimensions may be weighted differently across different groups of voters. In this framework, differences in group voting within elections, then, can be attributed to differences in the distribution of issue preferences across groups or to differences in the weights the groups attach to each issue domain. Changes in groups' voting patterns over time may additionally be caused by changes in candidates' platforms. I show that while issue weights are typically not identifiable without data on candidates' platforms, relative weights across groups are. I use this theoretical discussion to structure my subsequent empirical investigations.

2.1 A Multidimensional Spatial Voting Model

In the model, in each election there are two candidates competing against each other. Candidates are characterized by their policy platforms in K -dimensional Euclidean space. These platforms are denoted by $\mathbf{x}_j = (x_j^1, \dots, x_j^K)$, for $j \in \{d, r\}$. Voters have ideal points in the same K -dimensional space, denoted $\Theta_i = (\theta_i^1, \dots, \theta_i^K)$.

The utility that a voter receives from candidate j is a function of the distance between her ideal point and the candidate's ideal point, where each voter has a weighting vector $\mathbf{w}_i = (w_i^1, \dots, w_i^K)$ describes how much weight she attaches to each dimension. I assume the utility voter i gets from candidate j is related to the (\mathbf{w}_i -weighted) Euclidean distance between the voter and candidate's respective ideal points:

$$V_{ij} = - \sum_{k=1}^K w_i^k (x_j^k - \theta_i^k)^2. \quad (1)$$

Voter's utility from a candidate also contains an additive, independently distributed error term for each candidate, denoted by u_{ij} .⁴ Total utility for a candidate is given by $U_{ij} = V_{ij} + u_{ij}$.

Voters vote for the candidate who gives them higher utility. A distributional assumption about the differences in error terms for each candidate — namely, that $(u_{ij} - u_{ij'}) \sim F_u$ — choice probabilities of the form

$$\begin{aligned} p_{ir} &= \Pr(i \text{ votes for } r) = \Pr(V_{ir} + u_{ir} > V_{id} + u_{id}) \\ &= F_u(V_{ir} - V_{id}) \\ &= F_u \left(\left[\sum_{k=1}^K w_i^k (x_d^k - \theta_i^k)^2 \right] - \left[\sum_{k=1}^K w_i^k (x_r^k - \theta_i^k)^2 \right] \right). \end{aligned} \quad (2)$$

In the application here, I maintain the assumption that the errors follow an extreme value

⁴This term could correspond to valence qualities of the candidate, such as perceived competence, or other determinants of vote choice that are not related to policy positions.

distribution, yielding logit choice probabilities.⁵

To obtain the vote share for the Republican candidate within a given group g , we integrate over the distributions of Θ_i and \mathbf{w}_i among members of group g :

$$v_g = \int p_{ir} dF_g(\Theta) dF_g(\mathbf{w}), \quad (3)$$

where $F_g(\Theta)$ and $F_g(\mathbf{w})$ are, respectively, the distributions of ideal points and weights within group g .

This framework identifies there are two potential sources of differences in Republican vote share across groups: (1) differences in the distribution of ideal points, $F_g(\Theta)$, and (2) differences in the distribution of weights, $F_g(\mathbf{w})$. Across elections, even absent changes in ideal points or weights, (3) changes in candidate positioning could additionally generate changes in the voting behavior of a group.

2.2 Interpreting Regressions of Vote Choice on Issue Attitudes

Directly estimating the parameters of the spatial voting model outlined above is infeasible in the absence of data measuring both candidates' platforms (\mathbf{x}_j) and voters' ideal points (Θ_i) on the same scale. Such data are occasionally available for specific elections and specific issues (e.g. Alvarez and Nagler, 1998). However, comprehensive over-time data are unavailable.

A straightforward alternative is to regress vote choice on voters' issue attitudes. Under an assumption about variation in the issue weights, this regression yields reduced-form parameters that are functions of the model parameters. Specifically, assume that the issue weights \mathbf{w}_i are homogeneous within a group. Then a logit regression of voting for the Republican on issue attitudes yields intercept and slope parameters that are functions of the issue weights

⁵To improve the exposition of this section, I ignore turnout decisions. A “calculus-of-voting” model of turnout, in which voters abstain if the difference in utility between the candidates is sufficiently small (i.e. $|V_{id} + u_{id} - V_{ir} - u_{ir}| < c$), yields an ordinal model. The implications of the model are unchanged in this case. In my subsequent empirical analyses, I estimate ordinal models to take turnout into account.

within that group:

$$\beta^k = 2w^k(x_r^k - x_d^k) \quad \text{and} \quad \alpha = \sum_k w^k(x_d^{k2} - x_r^{k2}). \quad (4)$$

The slope coefficients β^k are the product of the weight placed on issue k and the candidates' platform divergence on that issue, while the intercept is a function of the weights and platforms on all issues.⁶ The fact that the slope coefficients contain both issue weights and candidate platforms presents inferential challenges, because it implies that the issue weights themselves are not identifiable in the absence of data on candidate platforms measured on the same scale as respondents' issue preference. While some interventions in the literature document the increasing "weight" attached to non-economic issues among both college- and non-college whites (Bartels, 2006, 212), such an interpretation can be sustained only under the untenable assumption that candidates' platforms are fixed from one election to the next.

2.3 Identifying Relative Issue Weights Across Groups

Despite the difficulty with identifying issue weights, some progress can be made by comparing different groups within the same election. Because the candidate platforms are held fixed across groups within the same election, the ratio of slope coefficients across groups recovers the relative weight that the groups place on the issue. Denote the slope coefficients and weights among groups g and g' using subscripts. The ratio of coefficients is then equal to the ratio of weights:

$$\beta_g^k / \beta_{g'}^k = \frac{w_g^k(x_r^k - x_d^k)}{w_{g'}^k(x_r^k - x_d^k)} = \frac{w_g^k}{w_{g'}^k}. \quad (5)$$

⁶A slightly weaker assumption that still allows for a "structural" interpretation of this regression is due to Rivers (1988). Suppose there is unobserved individual-level heterogeneity in issue weights and that this heterogeneity is uncorrelated with issue preferences. Then, this regression yields functions of the *average* issue weights within the sample. If the weights are correlated with preferences — for instance, if people with more extreme preferences on an issue dimension also place higher weight on that dimension — then the reduced-form coefficients are not interpretable in terms of structural parameters.

If the coefficients are identical, it implies that the two groups place equal weight on the issue, and the ratio is 1. If $\beta_g^k / \beta_{g'}^k = 2$, it implies that group g places twice as much weight on issue k as does group g' .

This simple result implies that we can study the relative importance of different issues between education groups. For example, if the white working class is especially motivated by racial identity concerns, then we should observe that the weight attached to racial issues is higher in that group.

3 Construction of Issue Scales

A core goal of this paper is to investigate the issue basis voting patterns across education groups. This goal necessitates generating measures of issue preferences that cover a relatively long time span, are comparable over time, and cover a range of important public policy issues that could plausibly be related to voting decisions.

To construct such measures, I combine a large number of survey questions from the American National Election Studies (ANES) and the Cooperative Congressional Election Study (CCES) together using an ideal point model. I begin by defining four issue areas covering a wide range of important public policies and which are plausible drivers of voting decisions. I then categorize over 190 survey questions from the ANES and CCES into these issue categories. I fit separate ideal point models to generate preference estimates for each of the four issue areas.

The ANES data covers 1984-2020 and I obtain ideal point estimates for roughly 40,800 ANES respondents.⁷ The CCES data covers 2006-2020 and I obtain ideal point estimates for roughly 413,000 respondents. The remainder of this section details each step of the measurement strategy. Technical details on model estimation are relegated to Appendix B.

⁷I choose 1984 as the start of the analysis because many questions on the ANES are first asked consistently in this year. Further, the 1984 election was a low point for educational polarization among whites, as seen in Figure 1.

3.1 Defining Issue Areas

The first two issue domains that I examine have been investigated extensively in prior research. The first domain, Economics, taps attitudes related to government spending and the extent of the state’s intervention in the economy. This dimension is the primary axis of conflict in Congress throughout American history and is the traditional divide between left and right parties worldwide (Poole and Rosenthal, 2007).

The second domain, Moral and Social Issues, taps into attitudes on the extent to which the state should regulate in favor of moral conduct and, particularly, whether the state should favor moral traditionalism. This second dimension has been the axis of much conflict in modern American politics — especially since the rise of the “New Left” in the 1960s and the rise of Evangelical conservatism in the 1980s. Prior research has also documented distinct attitudes in the public on questions of economic and moral policy (Treier and Hillygus, 2009; Ansolabehere, Rodden and Snyder, 2006).

The final two domains have received less attention in the issue-voting and political economy literature, but have clear importance for American politics and have been the subject of extensive individual study. The third issue domain, Race and Civil Rights, taps into racial attitudes, primarily towards Black Americans. The importance racial issues for electoral politics has waxed and waned over the course of American history (Schickler, 2016; Poole and Rosenthal, 2007). But racial politics is central to American political development and the organization of American government. Recently, there is renewed attention on the importance of racial attitudes for electoral politics — especially since the 2016 election (Sides, Tesler and Vavreck, 2019; Hopkins, 2019).⁸

The final dimension, Foreign Policy, taps into attitudes related to the United States’ place in the world, including attitudes towards militarism, international cooperation, immigration,

⁸Racial attitudes may be related to attitudes about the role of traditional values in society — as noted by analysts of “symbolic racism” or racial resentment (Kinder and Sears, 1981; Sniderman et al., 1991). But there is no necessary reason why moral conservatism should go along with conservative racial attitudes, so I treat them as separate issue domains.

and international trade. The role of foreign policy in presidential campaigns has varied over time — from an early Cold War bipartisan consensus, to the divisive politics of Vietnam and Iraq (Aldrich et al., 2006). More recently, the issue of immigration has taken center stage in electoral politics (Hainmueller and Hopkins, 2015). While attitudes about immigration may be related to racial attitudes, the policy choices are fundamentally about the United States government’s stance toward citizens of other states. Therefore, I include immigration as part of the foreign policy issue domain.

3.2 Critiques of the Measurement Approach

These issue categories are designed to trade off parsimony and nuance in an attempt to study the substantive sources of electoral realignment. Nonetheless, any effort to define issue areas in this way is subject to benefits and drawbacks, which I briefly discuss here.

First, these issue areas are broad enough that they lump together distinct issues. For example, though the politics of income taxation may differ from the politics of government involvement in health insurance markets, both issues are classified into the economics issue domain. There are important gains to be made by studying the politics surrounding individual issues (e.g., Campbell, 2012). But the salient policy questions in any given domain change from one election to the next, making it difficult to study long-run realignment through the lens of individual policy battles. By defining relatively broad issue areas, I hope to capture broad contours of public opinion, while making distinctions across theoretically distinct bundles of issues.⁹ Moreover, combining responses to a number of survey questions reduces measurement error and generates more reliable estimates of public opinion, even if it sacrifices some important variation on individual policy proposals (Anscombe, Rodden and Snyder, 2008).

Second, the issue domains are not exhaustive — notably, they exclude some salient

⁹Note that my approach already employs more “splitting” of issues than many studies of long-run change in public opinion and representation, which often adopt a one-dimensional summary measure of ideology (e.g., Caughey and Warshaw, 2018; ?).

policies such as criminal justice, gun control, and voting rights. Nonetheless, the issue areas that I define cover a large portion of salient policies over which citizens are likely to have more-or-less reliable attitudes and which politicians stake out visible issue positions.

Third, by defining the issue areas *a priori*, I am imposing structure on the problem that may not reflect the way citizens see politics. An alternative approach would be to use unsupervised methods to discover latent structure in public opinion — letting the data “speak for itself.” This approach has the advantage of being agnostic about the particular way that public opinion is structured. However, this approach is unattractive for my goal of investigating changes in electoral coalitions in substantively and politically meaningful terms. There is little reason to believe that the latent structure will map to substantively interpretable issue domains.¹⁰ Instead, I take the approach of letting substantive knowledge and particular questions of interest guide my measurement strategy.

Ultimately, any measurement strategy has costs and benefits. By taking this approach, I hope to provide a relatively parsimonious account of changes in educational polarization over time, while preserving some of the nuance across issue domains that prior research has found to be important.

3.3 Categorizing Survey Questions into the Four Issue Domains

Most questions fall relatively naturally into one of these categories. To guide my categorizations, I rely on prior research that conducted similar exercises for economic and moral issue domains. While there is inevitably some subjectivity involved in these coding decisions, each issue scale typically contains a large number of questions, muting the effect of any given question on determining the meaning of the scale. Coding decisions for each included question, as well as temporal coverage of each question, are displayed in Figures A1 and A2.

To begin, I followed coding decisions made by researchers in prior studies of economic

¹⁰Prior research finds that one-dimensional models tend to fit public opinion data best, but do not explain very much of the variance in public opinion (Marble and Tyler, 2021). This finding suggests there are substantive gains to be made by examining individual issues.

and moral ideology (Anscombe, Rodden and Snyder, 2006; Treier and Hillygus, 2009). Questions related to government spending, taxation, redistribution, social insurance, and the role of government in the economy were placed in the Economics category.

Questions related to abortion, LGBT rights, the role of religion in public life, and the role of women in society were placed in the Moral/Social issues category. Questions related to racial integration, racial resentment, government spending on racial/ethnic minorities, and affirmative action were placed in the Race and Civil Rights category. Additionally, questions about welfare and solutions to “urban unrest” were also placed in this category due to their strongly racialized connotations in American politics (Gilens, 1999).¹¹

Finally, the Foreign Policy category contains the most heterogeneous set of questions. Questions related to international security and terrorism — including defense spending, the importance of international cooperation, willingness to use military force, and concern about war were placed in this category. A relatively small number of questions about international political economy — related to tariffs, outsourcing, and free trade agreements — were placed in this category. The final subcategory is immigration, which includes questions about whether the U.S. should increase or decrease immigration, whether the U.S. should increase border patrols, and how to deal with undocumented immigrants.

3.4 Estimating the Ideal Point Models

Using these question categorizations, I estimate separate ideal points for each issue domain using an ordinal logistic item-response theory (IRT) model. This type of model is similar to the binary IRT model commonly used to study roll-call voting data (Clinton, Jackman and Rivers, 2004). However, because survey data typically contains more than two response options, an ordinal model can make finer distinctions in ideal points that would be obscured

¹¹Unfortunately, early years of the CCES had relatively few questions related to race and civil rights. In 2008, the only question in this category assess respondents’ support for affirmative action using a 4-point outcome scale. Helpfully, this question is also asked in other years and on the ANES, making it possible to obtain ideal point estimates. However, these estimates are subject to more uncertainty than estimates based on more survey responses.

with a binary model. More details about the IRT model implementation and estimation are given in Appendix B.¹²

Most questions asked on the CCES are not asked on the ANES, and vice versa. Estimating an IRT model on these two sets of surveys separately will thus yield ideal point estimates that are not comparable to each other. In order for the meaning of the scales comparable, it is necessary to make some “bridging” assumptions (Jessee, 2016; Tausanovitch and Warshaw, 2013). In my case, I find questions that are (nearly) identical on the two sets of surveys. Then, during estimation, I impose the assumption that the mapping between the latent ideal point scale and the response categories is identical between the two survey sources — i.e., that the “item parameters” are identical regardless of the survey source.¹³ The ANES asks more questions consistently over time, making those estimates less sensitive to bridging assumptions. The CCES has more questions that are only asked once — meaning that I rely more heavily on the bridging assumptions.¹⁴

Estimates of the discrimination parameters for each item are plotted in Figures B17-B20. Responses to questions with higher (absolute) discrimination parameters are more sensitive to respondents’ locations on the underlying latent scale, so examination of these plots aids in interpreting the issue scales. Respondents’ estimated position on the economic policy issue scale is highly influenced by their opinions on government involvement in healthcare markets, the minimum wage, and spending on the poor. Positions on the moral values scale are especially influenced by opinions on gay marriage, transgender rights, and abortion. Positions on the race and civil rights scale are highly sensitive to opinions on spending on

¹²To speed up computation, I estimate ideal points using a two-step process. First, I estimate the “item parameters” on a subset of the full sample. I then estimate ideal points for the remainder of the sample by fixing the item parameters at their posterior means from the first stage and maximizing the posterior the maximum a posteriori (MAP) ideal point parameters. More details are in Appendix B.3.

¹³In some cases, the question wording was nearly identical but response options varied — for example, the CCES tends to have binary support/oppose response options, while the ANES tends to have Likert-style response options. In these cases, I collapse the response categories to be identical across survey sources. I also check that the margins are relatively similar across survey sources; if the margins on a given item were very dissimilar, I do not use it as a bridge item.

¹⁴Due to the much larger sample size of the CCES, my primary analyses include both survey sources. However, when possible, I replicate analyses using only ANES data to maximize over-time comparability.

assistance to Blacks, answers to questions that comprise the racial resentment scale, and to attitudes toward affirmative action. Finally, positions on the foreign policy scale are especially sensitive to survey responses on questions related to the Iraq War, undocumented immigrants, and border security.

3.5 Summary of Ideal Point Estimates

The issue scales are standardized so that the average posterior mean and standard deviation, across all respondents and all years, are 0 and 1. The appendix includes several summaries of the ideal point estimates. Figure A4 plots the average of posterior mean ideal point estimates by respondents' party identification. Across all issue areas, there is growing polarization between the parties. Positions on economic issues have always divided partisans, but in the past decade, especially, there are also sharp divisions on moral/social issues, race and civil rights, and foreign policy.

Table A1 shows the correlation of posterior means across issue areas in the 1990s and 2010s. While issue position are positively correlated — indicating that a conservative on economic issues is likely to be conservative on other issues as well — the correlations are far from perfect. However, they are increasing over time. The over-time correlations are presented visually in Figure A3. In both survey sources, there is a sharp uptick in the correlation between issue preferences after 2008.

4 The Rise of Consistent Polarization Across Issue Areas

I begin my empirical analyses with a description of the education gap in public opinion among white Americans. To summarize educational polarization on each issue domain, I regress respondents' estimated issue positions on an indicator for holding a college degree, along with demographic controls for age, sex, and income. I run separate regressions for each presidential election year between 1984 and 2020 and plot the estimated coefficient on the college indicator. The coefficient estimate is the average difference in college versus non-

college issue-specific ideal point, after adjusting for the control variables. Because the scales are standardized to have unit variance, coefficients can be interpreted in terms of standard deviations. Figure 2 presents the results.¹⁵ I begin by discussing the non-economic issues, then discuss the results for the economics issue scale.

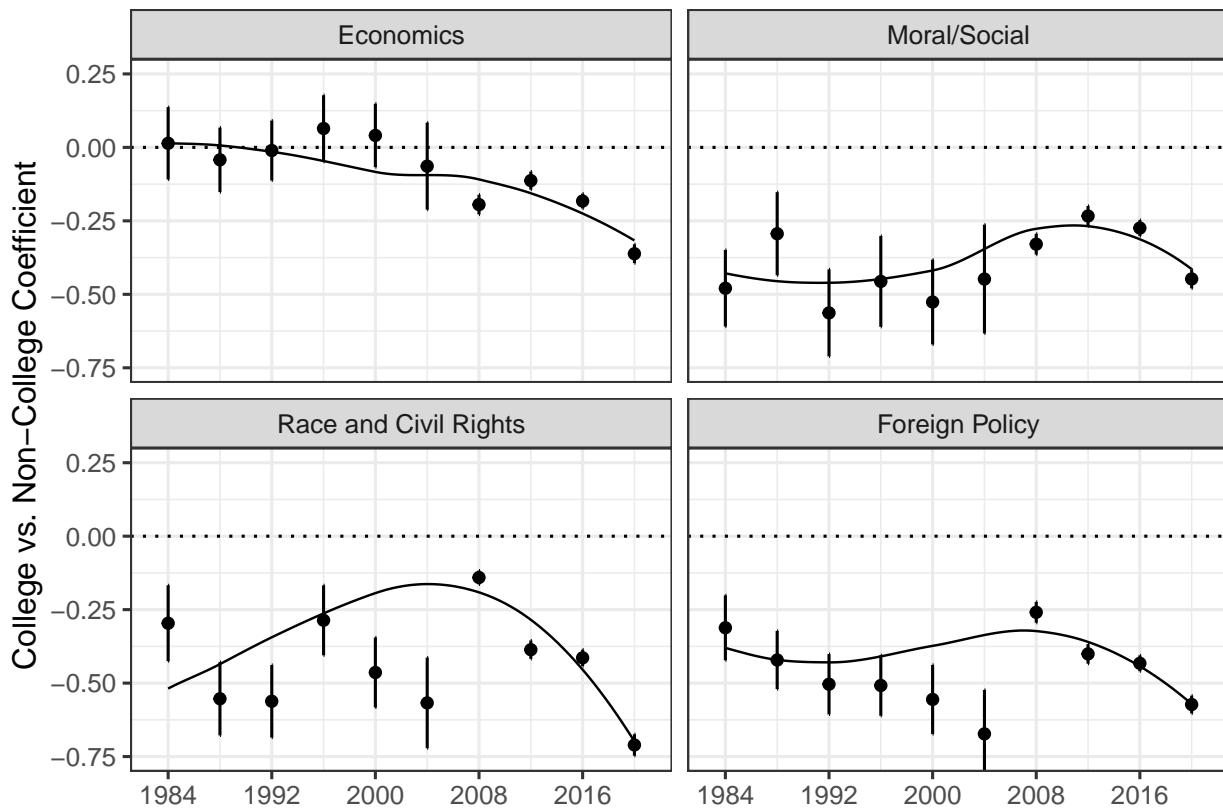
4.1 The Longstanding Educational Divide on Non-Economic Issues

For non-economic issues, college-educated voters have long been consistently more liberal than non-college voters. As far back as the mid-1980s, the education gap on moral issues was well over a quarter of a standard deviation of the issue scale. College-educated voters tend to prefer less restrictive policies toward abortion, more recognition of the rights of sexual minorities, more supportive of women’s rights, and less insistent that policy should reflect traditional moral and cultural values. Attitudes on this issue dimension in the population writ large have moved substantially leftward over the time period that I study — coinciding with advances in gay rights and increasing gender equality in society. But the gap between college- and non-college voters on this issue domain has remained essentially constant over time.

