Moral Values and Judicial Decision-Making

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Moral Values and Judicial Decision-Making

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Abstract

This paper empirically investigates the relationship between morality and judicial decision-making. I use Moral Foundations Theory as a framework for morality. Using published judicial opinions and a text analysis, I construct measures of moral values for judges on the U.S. Circuit Courts of Appeals. I survey law students, lawyers, and judges, who classify the moral relevance of case types based on the subject matter of cases. Using the constructed moral values measure and detailed information on judges and a subset of cases, I then explore the explanatory power of judicial moral values in judicial decision-making. I find mostly null results.

Contents

1 Introduction

Courts play an important role in common-law systems through their ability to set precedent. Given the ability to set precedent through their decisions, judges have the potential to impact real-world, policy outcomes. A traditional school of thought views judges as making decisions that are independent and objective, but a large body of research suggests that judges are not inherently objective and that judicial characteristics and biases can influence outcomes (Sunstein et. al. 2007; Chen 2019; Ornaghi et. al. 2019; Abrams et. al. 2012; Holden et. al. 2019; Bonica and Sen 2021). In particular judicial ideology has been identified as an essential element of judges' decisions. Judges are often quick to defend their objectivity, but Circuit Court Judge Damon J. Keith stated in an opinion, "Judges are policymakers because their political beliefs influence and dictate their decisions on important jurisprudential matters." (Liptack, 2019). In this paper, I contribute to existing research exploring determinants of judicial decision-making by empirically investigating the relationship between morality and judicial decision-making.

In order to do this, I make use of Moral Foundations Theory (MFT), a positive framework for morality developed by psychologist Jonathan Haidt and his collaborators. Existing research in psychology and economics utilizes MFT to explore how morality impacts decision-making and policy primarily by examining the role of morality in political polarization (e.g. Bursztyn et. al. 2019; Enke 2020). The framework is characterized by people's beliefs about what is "right" and "wrong" and is based on the fact that people have heterogeneous values. People assign moral relevance to "universal" values and "communal" values. Universal values include concepts such as individual rights, justice, fairness, and avoidance of externalities. Universal values apply irrespective of the context or identity of people involved. In contrast, communal values include concepts such as community, loyalty, betrayal, respect, authority, and tradition. These values are tied to certain relationships or groups (Enke, 2020). One distinction between universal and communal moral values is the tradeoff between a comprehensive concern for human well-being and a particular concern for the well-being of a local

community. For instance, this tradeoff may come up when making a decision to allocate charitable donations to a local organization as opposed to a national or global organization. Existing research shows that universal values are more prevalent among people with a liberal ideology and communal values are more prevalent among people with a conservative ideology (Graham, Haidt and Nosek, 2009). This paper expands on previous literature using MFT by using MFT to study judges and the court systems. Judges have an incentive to appear nonpartisan and objective, so they may be less likely to clearly display their moral values. Thus, this paper applies MFT to a setting where moral values may be less readily apparent.

I contribute to prior literature that shows ideological characteristics, biographical characteristics, attitudes towards gender and race, and other factors influence judges' decisions. Previous literature explores the relationship between political ideology and judicial decision-making. On a broad range of topics, Sunstein et al. (2007) find that Democrat-appointed judges often systematically have different rulings than Republican-appointed judges. Additionally, Chen (2019) finds that judges rule along partisan lines more often when it is closer to a presidential election. However, political ideology is not always predictive of judicial behavior. In fact, Sunstein et al. (2007) find that judges' decisions do not always align with their political ideology. Additionally, the U.S. Circuit Courts of Appeals are only below the U.S. Supreme Court in the federal court system, and judges are appointed for a life term. Some appellate court judges may rule politically in hopes of moving up to the Supreme Court, but there is not the political pressure of re-election. Beyond political ideology, previous research looks at how other characteristics impact judicial decision-making, including gender bias (Ornaghi, Ash and Chen, 2019), racial bias (Abrams, Bertrand and Mullainathan, 2012), and peer effects (Holden, Keane and Lilley, 2019).

In this paper, I explore the relationship between moral values and judicial decisions, looking to see if judges with universal values make universal decisions. In order to investigate the relationship between judicial moral values and judicial decisions, I classify the moral relevance of cases and the moral values of judges. To classify the moral relevance of cases, I

survey law students, judges, and lawyers asking participants to classify the moral relevance of legal cases based on case subject matter. To estimate judicial moral values, I use text analyses of more than 300,000 published judicial opinions from the U.S. Circuit Courts of Appeals along with the MFT as a framework for morality. I then link datasets containing detailed case data for a subset of cases decided by the U.S. Circuit Courts of Appeals and detailed judicial biographic information with the moral classifications of cases determined by the survey and measures of judicial moral values. I then look at how judicial moral values are related to biographic characteristics and judicial decisions. Within the judiciary, relative universal values increase over time. When looking at the relationship between moral values and judicial decision-making, I find mostly null results, which may be partially explained by structural characteristics of MFT or structural characteristics of the U.S. Circuit Courts of Appeals.

Section 2 provides background information on the U.S. Circuit Courts of Appeals and Moral Foundations Theory. Section 3 discusses datasets used, the survey of law students and professionals, and the construction of judicial moral values measures. Section 4 examines the relationship between judicial moral values and case outcomes. Section 5 concludes.

2 Background

2.1 Overview of U.S. Circuit Courts of Appeals

There are 13 Federal Circuit Courts of Appeals in the United States. Jurisdiction for 12 of the circuits is based on the geographic location of the appealed case. Figure 1 shows the current geographic structure of the circuit courts. Jurisdiction for the federal circuit, however, is based solely on subject matter of the case. The federal circuit has jurisdiction over subjects including international trade, government contracts, patents, trademarks, federal personnel, veterans' benefits, and public safety officers' benefits claims[1].

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[1] https://ballotpedia.org/United_States_Court_of_Appeals_for_the_Federal_Circuit

Figure 1: Geographic Boundaries of U.S. Circuit Courts of Appeals (1982 - present)
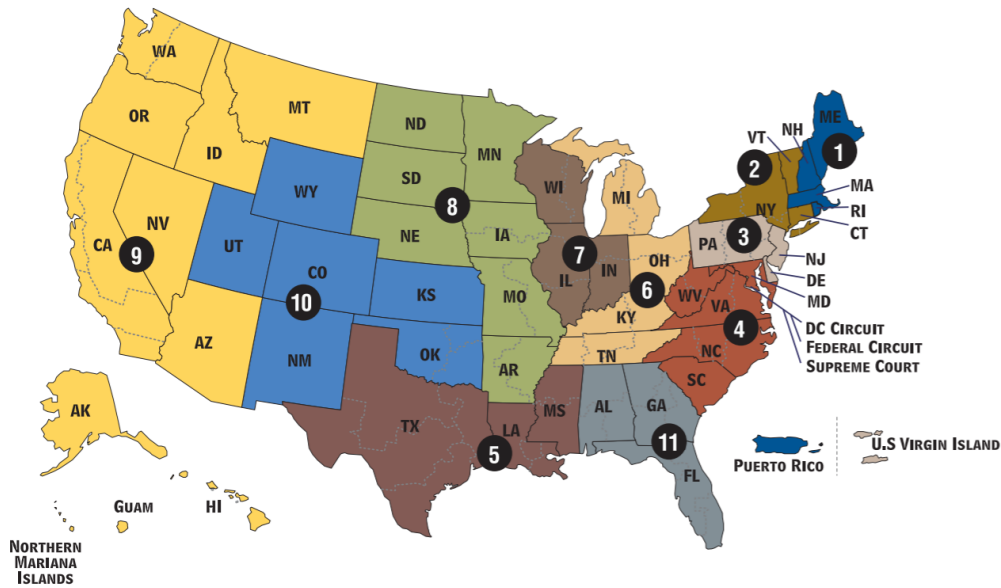
Source: Administrative Office of the U.S. Courts.

Notes: Over the time span that my data covers, the geographic boundaries of the courts changed twice. From 1866 - 1928, the tenth circuit and the eighth circuit comprised a single circuit, and in 1929 the region was split into two circuits. Prior to 1980, the fifth circuit and the eleventh circuit were a single circuit, called the fifth circuit, and in 1980 the region was split into two circuits. The DC circuit is also referred to as the twelfth circuit.

