

Mapping Morality: Congressional District-level Measures of the Moral Foundations

Abstract

The political geography of the United States has been the subject of a great deal of scholarly and popular writing. This work has been important in understanding variation in state governments, election returns, social indicators, and the quality of representation by elected officials. However, studies in this tradition generally have been limited in terms of the units of analysis (typically focusing on states or regions due to data limitations). Studies that focus on smaller geographic units are typically forced to rely on imperfect proxies of the indicators they would like to study. In this paper, I construct congressional-district level measurements of moral foundations directly from a large database of survey responses. Moral foundations theory represents a new synthesis of values research, and it offers a way to explain the origins of political differences across individuals. I find that variation in the moral foundations across the country explains a significant amount of variance in vote returns and congressional behavior. In addition to the substantive contribution of this paper, I demonstrate how Bayesian hierarchical modeling can be used to correct for the biases in self-selected internet surveys.

Brad Jones

University of Wisconsin

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¹ Special thanks to Jonathan Haidt for generously sharing the YourMorals data. Portions of this paper have appeared in a research blog I contribute to, yourmorals.org/blog/author/brad

The political geography of the United States has been the subject of a great deal of scholarly and popular writing. Daniel Elazar's (1972) seminal work defining three dominant political cultures in the United States was an important step in making the subject of culture relevant to political scientists. Elazar's theory inspired scores of scholars to write and think about variations in cultural geography in the United States, and in the intervening 40 years, more than a hundred books and articles on the subject (e.g. Erikson, McIver, and Wright 1987; Laitin and Wildavsky 1988; Lieske 1993; Miller, Barker, and Carman 2006; Nardulli 1990; Vandello and Cohen 1999; Wirt 1991).

This research has created an important framework for understanding variation across the states in terms of state government administration and functioning (Elazar 1972; D. Y. Miller, Barker, and Carman 2006), election returns (Lieske 1993), social indicators (Vandello and Cohen 1999), and the quality of representation by elected officials (Hutcheson and Taylor 1973). One of the reasons Elazar's cultural typology was so successful was that it seemed to capture something intuitive about the interaction between culture and politics in America. One needs only reflect on the wide cultural gulf that separates Los Angeles from New York City or Chicago to feel that the sum total of those differences must also manifest themselves politically.

Studies in this tradition have generally been limited in terms of the units of analysis (typically focusing on states or regions due to data limitations). Elazar's critics and supporters alike often comment on how little empirical backing there is for his original conceptualization (D. Y. Miller, Barker, and Carman 2006; Nardulli 1990). To construct reliable measures even at the state level generally requires tens of thousands of respondents (Berry et al. 1998; Brace et al. 2002; Erikson, McIver, and Wright 1987; but see Lax and Phillips 2009 for an alternative method). It is unusual to have datasets that contain large enough samples to be able to generalize

across a large number of smaller geographies. Those studies that do focus on smaller geographic units are typically forced to rely on imperfect proxies of the indicators they would like to study (Adler and Lapinski 1997; Hall 1998; Lieske 1993; Vandello and Cohen 1999).

In this paper, I construct congressional-district level measurements of important aspects of culture directly from a large ($n > 100,000$) database of survey responses. My data were collected from participants in an online, opt-in survey, and I discuss how Bayesian hierarchical modeling can be used to correct for the obvious self-selection biases that arise from self-selected panels. Given the relative ease of collecting survey responses from individuals on the internet, it is important for scholars to consider how to make use of this powerful new data collection tool. Ultimately, the proof of a valid measurement is found in its ability to explain variation in real-world phenomena. After constructing the measures of moral foundations across the country, I show how they correlate with election returns and congressional behavior.

Theory and Literature Review

Scholars of American politics have had an uneasy relationship with the concept of culture (Pye 1991). Culture seems to be one of those conceptual tools in political science that is intermittently rediscovered and dusted off to serve some new purpose only to fade once again. In the 1950s and 1960s, political science attempted to understand democratization and comparative politics by analyzing culture (e.g. Almond and Verba 1989 [1960]). Elazar's work applied this comparative approach to the American states to understand the diversity of civic attitudes within a particular country (Elazar 1972). Cultural studies saw a revival in the late 1980s and early 1990s with Aaron Wildavsky's pioneering work on the subject (Conway 1989; Lieske 1993; A. B. Wildavsky 1987).

Elazar's political culture theory provides an interesting case study of the on-again-off-again relationship between political science and culture. Elazar's original typology was based on ethnic settlement patterns in the early history of the United States. Critics immediately were skeptical of the lack contemporary or confirmatory evidence for his classifications (C. A. Johnson 1976; Schiltz and Rainey 1978). Subsequent research attempted to address these criticisms by bringing individual-level (Erikson, McIver, and Wright 1987; D. Y. Miller, Barker, and Carman 2006; Nardulli 1990) and aggregate-level (Lieske 1993; Vandello and Cohen 1999) data to the task. These studies arrived at somewhat mixed results, and for the most part, the mainstream of political science (with the exception of a few persistent voices) has not returned to the question of how political culture shapes politics.

As with so many seemingly useful concepts, political culture has suffered from a lack of carefully defined terms and operationalizations. Adcock and Collier (2001) outline the general scholarly problem of connecting measurements to carefully developed concepts. Without both elements—carefully constructed theory *and* quality data—we risk running around in circles in our research efforts. Adcock and Collier highlight something of a paradox present in any research program. In order to have high quality data, we need to be guided by good theory. However, good theory requires finding good measures of the critical concepts. The only way forward is incremental and iterative improvements to both our theory and our data.

Moral foundations theory (Haidt and Graham 2007; Haidt, Graham, and Joseph 2009) presents us with a potential way forward in the study of political culture. The theory has its intellectual roots in moral philosophy and the study of culturally variable values (Haidt and Joseph 2004; Shweder et al. 1997), and it draws from recent work in anthropology, evolutionary biology, and even primatology. The theory holds that humans share a common set of moral

intuitions. The most recent version of the theory focuses on five values: harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity.

One of the features of moral foundations theory is that it brings values research under one theoretical umbrella. Mondak (2010) has argued that the eclecticism that characterized personality research was mitigated by the introduction of McCrae and Costa's (1987, 2003) Big Five personality theory. These kinds of overarching theories impose a discipline in the field that allows for cumulative research. Table 1 below summarizes each of the moral foundations and relates them to some of the existing political science literature.