A similar pattern applies to racial issues and foreign policy. Since the 1980s, college-educated voters have been more liberal on these policy domain than non-college voters. While there have been short-term fluctuations in the education gap on these policy domains, over the long term differences have remained constant. College-educated voters are more amenable towards policies aimed at benefiting racial and ethnic minorities, such as affirmative action and assistance to Black Americans. College graduates also express lower levels of racial resentment, consistent with prior research (e.g. Smith, Kreitzer and Suo, 2020). On foreign policy, white college graduates express more welcoming attitudes towards immigrants and more opposition to foreign wars.

¹⁵Figure A5 plots the results of the same analysis without control variables. The magnitude of the differences varies compared to the results presented here, but the trends are similar. The largest difference is that college graduates previously were substantially more conservative than non-graduates on economic issues. This flipped in the late 2000s, and college graduates are now more liberal on this domain.

Figure 2: Differences in Attitudes Between College and Non-College Voters



Notes: Points are coefficient estimates from a linear regression of ideal point estimates on an indicator for having a four-year college degree, among whites. Bars indicate robust 95% confidence intervals. The curved line is a loess line fit to the estimates, weighted by the inverse of their variance. Models also include controls for age, race, sex, and income. All regressions include survey weights.

These educational differences on non-economic policy domains are consistent with the theory of “postmaterialist” values. In the 1960s, student-led movements eschewed traditional values of safety and security in favor of advancing environmental protection, enabling self-expression, and incorporating marginalized populations into political life (Inglehart, 1981). They are also consistent with work in American politics on the importance of non-economic issues among high-income and high-education voters (Gelman, 2009; Bartels, 2006).

4.2 The Increasing Economic Liberalism of the College Educated

A key part of the story of educational realignment is displayed in the top-left panel of Figure 2. From at least the early 1980s to the mid-2000s, there was essentially no difference in average attitudes on economic policy between college and non-college voters, after accounting for other covariates. In the unadjusted differences presented in Figure A5, college-educated voters were substantially more conservative than non-college voters until 2012.

Since the mid-2000s, however, college-educated whites have become more liberal on economic issues than non-college whites. This change begins to occur in 2004, continuing steadily through the next decade and a half. By 2020, college-educated whites were about 0.37 points more liberal on the economic policy scale, on average, after applying demographic controls. Without demographic controls, the difference is about 0.27. For reference, the average difference in economic policy among white Democrats and white Republicans in 1984 was 0.67 and in 2020 was 1.75 (after adjusting for identical controls). Thus, in recent years, the *education* gap on this policy dimension is about half as large in magnitude as the *party* gap was in the 1980s — a time before “culture war” issues took center stage in electoral politics.

The prior pattern of minimal differences between college- and non-college voters on economic policy — or, before adjusting for income, the conservatism of college voters — was reflected in the voting patterns during this time. As presented in Figure 1, college-educated white voters supported Republican presidential candidates at a higher (or similar) rate compared to non-college whites until the 2000 election. In that election, according to ANES estimates, college-educated whites contributed a higher rate of support to the Democratic candidate than non-college whites. This gap has only grown larger since that election, coinciding temporally with the increasing liberalism of college-educated voters on economic policy.

As economic issues are thought to be especially important in shaping voters’ preferences, the realignment of economic policy preferences across educational lines is likely to be a large

part of the story of the electoral realignment of white voters. I return to this question more formally in a subsequent section. Before examining potential causes of this realignment on economic policy and its consequences for elections, I first address several concerns about the validity of the finding.

4.3 Assessing the Effect of Survey Source

In this section, I probe the extent to which the results on economic policy are an artifact of the data sources or measurement strategy. The results above suggest that college-educated voters started becoming more liberal on economic issues vis-a-vis non-college voters around the mid-2000s. This timing coincides with the introduction of the CCES in 2008. While the CCES is a much larger sample, improving the statistical precision of the estimates, it also contains a largely separate set of questions than the ANES. If the CCES questions happen to be questions that more clearly separate college and non-college voters than the ANES questions, then the trends may be an artifact of the survey source rather than a legitimate change in public opinion.

To assess this possibility, I take several approaches. First, Figure A7 repeats the same regression analysis as above, but separates out the ANES during the entire time period to maximize the over-time comparability of the estimates. This analysis shows the same general pattern of an increasing gap between college and non-college voters on economic issues, though the timing is later than what is suggested from the combined ANES-CCES sample. The ANES-only results show that white college-educated voters became more liberal than white non-college voters beginning 2016, with an even larger increase in 2020. In contrast, the combined sample shows white college-educated voters being more liberal than non-college whites since at least 2008.

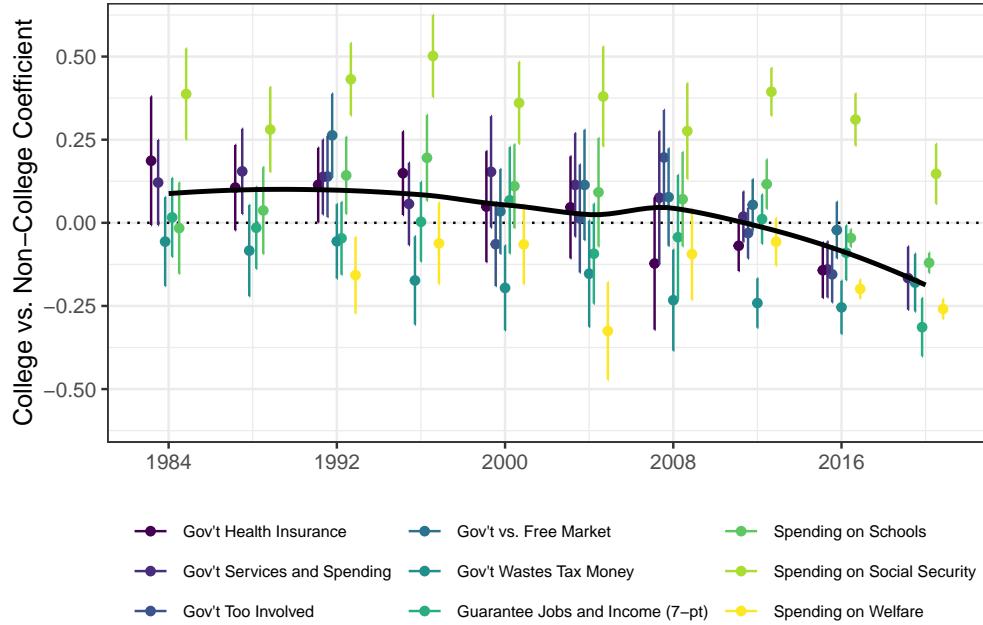
Second, I examine educational differences in responses to individual survey items, without aggregating responses together to form an issue scale. I focus my attention to 9 ANES questions that have been consistently asked over a long time span. These questions cover

topics including: whether the respondent favors government-provided health insurance, a scale measuring preferences for government services and spending, questions about whether the government should intervene in the free market, whether the government should work to guarantee jobs and income, and several questions related to public spending. I recode responses so that higher values indicate more conservative responses, and I standardize items to have mean 0 and unit variance. I then estimate the same models as before among whites, regressing the (recoded) response on an indicator for college, age, sex, and income.

If changes in survey questions or the aggregation of survey responses to issue scales are driving the patterns I document, then these patterns should not be evident when staying closer to the raw data. However, Figure 3 shows that even when looking at individual survey questions, non-college whites have become more conservative relative to college-educated whites. The coefficient estimates on the college indicator tend to be around 0 or positive during the 1980s and (for some items) the 1990s. These differences began to narrow in the early- to mid-2000s, and by 2012 had essentially disappeared. In 2016 and 2020, college-educated whites expressed more liberal responses, on average, on all but one of these items.

Overall, these results suggest that the pattern is not entirely attributable to differences in survey source, but raise some concerns that the differences may be sensitive to the inclusion of different questions in the economics issue scale across the ANES and CCES. There are notable differences in the types of questions asked on the two survey sources. The CCES has more detailed and current policy questions compared to the ANES, which asks more general questions. For example, in 2008, the CCES economic policy questions included items related to concrete policy proposals such as a minimum wage increase, privatization of Social Security, federal assistance for home foreclosures, and funding for the Children's Health Insurance Program. In contrast, the ANES economic policy questions tend to be more general and less tied to current policy debates. These included questions about increasing or decreasing spending on different policy areas, opinion about whether the government tends

Figure 3: Individual Economic Policy Items Show Education Realignment Among Whites



Notes: Points are coefficient estimates from a linear regression of standardized survey responses on an indicator for having a four-year college degree for select economic policy items. Bars indicate robust 95% confidence intervals. The curved line is a loess line fit to the coefficient estimates, weighted by the inverse of their variance. Models also include controls for age, sex, and income. All regressions include survey weights.

to waste tax money, and whether the government should guarantee jobs and income.¹⁶

A priori, it is unclear which question style is more appropriate for studying educational differences in public opinion. The more narrow questions asked by the CCES relate more directly to current government policy, and thus may be more indicative of politically relevant opinion on this issue dimension. On the other hand, this style of question may be more sensitive to differing levels of political information. If college-educated voters have better information about the content of these policies, they may express more consistent views — which could lead to less moderate estimates of public opinion in this subgroup (Broockman, 2016).¹⁷ Regardless of which type of question better measures economic policy preferences,

¹⁶The only overlapping economic policy question asked on both the ANES and CCES in 2008 relates to the bank bailouts following the global financial crisis.

¹⁷Even if this latter case explains the differences across survey sources, it would be noteworthy if well-informed respondents tend to express more liberal policy views. If college-educated voters were truly more conservative, then their potentially more consistent answers would result in larger positive coefficients.

it is notable that both generate the same conclusion about the current state of educational polarization on economic policy.

In sum, these analyses suggest that the main finding on economic policy — that college-educated whites have become more liberal than non-college whites — is not merely an artifact of the measurement strategy. While there is some ambiguity over the exact timing of the shift, both survey sources suggest similar levels of educational polarization in 2016 and 2020 over economic policy.

5 Labor Market Divergence and Polarization on Economics

What has driven the increasing economic liberalism of college-educated whites, relative to non-college whites? In this section, I present suggestive evidence that the growing labor market divergence between those with and without a college degree may be driving educational polarization over economic policy.

There have been salient changes in the relative material circumstances of college- and non-college workers over the past 50 years or so. Technological change has enhanced the productivity of college-educated workers, increasing the demand for — and, ultimately, the relative wages of — high-education workers relative to lower-education workers (Autor and Dorn, 2013). The result has been steadily increasing earnings among those with a college degree, compared to stagnant or declining earnings for those with only a high school education (Autor, 2019). While this trend has received attention in the labor economics literature, its implications for politics are relatively under-explored.

Standard political economy models, based on Meltzer and Richard (1981), Roberts (1977), and Romer (1975), suggest that rising inequality should lead people making below the average income demand higher levels of redistribution. As the wages of non-college-educated workers have stagnated, this would suggest the opposite pattern as the one observed in the previous section: non-college workers should demand higher levels of redistribution relative to college-educated workers.

Other influential ideas in political economy suggest that public spending may be a normal good — with relatively well-off people demanding more spending. The mechanisms behind such a pattern could be insurance motivations (Moene and Wallerstein, 2001; Rehm, 2016), inequality aversion, or avoidance of externalities to inequality such as crime (Rueda and Stegmueller, 2016).

While I cannot fully adjudicate between the potential mechanisms by which inequality may affect polarization, I provide some insight into this question. I exploit local-level variation in labor market outcomes by educational group to examine the effect of inequality on polarization. In cross-sectional and fixed-effects regressions, I find that the education gap on economic policy preferences is larger in areas with more between-group inequality. I find no such pattern for the other issue domains.

5.1 Regional Variation in Relative Earnings

To investigate the importance of between-group inequality on educational polarization, I leverage variation across local labor markets in the relative earnings of college- and high school-educated workers. Specifically, I use data on the average earnings, at the county level, of workers with a four-year college degree and workers with a high school education. The data are drawn from the Census Bureau’s Local Employment Dynamics (LED) dataset, which uses a variety of administrative and survey sources to track local labor markets.¹⁸ This data source has been used in prior political science research on the impact of local economic conditions on political outcomes (e.g., Ballard-Rosa, Scheve and Jensen, 2021; Baccini and Weymouth, 2021). I focus my attention to the period beginning in 2003, due to data availability constraints.¹⁹

¹⁸The LED data tool draws from the Quarterly Workforce Indicators program, which in turns draws on linked employer-employee data derived “administrative records on employment collected by the states, Social Security data, Federal tax records, and other census and survey data.” See https://lehd.ces.census.gov/doc/QWI_101.pdf for more details on data collection and sources. The data extraction tool is available online at <https://ledextract.ces.census.gov/static/data.html>.

¹⁹By 2003, all but 6 states plus D.C. have earnings data available; by 2005, all states but Massachusetts have data available. All states have data available by 2011.

My primary measure of economic divergence between college- and non-college workers is the ratio of average earnings.²⁰ This measure naturally adjusts for regional differences in compensation — whether due to local industry composition, cost of living differences, state- or local-level business and labor regulations, and so on — that jointly affect the earnings of workers across the educational spectrum. A higher earnings ratio indicates that college-educated workers are doing relatively better than high school-educated workers; a ratio closer to 1 indicates relative equality in economic outcomes.

There is significant cross-sectional and time-series variation in this measure of educational inequality. In 2004, the average population-weighted earnings ratio across counties was 1.70, with a standard deviation of 0.29; in 2016, these statistics were 1.85 and 0.28, respectively. I merge this county-level economic variable to the ideal point dataset to investigate the relationship between local educational inequality and polarization.²¹ If educational polarization over economic policy is related to educational divergence in the labor market, we should expect to see that places with growing educational inequality have different levels of polarization.

5.2 Graphical Evidence on Educational Polarization and Inequality

To begin, Figure 4 investigates the relationship between economic divergence and educational polarization on economic policy among whites. On the horizontal axis is the county-level change in educational divergence between 2003 and 2011, and on the vertical axis is the average ideal point by educational attainment, using survey data spanning 2012-2020. In places with shrinking educational divergence, on the left-hand side of the plot, there is relatively little polarization between college- and non-college whites over economic policy. In counties with a change in the earnings ratio of -0.3 — roughly the 5th percentile across counties — both college- and non-college whites are relatively economically conservative,

²⁰Ideally, this measure could be further refined by race; however, race-by-education data is unavailable.

²¹Because the ANES public files do not include county identifiers after 1996, these analyses are subset to CCES respondents.

and there are only small gaps between the educational groups. Contrast this with counties that experienced a change in the earnings ratio of 0.25 — roughly the 95th percentile across counties. There, all white voters are more economically liberal, but this is especially true among college-educated whites. The average placement on the economics issue scale among non-college whites is about 0.1, while the average placement among college-educated whites is about -0.1 . In short, educational differences on economic policy appears only in places that have seen divergence in the economic fortunes of college- and high school-educated workers.²²

In Figure A8, I present analogous plots for the non-economic issues. For non-economic issues, there is a much less dramatic relationship between economic inequality and polarization. While places with growing divergence tend to be more liberal across the board, college-educated whites are consistently more liberal than non-college whites in places with growing and shrinking educational inequality.

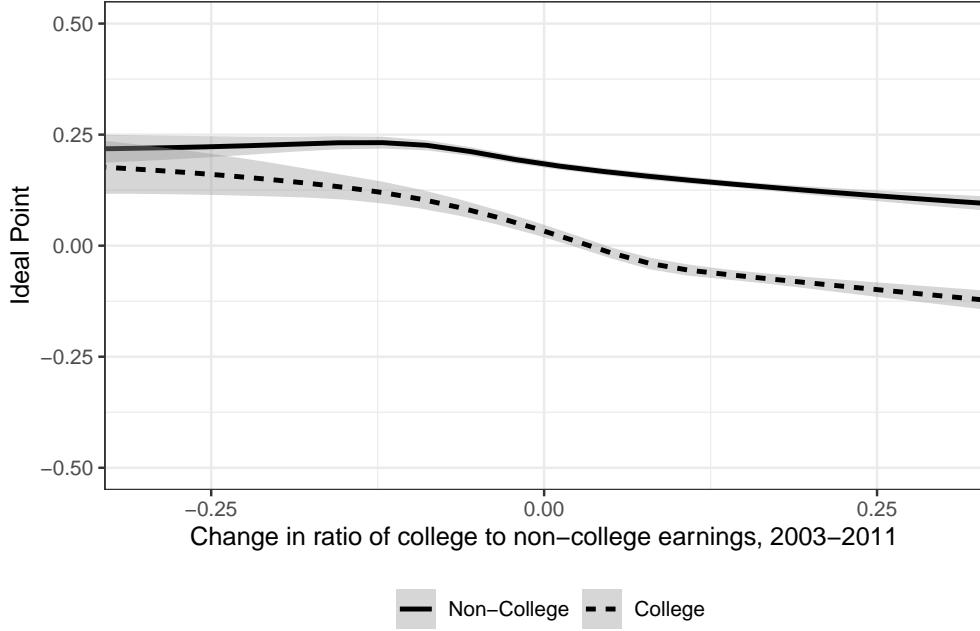
5.3 Panel Data Regressions

While the results here are suggestive, it could be the case that there are simply other differences driving the results. For example, places with higher population density tend to be more liberal (Rodden, 2019) and also tend to be those where the gap between college- and non-college workers has risen most dramatically (Autor, 2019).

Assessing the independent causal effect of local earnings inequality is difficult. However, I can at least account for some of these potential relationships by estimating panel models that account for some unobserved differences across counties. Specifically, I estimate regressions that model respondents' estimated policy preferences as a function of their educational

²²Figure A9 presents the same analysis using four individual survey questions related to economic policy: support for repealing the Affordable Care Act, attitudes on the trade-off between increasing taxes or decreasing spending, support for spending on welfare, and support for spending on police. On the first three items, there is some evidence of increasing educational polarization in counties with more unequal labor market outcomes — especially on the second and third. On the last item, spending on police, the pattern is reversed, with college-educated whites more supportive of *decreasing* police spending in places with higher inequality, while non-college whites are more supportive of *increasing* police spending in those places.

Figure 4: Educational Polarization On Economic Issues Coincides with Economic Inequality



Notes: The horizontal axis measures the change in county-level earnings ratio of college to high school-educated workers from 2003 to 2011. The vertical axis is the average ideal point on economic policy, by education, for survey years 2012 and later. The line plots a generalized additive model (GAM) estimated with survey weights applied. The horizontal axis is restricted to roughly the middle 90% of counties.

attainment, local inequality, and the interaction between the two. I also include individual- and county-level covariates, plus county and year fixed effects. The regression takes the form

$$Y_{ict} = \alpha_c + \gamma_t + \beta_1 E_i + \beta_2 R_{ct} + \beta_3 E_i \times R_{ct} + Z'_{ict} \delta + \varepsilon_{ict}, \quad (6)$$

where Y_{ict} is the issue position of respondent i in county c in year t , E_i is an indicator for respondent i having a college degree, and R_{ct} is the contemporaneous college to high school earnings ratio in county c . The county fixed effects α_c account for time-invariant differences across counties in the average policy opinion. The time fixed effects γ_t account for national-level changes in average policy opinion. Finally, the vector of control variables Z_{ict} includes age, sex, income, and the county's (log) population density. I estimate separate models for each issue domain, subset to white voters, and cluster standard errors at the county level.