If a court case is filed in a federal U.S. District Court, it may proceed to a U.S. Court of Appeals. A path that a case filed in a federal district court may follow is shown below:

U.S. District Court → U.S. Court of Appeals → U.S. Supreme Court

If a case proceeds to a U.S. Circuit Court of Appeals, a panel of three judges typically presides over the case. When deciding a case, one or more of the judges on the panel may write and publish an opinion explaining the court's decision. Circuit court judges are nominated by the president and confirmed by the senate. Federal circuit court judges are appointed for life. Cases are assigned quasi-randomly to a panel of judges based on availability and caseload. Chen (2010) and Bowie, Songer and Szmer (2014) provide evidence supporting the quasi-random assignment of cases to judge panels and explain how the random assignment works.

The U.S. Congress determines how many active judges serve each circuit. The ninth circuit is the largest with 29 active judges, and the first circuit is the smallest with 9 active judges. Each circuit may also have senior judges who serve on panels. When judges are 65 years or older, they may choose to be designated as senior judges who have a reduced caseload. If a circuit has a high caseload, visiting judges[2] may be brought to the circuit for a period of time.

2.2   Moral Foundations Theory

As previously mentioned, Moral Foundations Theory (MFT) is a positive framework for morality developed by psychologist Jonathan Haidt and his collaborators. The framework posits that people's moral interests can be defined by five foundations: care/harm, fairness/reciprocity, loyalty/betrayal, authority/subversion, and sanctity/degradation. Notably, the care/harm and the fairness/reciprocity foundations coincide with universalist moral values, because they apply irrespective of context, and the loyalty/betrayal and the authority/subversion foundations coincide with communal moral values, because they are tied to a specific group or relationship (Enke, 2020).[3] Definitions for the foundations are given in Tables 1 and 2.

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[2]Visiting judges are typically district judges or senior judges.

[3]The sanctity/degradation foundation does not correspond to either universal nor communal values.

Table 1: Universal Moral Foundations

Moral Foundation	Explanation	Positive Words	Negative Words
Care/Harm	This foundation is related to our long evolution as mammals with attachment systems and an ability to feel (and dislike) the pain of others. It underlies virtues of kindness, gentleness, and nurturance.	compassion, empathy, kindness, caring, generosity	suffering, threaten, inflict, mistreat, endangers
Fairness/Reciprocity	This foundation is related to the evolutionary process of reciprocal altruism. It generates ideas of justice, rights, and autonomy.	law, justness, unbias, egalitarians, parity	thief, betrayer, bigot, exploiting, disparity

Sources: Frimer et al. (2017) and `MoralFoundations.org`

Table 2: Communal Moral Foundations

Moral Foundation	Explanation	Positive Words	Negative Words
Loyalty/Betrayal	This foundation is related to our long history as tribal creatures able to form shifting coalitions. It 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."	patriot, ally, fellow, family, unity	heretic, enemy, deserter, infidel, backstab
Authority/Subversion	This foundation was shaped by our long primate history of hierarchical social interactions. It underlies virtues of leadership and followership, including deference to legitimate authority and respect for traditions.	obey, deference, reverence, respect, govern	anarchy, chaos, lawlessness, treason, bedlam

Sources: Frimer et al. (2017) and `MoralFoundations.org`

The Moral Foundations Dictionary (MFD) is a set of moral keywords constructed by Graham and Haidt in 2009[4] and expanded by Graham, Haidt, and collaborators in 2017 (Frimer et al., 2017). For each foundation, the MFD includes words associated with the "virtue" (e.g. care) and words associated with the "vice" (e.g. harm). Tables 1 and 2 list

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[4]https://moralfoundations.org/other-materials/

examples of words included in the MFD for each foundation. The MFD includes keywords associated with each foundation. The expanded MFD has a total of 2,103 words.

3 Data

I use data on case and judge attributes that covers 418 circuit court judges and about 17,000 cases from 1925 - 1996. This data comes from two related datasets: the U.S. Appeals Courts Database and the Attributes of U.S. Federal Judges Database, both maintained by the Judicial Research Initiative. When combined, these two sources form a dataset with approximately 51,000 observations, where each observation is a case-judge, containing information on the details of a specific case the the decision and characteristics of one of the judges who decided the case[5]. Additionally, I access all published opinions from the U.S. Circuit Courts of Appeals on CourtListener, a resource maintained by the Free Law Project.

3.1 Judge Characteristics

My dataset includes 418 judges appointed by presidents from Benjamin Harrison through Bill Clinton. The dataset included information on appointing president, party of appointing president, party in control of the Senate at the time of confirmation, birth cohort, year of appointment, gender, race, religion, law school attended, and circuit for each judge. the set of judges is very homogeneous by race and gender. Ninety percent of judges in the sample are white men. The sample is balanced between judges appointed by Republican presidents and judges appointed by Democratic presidents, with 52% of judges appointed by Republicans. Judges' demographic and political characteristics are presented in Figure 2. Figure 3 shows how many judges from each circuit are in my data.

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[5]Each case becomes three observations: one observation for each judge who served on the panel deciding the case. Additionally, note that, in my analysis, I omit all observations that include a visiting judge, so that judges are limited to appellate judges in their original circuit.

Figure 2: Judge Characteristics
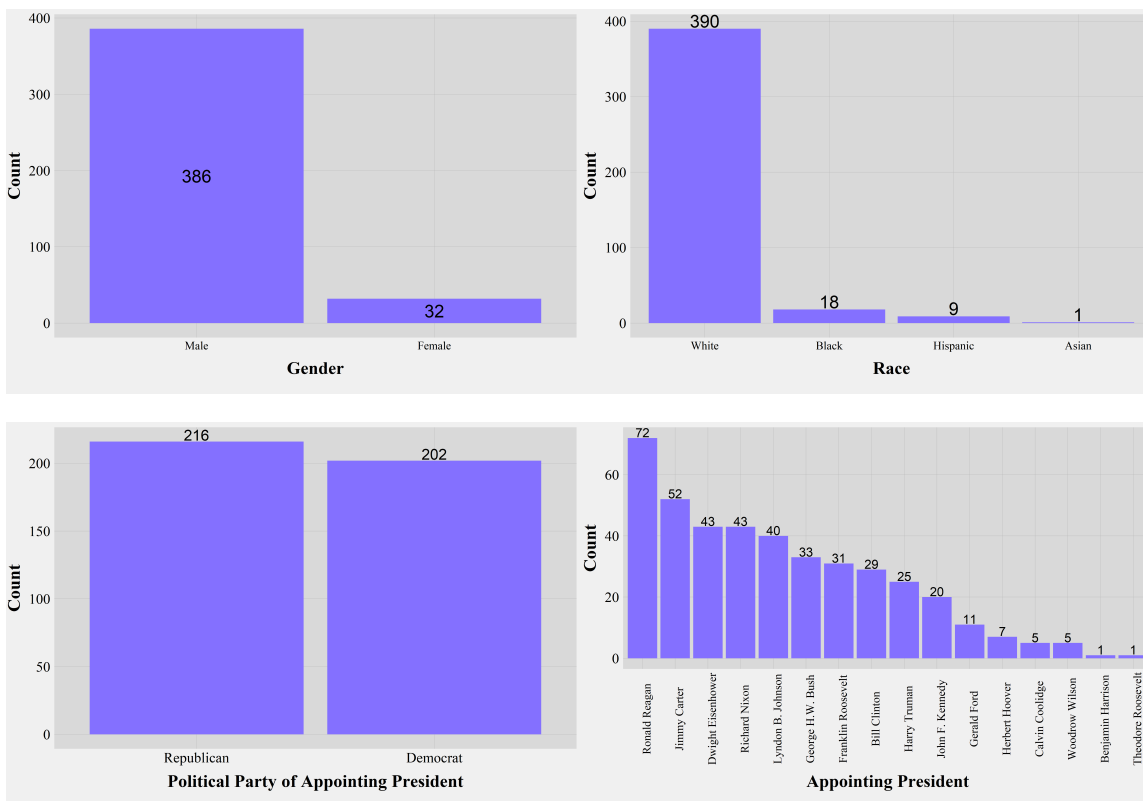
Notes: Presidents Benjamin Harrison, Theodore Roosevelt, Woodrow Wilson, and Calvin Coolidge all began their terms before the earliest case in my data set (1925). Thus, the number of judges appointed by these presidents seen in my data is low compared to judges appointed by other presidents, as judges appointed by these presidents are more likely to have retired and left the circuit courts.