[Table 1 here]

Jonathan Haidt² has compared the human moral senses to the five tastes humans are able to distinguish (sweet, salty, bitter, sour, and umami³). Individual differences in taste sensitivity are the product of a rich interaction between an individual's genetic make-up, the local environment, and his or her cultural heritage (Wise et al. 2007). Building from the same five basic tastes, humans around the world have created a great diversity of cuisines. These cuisines are guided by culture (e.g. religious dietary restrictions), environment (e.g. staple foods vary with climate), and of course biological imperatives (all cuisines must satisfy basic nutritional needs). These driving forces often interact in important ways. For example, environment interacts with culture to shape it (and vice versa⁴), so we can imagine how certain cultural practices might have increased the fitness of their adherents. Many food taboos can be understood in these terms (J. Henrich and N. Henrich 2010; Lepowsky 1985). Another example is the way in which culture

² The text of the talk where he makes the comparison can be found at http://edge.org/3rd_culture/morality10/morality.haidt.html. I extend this metaphor a little here.

³ Umami is a savory taste distinct from saltiness and bitterness. Western scientists were generally slow to accept the existence of this fifth taste, but in the last 15 years, L-glutamate (the compound responsible for the umami taste) receptors were discovered in the tongue ("Sweet, Sour, Salty, Bitter ... and Umami" 2007).

⁴ See Durham's (1992) description of how changes in cultural practices shaped the environment of the people of the Niger delta and probably led to higher incidences of sickle cell anemia.

can shape genetics and physiology. Durham (1992) describes how dairying relates to the capacity for lactase absorption in human societies.

Morality can be understood in the same terms. Analogous to the wide diversity of cuisines around the world, there is also a great deal of variation in moral and cultural understandings. As Wildavsky put it, “Human beings do not choose what they want, like ordering a la carte, any more than they (so far) select their body parts in any size or shape they want, regardless of the configuration into which these have to fit. Preference formation is much more like ordering *prix fixe* from a number of set dinners or voting a party ticket” (A. B. Wildavsky 1987, 4). Culture provides us with the menu of available options. That menu is affected by environment and constrained by human nature. Peter Rentfrow’s recent work (Rentfrow, Gosling, and Potter 2008) demonstrates how psychological traits vary across geographies. Through some combination of historical contingency (e.g. Elazar’s settlement patterns), environment (e.g. differences in climate), and perhaps increasingly self-sorting (Bishop and Cushing 2009; McDonald 2009), we can see marked cultural and psychological differences from place to place.

Moral foundations theory’s promise is that it occupies something of a middle ground or intermediate cause of human preferences and attitudes. Evolutionary biologists typically distinguish between ultimate and proximate causes (Mayr 1961). Ultimate causes are the big, generally slow moving forces that act on a population—typically the things we think of when we think of evolutionary change. Proximate causes are connected to ultimate causes but can be quite distinct. They provide the immediate rationale for an observed behavior. For example, genetic transmission in humans requires sexual activity. The ultimate cause of sexual activity is the biological imperative to reproduce. Proximally, sexual behavior is pleasurable and most

individual humans need no grand procreative incentive to procreate—indeed we often go to great lengths to avoid pregnancy (Pinker 2003, 54). At some level, all of what we are is genetically determined, and we can think of genetic and biological factors as providing us with an ultimate cause of human value systems.

The study of politically relevant individual attitudes and values by political scientists, on the other hand, has often been focused too narrowly on proximate causes. The Michigan school focused on the absolute narrowest point of Converse's "funnel of causality": party identification, candidate evaluations, and issue positions (Campbell et al. 1960; Campbell, Gurin, and W. E. Miller 1954). These studies, somewhat underwhelmingly, found strong correlations between these variables and vote choice. It was no great revelation to discover that individuals tended to support candidates who they liked and agreed with on the issues and shared their partisan identity. However, until recently, we have not moved very far beyond the original Michigan model.

Recent work has shifted focus away from the proximate causes and highlighted some of the ultimate causes of political attitudes and behaviors. Alford et al. (2005) caused quite a stir and not a little controversy (Charney 2008) with their work on the genetic correlates of political ideology. As John Jost (2009) points out, it is a little surprising that this finding caused such commotion among the political science community, as the behavioral geneticists had made very similar observations more than three decades earlier (Eaves and Eysenck 1974). Old or new, this literature is currently changing the way that we think about individual level political attitudes in important ways (Alford and John R. Hibbing 2007; Alford, Funk, and John R. Hibbing 2008; Amodio et al. 2007; Gerber et al. 2010; Hannagan and Hatemi 2008; Hatemi et al. 2009; Mondak et al. 2010; Monroe, Adam Martin, and Ghosh 2009; Oxley et al. 2008).

Moral foundations theory fits neatly in between these two poles. The theory suggests that humans are born with innate moral senses—analogueous to taste receptors—that help us to define our preferences and navigate a complex social world. These innate moral foundations provide the raw building materials that—when put together in different configurations—manifest in the varying cultures (Haidt and Joseph 2004; Haidt 2001). Haidt and his colleagues have repeatedly demonstrated how the moral foundations relate to political ideology in the United States and in other western democracies (Haidt and Graham 2007; Haidt, Graham, and Joseph 2009; McAdams et al. 2008). In other work, I have shown how the moral foundations relate to party identification and vote choice (Jones 2011).

As I move forward into the measurement and analysis of the moral foundations at the congressional district level, I expect significant variation across the country that corresponds with real political phenomena. In this paper, I relate the moral foundations to presidential vote, electoral swings in House elections, and the behavior of members of congress. I expect the Harm and Fairness foundations to be positively related to the share of the vote for the Democratic presidential candidate in each district and the Ingroup, Authority, and Purity foundations to show a negative relationship. I expect the swings toward the Democratic Party in the 2006 midterms to be related to the Harm Foundation, and I expect the counter-swing in the 2010 midterms toward the Republicans to be related to the Ingroup, Authority, and Purity foundations. Finally, I expect that members' cosponsorship behavior to be significantly related to the moral foundations of their districts.

Data and Methods

My measures of the moral foundations were collected from an opt-in internet survey. Jonathan Haidt and his colleagues created a website (www.yourmorals.org) where individuals

could register and fill out the moral foundations questionnaire. The data in this paper were collected between June 2007 and May 2010. After filling out some limited demographic and geographic information, individuals filled out the moral foundations questionnaire and had the option of completing other studies at the website. Participants in the study were self-selected and generally came to the website after reading a newspaper editorial or blog post mentioning the research.⁵

Respondents who came to the website and filled out the questionnaire are an extremely unrepresentative bunch. The clearest and perhaps most problematic example of the biases in the sample (henceforth, “YourMorals” data) is the proportion who self-identify as liberal. In general, the proportion of adults who self-identify as liberal in national surveys hovers between 18 and 22 percent. However, nearly two-thirds of the participants in the YourMorals data claim to be liberals.⁶ This dramatic difference is a considerable source of worry for the prospect of recovering representative measures from this dataset. We see a similar bias with respect to education and race. The YourMorals respondents were significantly more likely to have a college degree than the general public, and minorities were substantially underrepresented.⁷

From the discussion of the demographic biases in the sample above, it would clearly be inappropriate to aggregate the YourMorals data by congressional district and use the resulting

⁵ The most common referring website was an editorial by Nicholas Kristof which ran in the *New York Times* in May of 2007. The editorial was provocatively titled, “Would you slap your father? If so you’re a liberal.” The piece reported on some of Haidt’s research on the correlations between the moral foundations and political ideology.