Table 1: Fixed Effects Regressions of Ideal Points on Local Educational Inequality Among Whites

Dependent Variables:	Economics (1)	Moral (2)	Race (3)	Foreign Policy (4)
College	-0.141*** (0.030)	-0.258*** (0.035)	-0.303*** (0.032)	-0.374*** (0.030)
Coll/HS Earning Ratio	-0.078*** (0.025)	-0.021 (0.043)	-0.007 (0.031)	-0.062** (0.029)
College \times Coll/HS Earning Ratio	-0.045*** (0.016)	0.024 (0.019)	0.024 (0.018)	0.040** (0.017)
Indiv. Controls	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	294,637	293,867	259,279	294,532
N Counties	3,003	3,003	2,990	3,003
R^2	0.068	0.087	0.090	0.096
Within R^2	0.034	0.028	0.040	0.051

Notes: This table presents fixed-effects models regressing white respondents' estimated issue positions on county-level educational inequality, educational attainment, and their interactions. All models include additional controls for age, sex, income, and county log population density, plus county- and year-level fixed effects. *Coll/HS Earning Ratio* is the ratio of average earnings within the county for college-educated workers compared to workers with only a high school degree. All regressions include survey weights. Standard errors clustered at the county level are in parentheses. The standard deviation of *Coll/HS Earning Ratio* across county-year observations is 0.25; the standard deviation after accounting for county and year fixed effects is 0.15. Data source: CCES, 2006-2020. *** $p < .01$, ** $p < .05$, * $p < .1$

This model leverages over-time variation within counties to eliminate some forms of spurious correlation between issue preferences and county-level earnings ratios. Given the results in the previous section, I expect a negative β_1 coefficient, indicating that college-educated whites are more liberal on each issue dimension than non-college whites. If there is a relationship between the level of educational inequality in the county, there should be a significant coefficient on the interaction term, β_3 , with the same sign as β_1 .²³

Table 1 presents the results of these regressions for each issue area.²⁴ Beginning with

²³Recall that the earnings ratio R_{ct} takes a value of 1 when there is no difference in average earnings between those with and without a college degree. Moreover, because earnings are strictly positive, R_{ct} cannot take non-positive values. Thus, if β_1 and β_3 have the same sign, the differences between college- and non-college issue attitudes are at least as large in magnitude as β_1 .

²⁴Table A2 presents analogous regressions that additionally include county-specific linear time trends.

the first column, the model estimates suggest that college-educated respondents tend to be more liberal than non-college respondents, especially in places with higher levels of earnings inequality across educational groups — as indicated by the significant negative coefficient estimates on the college indicator and the interaction between college and local earnings inequality. This pattern mirrors the prior cross-sectional results presented above. It suggests that the polarization on economic policy attitudes in places with large differences in labor market outcomes between educational groups is not merely due to time-invariant unobserved differences across counties.

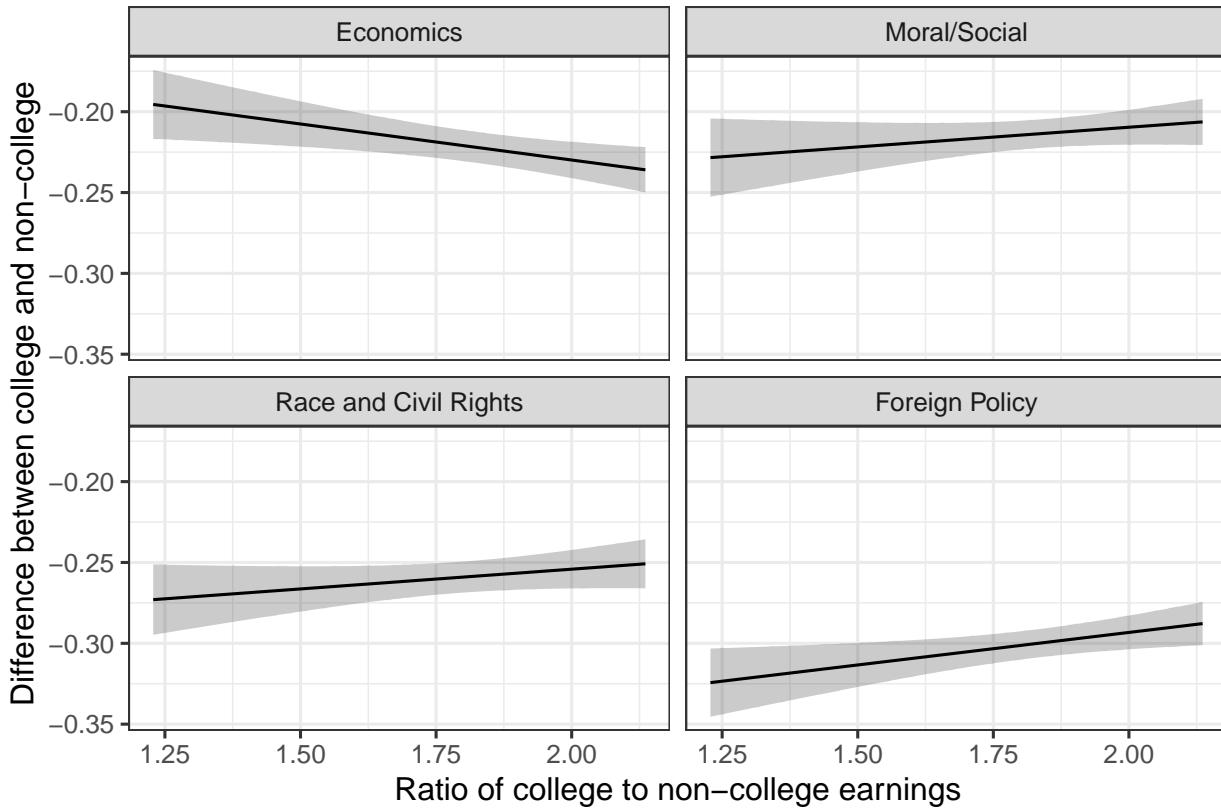
The remaining columns present results for the non-economic issues. The pattern of increasing polarization in counties with higher educational inequality does not appear for other issues. For moral and racial issues, there are insignificant coefficients on the interaction term. For foreign policy, there is a significant interaction term with the opposite sign as the coefficient on the college indicator — suggesting that educational polarization is more muted in high-inequality areas on this issue domain.

To aid in the substantive interpretation of the results, Figure 5 plots the implied average difference between college- and non-college whites on each issue across levels of educational inequality for each issue domain. The top-left panel shows that college-educated white voters tend to be about 0.20 points more liberal on the economic issue scale than non-college whites in places with relatively low levels of educational inequality. In places with higher levels of inequality across groups, this difference increases in magnitude to just under 0.25 points on the issue scale. As indicated by the regression results, there is essentially no difference for moral and racial issues, and slightly lower levels of educational polarization on foreign policy in areas with larger earnings gaps.

The substantive magnitude of this effect is relatively small, especially compared to the cross-sectional results presented in Figure 5. However, this estimation strategy — exploiting variation within local labor markets — nets out any secular, nationwide changes to the

While the magnitudes of the coefficients in these more demanding models are slightly attenuated, they exhibit the same patterns of statistical significance and are substantively similar.

Figure 5: Model-Based Estimates of Differences Between College and Non-College Attitudes



Notes: Lines plot marginal effects of college on issue attitudes, using the fixed-effects model estimates in 1. The horizontal axis spans the central 95% of the county-level distribution of college to high school earnings. Bars show 95% confidence intervals, clustered at the county level. The limits of the horizontal axis are the 2.5th and 97.5th percentile of county-level earnings ratios, across all county-year observations.

relative earnings of college and non-college workers. In that case, the total effect of growing inequality in labor market outcomes on economic polarization may be larger than the estimates presented here.

6 Convergence of Issue Weights Across Educational Groups

The previous sections documented that college-educated white voters have become more liberal than whites without a college degree on economic issues. This change partially coincided with the growing educational polarization in presidential elections presented in Figure 1. But

this shift also may have coincided with an increasing importance of non-economic issues in political life (Frank, 2004; Bartels, 2006; Hopkins, 2019; Gelman, 2009). Because college-educated whites have long been more liberal than non-college whites on these issue areas, the potentially increased importance of these issues may also explain the realignment in voting.

As outlined in Section 2, the relationship between attitudes and vote choice depends on both the candidate platforms and the weight voters attach to different issues. As presidential candidates have staked out distinct issues on non-economic issues (Sides, Tesler and Vavreck, 2019; Hacker and Pierson, 2020), the relationship between attitudes on these issues and vote choice may be growing stronger, even if the underlying importance of the issues to voters is unchanging. However, it may also be that different educational groups placed weighted different issues differently — and that this pattern has changed over time.

In this section, I study the importance of these different mechanisms — attitude change and changing issue weights — in accounting for educational realignment among white voters. Broadly, I find convergence between the weights that college- and non-college whites place on different issues. Non-college voters have become “issue voters” that resemble college voters. Simple counterfactual exercises suggest that from the 1980s to the 1990s, yearly fluctuations in group voting patterns were due to a combination of changes in issue weights and changes in candidate platforms — not changes in the distribution of preferences. However, since the early 2000s, shifts in voting patterns also depend on shifts in attitudes.

My analysis strategy is relatively straightforward, following the theoretical discussion. I estimate ordered logit regressions of the form:²⁵

$$Y_i = f(\Theta'_i \beta_g + X'_i \gamma, c). \quad (7)$$

The left hand-side variable is an ordered variable where -1 indicates a vote for the Democratic, 0 indicates abstention or a third-party vote, and 1 indicates a vote for the Republican.

²⁵While the discussion in Section 2 abstracts away from the turnout decision and presents a binary choice model, the ordered model follows from a standard “calculus of voting” decision rule. All of the implications about the mapping between the reduced-form and structural parameters remain unchanged.

Respondents' estimated ideal points (on the four issue dimensions) are given by Θ_i , and the relationship between vote choice and Θ_i is allowed to vary by education group, as indicated by the subscript on β_g . Finally, X_i is a vector of control variables for age, sex, and income.²⁶ The link function f is the cumulative logistic link, which also depends on a vector of "cut-point" parameters c . I estimate this regression separately for each year from 1984 to 2020. All regressions include survey weights.

Under the assumption that issue weights are constant within groups, the coefficients β_g are proportional to the product of the group's issue weight and the difference between the candidates' platforms, as indicated in Equation 5. Changes in coefficients from year to year thus reflect a combination of changes in candidate platforms and changes in issue weights. Within an election, differences across groups are attributable to differences in issue weights; namely, the ratio coefficients across two groups is equal to the ratio of issue weights.

6.1 The Growing Importance of Non-Economic Issues for Vote Choice

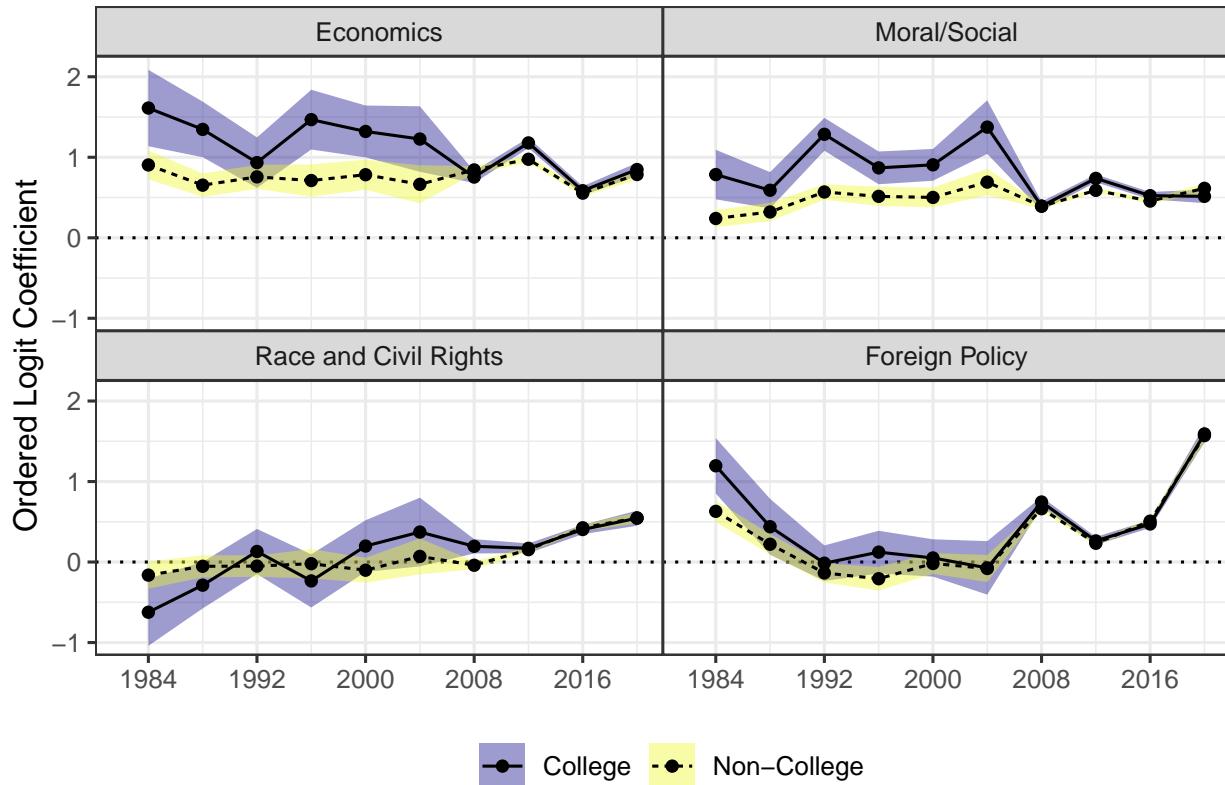
The estimates of the coefficients β_g are presented graphically in Figure 6. Analogous results using only ANES data are presented in Figure A10. Recall that these estimates reflect the combination of issue weights and candidate platform divergence. There are several patterns to note.

First, especially in the 1980s and 1990s, attitudes on economics tend to be most important for predicting vote choice. This pattern is especially true among non-college voters. Given the centrality of economics in the American party system (Poole and Rosenthal, 2007), this finding pattern is unsurprising.

Second, attitudes on moral issues have been important predictors of vote choice among college-educated whites since the 1980s, while being less important for non-college whites. There was a large increase in this coefficient in 2004, especially, consistent with (contested)

²⁶In line with the issue voting framework adopted in this paper, I do not control for party identification because it may be a product of issue positions. Instead, I control only for non-political variables that may influence perceptions of candidates independent of issue positions.

Figure 6: Marginal Effect of Issue Attitudes on Vote Choice Among White Voters



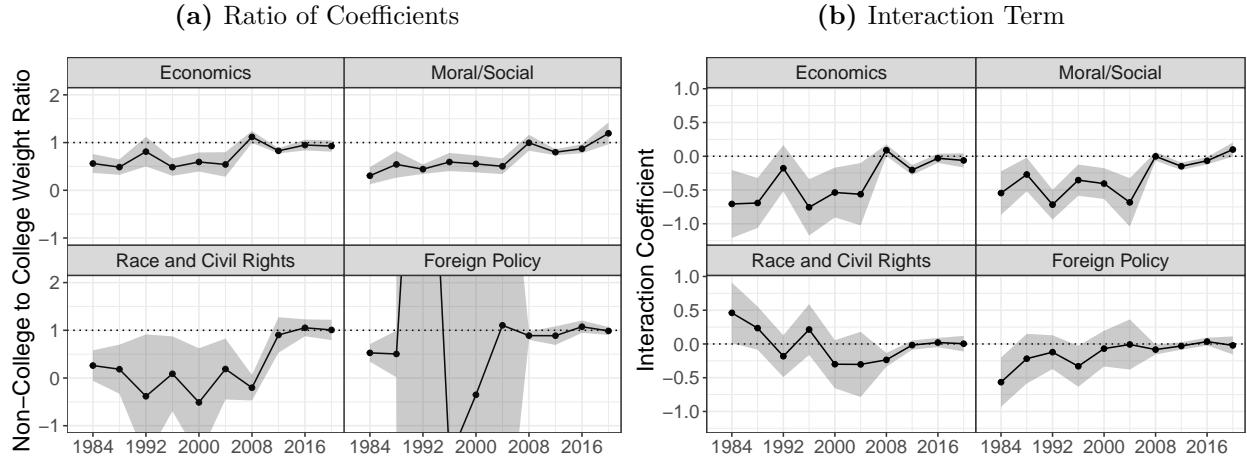
Notes: Points are regression coefficients from ordered logit model predicting vote choice (Democrat, other/no vote, Republican) as a function of issue-specific ideal points, along with controls for age, sex, and income. All models are estimated by maximum quasi-likelihood, applying survey weights. Bands plot 95% confidence intervals.

post-election narratives that “moral values” drove vote choice in this election (Hillygus, 2005). However, the coefficients on moral issue positions have been lower in elections since 2008 for college-educated voters, while remaining steady for non-college voters.

Third, the correlations between vote choice and attitudes on both race and civil rights and foreign policy were relatively low during the 1990s, in both education groups. However, their relevance began to increase around 2004 for racial attitudes and 2008 for foreign policy attitudes.²⁷ There were especially large coefficients on foreign policy during the Trump

²⁷The relatively small coefficient on racial attitudes in 2008 may be a result of noisy measurement of this issue attitude in the CCES (see footnote 11), leading to attenuation bias. The ANES-only results in Figure A10 suggest that racial attitudes were more important in 2008 than in 2004 for both educational groups.

Figure 7: Relative Issue Weights Between Non-College and College-Educated Whites



Notes: (Left) Relative weight that non-college whites place on issue dimension relative to college-educated whites in each presidential election, 1984–2020. Bands show 90% confidence intervals calculated using the delta method. (Right) Estimates of the interaction between issue attitudes and an indicator for not having a 4-year college degree. Bands show 90% confidence intervals. In both panels, lower coefficients imply that non-college-educated voters place less weight on an issue in their voting decision than do college-educated voters. All estimates are derived from an ordered logit model predicting vote choice (Democrat, other/no vote, Republican) as a function of issue attitudes, where effects are allowed to vary by college attainment. The models also control for age, sex, and income. Models are estimated by maximum quasi-likelihood, applying survey weights.

elections. This finding is consistent with the candidates staking out strikingly different policy platforms on foreign policy issues — especially immigration — and is also consistent with voters placing more weight on these issues in making their decisions.

Finally, the coefficients across educational groups are converging. This is shown directly in Figure 7. The first panel plots the ratio of estimated coefficients on issue attitudes for whites without a college degree to the coefficient for whites with a college degree — i.e., $\beta_{noncollege}/\beta_{college}$. Following the result in Equation 5, this ratio can be interpreted as the relative weight placed on each issue across groups, under the assumption of homogeneous weights within groups. This interpretation enables over-time comparisons in substantively meaningful terms. The second panel in Figure 7 plots the interaction coefficient directly — i.e., $\beta_{noncollege} - \beta_{college}$. Within each year, this difference is proportional to the difference in issue weights (scaled by the candidate platform divergence). These quantities are more

precisely estimated than the ratios, but comparisons over time do not reveal relative issue weights directly without further assumptions about the changes in the candidate platforms.

For most years, non-college whites place lower weight on all issue dimensions than college-educated whites. Generally, non-college voters' issues positions and their vote choice are less tightly correlated than college voters' — implying that they base their votes less on policy platforms.²⁸

However, these differences have narrowed over time, to the point where there is virtually no difference in issue weights in recent elections. There have been especially dramatic shifts on the moral issue dimension. In the 2000 election, I estimate that non-college whites placed roughly half as much weight on moral issues as did college-educated whites. By 2020, they placed slightly *higher* weight on this dimension as did college graduates.

Similarly, in 2004, there was essentially no correlation between vote choice and attitudes on race among non-college whites, while there was a significant correlation among college graduates. The point estimate suggests that the weight placed on this dimensions among the working class was about 18% of the weight placed on it by college graduates. By 2020, both groups based their votes on racial policy, weighting it nearly exactly the same.

College-educated whites have long been pulled toward the Democratic Party because of non-economic issues. Until more recently, however, these issues were important for the white working class, preventing the Republican Party from fully capitalizing on the more conservative cultural values of the working class. Issue weights have now converged, meaning that issue attitudes translate to electoral support in a more symmetric way across education groups than they did from the 1980s through the early 2000s.

6.2 Decomposing Group Voting Patterns

The implication of converging issue weights is that attitude polarization — on both economic and non-economic issues — is becoming an increasingly important explanation for edu-

²⁸In the context of the spatial voting model in Section 2, this is equivalent to saying that the variance of the non-spatial utility u_{ij} is higher for non-college voters than for college voters.

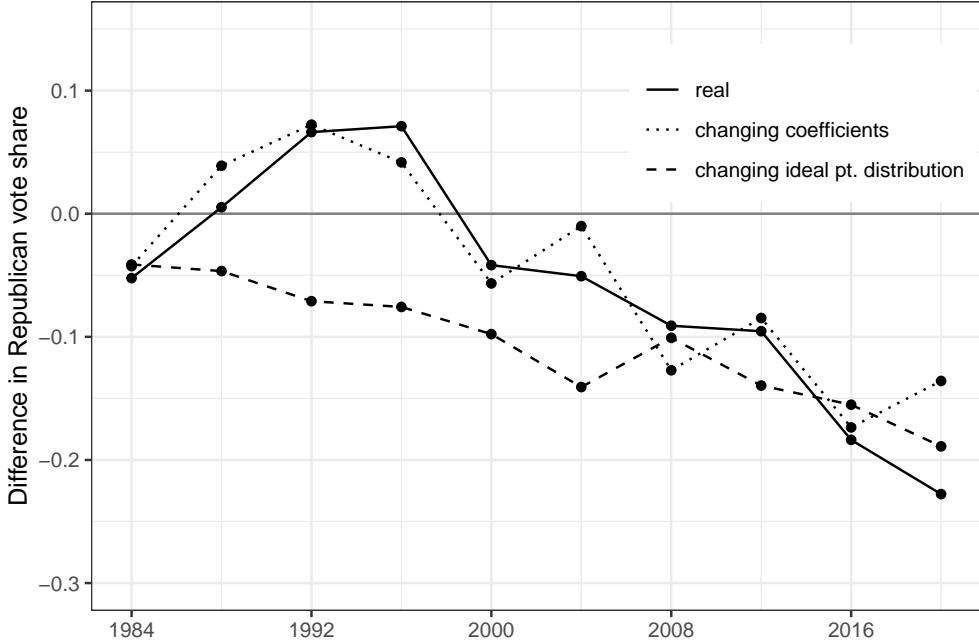
tional polarization in voting. The relatively conservative views of whites without a college degree on non-economic issues have become more important in their vote choice decisions relative to college-educated whites.