Figure 3: Number of Judges from each Circuit
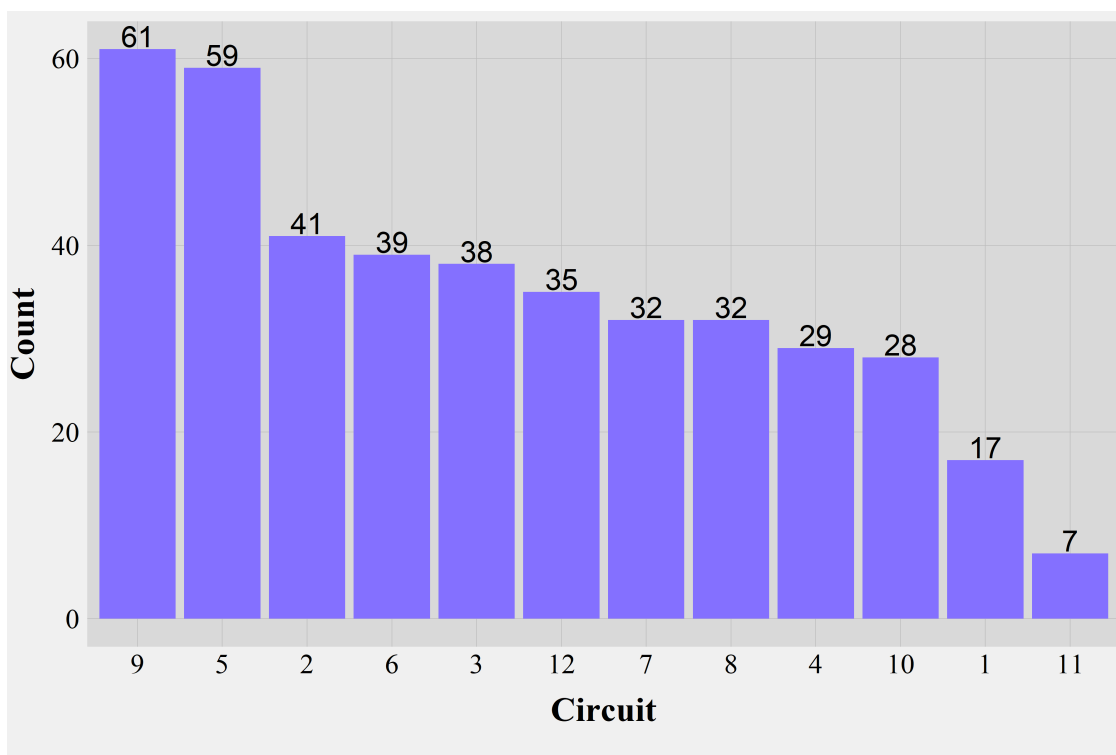
3.2 Case Attributes

I have data on approximately 17,000 cases decided from 1925 - 1996. The dataset includes 15 cases per circuit per year from 1925 - 1960 and 30 cases per circuit per year from 1961 - 1996. The dataset contains over 200 variables with information about each case. The variables fall under three categories:

- Basic information about the case, including the date of the case, the judges that decided the case, and the judges' rulings.

- Information on all parties involved in the case.

- Information on the content of the case. In particular, there is a hand-coded variable describing a category for each case. There are eight large categories, with approximately 60 smaller categories.

Table 3 states each case type, gives examples of the cases that fall under each case type, and notes the number of cases in the dataset under each category.

Table 3: Case Types

Case Type	Example(s)	Frequency
Criminal	Murder, rape, arson, burglary, theft, narcotics	4,752
Civil Rights	Civil rights claims by prisoners, voting rights, race discrimination, sex discrimination	1,396
First Amendment	legality of expression in context of overt acts (speeches, parades, picketing, etc.) protesting race discrimination, overt acts -opposition to war and the military, expression of political or social beliefs conflicting with regulation of physical activity (includes demonstrations, parades, canvassing, picketing)	246
Due Process	Denial of a fair hearing	191
Privacy	Abortion rights, suits demanding compensation for violation of privacy rights	31
Economic Activity and Regulation	Economic regulation and benefits (social security, environmental regulation, rent control), bankruptcy, commercial disputes	9,487
Labor	Union organizing, collective bargaining, fair workplace practices, health and safety standards	1,331
Miscellaneous	Challenges to authority, interstate conflict, other	530

3.3   Matching Case Type and Moral Values

Every case in the U.S. Appeals Courts Database ("Database") has a hand-coded variable specifying its case type, as defined in Table 3, and a hand-coded variable specifying the judges' decisions on that case. For each case type, the Database defines potential outcomes as shown in Table 4.

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Table 4: Case Outcome Definitions

Case Type	Outcome A	Outcome B
Criminal	in favor of defendant	opposite of outcome A
Civil rights	upholding the position of the person or party asserting the denial of their rights	opposite of outcome A
First Amendment	for assertion of broadest interpretation of First Amendment	opposite of outcome A
Due process	for interest of person asserting due process rights violated	opposite of outcome A
Privacy	for interest of person asserting privacy rights violated	opposite of outcome A
Labor	for economic underdog	opposite of outcome A
Economic Activity and Regulation	for an economic underdog if present and for increased regulation	opposite of outcome A

Notes: Potential outcomes are given as defined in the U.S. Appeals Courts Database.

To elucidate the moral relevance of case outcomes, classifying each as universal or communal, I survey law students and graduates. Participants are given definitions of universal and communal moral values, definitions of case types, and definitions of potential case outcomes. Participants then predict the decision of a judge with universal moral values for each case type. For example, how is a judge with universal values likely to rule in a criminal case: in favor of the defendant, in favor of the opposite party, or too ambiguous to tell? Table 5 summarizes survey results.

I survey 99 people. 59 participants are current law students; 3 participants are current judges; and 37 participants are law school graduates working in other professions. 68 participants graduated from or will graduate from Harvard Law School. Graduation years range from 1976 - 2023.

Table 5: Survey Responses

Case Type	Predicts the judge will rule in the direction defined in table 4	Ambiguous	Predicts the judge will rule in opposite direction
Criminal	31	**52**	16
Civil Rights	**69**	26	4
1st Amendment	**66**	31	2
Due Process	**64**	32	3
Privacy	**52**	38	9
Economic Regulation	39	**41**	19
Labor	**54**	29	16

Notes: Survey participants are asked to predict how a judge with universal values is likely to rule in each case type. For instance, How will a judge with universal values rule in a criminal case: in favor of the defendant the direction defined, in favor of the opposite party, or is it too ambiguous to tell? Table 5 reports the number of responses for each case type. The majority response is bolded.

The participants found Outcome A, defined in Table 4, to be associated with universal moral values over Outcome B for all case types. Therefore, I classify Outcome A as the expected universal decision for all case types. However, it is clear that some case types have clearer moral relevance than others. For cases classified as Civil Rights, 1st Amendment, Due Process, Labor, and Privacy, a majority of survey participants define a clear universal decision. For cases classified as criminal or economic regulation, a majority of participants find the morality to be more ambiguous.

3.4   Measuring Moral Values in Judicial Opinions

This section outlines two approaches to constructing a measure of judicial moral values using published judicial opinions. The first approach uses document word counts, and the second uses a Word2Vec model. Word count measures are standard lexicon-based text analyses. Word2Vec models are word embedding models, which will deliver meaningful similarity measures even if judges do not use the specific words from the MFD but conceptually related ones.

3.4.1 Word Counts

To construct a moral values measure based on word counts, I follow the procedure used in Enke (2020). First, from the corpus of all published judicial opinions from the U.S. Circuit Courts of Appeals, I identify all opinions authored by judges within my sample. Opinion text often only states the last name of the opinion's author. I use the stated last name, opinion date, and circuit to identify the opinion's author. Next the opinions are pre-processed. Punctuation, capitalization, digits, and stop-words are removed from all opinions, and the texts are tokenized. Across a judge's opinions, I count the frequency of each moral keyword. Table 6 shows random examples of how moral keywords are used in judicial opinions, and Table 7 lists the most used moral keywords for judges in my sample. Unsurprisingly, the list includes words related to courts, such as law, order, authority, and justice.

Table 6: Examples of Words from MFD used in Judicial Opinions

This case poses important questions about when and under what circumstances the belated discovery of juror *dishonesty* during the voir dire process demands vacatur of a jury verdict.
The Elliotts must establish that the Army's failure to exercise reasonable *care* towards them and any breach of its *duty* exposed them to an elevated risk of foreseeable *harm*, which resulted in *injury*.
It may be noted that our system of military *justice* has contained for many years, without any constitutional challenge of which we are aware, a system of alternate forums to try the same penal offense, with varying sentencing *authority*.
We have some *sympathy* for PRMSA's plight. It may seem at first glance *unfair* to a carrier operating in a fast-breaking energy market to be forced to react and adjust to events up to the moment of decision.
The prosecution did not *exploit* cross-examination to introduce for purposes of impeachment any *prejudicial* evidence concerning the defendant's reputation or past criminal record.