⁶ Beyond the obvious sampling issues, there are a few other problems with directly comparing the measure of ideology in YourMorals with that in nationally representative samples. First, there is a mode difference that could account for some of the discrepancy (although certainly not all or even a very significant portion of it). Another (and more serious) difference between nationally representative samples and the YourMorals data is the choice of a seven point scale rather than a five point scale. Five point scales are used more regularly in telephone samples with the options being “Very Conservative,” “Conservative,” “Moderate,” “Liberal,” and “Very Liberal.” The YourMorals data includes options for “Slightly liberal” and “Slightly Conservative” as well as “Libertarian” and “other” categories. The 65 percent figure lumps all of the “liberals” together. If you believe that the “slightly liberal” respondents might have self-identified as “Moderate” given fewer options, the proportion turns out to be just over 50—still alarmingly divergent from the population figure which is probably closer to 20 percent.

⁷ Population estimates come from the American Community Survey estimates. Presumably the sample would also be biased with respect to income, but income data are unavailable for the YourMorals respondents.

statistics as estimates of the population. Lacking randomly selected respondents, one solution is a model-based approach to mitigate the demographic biases in the data. My approach extends the logic of multilevel regression with post-stratification (MRP)—a method routinely used in epidemiology (Boscoe, Ward, and Reynolds 2004; Jia, Muennig, and Borawski 2004; Moura and Migon 2002; Pfeiffermann 2002) and increasingly in political science and other disciplines (Dietz 2002; Gelman et al. 2005; Lax and Phillips 2009)—to cases where the survey data are unrepresentative.

Multilevel regression with post-stratification proceeds in (basically) three steps. First, we construct a model to obtain the expected values of the variable of interest as a function of variables for which underlying population values are known (typically this means only items that show up in the Census – geography, age, education, income, race, gender, maybe a few others).

Second, we use the model to predict the expected value of the variable of interest for each combination of variables (or cells) in the model. For example, if the model used four regions (Northeast, South, Midwest, West), three categories of age (18-30, 31-60, 61+), three categories of education (HS, College, Graduate), two categories of income (Less than \$50k, More than \$50k), two categories of race (white, non-white), and gender as predictors, there would be a total of $4*3*3*2*2*2 = 288$ cells. From a 18 year old male with a HS degree or less who makes less than \$50k is white and lives in Maine to a 75 year old female with a PhD making more than \$50k is Asian and lives in New Mexico. All individuals in the sample fit into one (and only one) of the cells defined by the combinations of predictors in the model. Some of the cells might even be empty. In cells where there is no or very little data, the model borrows statistical power from the other cells to come up with an expected value for every cell (Gelman and Hill 2006).

Finally, we weight each of the estimated cell values by the proportion of individuals in the population to come up with predictions for the geographic regions of interest. In this case, we would have predictions for each region. Lax and Phillips (2009) have convincingly demonstrated how this method can be used to create valid inferences for small-area estimation where the cells in the model are sparsely populated. The same logic should apply to a demographically biased sample. In this case, we have a problem of imbalance in our cells. Some are overpopulated and others hardly at all. By applying the method outlined above, we can estimate a model that can fill in the gaps in our data and reweight it all back to the population values.⁸

For the YourMorals data specifically, I stratified the sample based on congressional district of residence (436 in total including DC),⁹ age (five categories: 18-24, 25-34, 35-44, 45-54, 55-64, and 65+), education (four categories: HS or less, some college, bachelors degree, graduate/professional degree), race (five categories: Asian, black, Hispanic, non-Hispanic White, and other), gender, and political ideology (two categories: liberal, non-liberal). This leads to a somewhat staggering 174,400 total cells.

⁸ This approach ignores the unobservable selection biases that are almost certainly present even after correcting for demographic bias. In essence, we have to assume that conditional on the observable covariates, individuals who selected into the sample are exchangeable with those who did not select in. This would not be problematic if the selection bias affected all members of the sample in the same way. At the end of the day, we will be interested in the variation in moral foundations scores across the districts and any constant bias across the sample will wash out in the analysis. This might not hold if, for example, the conservatives that we sample are rather unrepresentative while the liberals are more representative. In this case, the estimates for conservatives would be biased while the liberal estimates would be unaffected. In theory it might be possible to estimate this bias if we could supplement the unrepresentative data with a group of representative respondents. Given the representative data we could directly estimate the bias and potentially correct for it.

⁹ Individuals were assigned to congressional districts based on their zip codes. Nearly two-thirds of individuals live in zip codes that fall entirely within one congressional district. Individuals who live in zip codes that fell into multiple districts were assigned to one district with probability equal to the proportion of the zip code that fell into the particular district. For example if an individual fell into a district that was 90 percent in District 1 and 10 percent in District 2, he or she was assigned to District 1 with probability 0.9 and District 2 with probability 0.1. In principle the uncertainty about actual district of residence could be incorporated into the Bayesian model. Before each iteration of the Markov Chain, we could perform the same probability calculation and estimate the parameters accordingly. However, JAGS does not support this sort of probabilistic indexing as of this writing. Experimentation with several different versions of the data set (with different assignments for the geographically ambiguous respondents) did not reveal any large differences.

Stratifying on ideology requires some population estimates of liberalism for each cell. This data is obviously not available through the census, so I apply a similar MRP procedure to a collection of polls conducted by the Pew Center for the People and the Press from 2001 to 2008.¹⁰ The advantage of the Bayesian hierarchical setup is the ability to incorporate the uncertainty inherent in the cell-level ideology estimates into the final estimate of the moral foundations score for each congressional district.¹¹

Constructing congressional-district level measures of the moral foundations moves forward in two-stages. In the first stage, I produced estimates of ideology to be used in the MRP in the second stage. These estimates were derived from the following model:

$$P(y_j) \sim \text{Binomial}(\theta_j, n_j)$$

$$\phi_j = \ln\left(\frac{\theta_j}{1 - \theta_j}\right)$$

$$\phi_j \sim N(\mu_j, 1)$$

$$\mu_j = \alpha_k + X_j\beta$$

$$\alpha_k \sim N(A_s, 0.001)$$

$$A_s \sim N(0, 0.001)$$

Where j indexes the 87,200 cells, k indexes congressional districts, and s indexes states. X is a matrix of covariates (dummy variables corresponding to the categories of age, sex, education, and race). In words, the model estimates the cell proportion of liberalism as a function of

¹⁰ Pew makes the individual level results of their polls public six months after they are fielded. This dataset is comprised of nearly 200,000 interviews conducted in 114 separate surveys. The samples were designed to be representative of the adult population. In most cases, these surveys include the respondent's zip code which was used to classify individuals into congressional districts in a similar manner as the YourMorals data (see note 9 above for details).