To assess the relative contribution of changes in the distribution of attitudes and changes in voting decision rules, I conduct simple simulations. First, I hold the coefficients from a regression of vote choice on attitudes fixed at their 1984 levels. I then predict what the education gap in voting would have been in each subsequent year, using the observed attitude distributions. This simulation effectively holds fixed both candidate platforms and issue weights at their 1984 levels. If attitude change is primarily responsible for growing educational polarization in vote choice, then the simulated vote shares should match the observed gap closely. Second, I conduct the opposite exercise: I hold fixed the distribution of ideal points at their levels in the 1980s (pooling together data from 1984 and 1988), while allowing the vote choice coefficients to vary over time. If changes to candidate platforms and issue weights are primarily responsible for educational polarization then this simulation should track the observed education gap.²⁹

The results are plotted in Figure 8. The solid line plots the difference in observed two-party vote share and shows the now-familiar trend whereby college-educated white voters are voting for the Democratic candidate at higher rates than non-college-educated white voters. The dotted line shows the simulated differences when only the coefficients are allowed to vary and the dashed line shows the simulated differences when only the preference distributions are allowed to vary. The dotted line closely approximates the solid line over essentially the entire time period — indicating that changes in the candidate platforms and issue weights are able to account for a large portion of the growing education gap in presidential elections. The dashed line implies a much higher degree of educational polarization than is actually observed between 1984 and 2004. However, from 2008 to 2020, the observed level of educational

²⁹Unfortunately, due to the inability to separately identify issue weights and candidate platforms, these factors are bundled together in the simulation.

Figure 8: Simulated Education Gap Among White Voters



Notes: The solid lines plots the difference in observed two-party vote share for the Republican between college-educated and non-college-educated white voters. Values above 0 indicate that Republican vote share among the college-educated was higher than among the non-college-educated. The other lines plot simulated differences under two counterfactual scenarios. In the first, shown in the dotted lines, the distribution of ideal points within groups is held fixed at its 1984 level, while the coefficients relating vote choice to attitudes (as in Equation 7) are re-estimated for each year. In the second, shown in the dashed lines, the distribution of ideal points is allowed to evolve, but the coefficients relating vote choice to attitudes are held fixed at their estimated 1984 values. Estimates are derived from an ordered logit model without covariates. All quantities are estimated applying survey weights in both model estimation and calculation of simulated vote shares.

polarization is qualitatively similar to what is implied by changing preference distributions.³⁰

These results, at least through 2004, are broadly consistent strategic candidate positioning. As preference distributions evolve over time, candidates may adopt platforms that offset would-be changes in voting patterns. As a result, changes in group-based voting patterns are muted relative to what we would expect purely examining changes in public opinion. The results after 2004, paired with the convergence in issue weights during this time, suggest the limits of this dynamic. College and non-college voters are now consistently polarized on each

³⁰Figure A12 plots raw simulated vote share in each group, rather than the gap between groups. The broad patterns identified here also hold when looking at levels within groups.

issue, in the same direction, and place relatively equal weights on each issue dimension. As a result, politicians have little ability to position themselves in a way that offsets the issue polarization.

In sum, during the 1990s and early 2000s, educational polarization on non-economic issues was relatively unimportant for voting patterns. During this time, college-educated voters were no more liberal on economic issues than non-college voters — and this issue dimension was most important for explaining voting patterns. The minimal importance of non-economic issues among non-college voters meant that the white working class voted primarily for Democrats during this time period. However, two shifts in the mid-2000s led to the growing education gap. First, college-educated white voters began to become more liberal on economic issues — pushing them toward the Democratic Party relative to non-college whites. Second, non-college-educated white voters began to base their votes on non-economic issues to the same extent as college-educated whites. This pushed the white working class more toward the Republican Party, as their conservative cultural attitudes began to influence vote choice more.

7 Issues of Interpretation

Thus far, I have argued that the growing education gap among whites in presidential elections is partly due to the increased liberalism of whites with college degrees, and partly due to an increased relative importance of non-economic issues for vote choice among white whites without college degrees vote. I based this conclusion on an analysis of issue-specific ideal points and correlations between vote choice and issue positions. In this section, I discuss two issues in interpreting these results: first, the assumptions under which the estimates can be interpreted as causal and, second, the distinction between expressed and genuine preferences.

7.1 Description and Causal Inference

Most of the first half of the paper, examining trends in issue positions over time, is clearly descriptive in nature.³¹ But it is worthwhile to clarify the conditions under which the analysis in the second half of the paper — examining the relationship between voting and issue attitudes — should be regarded as descriptive versus causal. There are at least two distinct causal questions that could be of interest in this analysis.

The most straightforward causal question asks how a voter’s choice would change if their attitude on one issue were to change, holding all else equal. Under the spatial voting model, the “all else equal” condition implies that both candidate platforms and respondents’ issue weights are held constant, in addition to the non-spatial component of utility. Clearly, this is a difficult causal question to answer because issue attitudes are not randomly assigned. There may be other factors that jointly determine a respondent’s issue attitudes and the way they vote.³² I address some of these factors by controlling for sociodemographic variables, but of course there may be unobserved confounders.

However, if the data-generating process is indeed well-described by the spatial voting model, the estimates can be interpreted as causal. There is now ample experimental evidence that citizens base their voting decisions, to a significant extent, on the policy positions of candidates (Bullock 2011; Boudreau and MacKenzie 2014; Peterson 2017; Mummolo, Peterson and Westwood 2019; see Bullock 2020 for a recent review). In particular, voters base their decisions on the proximity between their own preferred policies and the candidates’ platforms (Tomz and Van Houweling, 2008). This research provides some justification for the structural (i.e., causal) interpretation that I give the estimates.

A particularly salient factor that could be argued to directly influence vote choice but which I do not control for is partisan identification. Partisan identification is malleable,

³¹The exception is Section 5, analyzing the relationship between local inequality in labor market outcomes and polarization over economic policy.

³²Formally, in the notation of Section 2, a correlation between respondents’ issue positions, Θ_i , and the non-spatial component of utility for a candidate, v_{ij} , would induce omitted-variables bias.

responding to external events, the candidates that the parties field, and policy changes over time (Montagnes, Peskowitz and McCrain, 2019; Fowler, 2020). If policy positions influence party identification in the same way that they influence voting, party identification would be a post-treatment control variables that is properly excluded from the vote choice regressions. Moreover, the sort of within-party comparisons that would be made by controlling for party would not be particularly useful for explaining long-term realignment that this paper studies. More generally, answering the question, “Why do voters support the Republican candidate?” with, “Because they identify as Republicans” is unsatisfying because it merely pushes the question up a level (for more discussion, see Jessee, 2012, p. 179).

A separate but equally important causal question is how a candidate’s vote share would change if their platform were to change (again, holding all else fixed). This question is the crux of a large literature on electoral accountability (cf. Ansolabehere, Snyder and Stewart, 2001; Canes-Wrone, Brady and Cogan, 2002), but is difficult to address directly with the analyses presented here. In the spatial voting model, the effect of changing candidate platforms is governed primarily by voters’ issue weights — which cannot be separately identified from candidate platforms without additional data. Additionally, because I estimate these regressions separately for each year, there is no variation in candidate platforms. However, given that *relative* issue weights can be identified, we can reason that the effect of changing candidate platforms would be larger for groups that have larger issue weights (again, under the spatial voting model assumptions).

Setting aside questions of causality, the results I present should be of interest even under a strictly descriptive interpretation. I have shown that the partial correlations between vote choice and issue attitudes have changed over time — with a stronger correlation on racial and foreign policy issues in recent elections, and a convergence in the correlations across educational groups. The spatial voting model gives a neat interpretation to these correlations, but other models of candidate choice may yield alternative interpretations.

7.2 Expressive versus Genuine Preference

I argue that college-educated whites have become more liberal on economic issues, despite the rising relative status of college graduates compared to non-graduates. One concern about this finding is that these voters are expressively responding to survey items. They may express liberal policy views when it is costless, but would mobilize in opposition to policies that materially threatened their own interests — even if those policies aligned with their stated ideological preferences. Indeed, there is evidence that wealthier liberals may oppose egalitarian local policies that impose large costs on them (Marble and Nall, 2020).

Nothing in my data can definitively rule out this possibility. However, there are several patterns that caution against this interpretation. First, even relatively ambitious policy proposals discussed at the national level and included in the economic policy scale, such as Medicare for All, would impose relatively low costs on most wealthier citizens. Some of these policies may even benefit well-off citizens, either by mitigating some externalities of inequality (Rueda and Stegmüller, 2016) or by providing expanded social insurance programs (Moene and Wallerstein, 2001; Rehm, 2016). Research on the role of self-interest in politics finds that it is most important when the stakes are clear and relatively large (Marble and Nall, 2020; de Benedictis-Kessner and Hankinson, 2019) — descriptions that may not apply to many national-level economic policy proposals.

Second, even as parts of the Democratic Party has embraced more left-wing economic ideas in recent years, college-educated white voter have continued to vote for Democrats at high rates. And the estimates of the vote choice-attitude relationship presented in Figure 6 suggest that the more conservative college graduates are on economic policy, the more likely they are to vote for the Republican candidate, even after accounting for other attitudes. Of course, this does not rule out a mismatch between stated and genuine preferences. However, it does suggest that stated liberal economic preferences do in fact translate to support for more liberal candidates.

8 Conclusion

Over the past 40 years, and especially since 2000, there has been a realignment along educational lines among white voters. College-educated whites are now a reliable voting bloc for Democrats in presidential elections, while whites without a college degree are an increasingly solid Republican voting bloc. In this paper, I take an issue voting approach to studying this realignment. I construct issue scales based on survey responses covering four important policy domains and investigate trends in these attitudes. Using the framework of a multidimensional spatial voting model, I evaluate the changing relationship between vote choice and issue attitudes across educational groups.

I find that both economic and non-economic issues have contributed to the realignment. College-educated whites have become more economically liberal in recent years, resulting in consistent educational polarization across all issue areas. At the same time, the criteria on which both educational groups base their votes are converging. College-educated voters have traditionally been more solid issue voters — on both economic and cultural issues. Beginning in the mid-2000s, non-college voters, too, have come to base their votes more heavily on non-economic issues. This has pushed non-college voters toward the Republican Party.

The liberal move on economic policy among college graduates goes along with growing inequality in labor market outcomes. In places that have experienced growing wage divergences across educational groups, college-educated voters express especially liberal economic views. This result is consistent with theories emphasizing the externalities of inequality or social insurance motivations for public spending.

What do these findings mean for the American party system? Non-economic dimensions of political conflict are increasingly important for structuring political coalitions. Cultural attitudes on race and moral traditionalism are now drivers of vote choice for both the working and professional class. Democrats have long appealed to the liberal cultural values of college-

educated white voters; Republicans have now come to attract working-class voters on the basis of their conservative values.

Punditry often suggests that this pattern presents a dilemma for both parties. Should the Democratic Party embrace cultural liberalism, alienating the white working class? Or should it center economic policy, at the risk of deterring wealthy cultural liberals? Republicans could face a similar dilemma. Embracing identity politics may pay dividends among the working class, but could alienate the business wing of the party. Focusing on its traditional economically conservative platform may drive away the working class.

My findings regarding economic policy views suggest that this dilemma may be illusory. Economic preferences have become increasingly aligned across educational lines, and now reflect the same patterns observed on non-economic issues. Whites with a college degree have become more economically liberal than those without a degree — suggesting that a focus on economic policy may not fracture the nascent coalitions.

Finally, while this paper provides new evidence on issue polarization and voting behavior, it leaves open questions for future research. I have provided some evidence that economic divergence has driven realignment over economic policy. While this result is broadly consistent with several extant theories, additional research is needed to more fully explore the causes and implications of this pattern. Additionally, I have shown that issue weights across groups have converged. Are the changing issue weights due to a nationalized media landscape? Candidate campaign appeals? Changes to material conditions? A potential avenue for future research is to apply the theoretical framework outlined in this paper to study these important questions.

References

- Aldrich, John H., Christopher Gelpi, Peter Feaver, Jason Reifler and Kristin Thompson Sharp. 2006. "Foreign Policy and the Electoral Connection." *Annual Review of Political Science* 9:477–502.
- Alvarez, R. Michael and Jonathan Nagler. 1998. "Economics, Entitlements, and Social Issues: Voter Choice in the 1996 Presidential Election." *American Journal of Political Science* 42(4):1349–1363.
- Anscombe, Stephen, James M. Snyder and Charles Stewart. 2001. "Candidate Positioning in U.S. House Elections." *American Journal of Political Science* 45(1):136–159.
- Anscombe, Stephen, Jonathan Rodden and James M. Snyder. 2006. "Purple America." *Journal of Economic Perspectives* 20(2):97–118.
- Anscombe, Stephen, Jonathan Rodden and James M. Snyder. 2008. "The Strength of Issues: Using Multiple Measures to Gauge Preference Stability, Ideological Constraint, and Issue Voting." *American Political Science Review* 102(02):215–232.
- Autor, David, David Dorn, Gordon Hanson and Kaveh Majlesi. 2020. "Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure." *American Economic Review* 110(10):3139–3183.
- Autor, David H. 2019. "Work of the Past, Work of the Future." *AEA Papers and Proceedings* 109:1–32.
- Autor, David H. and David Dorn. 2013. "The Growth of Low-Skill Service Jobs and the Polarization of the U.S. Labor Market." *American Economic Review* 103(5):1553–1597.
- Autor, David H., David Dorn and Gordon H. Hanson. 2013. "The China Syndrome: Local Labor Market Impacts of Import Competition in the United States." *American Economic Review* 103(6):2121–2168.
- Axelrod, Robert. 1972. "Where the Votes Come From: An Analysis of Electoral Coalitions, 1952–1968." *American Political Science Review* 66(1):11–20.
- Baccini, Leonardo and Stephen Weymouth. 2021. "Gone for Good: Deindustrialization, White Voter Backlash, and US Presidential Voting." *American Political Science Review* 115(2):550–567.
- Ballard-Rosa, Cameron, Kenneth Scheve and Amalie Jensen. 2021. "Economic Decline, Social Identity, and Authoritarian Values in the United States." *International Studies Quarterly*.
- Bartels, Larry M. 2006. "What's the Matter with What's the Matter with Kansas?" *Quarterly Journal of Political Science* 1:201–226.

- Betancourt, Michael. 2016. “Diagnosing Suboptimal Cotangent Disintegrations in Hamiltonian Monte Carlo.”
- URL:** <https://arxiv.org/pdf/1604.00695.pdf>
- Boudreau, Cheryl and Scott A. MacKenzie. 2014. “Informing the Electorate? How Party Cues and Policy Information Affect Public Opinion About Initiatives.” *American Journal of Political Science* 58(1):48–62.
- Broockman, David E. 2016. “Approaches to Studying Policy Representation.” *Legislative Studies Quarterly* 41(1):181–215.
- Broockman, David E., Gregory Ferenstein and Neil Malhotra. 2019. “Predispositions and the Political Behavior of American Economic Elites: Evidence from Technology Entrepreneurs.” *American Journal of Political Science* 63(1):212–233.
- Bullock, John G. 2011. “Elite Influence on Public Opinion in an Informed Electorate.” *American Political Science Review* 105(3):496–515.
- Bullock, John G. 2020. Party Cues. In *The Oxford Handbook of Electoral Persuasion*, ed. Elizabeth Suhay, Bernard Grofman and Alexander H. Trechsel. Oxford University Press pp. 128–150.
- Campbell, Andrea. 2012. “Policy Makes Mass Politics.” *Annual Review of Political Science* 15:333–351.
- Canes-Wrone, Brandice, David W. Brady and John F. Cogan. 2002. “Out of Step, Out of Office: Electoral Accountability and House Members’ Voting.” *American Political Science Review* 96(1):127–140.
- Carnes, Nicholas and Noam Lupu. 2021. “The White Working Class and the 2016 Election.” *Perspectives on Politics* 19(1):55–72.
- Carpenter, Bob, Andrew Gelman, Matthew D Hoffman, Daniel Lee, Ben Goodrich, Michael Betancourt, Marcus Brubaker, Jiqiang Guo, Peter Li and Allen Riddell. 2017. “Stan: A Probabilistic Programming Language.” *Journal of Statistical Software* 76(1).
- URL:** <http://www.jstatsoft.org/v76/i01/>
- Caughey, Devin and Christopher Warshaw. 2018. “Policy Preferences and Policy Change: Dynamic Responsiveness in the American States, 1936–2014.” *American Political Science Review* 112(2):249–266.
- Che, Yi, Yi Lu, Justin R. Pierce, Peter K. Schott and Zhigang Tao. 2016. “Does Trade Liberalization with China Influence U.S. Elections.”
- Clinton, Joshua, Simon Jackman and Douglas Rivers. 2004. “The Statistical Analysis of Roll Call Data.” *American Political Science Review* 98(2):355–370.
- Colantone, Italo and Piero Stanig. 2018. “Global Competition and Brexit.” *American Political Science Review* (Forthcoming).

- de Benedictis-Kessner, Justin and Michael Hankinson. 2019. “Concentrated Burdens: How Self-Interest and Partisanship Shape Opinion on Opioid Treatment Policy.” *American Journal of Political Science* Forthcomin:1–7.
- Duck-Mayr, JBrandon and Jacob M. Montgomery. 2020. “Ends Against the Middle: Measuring Latent Traits When Opposites Respond the Same Way for Antithetical Reasons.”.
- Farber, Henry S., Daniel Herbst, Ilyana Kuziemko and Suresh Naidu. 2021. “Unions and Inequality Over the Twentieth Century: New Evidence from Survey Data.” *Quarterly Journal of Economics* .
- Feigenbaum, James J. and Andrew B. Hall. 2015. “How Legislators Respond to Localized Economic Shocks: Evidence from Chinese Import Competition.” *Journal of Politics* 77(4):1012–1030.
- URL:** <http://www.jstor.org/stable/info/10.1086/682151>
- Fowler, Anthony. 2020. “Partisan Intoxication or Policy Voting?” *Quarterly Journal of Political Science* 15:141–179.
- Frank, Thomas. 2004. *What’s the Matter with Kansas?* New York: Henry Hold & Company.
- Gelman, Andrew. 2009. *Red State, Blue State, Rich State, Poor State: Why Americans Vote the Way They Do*. Princeton: Princeton University Press.
- Gelman, Andrew and Donald B. Rubin. 1992. “Inference from Iterative Simulation Using Multiple Sequences.” *Statistical Science* 7:457–511.
- Gelman, Andrew and Jennifer Hill. 2007. *Data Analysis Using Regression and Multi-level/Hierarchical models*. Cambridge University Press.
- Gilens, Martin. 1999. *Why Americans Hate Welfare*. Chicago: University of Chicago Press.
- Gilens, Martin and Adam Thal. 2017. “Preferences and Partisanship Among Affluent Americans.”.
- Grimmer, Justin and William Marble. 2019. “Who Put Trump in the White House? Explaining the Contribution of Voting Blocs to Trump’s Victory.”.
- URL:** <https://williammarble.co/docs/vb.pdf>
- Hacker, Jacob S. and Paul Pierson. 2020. *Let Them Eat Tweets: How the Right Rules in an Age of Extreme Inequality*. Liveright.
- Hainmueller, Jens and Daniel J. Hopkins. 2015. “The Hidden American Immigration Consensus: A Conjoint Analysis of Attitudes toward Immigrants.” *American Journal of Political Science* 59(3):529–548.
- Hillygus, D. Sunshine. 2005. “The Missing Link: Exploring the Relationship Between Higher Education and Political Engagement.” *Political Behavior* 27(1):25–47.