Notes: The table includes 5 randomly selected sentences that include at least one word from the Moral Foundations Dictionary from the corpus of published judicial opinions from the U.S. Circuit Courts of Appeals from 1925 - 1995. Words from the MFD are emphasized.

1. united	6. damages	11. respect
2. law	7. relief	12. duty
3. order	8. authority	13. injury
4. company	9. police	14. drug
5. rights	10. benefits	15. justice

Then for each moral foundation, I compute the average frequency across keywords, separately for "virtue" terms (ex. care) and "vice" terms (ex. harm). I then compute the average frequency across all virtue terms and all vice terms for each foundation using Equation 1.

$$\alpha_{f,v} = \frac{1}{N_{f,v}} \sum_{i=1}^{N_{f,v}} n_i \tag{1}$$

Where f indexes the foundation, v indexes virtue/vice, $N_{f,v}$ is the number of virtue or vice terms for foundation f in the MFD, and n_i is the frequency of word i in a judge's opinions. Then I compute the frequency across virtues and vices for each foundation:

$$\beta_f = \frac{\alpha_{f,virtue} + \alpha_{f,vice}}{2} \tag{2}$$

Then I calculate the relative frequency of universal keywords:

$$U = \frac{\beta_{CARE} + \beta_{FAIRNESS} - \beta_{LOYALTY} - \beta_{AUTHORITY}}{\text{number of non-stop words}} \tag{3}$$

Finally, I standardize the measure as a z-score. This is the word-count based measure of relative universalism I use. An increase in the measure indicates an increase in universalism.

As explained in Enke (2020), this measure accounts for two imbalances within the Moral Foundations Dictionary:

1. The dictionary contains more words for some moral foundations than others.

2. Morality can be referred to by focusing on the virtue ("loyalty") or the vice ("betrayal"). The fraction of words within a given foundation that refers to virtues or vices is not constant across values.

Figure 4 shows a histogram of standardized universalism measures for each judge. There is some heterogeneity in relative universalism, however, the distribution has lower variation with a few outliers.

Figure 4: Histogram of Standardized Universalism Measures
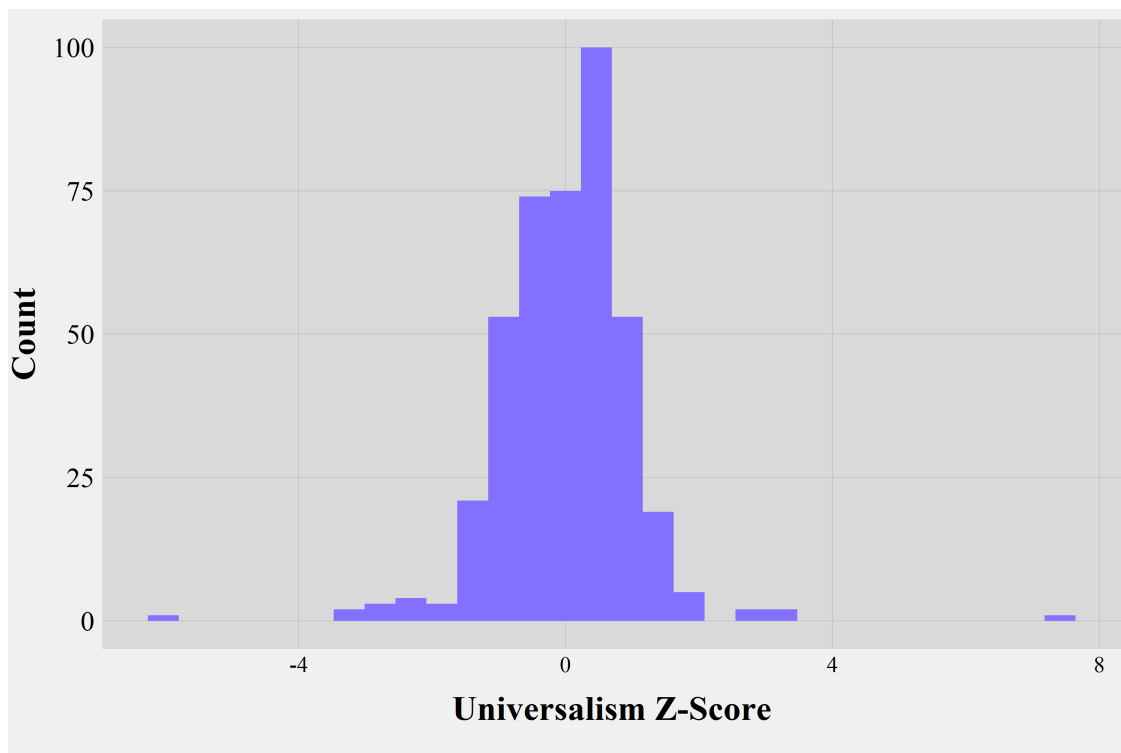
Figure 5 visualizes the spread of relative universalism by political affiliation, and Table 8 examines the relationship between universalism and judicial characteristics. Previous literature shows that moral values are well-correlated with political affiliation, so it is surprising that there is not a strong relationship between judges' political affiliations and judicial universalism.

Figure 5: Political Affiliation and Universalism
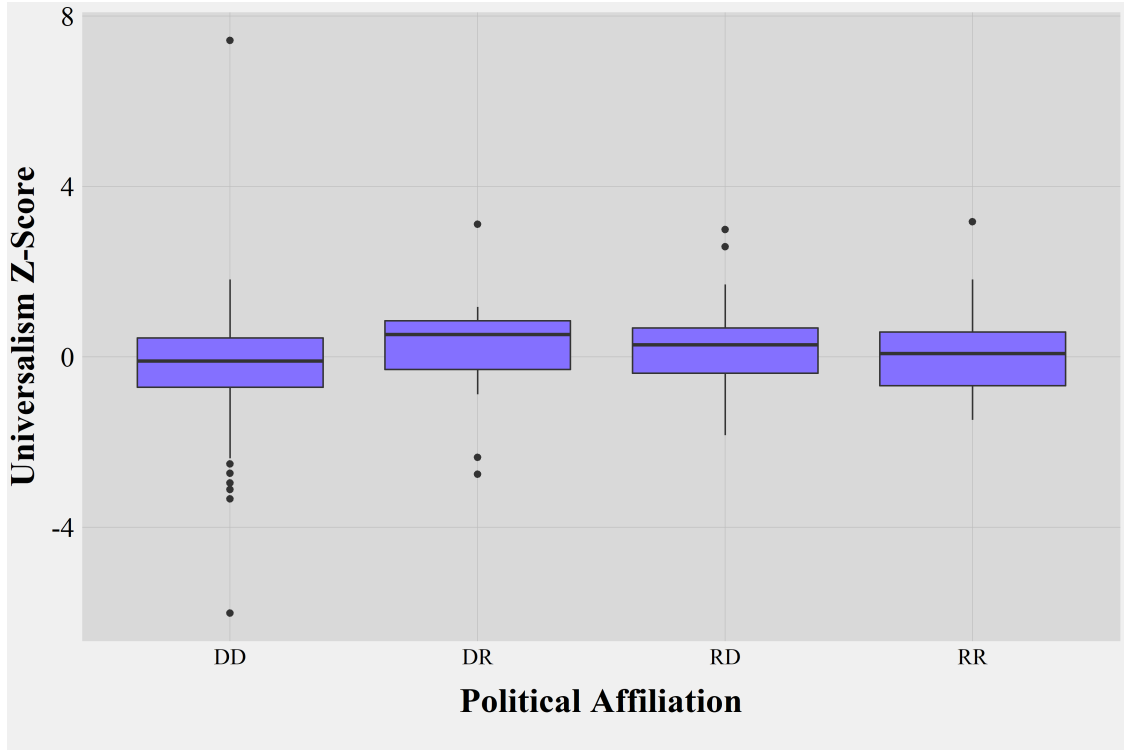
Notes: DD indicates judges who were appointed and confirmed by a Democratic president and Democratic Senate. DR indicates judges who were appointed and confirmed by a Democratic president and Republican Senate. RD indicates judges who were appointed and confirmed by a Republican president and a Democratic Senate, and RR indicates judges who were appointed and confirmed by a Republican president and a Republican Senate.