¹¹ Technically, there is also uncertainty in my "population" figures from the American Community Survey which is compiled by the Census from survey data. As this data is reported with standard errors, it would also be possible to account for the population-level uncertainty and propagate it into the other parts of the model, but I did not take this additional step.

demographics and a district-level intercept. The model also takes into account the nesting of congressional districts within states. The primary parameter of interest, θ_j , is the proportion of the cell that identifies as liberal. The model includes an intercept that varies by congressional district and state. It was estimated in JAGS, and the sampler was set to produce two parallel chains of parameter estimates. After discarding the first 25,000 iterations, I let the sampler run for 25,000 more iterations collecting every 25th (for a total of 2,000 draws from the posterior distribution).¹² The result is samples from the distribution of liberalism for each the 87,200 cells.

The second stage proceeds in a similar manner. First I constructed a model of the moral foundations scores. As each individual has a separate score for each of the five dimensions, the model is slightly more complicated.

$$Y \sim N(M, \Sigma)$$

Where Y is a $5 \times n$ matrix containing the scores for each individual on the moral foundations scores, M is a vector of means $\{\mu_1 \dots \mu_5\}$, and Σ is the precision matrix.

$$\mu_f = \alpha_{1,f,k} + \alpha_{2,f,k} \textit{Lib} + \alpha_{3,f,k} \textit{Male} + \alpha_{4,f,k} \textit{Lib} * \textit{Male} + X\beta$$

$$\alpha_{.,k} \sim N(A_s, T)$$

$$A_{.,s} \sim N(0, T)$$

I've suppressed the j index for readability. In the equations above, f indexes each moral foundation and the model is estimated as if the foundations followed a multivariate normal distribution. Each foundation is a function of demographics, a varying congressional district level effect, a varying effect for ideology, gender and the interaction between ideology and

¹² Visual inspection of the chains revealed good mixing. From these estimates it is possible to construct direct estimates of the ideology of each district. In this paper, I am primarily interested in the cell estimates to be used in constructing the appropriate weights for the representativeness of the moral foundations scores. As a check of the model, I correlated the congressional district level estimates of ideology with presidential vote at the district level. The Pearson's correlation was strong ($r = 0.68$) and in the expected direction (liberalism correlates positively with vote for Obama in 2008).

gender. As above, the model takes into account the fact that congressional districts are nested within states. Similar to the ideology model, the Gibbs sampler first burned-in the first 25,000 observations for two chains, and I recorded every 25th observation for the next 25,000. Once the estimation was complete, I had 2,000 draws from the posterior distribution of the moral foundations.

Using the estimated coefficients from the model, I found the moral foundations score for each congressional district by appropriately weighting the cells according to the population figures from the Census and the ideology estimates from above.¹³ From that point it is relatively easy to aggregate up to the congressional district level. The results for each of the five moral foundations are displayed in Maps 1 through 5. Districts shaded in darker shades of green were placed relatively high on the foundation. Districts in red were lower.

[Maps 1 through 5 here]

Moral Foundations and Presidential Vote

After constructing the measures of the moral foundations at the congressional district level, it is a simple matter to compare them with the results of recent elections. Table 2 shows the results of a simple OLS regression with Democratic vote share for 2004 and 2008 as the dependent variable and the estimates of the moral foundations as the independent variables. The results are generally in line with my expectations. The moral foundations measures have all been standardized (centered at zero with a standard deviation of one), and the presidential vote is measured in percentage points. For example, a one standard deviation increase in the Fairness foundation correlates with an additional four percentage points for Kerry in 2004 (holding the

¹³ To account for the uncertainty in the ideology estimates, I estimated the proportion liberal in each cell from the posterior density draws from the ideology model.

other values of the moral foundations constant).¹⁴ The results look very similar for both presidential election years, and the moral foundations scores succeed in explaining nearly half of the variation in presidential vote at the congressional district level.

[Table 2 here]

The results in Table 2 validate my expectations with respect to the Fairness, Ingroup, and Purity foundations. The Harm and Authority foundations had the wrong signs, but were statistically insignificant. One potential reason for these unexpected findings is the correlational structure of the moral foundation scores. The Harm and Fairness measures are strongly positively correlated and the Ingroup, Authority and Purity foundations are similarly correlated with each other.

Moral Foundations and Congressional Seat Swings

Recent years have seen an increased volatility in congressional vote returns. From the dramatic swing toward the Democrats in 2006 and 2008 to a counter-wave in 2010, these rapid transitions in power have created something of a puzzle for students of American politics. How much leverage do the moral foundations give us when thinking about recent shakeups in the halls of Congress? I estimated two similarly specified logit regressions with change in party control as the dependent variable. In each regression, I restricted the cases to the seats that were held by the party in power in the previous election (so the first column estimates the probability that a seat went from control by a Republican to control by a Democrat in the 2006 and 2008 midterms among Republican seats). In the models, I control for Democratic share of the vote in the most recent presidential election preceding (2004 and 2008 for the 2006 and 2010 midterms respectively).

[Table 3 here]

¹⁴ These results are robust to including estimated ideology on the right-hand side.

The results for 2006 were generally unresponsive of my expectations. The small and marginally significant, negative effect of the authority foundation on the probability of seats changing hands provides some evidence in support of my theory. Republican seats that had relatively lower scores on the authority foundation were more likely to see a change in party control, but overall the results are rather weak. The 2010 elections are slightly more in line with my theoretical expectations. The Democratic seats that were most at risk of party change in 2010 were those that were low on the fairness¹⁵ foundation and high on the ingroup foundation. The inclusion of the presidential vote presents something of a conservative test for these models. In both 2006 and 2010, the seats that were most at risk of changes in party control were the marginal districts. It is also possible that these models are significantly misspecified. Additional controls for incumbency, fundraising totals, and personal scandals, might uncover further evidence for the effect of the moral foundations on congressional vote shifts.

Bill Sponsorship and Moral Representation in Congress

A final area that I investigated was the relationship between the estimated moral foundations scores and the patterns of bill sponsorship. Most studies of sponsorship have focused on economic representation. It is relatively straightforward to find the proportion of a congressional district that is involved in agriculture and support for the farm bill. Economic representation is surely an important component of representation, but Congress does much more than economic policy. Especially in recent years, a great deal of the legislation introduced in Congress is thick with morality and symbolic action. Much of this legislation never comes to a vote, but members of congress are quick to point to their records of introducing and cosponsoring legislation when communicating with constituents (Koger 2003; Swers 2005), and

¹⁵ On its face, this seems a little strange. After all, the Tea Party movement drew heavily on the language of fairness. As it is currently constituted, the fairness foundation primarily measures an egalitarian conceptualization of fairness. The “conservative” flavor of fairness is closer to the ascriptive end of Hochschild’s continuum (Hochschild 1986).

it seems clear that we should construe representation more broadly than just economic policy (Burden 2007).