- Hopkins, Daniel J. 2019. “The Activation of Prejudice and Presidential Voting: Panel Evidence from the 2016 U.S. Election.” *Political Behavior*.
- URL:** <https://doi.org/10.1007/s11109-019-09567-4>
- Inglehart, Ronald. 1981. “Post-Materialism in an Environment of Insecurity.” *American Political Science Review* 75(4):880–900.
- Jardina, Ashley. 2019. *White Identity Politics*. Cambridge University Press.
- Jensen, J. Bradford, Dennis P. Quinn and Stephen Weymouth. 2017. “Winners and Losers in International Trade: The Effects on US Presidential Voting.” *International Organization* 71(3):423–457.
- Jessee, Stephen. 2016. “(How) Can We Estimate the Ideology of Citizens and Political Elites on the Same Scale?” *American Journal of Political Science* 60(4):1108–1124.
- Jessee, Stephen A. 2012. *Ideology and Spatial Voting in American Elections*. New York: Cambridge University Press.
- Kinder, Donald R. and David Sears. 1981. “Prejudice and Politics: Symbolic Racism and Threats to the ”Good Life”.” *Journal of Personality and Social Psychology* 40(3):414–431.
- Marble, William and Clayton Nall. 2020. “Where Self-Interest Trumps Ideology: Liberal Homeowners and Local Opposition to Housing Development.” *Journal of Politics* (Forthcoming).
- URL:** <http://doi.org/10.1086/711717>
- Marble, William and Matt Tyler. 2021. “The Structure of Political Choices: Distinguishing Between Constraint and Multidimensionality.” *Political Analysis* (Forthcoming).
- URL:** <http://doi.org/10.1017/pan.2021.3%0A>
- McCarty, Nolan, Keith T. Poole and Howard Rosenthal. 2016. *Polarized America: The Dance of Ideology and Unequal Riches*. 2 ed. Cambridge: MIT Press.
- Meltzer, Allan H. and Scott F. Richard. 1981. “A Rational Theory of the Size of Government.” *Journal of Political Economy* 89(5):914–927.
- Meltzer, Allan H. and Scott F. Richard. 1983. “Tests of a Rational Theory of the Size of Government.” *Public Choice* 41(3):403–418.
- Moene, Karl and Michael Wallerstein. 2001. “Inequality, Social Insurance, and Redistribution.” *American Political Science Review* 95(4):859–874.
- URL:** http://wcfa.harvard.edu/files/wcfa/files/667_wallerstein1.pdf
- Montagnes, B Pablo, Zachary Peskowitz and Joshua McCrain. 2019. “Bounding Partisan Approval Rates under Endogenous.” 81(1):321–326.
- Mummolo, Jonathan, Erik Peterson and Sean Westwood. 2019. “The Limits of Partisan Loyalty.” *Political Behavior* (0123456789).
- URL:** <https://doi.org/10.1007/s11109-019-09576-3>

- Mutz, Diana C. 2018. "Status Threat, Not Economic Hardship, Explains the 2016 Presidential Vote." *Proceedings of the National Academy of Sciences* p. 201718155.
- Peterson, Erik. 2017. "The Role of the Information Environment in Partisan Voting." *Journal of Politics* 79(4):1191–1204.
- Poole, Keith T. and Howard Rosenthal. 2007. *Ideology and Congress*. New Brunswick, New Jersey: Transaction Publishers.
- Rehm, Philipp. 2016. *Risk Inequality and Welfare States: Social Policy Preferences, Development, and Dynamics*. New York: Cambridge University Press.
- Reny, Tyler, Loren Collingwood and Ali Valenzuela. 2018. "Vote Switching in the 2016 Election: Racial and Immigration Attitudes, Not Economics, Explains Shifts in White Voting." *Public Opinion Quarterly* (Forthcoming).
- Rivers, Douglas. 1988. "Heterogeneity in Models of Electoral Choice." *American Journal of Political Science* 32(3):737–757.
- Rivers, Douglas. 2003. "Identification of Multidimensional Spatial Voting Models.".
- Roberts, Kevin W.S. 1977. "Voting Over Income Tax Schedules." *Journal of Public Economics* 8(3):329–340.
- Rodden, Jonathan. 2019. *Why Cities Lose: The Deep Roots of the Urban-Rural Political Divide*. New York: Basic Books.
- Romer, Thomas. 1975. "Individual Welfare, Majority Voting, and the Properties of a Linear Income Tax." *Journal of Public Economics* 4(2):163–185.
- Rueda, David and Daniel Stegmueller. 2016. "The Externalities of Inequality: Fear of Crime and Preferences for Redistribution in Western Europe." *American Journal of Political Science* 60(2):472–489.
- Schickler, Eric. 2016. *Racial Realignment: The Transformation of American Liberalism, 1932-1965*. Princeton, N.J.: Princeton University Press.
- Shayo, Moses. 2009. "A Model of Social Identity with an Application to Political Economy: Nation, Class, and Redistribution." *American Political Science Review* 103(2):147–174.
- Sides, John, Michael Tesler and Lynn Vavreck. 2019. *Identity Crisis: The 2016 Presidential Campaign and the Battle for the Meaning of America*. Princeton, N.J.: Princeton University Press.
- Smith, Candis Watts, Rebecca J. Kreitzer and Feiya Suo. 2020. "The Dynamics of Racial Resentment across the 50 US States." *Perspectives on Politics* 18(2):527–538.
- Smith, Rogers M. and Desmond King. 2021. "White Protectionism in America." *Perspectives on Politics* 19(2):460–478.

Sniderman, Paul M, Thomas Piazza, Philip E Tetlock and Ann Kendrick. 1991. "The New Racism." *American Journal of Political Science* 35(2):423–447.

Tausanovitch, Chris and Christopher Warshaw. 2013. "Measuring Constituent Policy Preferences in Congress, State Legislatures, and Cities." *Journal of Politics* 75(02):330–342.
URL: <http://www.jstor.org/stable/10.1017/S0022381613000042>

Tomz, Michael and Robert P. Van Houweling. 2008. "Candidate Positioning and Voter Choice." *American Political Science Review* 102(3):303–318.

Treier, S. and D. S. Hillygus. 2009. "The Nature of Political Ideology in the Contemporary Electorate." *Public Opinion Quarterly* 73(4):679–703.

URL: <http://poq.oxfordjournals.org/cgi/doi/10.1093/poq/nfp067>

A Additional Tables and Figures

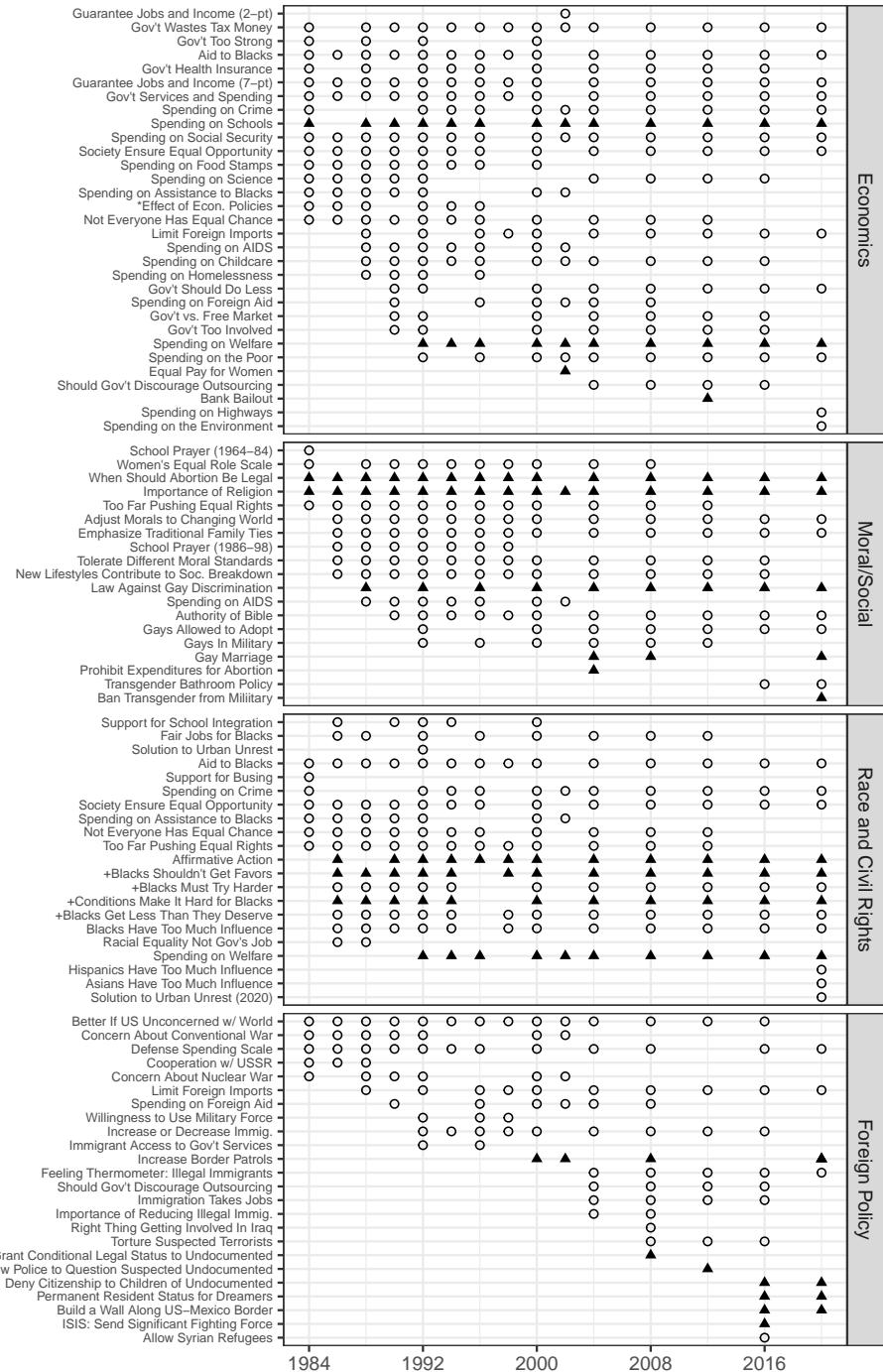
This section presents additional tables and figures. See in-text references and captions for explanations of each table or figure.

Table A1: Issue Scale Correlations by Decade

Correlations from 1990 to 2000					
	Econ.	Moral	Race	For.	Pol.
Economics	1.00				
Moral/Social	0.27	1.00			
Race and Civil Rights	0.68	0.32	1.00		
Foreign Policy	0.24	0.20	0.34	1.00	

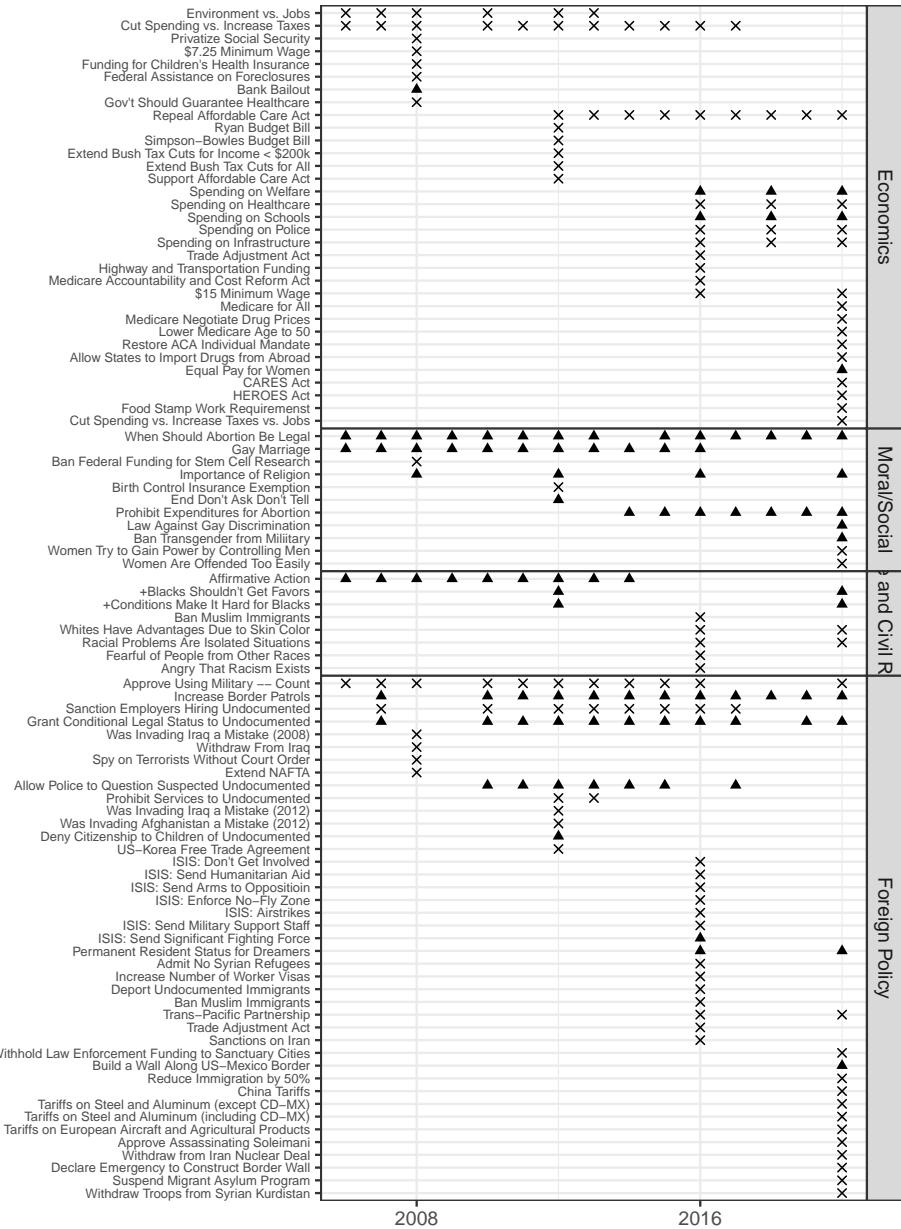
Correlations from 2010 to 2020					
	Econ.	Moral	Race	For.	Pol.
Economics	1.00				
Moral/Social	0.50	1.00			
Race and Civil Rights	0.71	0.42	1.00		
Foreign Policy	0.55	0.45	0.56	1.00	

Figure A1: ANES Question Coverage for Items Used in Issue Scales



Notes: Circles indicate questions that were asked only the ANES, while triangles indicate “bridge” questions that were also asked on the CCES. * indicates that the question parameters were allowed to vary by year. + indicates that the question is part of the racial resentment battery.

Figure A2: CCES Question Coverage for Items Used in Issue Scales



Notes: X's indicate questions that were asked only the CCES, while triangles indicate "bridge" questions that were also asked on the ANES. + indicates that the question is part of the racial resentment battery.

Table A2: Fixed Effects Regressions of Ideal Points on Local Educational Inequality Among Whites, With County Time Trends

Dependent Variables:	Economics (1)	Moral (2)	Race (3)	Foreign Policy (4)
College	-0.150*** (0.031)	-0.251*** (0.032)	-0.301*** (0.031)	-0.361*** (0.030)
Coll/HS Earning Ratio	-0.009 (0.035)	0.050 (0.032)	-0.032 (0.035)	0.095*** (0.033)
College × Coll/HS Earning Ratio	-0.039** (0.017)	0.022 (0.017)	0.024 (0.017)	0.035** (0.016)
Indiv. Controls	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
County Time Trends	Yes	Yes	Yes	Yes
Observations	294,637	293,867	259,279	294,532
N Counties	3,003	3,003	2,990	3,003
R ²	0.072	0.093	0.102	0.100
Within R ²	0.034	0.028	0.039	0.051

Notes: This table presents fixed-effects models regressing white respondents' estimated issue positions on county-level educational inequality, educational attainment, and their interactions, plus county- and year-level fixed effects and county-specific linear time trends. All models include additional controls for age, sex, and income. *Coll/HS Earning Ratio* is the ratio of average earnings within the county for college-educated workers compared to workers with only a high school degree. All regressions include survey weights. Standard errors clustered at the county level are in parentheses. The standard deviation of *Coll/HS Earning Ratio* across county-year observations is 0.25; the standard deviation after accounting for county and year fixed effects and county time trends is 0.13. Data source: CCES, 2006-2020. *** $p < .01$, ** $p < .05$, * $p < .1$