Given the homogeneity of my sample, it is unsurprising that the standard errors for characteristics such as race and gender are so large. In fact, much of the variation in relative universalism explained by the analysis in Table 8 is due to fixed effects for the year the judge was appointed.[6]

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[6]The same analysis without year fixed effects is included as a table in the appendix. The R^2 values are much lower.

Table 8: Universalism and Judge Characteristics

	(1)	(2)	(3)	(4)	(5)
Dem Pres, Rep Sen	-0.0494				-0.181
	(0.607)				(0.835)
Rep Pres, Dem Sen	0.382				0.225
	(0.353)				(0.359)
Rep Pres, Rep Sen	-1.167				-1.329
	(0.833)				(0.835)
Female		-0.109			-0.152
		(0.172)			(0.173)
Asian			-0.0602		-0.0602
			(1.140)		(1.136)
Black			-0.0894		-0.0980
			(0.210)		(0.213)
Hispanic			-0.528		-0.504
			(0.291)		(0.295)
Catholic				-0.158	-0.149
				(0.104)	(0.106)
Jewish				0.204	0.187
				(0.140)	(0.142)
Constant	0.480*	-0.687	-0.687	-0.687	0.642**
	(0.208)	(0.807)	(0.806)	(0.803)	(0.229)
N	418	418	418	418	418
R^2	0.465	0.465	0.470	0.473	0.478
Year FE	Y	Y	Y	Y	Y

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
"Dem. Pres, Rep. Sen." indicates that the appointing president
was Democratic and the confirming senate was majority Republican.
Year FE are based on the year a judge was appointed.

Figure 6 plots the measure of universalism across time. The measure of universalism for a judge is plotted with the year of appointment. There is a trend towards greater universalism with time.[7]

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[7]This is perhaps interesting since Enke (2020) finds a trend towards *communal* moral values in the US

Figure 6: Universalism Over Time
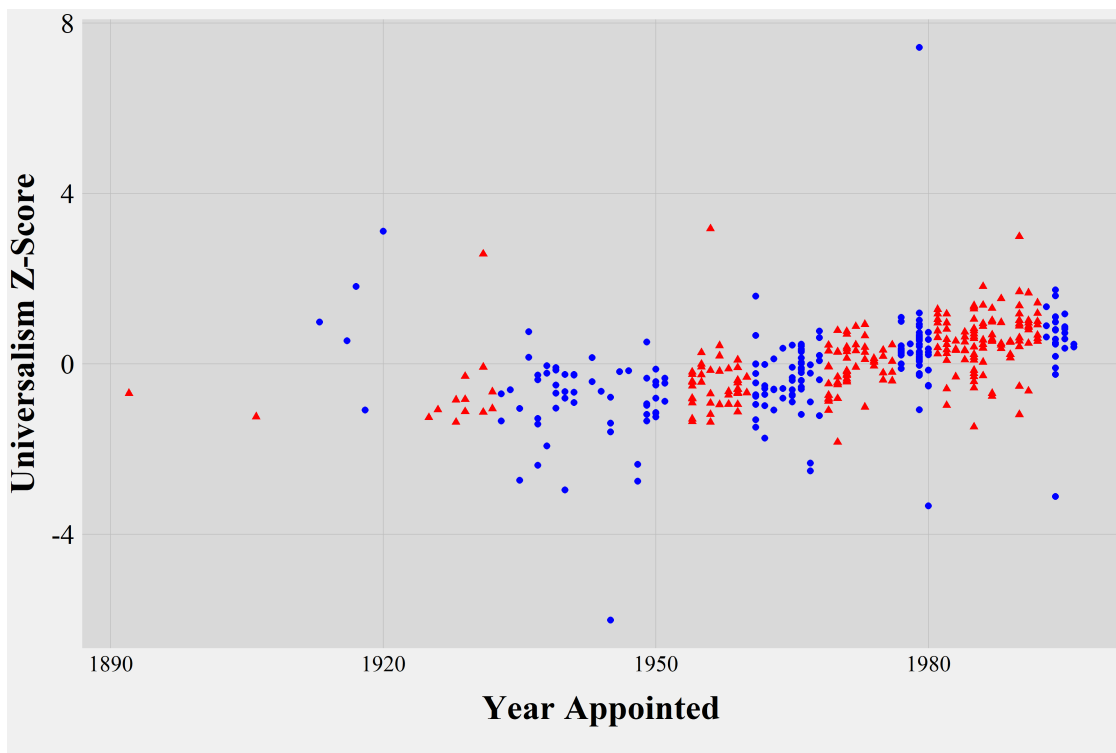
Notes: Judges appointed by a Republican president are indicated by red triangles, while judges appointed by a Democratic president are indicated by blue dots.

In all, the measure of universalism constructed from word counts reveals some variation in judicial moral values. However, political affiliation does not appear to be well-correlated with relative universalism, and relative universalism seems to increase from 1920 through the 1990s.

3.4.2   Word2Vec Model

I next construct another measure of universalism by training a Word2Vec model, a popular word embedding model, on the entire corpus of all published decisions from the U.S. Circuit Courts of Appeals (Mikolov et al., 2013). To construct this measure, I follow the process outlined in Gennaro and Ash (2021), where the authors construct a measure of emotionality using a corpus of congressional speeches. Each opinion is first stripped of punc-

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beginning in the early 2000s. Future analysis could extend judicial moral values forward in time to see if the trend matches that of the more general U.S.

tuation, capitalization, digits, and stopwords. Each opinion is then tokenized. I then use the corpus of all speeches to train a Word2Vec model using the implementation from the Python package gensim, with 150 dimensions and a 10 word context window, for 10 epochs. The Word2Vec model embeds words in a vector space, and semantically similar words locate near to each other in the vector space. After the Word2Vec model is trained, we can see which words are geometrically close to each other in the vector space; these words should be semantically similar. Table 9 shows some of the most semantically similar words for some moral keywords. Similarity and geometric closeness is measured by cosine similarity.

Table 9: Semantically Similar Words

Moral Keyword	Closest words
Care	precautions, hospital, protect, nurse, patient
Harm	injury, damage, loss, disruption, danger
Fair	impartial, reasonable, prompt, proper, honest
Cheat	bilk, deceive, swindle, scheme, defraud
Loyal	hardworking, honest, trust, unselfish, reliable
Betray	demean, denigrate, disabuse, deceive, expose
Authority	power, jurisdiction, right, responsibility, official
Subversion	perversion, tyranny, undemocratic, flout, perpetuate

I then use the trained Word2Vec model and a SIF (smooth inverse frequency) embedding method outlined in Arora, Liang and Ma (2016) and used in Gennaro and Ash (2021) to construct vector representations for the opinions of judges in my sample. I construct a vector

representation of judge i's written opinions using Equation 4:

$$\vec{d_i} = \frac{1}{|n|} \sum_{w \in n} \frac{\alpha}{f(w) + \alpha} \vec{w} \tag{4}$$

Where judge i's opinions are a list of words indexed by w, $f(w)$ is the frequency of word w in the entire corpus of all circuit court opinions used to train the word2vec model, $\alpha = 0.001$ is a smoothing parameter, and $|n|$ is the number of tokens in judge i's opinions. Using Equation 4, I also construct a vector representation for universal moral values, $\vec{X}$, by using the set of words from the MFD associated with universalism. Similarly, I construct a vector representation for communal moral values, $\vec{Y}$, using the set of words from the MFD associated with communal values.

Finally, I scale judge opinions along universal and communal dimensions using Equation 5:

$$\vec{U_i} = \frac{sim(\vec{d_i}, \vec{X}) + 1}{sim(\vec{d_i}, \vec{Y}) + 1} \tag{5}$$

Where $sim(\vec{a}, \vec{b})$ gives the cosine similarity between $\vec{a}$ and $\vec{b}$. An increase in $\vec{U_i}$ indicates a shift towards universalism.

Figure 7 shows a histogram of standardized universalism measures for each judge. The distribution has higher variation than the distribution of the measure constructed from word counts.