By perusing the titles of sponsored legislation in the 109th Congress, I selected several examples of bills that should be related to the moral foundations.¹⁶ For example, we might expect a positive relationship between the harm foundation and support for children's health insurance or stricter sanctions on bullying or hate speech. The fairness foundation should be associated with efforts to promote economic equality. We might expect the ingroup foundation to be associated with restrictions on immigration and support for symbolically patriotic measures (flag protection, English-only). The authority foundation should be associated with legislation dealing with supporting the military or domestic police force. Finally, we might expect the purity foundation to be related to the sanctity of human life.

In what follows, I will highlight one bill that typifies each foundation. My models include the five foundations as well as the vote for the Democratic presidential candidate in 2004. It would perhaps be ideal to have measures of the moral foundations that were specific to each legislator's electoral "base." Many of these symbolic bills seem tailor-made for a legislator's most devoted supporters. Lacking such nuanced measures, I will instead rely on the average score for the district. Table 4 contains the results for each of the five bills. In each model, I have restricted the cases under study to members of only one party. This seems to provide a more conservative test of the model, as it requires explanation of differences within rather than between the parties.

The first column of Table 4 shows how the moral foundations affect the probability of Democrats signing on to H.R. 284, "To amend the Safe and Drug-Free Schools and

¹⁶ This is an admittedly ad hoc way of proceeding. I am open to suggestions for better ways to sample from the (vast) universe of bills introduced in these sessions.

Communities Act to include bullying and harassment prevention programs.” This seems like a classic “harm” issue, and indeed we see that Democrats who came from districts which were relatively higher on the harm foundation were significantly more likely to sign up as a cosponsor of this bill.

The second column shows the results for Democrats’ propensity to sponsor H.R. 363, “Keep Our Promise to America’s Children and Teachers (PACT) Act.” This bill increased funding for elementary school programs. It was designed to fully fund the Elementary and Secondary Education Act of 1965. As the second column of Table 4 shows, Democrats who represented districts who were higher on the fairness foundation were significantly more likely to sponsor this legislation. In the model, fairness seems to be the only significant factor affecting propensity to sponsor this bill. Even district partisanship appeared to have no effect.

The third column displays the results for the predictors of Republican support for the “Parental Consent Act of 2005” (H.R. 64). This act would have prevented the use of federal funds from being used for any mandatory mental health screening or conducting any such screenings without the express written consent of parents. The regression results show a positive relationship between sponsorship and the ingroup foundation and a negative relationship for the authority foundation. This bill was opposing the implementation of a report issued by President Bush’s “President’s New Freedom Commission on Mental Health.” It thus seems to pit familial loyalty against falling in line politically behind the president.

The fourth column of the table shows the positive relationship between the authority foundation and Democratic support for H.R. 98, the “Illegal Immigration Enforcement and Social Security Protection Act of 2005.” The bill would have made Social Security Cards more secure by adding a magnetic strip which employers could use to verify the identity of potential

employees. The results show that Democrats who represented districts that were relatively high on the authority foundation were more likely to support this legislation. In addition, there was a negative coefficient on the harm foundation and a significantly positive coefficient on the purity foundation.

The final column of Table 4 shows the probability of Republican sponsorship of the “Unborn Child Pain Awareness Act of 2005” (H.R. 356). This bill would have required doctors to inform women about the potential that their fetus would feel pain as a result of the procedure. Republicans in districts high on the purity foundation were significantly more likely to sign on to the bill.

Discussion and Conclusion

In this paper, I have discussed how non-probability samples can be used to construct representative measures of the population. Data from self-selected sources is becoming increasingly easy to collect with the proliferation of free and low-cost internet survey building tools. These data represent a challenge for those who are interested in generalizing to wider populations. The results presented in this paper show that with a little finessing we might be able to recover usable estimates of characteristics of the general population.

My results showed that the moral foundations are significantly related to presidential voting at the congressional district level. Without time-series data, we can only speculate about the moral dynamics of presidential elections, but the moral foundations give us tools to begin thinking about how they might function. While individual voters may be “innocent of ideology,” they do seem capable of systematically applying deeply held moral values to political situations.

With respect to swings in the control of Congress, my results were mixed. I did not uncover the expected relationship between the moral foundations and the Democratic victories in

2006 and 2008. Scholarly and journalistic accounts of the 2006 midterms pointed to the importance of the Iraq War and dissatisfaction with President Bush. Perhaps a more appropriately specified model would have uncovered the expected relationships. The 2010 elections were a little more in line with my expectations.

The bill sponsorship results were perhaps the most interesting. Differences across the congressional districts in terms of moral foundations scores proved to be important to explaining variation in bill sponsorship by members of congress. In several cases, the moral foundations outperformed district partisanship. These results are striking, and again the moral foundations give us a way to think about more nuanced differences between congressional districts than just simply the particular shade of red or blue.