Figure A3: Correlations Between Issue Scales Over Time

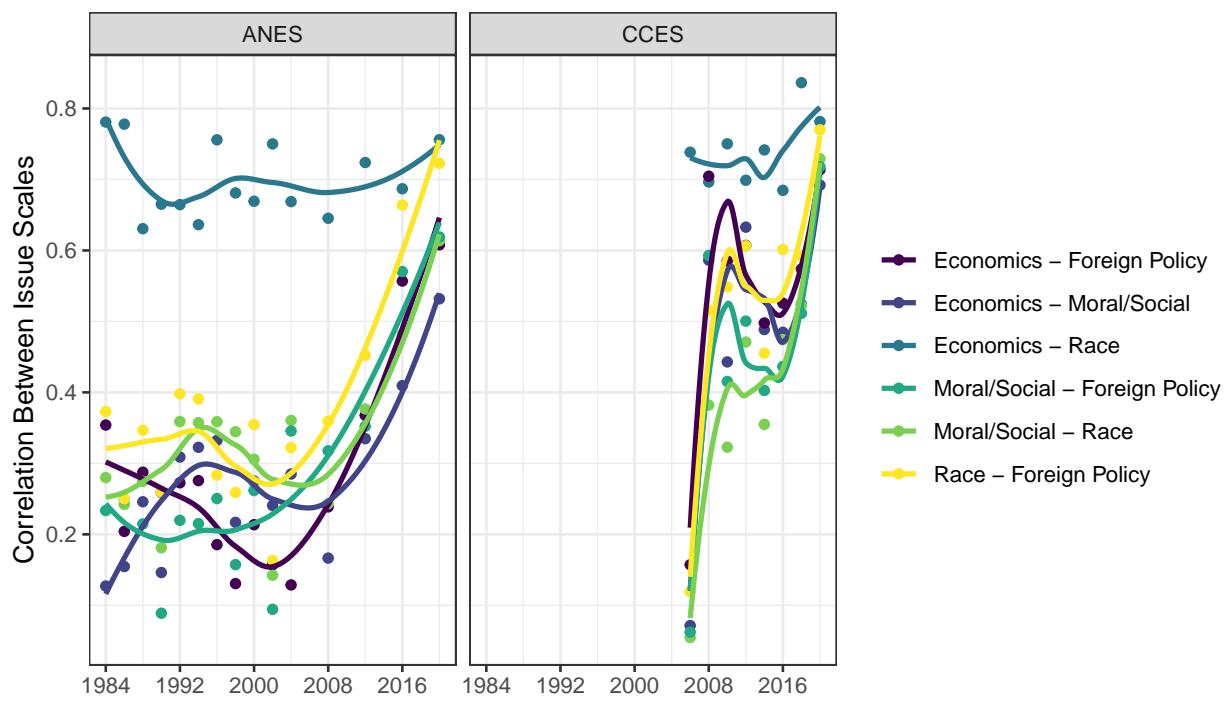


Figure A4: Average Issue-Specific Ideal Point, by Party

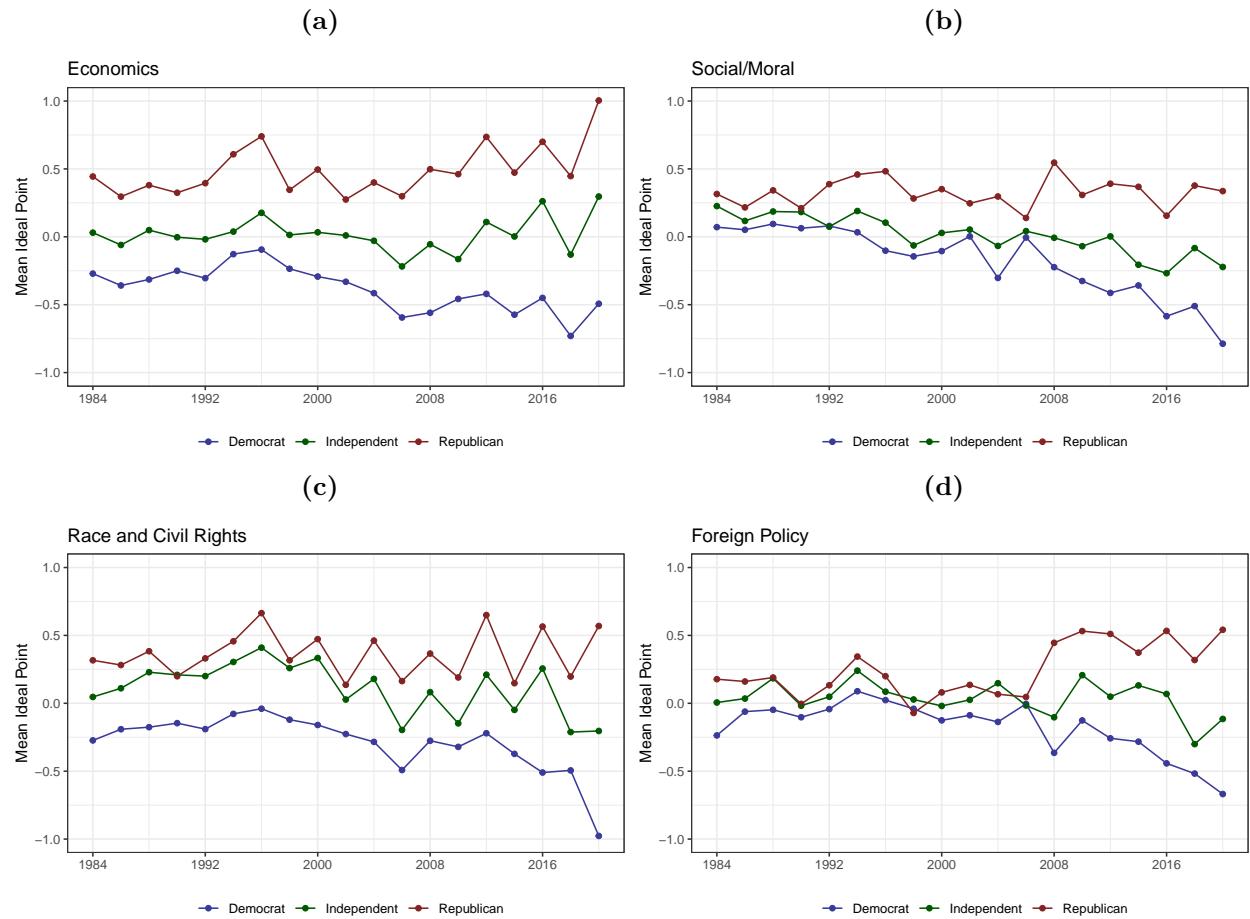
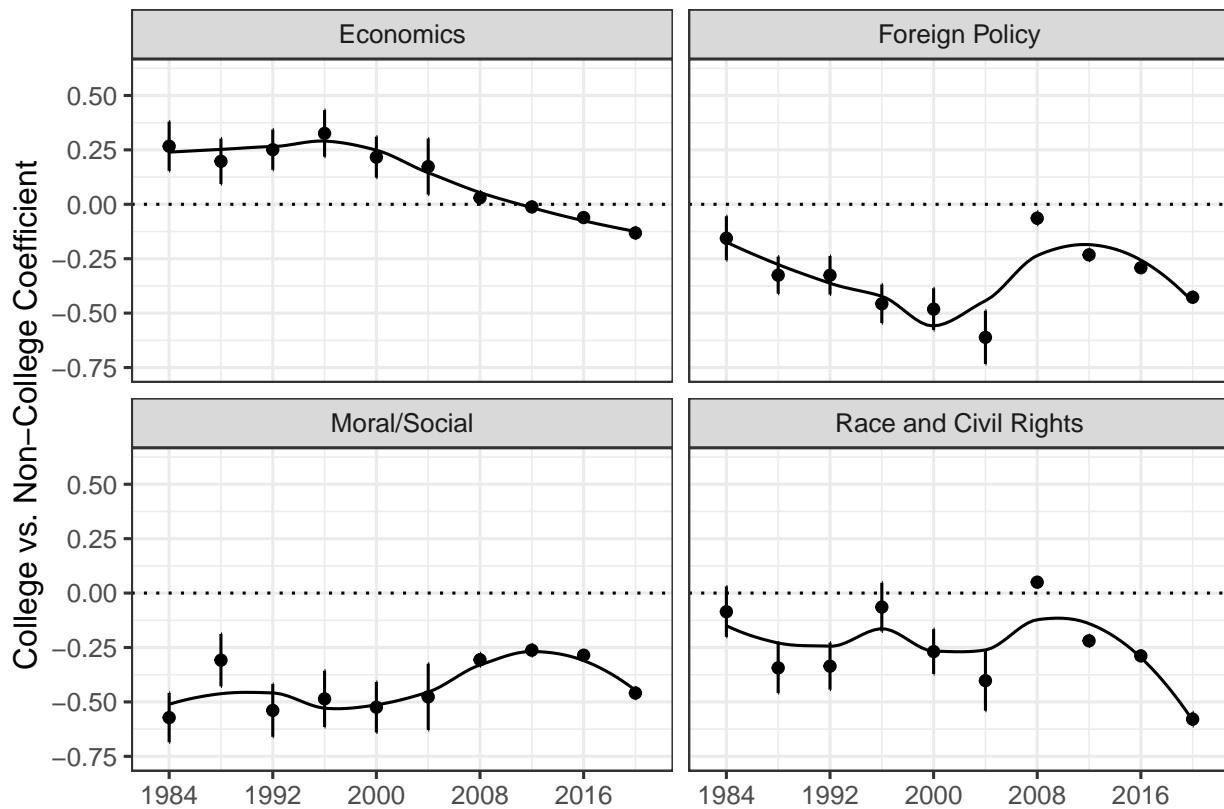
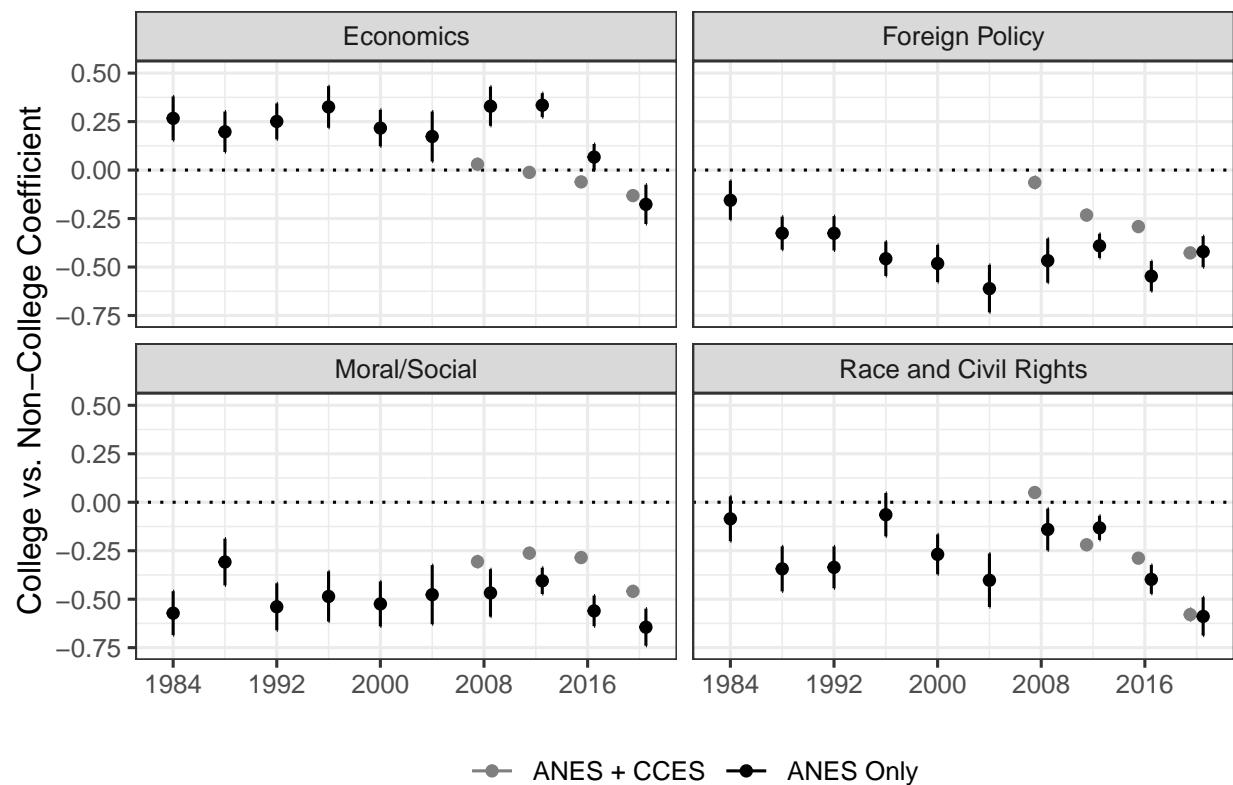


Figure A5: Differences in Attitudes of College and Non-College Voters, Without Controls



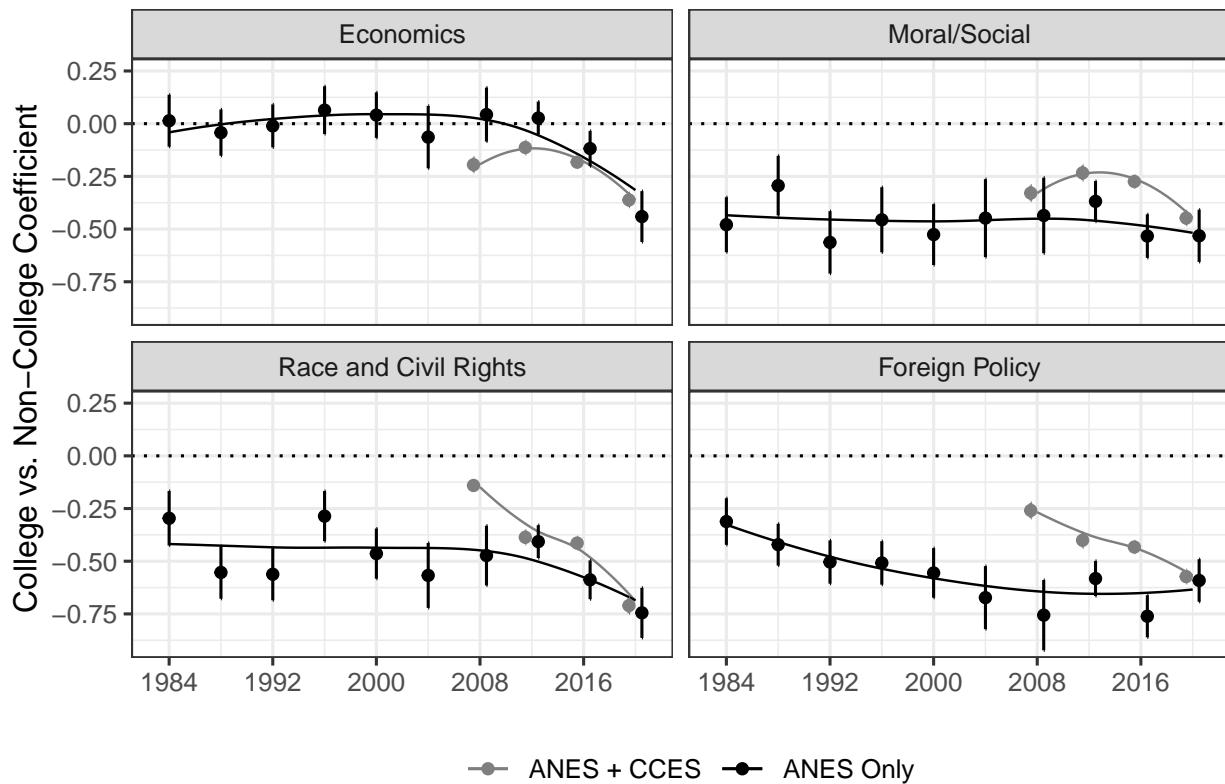
Notes: Points are coefficient estimates from a linear regression of ideal point estimates on an indicator for having a four-year college degree, among whites. Bars indicate robust 95% confidence intervals. Curved line is a loess fit to the estimated coefficients. All regressions include survey weights.

Figure A6: Differences in Attitudes of College and Non-College Voters, Without Controls by Survey Source



Notes: Points are coefficient estimates from a linear regression of ideal point estimates on an indicator for having a four-year college degree, among whites. Bars indicate robust 95% confidence intervals. Estimates for the entire time series using only ANES data are plotted in black. Gray points include the larger combined ANES-CCES sample for 2008-2020. All regressions include survey weights.

Figure A7: Differences in Attitudes Between College and Non-College Voters, by Survey Source



Notes: Points are coefficient estimates from a linear regression of ideal point estimates on an indicator for having a four-year college degree, among whites. Bars indicate robust 95% confidence intervals. The curved line is a loess line fit to the estimates, weighted by the inverse of their variance. Models also include controls for age, sex, and income. Estimates for the entire time series using only ANES data are plotted in black. Gray points include the larger combined ANES-CCES sample for 2008-2020. All regressions include survey weights.

Figure A8: Educational Polarization Among Whites, by Change in Inequality, for Non-Economic Issues

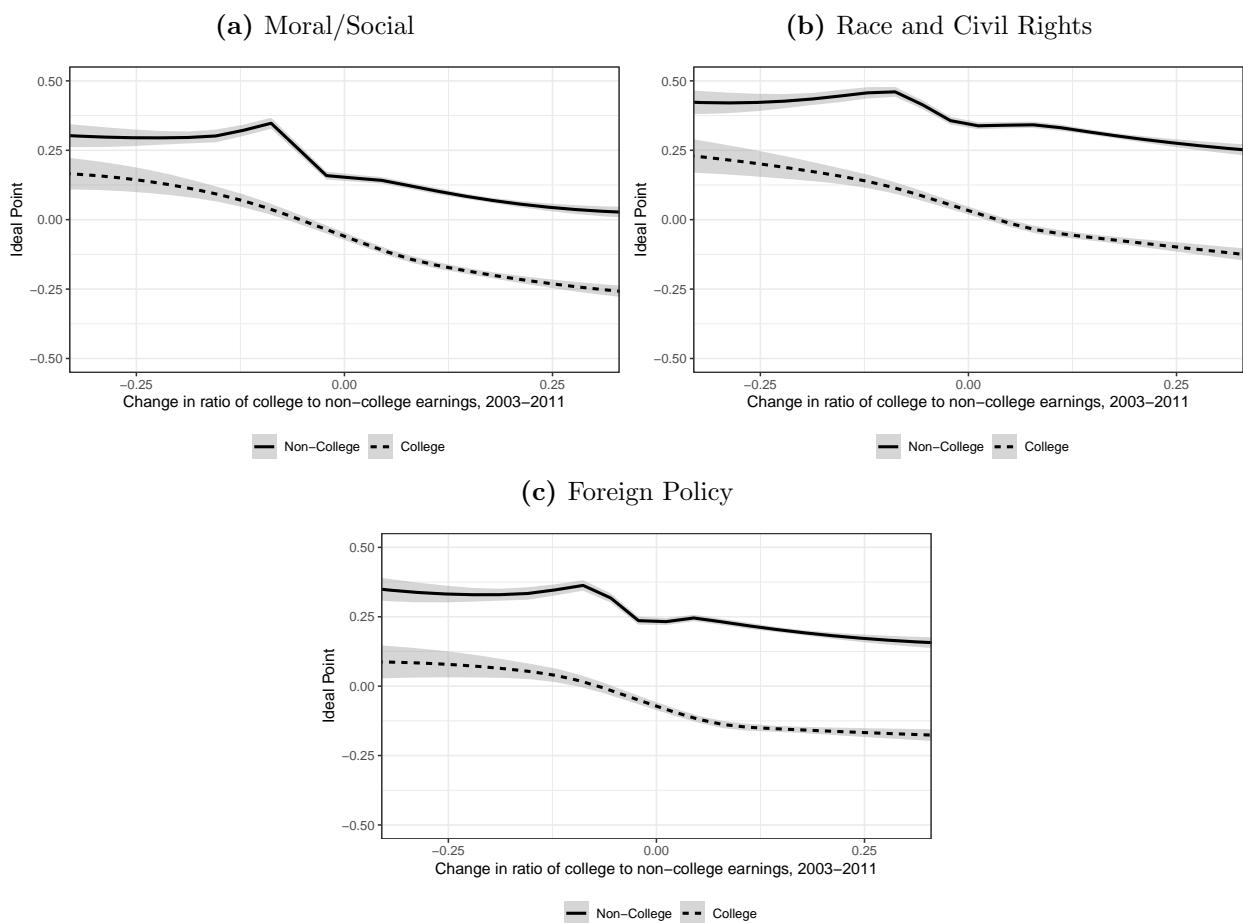


Figure A9: Relationship Between Educational Polarization and Earnings Inequality on Individual Policy Items

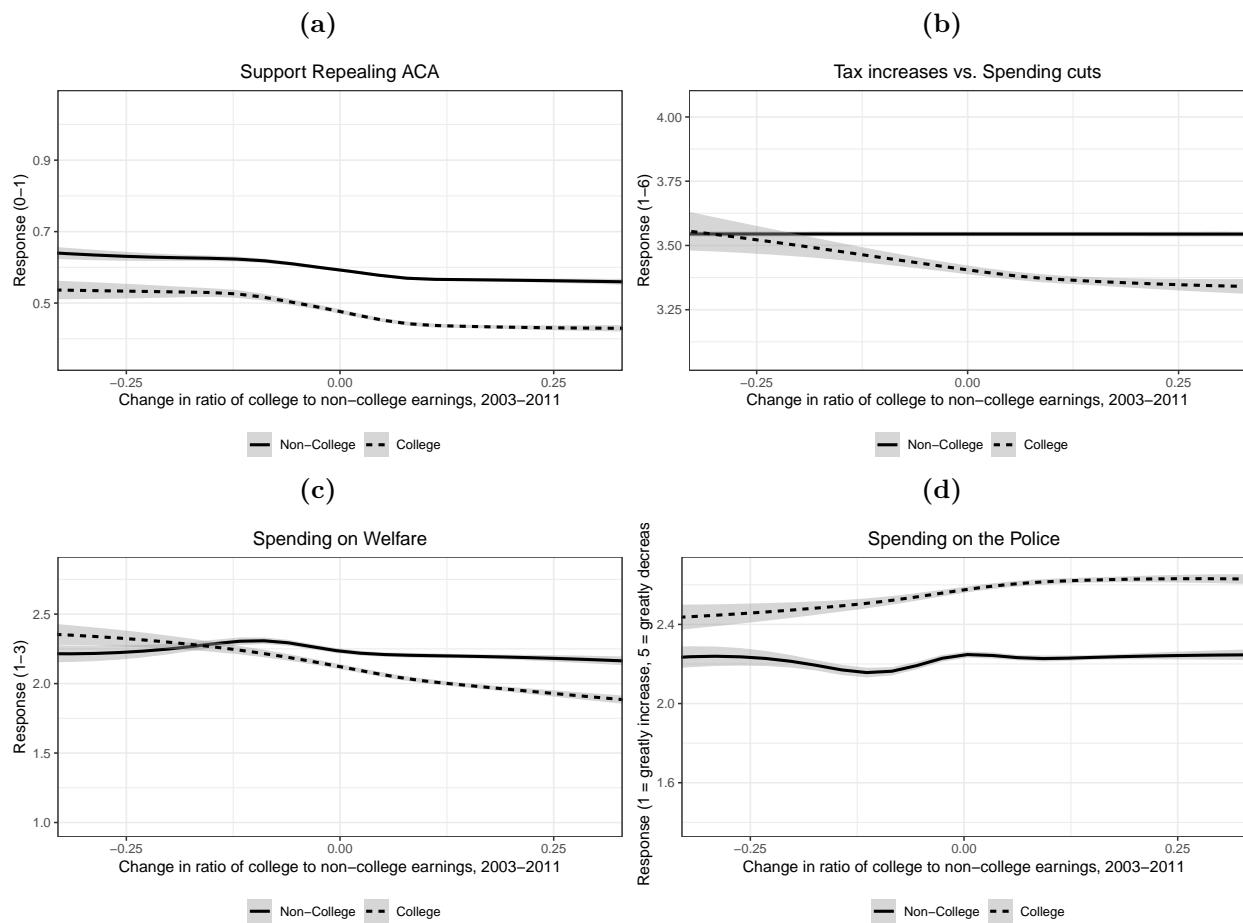
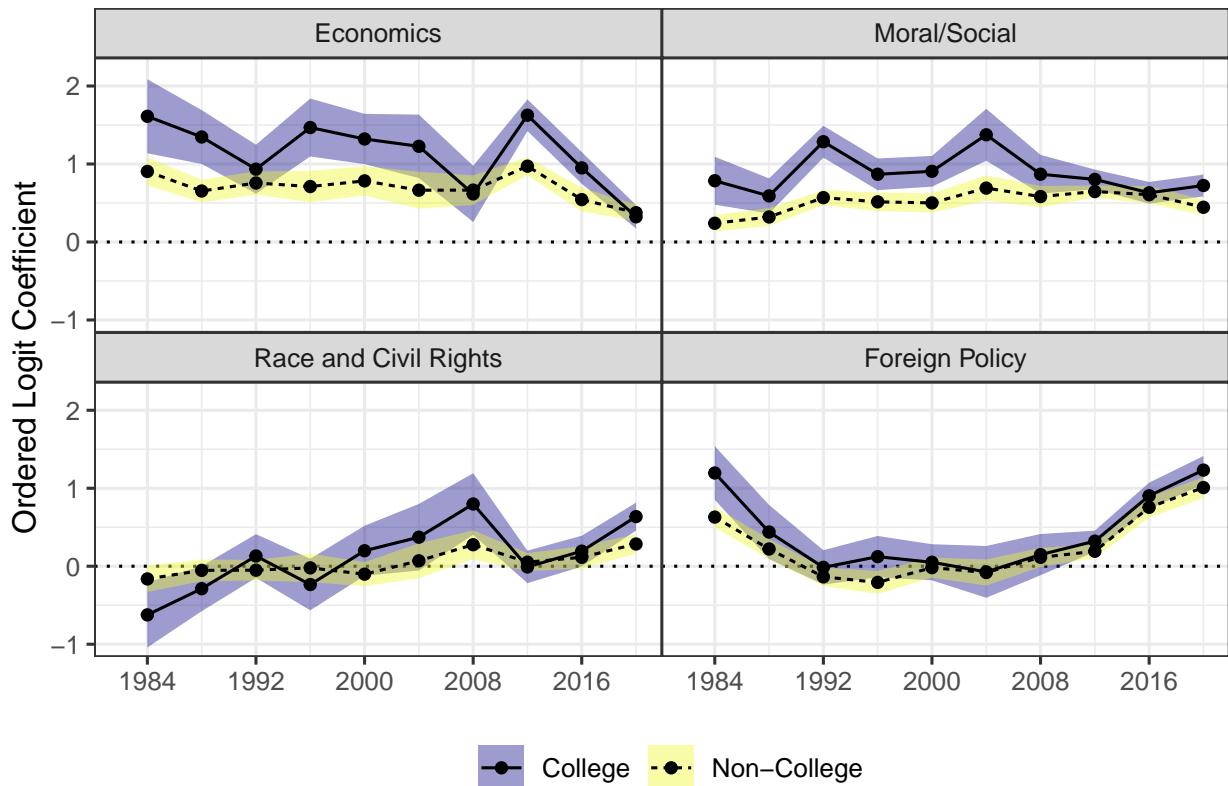
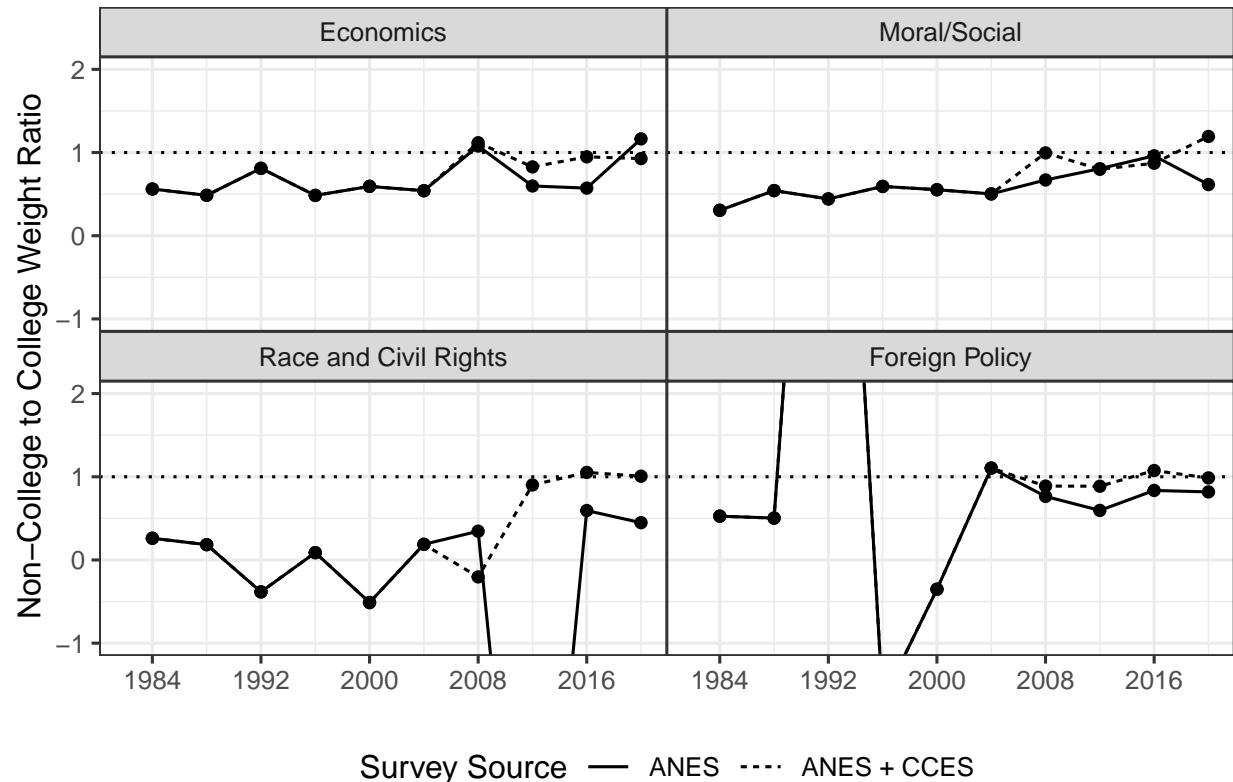