Figure 7: Histogram of Standardized Universalism Measure
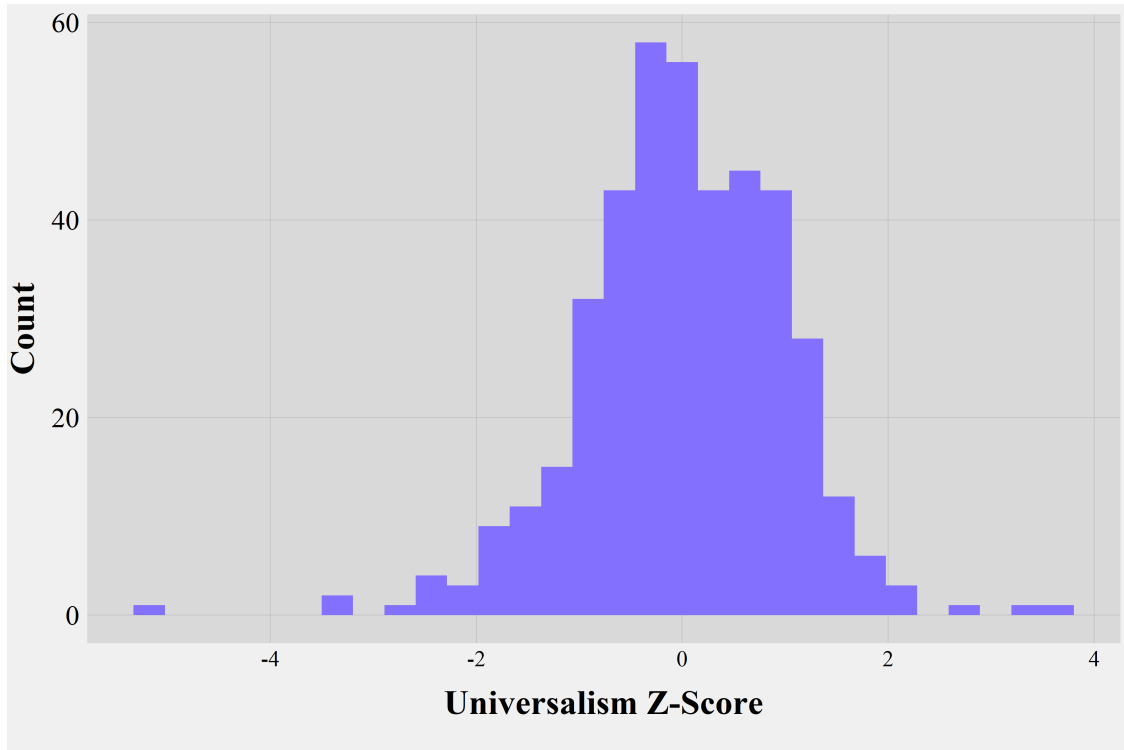
Figure 8 visualizes the spread of relative universalism by political affiliation, and Table 10 examines the relationship between universalism and judicial characteristics. Similarly to the word count measure of universalism, the measure of relative universalism constructed from the Word2Vec model is not well-correlated with political affiliation. Again, much of the variation explained in Table 10 is explained by fixed effects for the judge's year of appointment.

Figure 8: Political Affiliation and Universalism
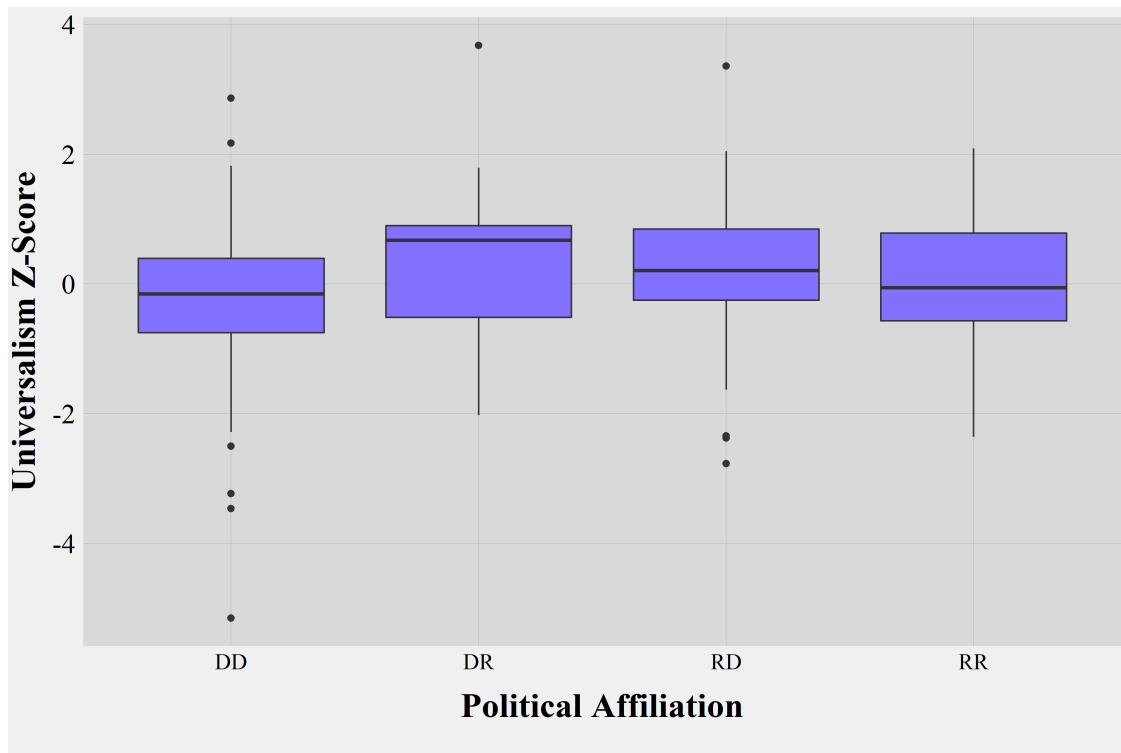
Notes: DD indicates judges who were appointed and confirmed by a Democratic president and Democratic Senate. DR indicates judges who were appointed and confirmed by a Democratic president and Republican Senate. RD indicates judges who were appointed and confirmed by a Republican president and a Democratic Senate, and RR indicates judges who were appointed and confirmed by a Republican president and a Republican Senate.

Table 10: Universalism and Judge Characteristics

	(1)	(2)	(3)	(4)	(5)
Dem Pres, Rep Sen	-0.315				-0.721
	(0.638)				(0.884)
Rep Pres, Dem Sen	0.774*				0.761*
	(0.371)				(0.379)
Rep Pres, Rep Sen	-0.330				-0.482
	(0.876)				(0.884)
Female		-0.0741			-0.106
		(0.181)			(0.183)
Asian			0.509		0.509
			(1.203)		(1.202)
Black			0.0748		-0.000129
			(0.222)		(0.225)
Hispanic			-0.255		-0.261
			(0.307)		(0.312)
Catholic				-0.159	-0.151
				(0.110)	(0.112)
Jewish				-0.209	-0.214
				(0.148)	(0.150)
Constant	0.226	-0.104	-0.104	-0.104	0.378
	(0.219)	(0.849)	(0.850)	(0.846)	(0.243)
N	418	418	418	418	418
R^2	0.401	0.402	0.403	0.407	0.409
Year FE	Y	Y	Y	Y	Y

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
"Dem. Pres, Rep. Sen." indicates that the appointing president
was Democratic and the confirming senate was majority Republican.
Year FE are based on the year a judge was appointed.

As shown with the previous measure, it appears that judicial universalism increases with time. This can be seen in Figure 9.