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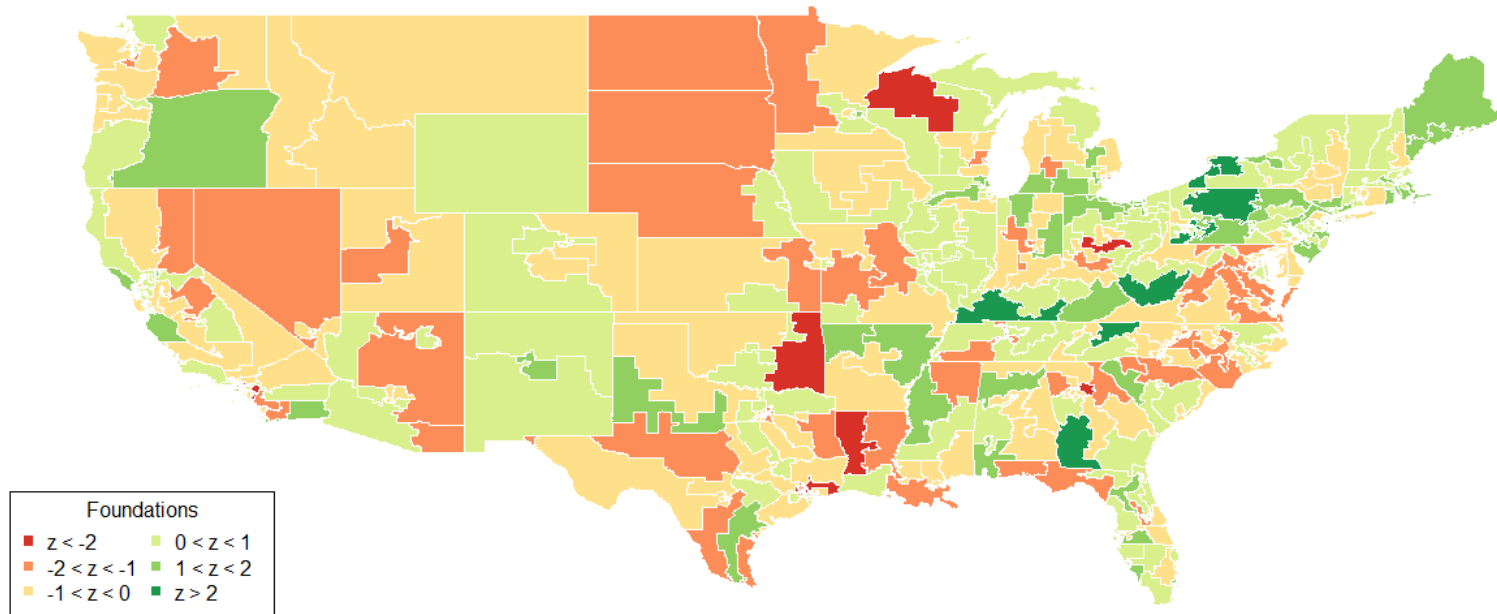
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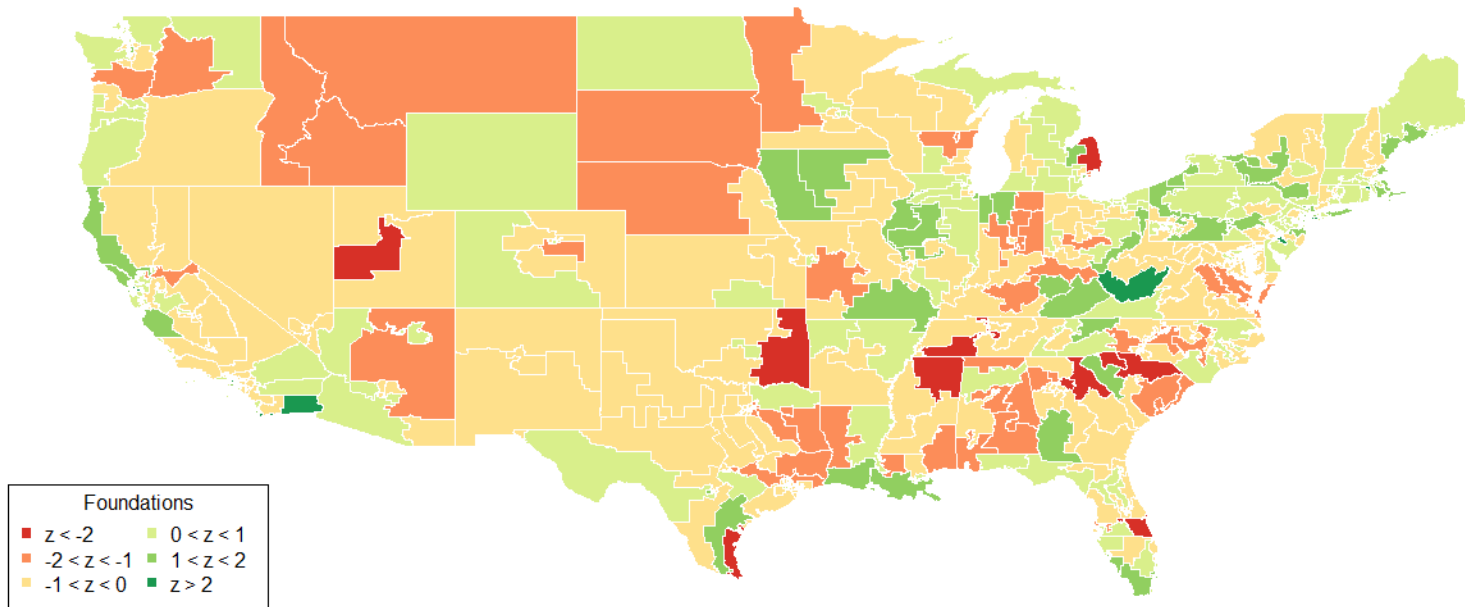
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Harm/Care Foundation