Figure A10: Marginal Effect of Issue Attitudes on Vote Choice Among white Voters, ANES Only



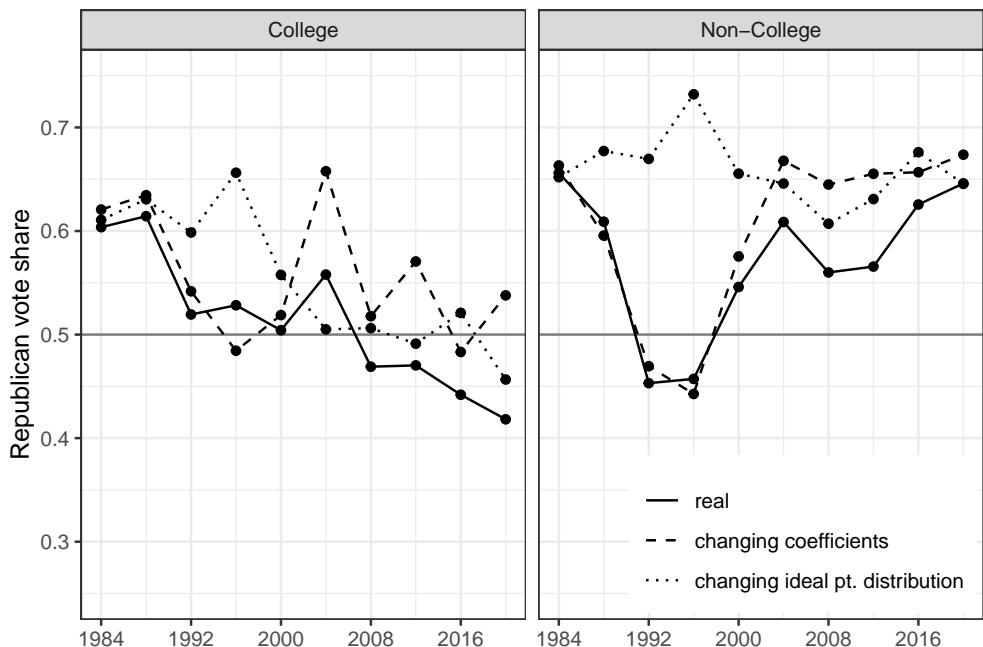
Notes: Points are regression coefficients from ordered logit model predicting vote choice (Democrat, other/no vote, Republican) as a function of issue-specific ideal points, where the slopes are allowed to vary by college attainment. Models also control for age, sex, and income. All models are estimated by maximum quasi-likelihood, applying survey weights. Bands plot 95% confidence intervals. Models are estimated only using ANES data.

Figure A11: Relative Issue Weights Between Non-College and College-Educated white Voters, ANES Only



Notes: Relative weight that non-college whites place on issue dimension compared to college-educated whites in each presidential election, 1984-2020. Points are derived from an ordered logit model predicting vote choice (Democrat, other/no vote, Republican) as a function of issue attitudes, where effects are allowed to vary by college attainment. The models also control for age, sex, and income. All models are estimated by maximum quasi-likelihood, applying survey weights. Dotted lines show estimates using both ANES and CCES data; solid lines show estimates using only ANES data.

Figure A12: Simulated Vote Share Among White Voters



Notes: The solid lines plot observed vote share among whites in each election from 1984 to 2020. The other lines plot simulated vote shares by education group under two counterfactual scenarios. In the first, shown in the dotted lines, the distribution of ideal points within groups is held fixed at its 1984 level, while the coefficients relating vote choice to attitudes (as in Equation 7) are re-estimated for each year. In the second, shown in the dashed lines, the distribution of ideal points is allowed to evolve, but the coefficients relating vote choice to attitudes are held fixed at their estimated 1984 values. Estimates are derived from an ordered logit model without covariates. All quantities are estimated applying survey weights in both model estimation and calculation of simulated vote shares.

B IRT Model Details

I estimate respondents' issue-specific ideal points using an ordinal logistic item-response theory (IRT) model, estimated separately for each issue area. The model is similar to classic binary IRT model used to analyze roll call vote data (Clinton, Jackman and Rivers, 2004). In those models, each data point is a yea or nay vote on a particular bill or resolution. However, survey questions typically have multiple ordered response options that provide more nuanced information about respondents' issue positions. For example, a standard ANES question about when abortion should be legal (VCF0838) has four response options:

1. By law, abortion should never be permitted.
2. The law should permit abortion only in case of rape, incest, or when the woman's life is in danger.
3. The law should permit abortion for reasons other than rape, incest, or danger to the woman's life, but only after the need for the abortion has been clearly established.
4. By law, a woman should always be able to obtain an abortion as a matter of personal choice.

The fact that there are more than two response options means that the standard binary ideal point model cannot be applied, at least without recoding the responses. One option is to collapse the question down to two response options — for example, treating responses (1) and (2) as the same and responses (3) and (4) as the same. However, this binarization obscures differences in the tails of the ideal point distributions. Someone who is generally pro-life is likely to answer option (1) or (2). However, those who answer (1) are likely to be very conservative on moral issues, even compared to pro-life respondents who answer response option (2). Instead of collapsing categories, I opt to preserve the full informational content of the question by using an ordinal model.

B.1 Model Definition

The full model is specified as follows. Index respondents by $i = 1, \dots, N$, questions by $j = 1, \dots, J$. Each question has K_j possible response categories. The observed data are survey responses $y_{ij} \in \{1, \dots, K_j\}$. Each respondent has a scalar ideal point θ_i , which is our main object of interest. Each question has a set of item parameters. The first is the “discrimination” parameter, denoted $\beta_j \in \mathbb{R}$, which indicates how strongly the question taps into attitudes. Second is a set of ordered “cutpoint” parameters, denoted $c^j = (c_1^j, \dots, c_{(K_j-1)}^j) \in \mathbb{R}^{(K_j-1)}$ with $c_k^j < c_{k+1}^j$. Denote the full set of parameters by $\Omega = \{(\theta_1, \dots, \theta_N); (\beta_1, \dots, \beta_J); (c^1, \dots, c^J)\}$.

The probability of observing response y_{ij} is given by

$$p(y_{ij} = k \mid \Omega) = \begin{cases} F(c_k^j - \theta_i \beta_j) & \text{if } k = 1 \\ F(c_{k+1}^j - \theta_i \beta_j) - F(c_k^j - \theta_i \beta_j) & \text{if } k > 1 \text{ and } k < K_j \\ 1 - F(c_{K_j-1}^j - \theta_i \beta_j) & \text{if } k = K_j \end{cases} \quad (8)$$

where $F(x) = \frac{1}{1+e^{-x}}$ is the logistic cumulative distribution function. In the case of a survey question with just two response options ($K_j = 2$), the model reduces to the standard binary IRT model with a logistic link function. Assuming conditional independence across items and respondents, the likelihood of the data is:

$$p(y \mid \Omega) = \prod_{i=1}^N \prod_{j=1}^J \prod_{k=1}^{K_j} p(y_{ij} = k \mid \beta_j, c^j, \theta_i)^{I(y_{ij}=k)}. \quad (9)$$

To identify the scale and location of the model, I place a standard normal prior distribution on the ideal points θ_i (Clinton, Jackman and Rivers, 2004; Rivers, 2003). This ensures local, but not global, identification: we could reverse the polarity of the ideal point space without affecting the likelihood by multiplying each θ_i and β_j by -1 . I resolve this issue by estimating the (globally) unidentified model and post-processing the MCMC output to

ensure that each chain is oriented in the same direction.

The question parameters β_j and c^j are given hierarchical priors, which enables partial pooling across questions and response options, to an extent determined by the data (Gelman and Hill, 2007). In particular, I place the following hierarchical prior on the discrimination parameters:

$$\beta_j \sim \text{Normal}(0, \sigma_\beta^2). \quad (10)$$

This hierarchical model can be viewed as a generalization of the standard practice of placing diffuse independent priors on the discrimination parameters, with the prior standard deviation σ_β estimated from the data.

Prior choice for cutpoints is more difficult, as it is difficult to reason a priori about the correct location of the cutpoints in the space determined by the product $\theta_i\beta_j$, on the logit scale. Instead, I specify a prior on the *difference between* cutpoints, with a hierarchical standard deviation that again partially pools information across questions and response categories to an extent determined by the data:

$$c_{k+1}^j - c_k^j \sim \text{Half-Normal}(0, \sigma_c^2). \quad (11)$$

Recall that the cutpoint vectors are ordered, so the difference between adjacent cutpoints is constrained to be positive. The hierarchical prior enables me to be agnostic about how far apart cutpoints should be, but provides some regularization that should improve performance.

As the final element of the model, the standard deviations themselves get half-Cauchy priors:

$$\sigma_\beta \sim \text{Half-Cauchy}(0, 2) \quad \text{and} \quad \sigma_c \sim \text{Half-Cauchy}(0, 2). \quad (12)$$

B.2 Comments on Model Assumptions

It is worth commenting briefly on the assumptions this functional form imposes. Most importantly, the inclusion of a single discrimination parameter for each question imposes a *monotonicity* assumption: for any value of \tilde{k} , the probability of providing a response less than or equal to \tilde{k} is monotonic in θ_i . There are at least two substantive implications that , there are (at least) two phenomena this assumption rules out.

First, the monotonicity assumption rules out “ends against the middle” cases, where a particularly extreme response option is favored by extremists on either side (very high or very low θ_i) relative to moderates (θ_i close to 0) (Duck-Mayr and Montgomery, 2020). This feature is common to all standard IRT models in political science.

Second, the monotonicity assumption imposes restrictions on preference orderings. In particular, if $y_{ij} = k$, the model assumes that respondent i must also prefer response option $k + 1$ to $k + 2$, and $k + 2$ to $k + 3$, and so on. Similarly, she must prefer $k - 1$ to $k - 2$, and so on. For example, take a question about proposed changes to income tax rates. If a respondent reports that she most prefers no change in the tax rate, then the model assumes she also would prefer small increases to large increases, and identically prefers small decreases to large decreases.

Theoretically, these assumptions could be violated. However, in reality most survey questions are written in such a way as to reflect the real-world politics of different issues. The response options are ordered in a way that is theoretically informed, meaning that the assumptions may be innocuous in practice. We could relax the second substantive assumption — that close response options are preferred over far response options — by estimating a multinomial logistic IRT model instead of the ordinal IRT model. However, this would require estimating many more parameters and it would throw away the prior information we have about the meaning of the response categories. For these reasons, I instead opt for the ordinal model.

B.3 Fitting the Model

The combined ANES-CES dataset is very large, with well over 500,000 survey respondents. Estimating the model above with the full dataset is extremely computationally intensive. To reduce computational burden, I opt to use a two-step procedure to obtain ideal point estimates. First, I sample from the full dataset to obtain item parameter estimates and ideal point estimates for the sampled respondents. Then, for the respondents who were not used in the first step, I treat the item parameters as fixed to estimate ideal points of respondents who were not sampled in the first step.

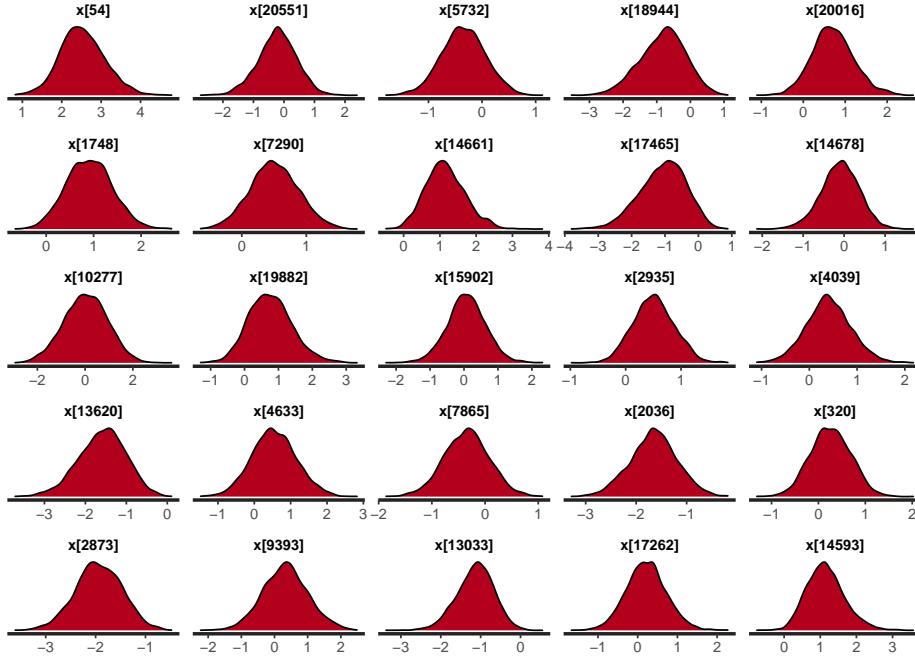
In the first step, I sample a relatively large number of respondents from the ANES and CES and estimate the model specified above using Hamiltonian Monte Carlo. To choose the sample for this step, I first select 750 respondents randomly from each survey-year combination. Then, I randomly sample additional respondents so that there are at least 1,500 responses to each question.³³ This ensures that a large number of respondents are available to estimate the item parameters with a relatively high degree of precision.

Then, in the second step, I treat the item parameters obtained in the first step as fixed. Specifically, I set item discrimination and cutpoint parameters to their posterior means. For the respondents not used in the first step, I obtain ideal point estimates by maximizing the posterior, conditional on the item parameters. These maximum a posteriori estimates are then used in downstream analysis.

This two-step process has two primary drawbacks. First, by treating the item parameters as fixed in the second step, I ignore uncertainty in the parameter estimates. However, this uncertainty is typically small — as seen in the discrimination parameter plots above. Moreover, there is higher uncertainty for questions that had a small number of responses. The held-out respondents were thus naturally less likely to have answered these questions anyway — reducing the effect of item parameter uncertainty on the second-stage ideal point

³³In a small number of questions, fewer than 1,500 respondents answered the question overall. In these cases, I sample all respondents who answered the question.

Figure B13: Posterior Distribution of Moral/Social Ideal Points for Selected Respondents



estimates.

Second, the MAP estimates obtained in the second step may not necessarily correspond to the posterior mean estimates that would be obtained with full Bayesian inference. This would be the case especially if the posterior distribution of ideal points were skewed. However, the posterior distribution of ideal points obtained in the first step appear to be roughly normally distributed, suggesting that the MAP will well-approximate the posterior mean. For example, Figure B13 plots the posterior density of Moral/Social ideal points for 25 randomly sampled respondents. The distributions are roughly symmetric about the mode, suggesting that the posterior mode and posterior mean are very similar.

B.4 MCMC Estimation and Diagnostics

I obtain draws from the posterior distribution of the parameters $p(\Omega | y) \propto p(y | \Omega)p(\Omega)$ via Markov chain Monte Carlo, implemented in the Stan programming language (Carpenter et al., 2017). For each issue domain, I run between 12 and 20 chains for 600 iterations

each, discarding the first half of each chain as warmup.³⁴ This leaves me with between $300 \times 12 = 3,300$ and $300 \times 20 = 6,000$ samples from the posterior for each issue area.

As noted above, the model as implemented is only locally, not globally, identified. Global identification requires fixing a polarity of the ideal point space. To achieve global identification, I post-process the output to ensure that the posterior mean ideal point estimates are positively correlated across all chains. If any chain is negatively correlated with the other chains, I reverse the polarity of that chain by multiplying the θ_i and β_j parameters by -1 . Finally, after combining samples from all chains together, I orient the space so that the average ideal point for Democrats is less than the average ideal point for Republicans.

I take several steps to diagnose performance of the MCMC estimation. There were no divergent transitions and the Bayesian fraction of missing information was low, indicating the sampler is efficiently exploring the posterior (Betancourt, 2016). Additionally, I examine the Gelman-Rubin \hat{R} statistics for each parameter (Gelman and Rubin, 1992). At convergence, all \hat{R} values should be equal to 1; values above 1.05 indicate problems with convergence. Figure B14 plots the distribution of \hat{R} statistics across all parameters, showing that nearly all of the \hat{R} values are less than 1.01.

Finally, Figures B15 and B16 show traceplots for, respectively, discrimination parameters β_j and variance parameters σ_β and σ_c . They show good mixing across chains, providing reassurance that the MCMC sampler converged to the posterior distribution.

B.5 Model Parameters

Figures B17-B20 plot estimates of the discrimination parameters for each issue area, along with 90 and 95% credible intervals.

³⁴I used all cores available on the server, which can vary by job submission.