Figure 9: Universalism Over Time
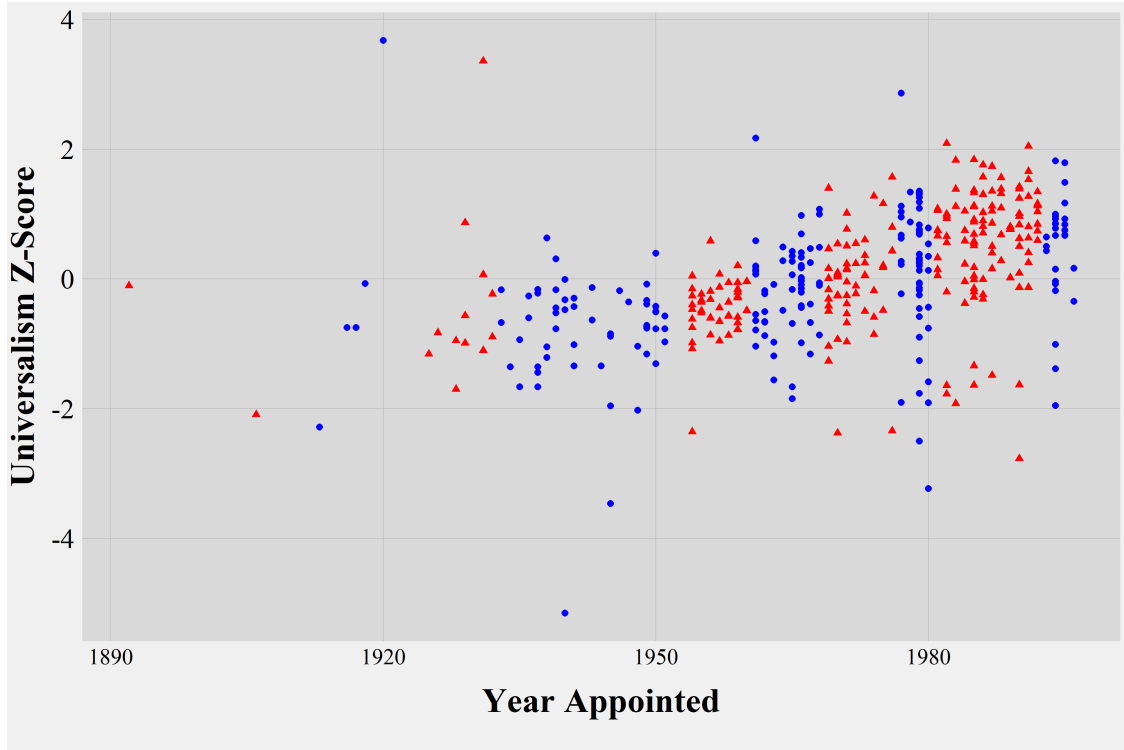
Notes: Judges appointed by a Republican president are indicated by red triangles, while judges appointed by a Democratic president are indicated by blue dots.

Descriptively, the word count measure of universalism and the Word2Vec measure of universalism reveal similar trends, and the correlation coefficient between the measure of universalism from the Word2Vec model and the measure based on word counts is 0.5641.

3.5 Overview of Complete Dataset

When put together, each observation in my complete dataset is a case-judge, representing a single judge's decision on a specific case. Each observation also includes background information on the judge, the judge's relative universalism measure, and the case type. In total, there are 39,001 observations that I use in my analysis.

4 Methods and Results

The key goal of this paper is to explore the relationship between moral values and judicial decisions. To do this I will begin by estimating the following specification for each case type:

$$UniversalVote_{jcit} = \beta Universalism_j + X_j\gamma + \delta_{ct} + \epsilon_{jcit} \tag{6}$$

where $UniversalVote_{jcit}$ is an indicator variable equal to 1 if judge j or circuit c ruled in line with the moral foundations prediction for universal values in case i during year t, $Universalism_j$ is the relative universalism measure for judge j, X_j are demographic characteristics of judge j (gender, party of nominating president, race, religion, cohort of birth, law school attended), and δ_{ct} are circuit-year fixed effects. Standard errors are clustered at the judge level. This specification is based on Section 5 of Ornaghi, Ash and Chen (2019), which examines the relationship between gender bias and judicial decisions.

The empirical strategy relies on the quasi-random assignment of judges to cases, to ensure that judges do not self-select into cases systematically[8]; the strategy also relies on conditioning on detailed judges' biographical characteristics, to ensure that moral values are not acting as a proxy for other features.

Results using the measure of universalism constructed using word counts are presented in Table 11, and results using the measure of universalism constructed using word counts are presented in Table 12. The results are mostly null. Consistent with survey results, higher universalism is associated with increased likelihood of voting in favor of the defendent in criminal cases, voting in favor of the party alleging a civil rights violation in civil rights cases, and voting in favor of the party alleging a due process violation in due process cases. Surprisingly, the coefficient on Universalism for privacy and 1st amendment cases is opposite of survey predictions. For cases categorized as labor or economic regulation, the sign on the coefficient for Universalism flips depending on which construction for the measure is used.

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[8]Previous literature confirms that cases are randomly assigned to judges within a circuit (Chen 2010; Ornaghi et. al. 2019).

Table 11: OLS Regression using word count measure

	(1) All Cases	(2) Criminal	(3) Civil Rights	(4) 1st Amendment	(5) Due Process	(6) Privacy	(7) Economic Regulation	(8) Labor
Universalism	0.00970	0.0106	0.00748	-0.0366	0.0205	-0.00604	-0.0102	0.0153*
	(0.00591)	(0.00695)	(0.0171)	(0.0271)	(0.0317)	(0.0316)	(0.0118)	(0.00596)
Female	0.0204	-0.00320	-0.0170	0.0795	0.0204	0.208*	0.00706	0.0170
	(0.0181)	(0.0268)	(0.0373)	(0.0714)	(0.0781)	(0.101)	(0.0334)	(0.0202)
Republican	-0.0239***	-0.0281**	-0.0312	-0.0527	-0.0868*	0.134	-0.0371*	-0.0124
	(0.00648)	(0.00953)	(0.0283)	(0.0439)	(0.0388)	(0.0878)	(0.0161)	(0.00811)
Asian	0.268***	0.703***			-0.608***			0.247***
	(0.0183)	(0.0318)			(0.145)			(0.0282)
Black	0.0420*	0.0481*	0.0298	-0.141*	-0.0598	0.280	0.0939	0.0321
	(0.0196)	(0.0220)	(0.0430)	(0.0613)	(0.0734)	(0.193)	(0.0522)	(0.0215)
Hispanic	0.0274	-0.0752*	0.116*	-0.377	-0.175	0.572	0.0578	0.0603**
	(0.0161)	(0.0299)	(0.0554)	(0.229)	(0.275)	(0.323)	(0.0790)	(0.0213)
Catholic	0.00557	-0.00558	-0.0172	-0.0436	0.0411	0.0160	-0.0177	0.0222*
	(0.00722)	(0.0105)	(0.0206)	(0.0495)	(0.0455)	(0.116)	(0.0182)	(0.00973)
Jewish	-0.0103	-0.00333	-0.000893	-0.00451	-0.0694	0.132	-0.0142	-0.00501
	(0.0101)	(0.0162)	(0.0291)	(0.0624)	(0.0593)	(0.118)	(0.0255)	(0.0125)
N	39001	12060	3656	664	484	82	3310	17936
R^2	0.017	0.032	0.069	0.263	0.430	0.777	0.107	0.018
Clusters	418	407	391	268	230	65	377	414
Outcome Mean	0.420	0.228	0.418	0.560	0.367	0.396	0.593	0.508
Circuit-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Additional Controls	Y	Y	Y	Y	Y	Y	Y	Y

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Each column of this table estimates the regression in equation 6. Column 1 estimates the regression for all cases, and subsequent columns estimate the regression for a subset of cases based on the subject matter of the case. Standard errors are clustered at the judge level. Additional controls include birth cohort (by decade) and law school attended.

Table 12: OLS regression using word2vec measure

	(1) All Cases	(2) Criminal	(3) Civil Rights	(4) 1st Amendment	(5) Due Process	(6) Privacy	(7) Economic Regulation	(8) Labor
Universalism	0.000556	0.0166*	0.0289**	-0.0123	0.0337	-0.0548	0.0135	-0.00232
	(0.00467)	(0.00651)	(0.0108)	(0.0268)	(0.0281)	(0.0656)	(0.0113)	(0.00547)
Female	0.0208	-0.00344	-0.0191	0.0796	0.0193	0.249*	0.00564	0.0175
	(0.0181)	(0.0272)	(0.0385)	(0.0707)	(0.0781)	(0.110)	(0.0329)	(0.0199)
Republican	-0.0242***	-0.0282**	-0.0341	-0.0555	-0.0883*	0.137	-0.0379*	-0.0139
	(0.00645)	(0.00940)	(0.0251)	(0.0440)	(0.0386)	(0.0880)	(0.0163)	(0.00794)
Asian	0.270***	0.708***			-0.608***			0.249***
	(0.0183)	(0.0317)			(0.145)			(0.0282)
Black	0.0425*	0.0461*	0.0137	-0.140*	-0.0639	0.298	0.0882	0.0322
	(0.0199)	(0.0219)	(0.0425)	(0.0633)	(0.0720)	(0.195)	(0.0526)	(0.0221)
Hispanic	0.0276	-0.0761**	0.112*	-0.378	-0.178	0.590	0.0645	0.0605**
	(0.0154)	(0.0294)	(0.0543)	(0.229)	(0.276)	(0.321)	(0.0803)	(0.0209)
Catholic	0.00490	-0.00666	-0.0191	-0.0431	0.0373	0.0324	-0.0167	0.0199*
	(0.00710)	(0.0102)	(0.0205)	(0.0500)	(0.0453)	(0.119)	(0.0182)	(0.00966)
Jewish	-0.00888	-0.00140	0.00122	-0.0128	-0.0627	0.144	-0.0164	-0.00334
	(0.0103)	(0.0159)	(0.0289)	(0.0611)	(0.0592)	(0.114)	(0.0254)	(0.0125)
N	39001	12060	3656	664	484	82	3310	17936
R^2	0.016	0.033	0.071	0.262	0.431	0.780	0.107	0.017
Clusters	418	407	391	268	230	65	377	414
Outcome Mean	0.420	0.228	0.418	0.560	0.367	0.396	0.593	0.508
Circuit-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Additional Controls	Y	Y	Y	Y	Y	Y	Y	Y

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Each column of this table estimates the regression in equation 6. Column 1 estimates the regression for all cases, and subsequent columns estimate the regression for a subset of cases based on the subject matter of the case. Standard errors are clustered at the judge level. Additional controls include birth cohort (by decade) and law school attended.