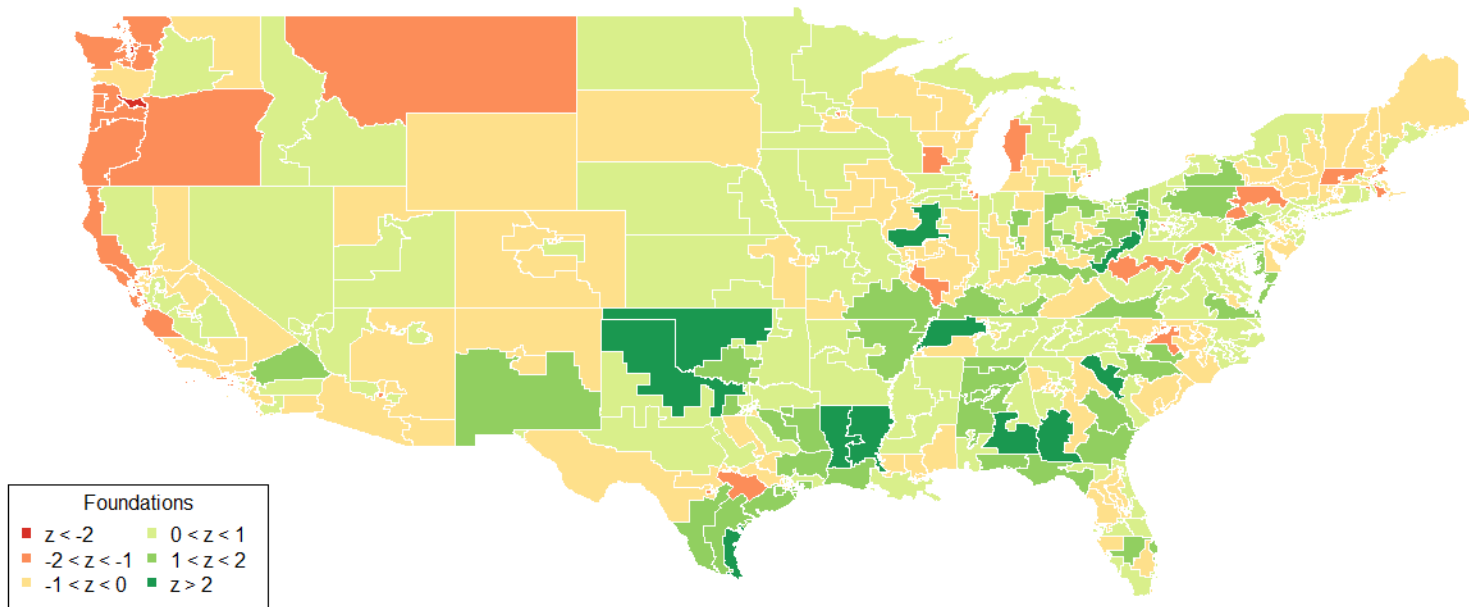


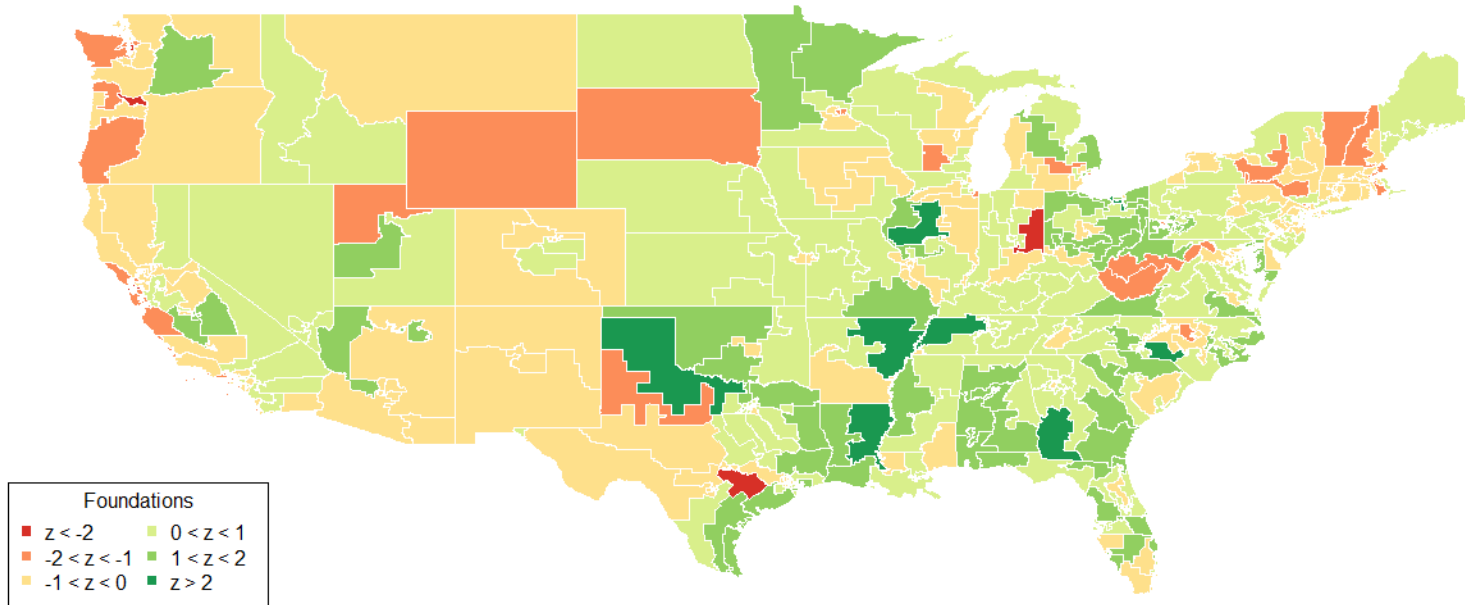
Map 1: Harm Foundation

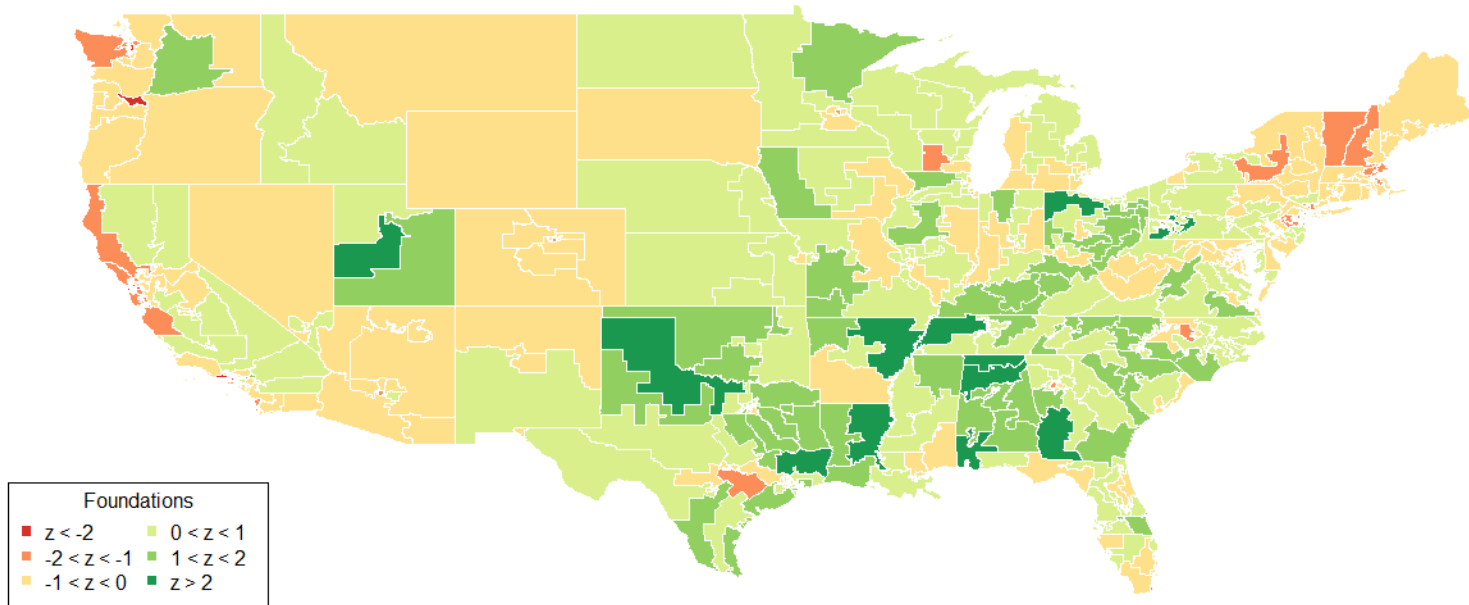
Fairness/Reciprocity Foundation



Map 2: Fairness Foundation

Ingroup/Loyalty Foundation**Map 3: Ingroup Foundation**

Authority/Respect Foundation**Map 4: Authority Foundation**

Purity/Sanctity Foundation**Map 5: Purity Foundation**

Tables and Figures

Table 1: Moral Foundations and Past Research		
Harm/Care	Related to our long evolution as mammals with attachment systems and an ability to feel (and dislike) the pain of others. This foundation underlies virtues of kindness, gentleness, and nurturance.	“Nurturant Parent Morality” (Lakoff 2002) Post-materialism/Environmentalism (Abramson and Inglehart 1986; Inglehart 1981)
Fairness/Equality	Related to the evolutionary process of reciprocal altruism. This foundation generates ideas of justice, rights, and autonomy.	“Equality of Opportunity” (Feldman 1988; Jacoby 2006)
Authority/Respect	Shaped by our long primate history of hierarchical social interactions. This foundation underlies virtues of leadership and followership, including deference to legitimate authority and respect for traditions.	“Strict Father Morality” (Lakoff 2002) Authoritarianism (Barker and Tinnick 2006; Feldman 2003; Hetherington and Weiler 2009; Stenner 2005)
Ingroup/Loyalty	Related to our long history as tribal creatures able to form shifting coalitions. This foundation underlies virtues of patriotism and self-sacrifice for the group. It is active anytime people feel that it's "one for all, and all for one."	Minimal Group Theory (Tajfel 1982) Nationalism/Patriotism (Li and Brewer 2004; Roccas, Schwartz, and Amit 2010; M. Shamir and J. Shamir 1995)
Purity/Sanctity	Shaped by the psychology of disgust and contamination. This foundation underlies religious notions of striving to live in an elevated, less carnal, more noble way. It underlies the widespread idea that the body is a temple which can be desecrated by immoral activities and contaminants (an idea not unique to religious traditions).	Conservatism-disgust linkage (Inbar et al. 2009)
<p>Descriptions in the middle column were taken from the Moral Foundations Theory homepage: http://faculty.virginia.edu/haidtlab/mft/index.php</p>		

Table 2: Presidential Vote and the Moral Foundations

	Kerry Vote Share	Obama Vote Share
Harm	-0.57 (0.63)	-0.95 (0.66)
Fair	3.84* (0.68)	3.31* (0.7)
Ingroup	-2.08* (0.97)	-2.07* (1.01)
Authority	1.62 (1.21)	1.42 (1.26)
Purity	-7.75* (1.07)	-8.33* (1.1)
Constant	49.16* (0.5)	53.79* (0.52)
n	435	435
R-squared	0.475	0.477

note: cell entries are OLS coefficients. Asterisks indicate statistical significance at the 0.05 level.

Table 3: Congressional Vote Swings

	2006-2008	2010
Harm	-0.26 (0.24)	0.23 (0.27)
Fair	-0.19 (0.27)	-0.66* (0.3)
Ingroup	0.64 (0.39)	0.8* (0.41)
Authority	-0.8 (0.46)	-0.74 (0.54)
Purity	0.29 (0.43)	-0.39 (0.47)
Dem. Pres. Vote	0.25* (0.02)	-0.22* (0.04)
Constant	-11.78* (1.8)	11.27* (1.9)
n	232	257
log-likelihood	-93.5	-76.37

note: cell entries are logit coefficients (standard errors in parentheses). Asterisks indicate significance at the 0.05 level.

Table 4: Bill Sponsorship and the Moral Foundations

	HR 284	HR 363	HR 64	HR 98	HR 356
	Democrats	Democrats	Republicans	Democrats	Republicans
	Harm	Fairness	Ingroup	Authority	Purity
Harm	0.67*	0.26	-0.26	-1.19*	-0.2
	(0.28)	(0.19)	(0.23)	(0.4)	(0.19)
Fairness	-0.12	0.44*	-0.01	0.18	0.19
	(0.29)	(0.21)	(0.25)	(0.43)	(0.21)
Ingroup	-0.93*	-0.01	0.67*	0.44	0.11
	(0.41)	(0.3)	(0.34)	(0.67)	(0.29)
Authority	1.23*	0.48	-0.88*	1.98*	-0.63
	(0.55)	(0.41)	(0.39)	(0.98)	(0.34)