Figure B14: Distribution of \hat{R} Statistics Across All Model Parameters; Mean and 90th Percentile Highlighted

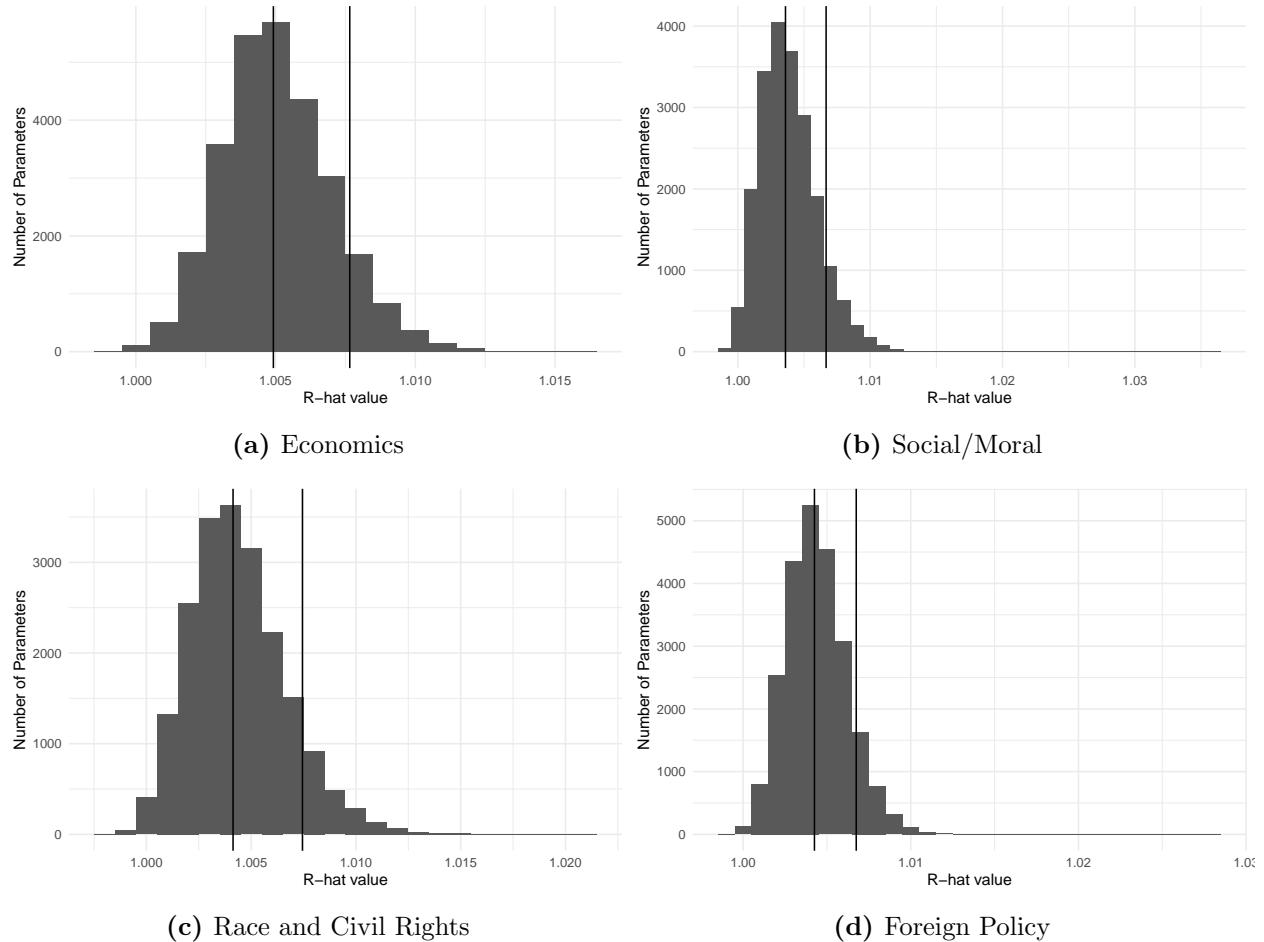
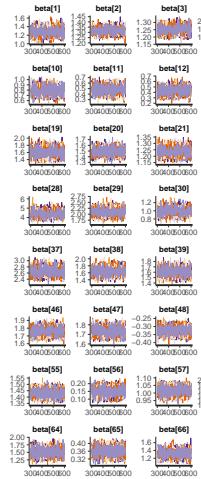
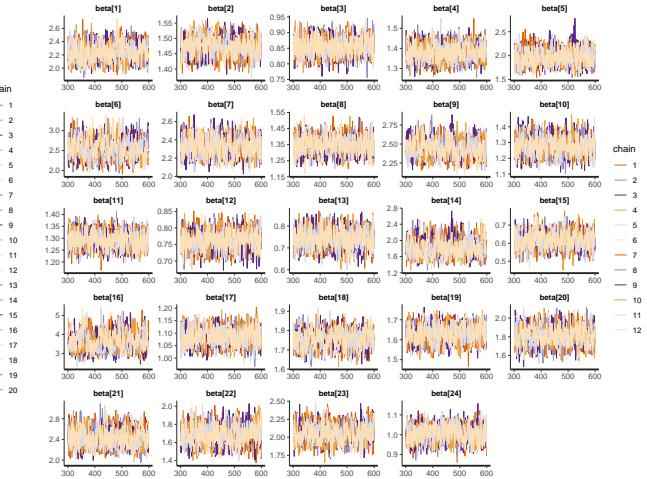


Figure B15: Traceplots for Discrimination Parameters β_j

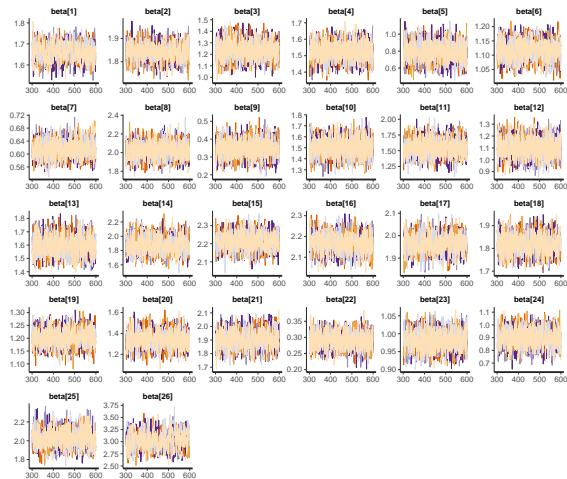
(a) Economics Discrimination



(b) Social/Moral Discrimination



(c) Race and Civil Rights Discrimination



(d) Foreign Policy Discrimination



Figure B16: Traceplots for Hierarchical Variance Parameters σ_β and σ_c

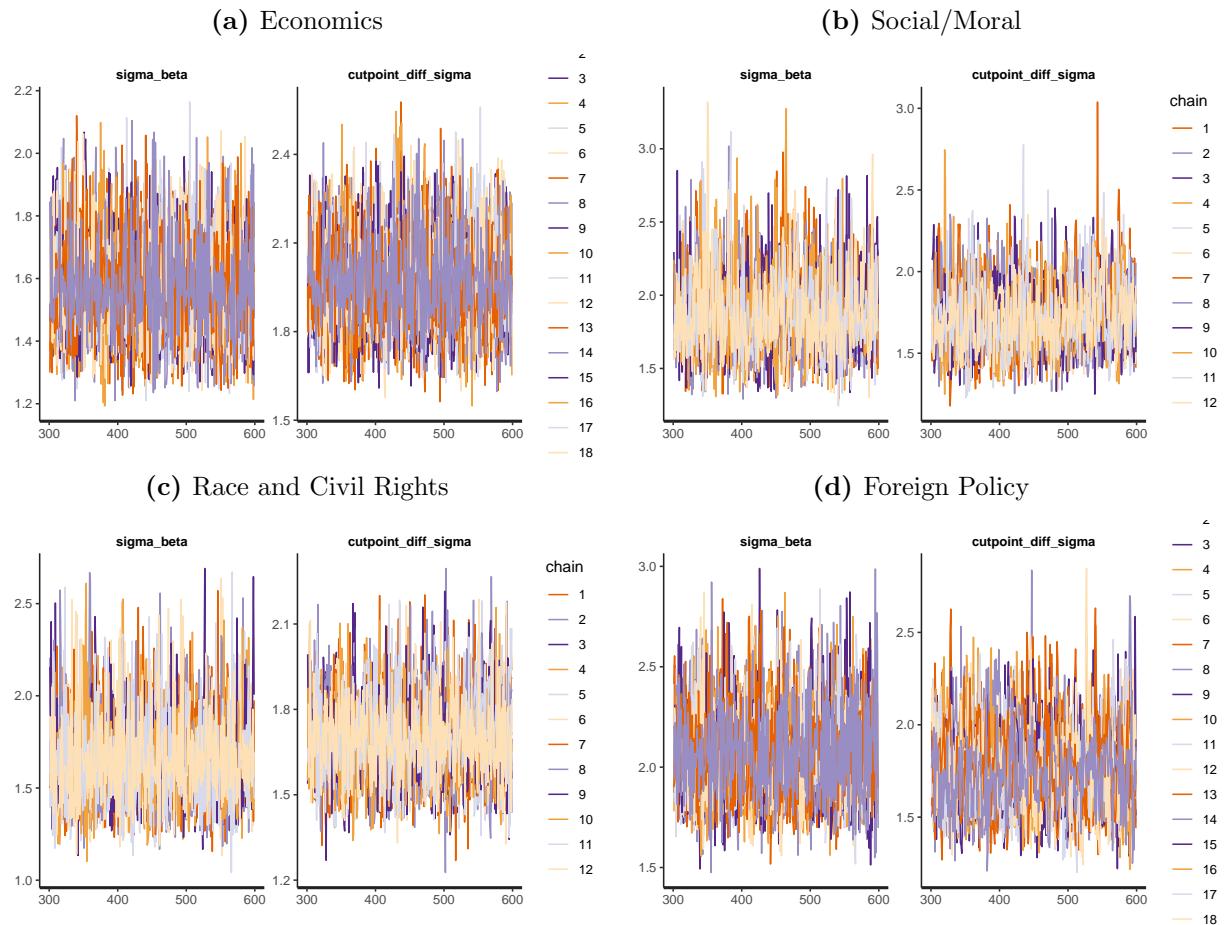
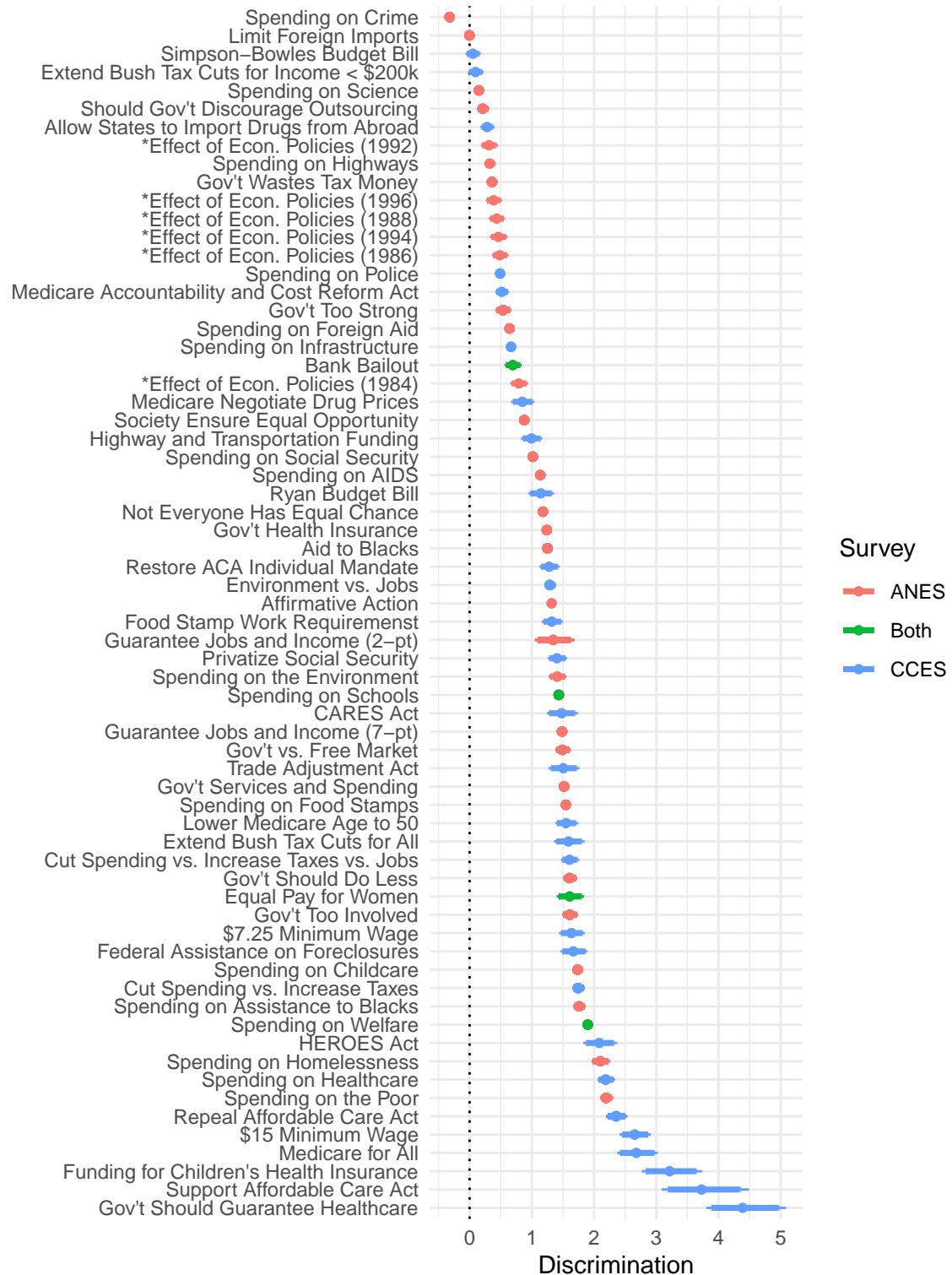
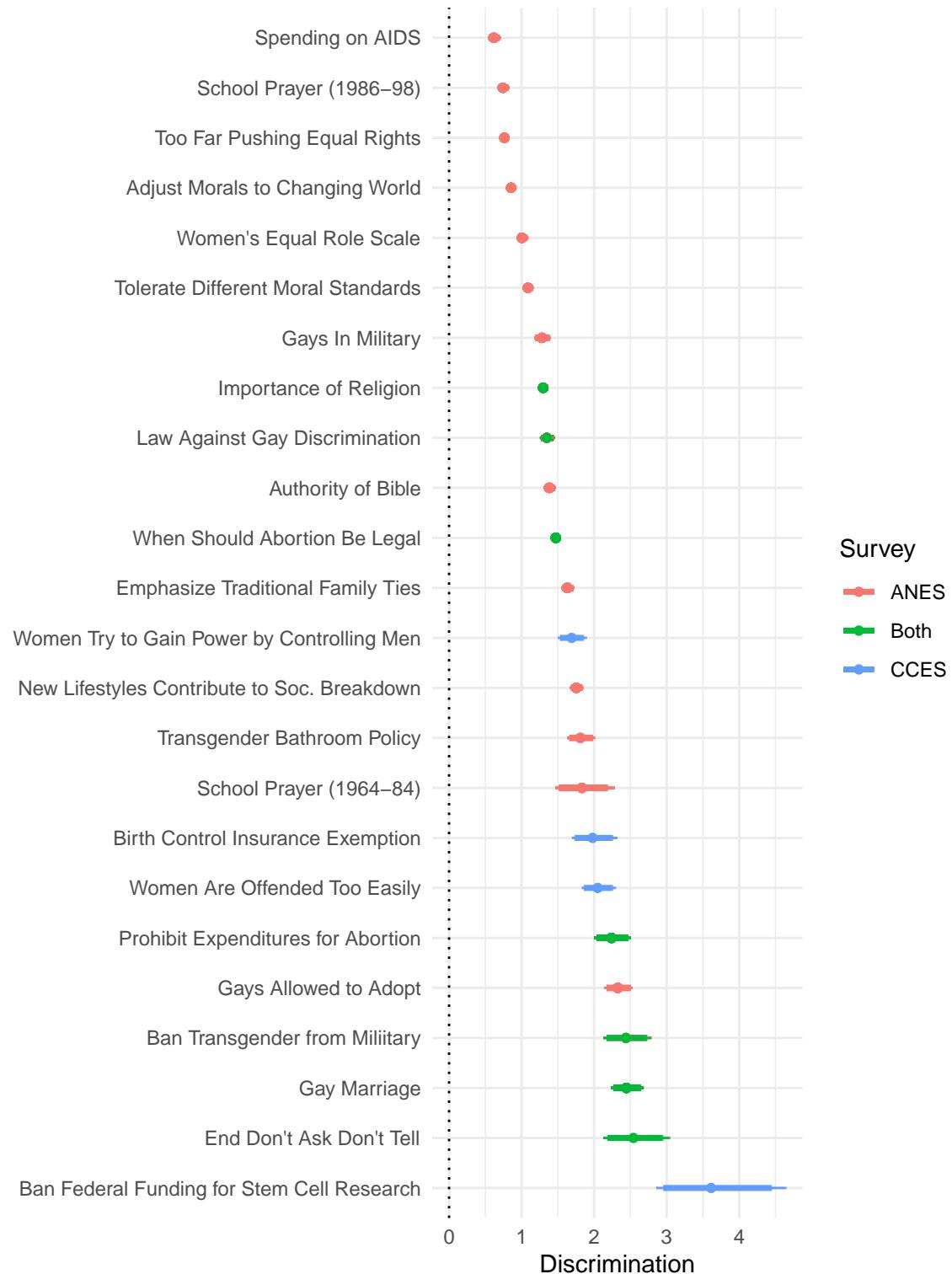


Figure B17: Discrimination Parameters for Economics Scale



Notes: Vertical lines show posterior mean of the discrimination parameter for each item. Thick and thin bars indicate, respectively, central 90% and 95% credible intervals.

Figure B18: Discrimination Parameters for Social/Moral Scale



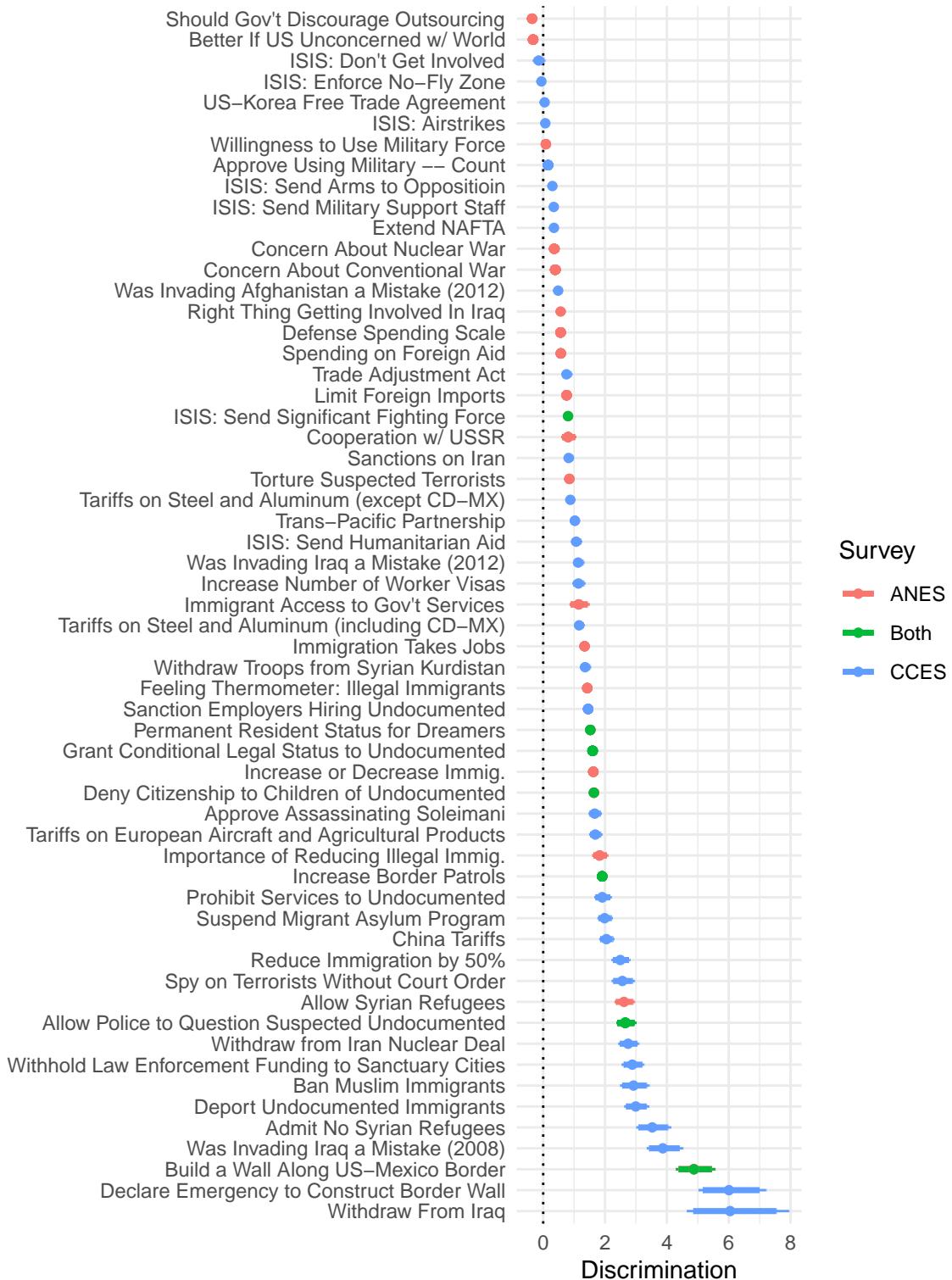
Notes: Vertical lines show posterior mean of the discrimination parameter for each item. Thick and thin bars indicate, respectively, central 90% and 95% credible intervals.

Figure B19: Discrimination Parameters for Race and Civil Rights Scale



Notes: Vertical lines show posterior mean of the discrimination parameter for each item. Thick and thin bars indicate, respectively, central 90% and 95% credible intervals.

Figure B20: Discrimination Parameters for Foreign Policy Scale



Notes: Vertical lines show posterior mean of the discrimination parameter for each item. Thick and thin bars indicate, respectively, central 90% and 95% credible intervals.