Purity	-0.63	-0.42	0.02	-2.06	1.06*
	(0.49)	(0.36)	(0.40)	(1.07)	(0.35)
Dem. Pres. Vote	0.01	0.01	-0.6*	-0.05	-0.07*
	(0.02)	(0.02)	(0.03)	(0.04)	(0.03)
Constant	-2.7*	-0.96	0.94	-1.44	3.05*
	(1.18)	(0.88)	(1.19)	(2.13)	(1.06)
n	206	206	229	206	229
log-likelihood	-87.25	-138.07	-106.21	-29.81	-139.91

note: cell entries are logit coefficients (standard errors in parentheses). Asterisks indicate significance at the 0.05 level.

Appendix:

Moral Foundations Questionnaire

Part 1. When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking? Please rate each statement using this scale:

[0] = not at all relevant (This consideration has nothing to do with my judgments of right and wrong)

[1] = not very relevant

[2] = slightly relevant

[3] = somewhat relevant

[4] = very relevant

[5] = extremely relevant (This is one of the most important factors when I judge right and wrong)

- _____ Whether or not someone suffered emotionally
- _____ Whether or not some people were treated differently than others
- _____ Whether or not someone's action showed love for his or her country
- _____ Whether or not someone showed a lack of respect for authority
- _____ Whether or not someone violated standards of purity and decency
- _____ Whether or not someone was good at math¹⁷
- _____ Whether or not someone cared for someone weak or vulnerable
- _____ Whether or not someone acted unfairly
- _____ Whether or not someone did something to betray his or her group
- _____ Whether or not someone conformed to the traditions of society
- _____ Whether or not someone did something disgusting
- _____ Whether or not someone was cruel
- _____ Whether or not someone was denied his or her rights
- _____ Whether or not someone showed a lack of loyalty
- _____ Whether or not an action caused chaos or disorder
- _____ Whether or not someone acted in a way that God would approve of

Part 2. Please read the following sentences and indicate your agreement or disagreement:

[0]	[1]	[2]	[3]	[4]	[5]
Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

- _____ Compassion for those who are suffering is the most crucial virtue.
- _____ When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.
- _____ I am proud of my country's history.
- _____ Respect for authority is something all children need to learn.
- _____ People should not do things that are disgusting, even if no one is harmed.
- _____ It is better to do good than to do bad.¹⁸

¹⁷ This item is used to screen out individuals who do not pay attention to the items as they fill them out.

- _____ One of the worst things a person could do is hurt a defenseless animal.
- _____ Justice is the most important requirement for a society.
- _____ People should be loyal to their family members, even when they have done something wrong.
- _____ Men and women each have different roles to play in society.
- _____ I would call some acts wrong on the grounds that they are unnatural.
- _____ It can never be right to kill a human being.
- _____ I think it's morally wrong that rich children inherit a lot of money while poor children inherit nothing.
- _____ It is more important to be a team player than to express oneself.
- _____ If I were a soldier and disagreed with my commanding officer's orders, I would obey anyway because that is my duty.
- _____ Chastity is an important and valuable virtue.

The Moral Foundations Questionnaire (full version, July 2008) by Jesse Graham, Jonathan Haidt, and Brian Nosek.
For more information about Moral Foundations Theory and scoring this form, see: www.MoralFoundations.org

¹⁸ This item is used to screen out individuals who are not paying attention to the questionnaire.