Because the dependent variable of interest, $UniversalVote_{jcit}$, is binary, there may be concerns about the validity of using an OLS model. I complete a similar analysis using a logit model, and results are consistent with the OLS results. The full logit model and results are provided in the appendix.

There are several possible reasons for finding null results. These explanations can be considered in two broad categories: the structure of the MFD and the structure of the courts.

First, the structure of the MFD and its construction may lead to inaccurate measures of judicial moral values. The MFD was constructed from everyday language that psychologists classified as morally relevant (Frimer et al., 2017). Judicial opinions are not written using "everyday" language. Opinions often cite relevant case law, make use of legal jargon, and utilize a formal structure. This creates at least two potential problems. One, judges may not use many of the words found in the MFD in opinions. My analysis using the Word2Vec model should circumvent this issue by picking up words used in the opinions that are similar to the moral keywords in the MFD. A second issue may be that judges are using words from the MFD in different contexts and with different meanings than used in everyday language and as conceived of in the MFD. For instance, words such as "jurisdiction" or "authority" may be used with a more specific definition in mind when used in judicial opinions than when used in everyday language. This problem could be avoided in the future by either attempting to use texts composed of less-formal, everyday language for analysis or by performing a human validation to check how well the MFD captures moral language used in more formal or structured texts.

Additionally, the MFD was originally constructed in 2009 and updated in 2017. The written opinions I utilize span from the nineteenth century through present day. Thus, it is possible that by using a static, modern MFD, I fail to capture changes in how language is used over time. The keywords in the MFD may not be appropriate for measuring the moral leaning of a text written in 1920. This means that I may inaccurately measure the moral

leaning of texts written earlier in the time period my set of opinions covers.

Null results may also be explained by the particular structure of the U.S. Circuit Courts of Appeals. Law clerks work for judges and may influence a judge's ruling or the language used in an opinion. Bonica et al. (2019) find that clerks at the U.S. Supreme Court exert only modest influence over judicial decisions, but that clerks exert more influence over high-profile cases. Thus, it is possible that clerks are influencing judges' opinions and decisions. However, the large majority of cases heard by the U.S. Circuit Courts of Appeals are not considered high profile cases, making it less likely that clerk influence would play a large role in most of a judge's decisions. Additionally, judges typically play a large role in writing their own opinions, making it unlikely that clerks are influencing the moral language used in written opinions.

The three-judge panel structure may dampen the use of moral keywords in judicial opinions. On the U.S. Circuit Courts of Appeals, the three judges deciding a case often agree unanimously on the outcome. If that is the case, oftentimes one judge will author an opinion that the other judges will affirm. Instead of publishing three opinions coming to the same conclusion, the court publishes a single opinion. Thus, one judge is essentially writing for the entire panel. Judges may limit overtly moral language in order to appeal to their colleagues and come to a unanimous opinion. Future research may work around this issue as well as the concern regarding clerk influence by utilizing dissenting or concurring opinions, which will be written and affirmed by only a single judge, or by utilizing a judge's writings from outside the courts, such as scholarly writing. However, these work-arounds will lead to a smaller sample of texts.

5   Conclusion

This paper empirically explores the relationship between moral values and judicial decision-making. In order to do this, the paper empirically applies MFT to a new realm of decision-

making and policy: the U.S. court system. I examine the role of morality in courts through two avenues: the moral relevance of case content and judicial moral values. I classify the moral relevance of cases, based on case subject matter, by surveying current law students, judges, and lawyers. To estimate the moral values of judges, I apply two text analysis techniques to published opinions from the U.S. Circuit Courts of Appeals. I find that relative universalism in the judiciary increases over the twentieth century. I then link the moral values classification of cases and the judicial moral values measures with detailed case and judge data to look at the relationship between moral values and judicial decision patterns. I find mostly null results, which may be partially explained by the structure of the MFD or the structure of the U.S. Circuit Courts of Appeals. Results are mostly robust to changing the text analysis method used to construct judicial moral values.

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A Appendix

A.1 Additional Descriptive Information from Word Count Universalism Measure

Table 13: Most and Least Universal Judges

Most Universal Judges

Judge Name	Appointing President	Circuit
Bailey Brown	Jimmy Carter	6
Charles Whittaker	Dwight Eisenhower	8
John W. Davis	Woodrow Wilson	3
David Souter	George H.W. Bush	1
Joseph W. Thompson	Herbert Hoover	3

Least Universal Judges

Judge Name	Appointing President	Circuit
Wilbur Miller	Harry Truman	12
Jerre Williams	Jimmy Carter	5
Jose Cabranes	Bill Clinton	2
John Mahoney	Franklin Roosevelt	1
Harold Stephens	Harry Truman	12

Table 14: Universalism and Judge Characteristics without Year FE

	(1)	(2)	(3)	(4)	(5)
Dem. Pres, Rep. Sen.	0.420				0.396
	(1.72)				(1.58)
Rep. Pres, Dem. Sen.	0.387**				0.455***
	(3.31)				(3.88)
Rep. Pres, Rep. Sen.	0.197				0.279*
	(1.59)				(2.26)
Male		-0.526**			-0.545**
		(-2.88)			(-3.00)
Black			-0.148		0.142
			(-0.14)		(0.14)
Hispanic			-0.466		-0.349
			(-0.44)		(-0.33)
Jewish				0.356*	0.379*
				(1.98)	(2.14)
Non-Catholic Christian				-0.0527	-0.0694
				(-0.45)	(-0.59)
Constant	-0.173*	0.487**	0.401	-0.00284	0.619
	(-2.36)	(2.77)	(0.40)	(-0.03)	(0.60)
N	418	418	418	418	418
R^2	0.03	0.02	0.01	0.02	0.08

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

"Dem. Pres, Rep. Sen." indicates that the appointing president

was Democratic and the confirming senate was majority Republican.

A.2 Additional Descriptive Information from Word2Vec Measure of Universalism

Table 15: Most and Least Universal Judges

Most Universal Judges

Judge Name	Appointing President	Circuit
William Orr	Franklin Roosevelt	9
Stanley Barnes	Dwight Eisenhower	9
Florence Allen	Franklin Roosevelt	6
Walter Ely	Lyndon Johnson	9
David Dyer	Lyndon Johnson	5

Least Universal Judges

Judge Name	Appointing President	Circuit
Leonard Moore	Dwight Eisenhower	2
Elbert Tuttle	Dwight Eisenhower	5
William Healy	Franklin Roosevelt	9
Wayne Borah	Franklin Roosevelt	5
Francis Duffy	Franklin Roosevelt	7

Table 16: Universalism and Judge Characteristics without Year FE

|	(1)	(2)	(3)	(4)	(5)
Dem. Pres, Rep. Sen.	0.589*				0.554*
	(2.45)				(2.21)
Rep. Pres, Dem. Sen.	0.473***				0.534***
	(4.10)				(4.56)
Rep. Pres, Rep. Sen.	0.253*				0.323**
	(2.08)				(2.62)
Male		-0.369*			-0.393*
		(-2.02)			(-2.16)
Black			0.128		0.582
			(0.12)		(0.57)
Hispanic			-0.0592		0.158
			(-0.06)		(0.15)
Jewish				-0.0312	0.00687
				(-0.17)	(0.04)
Non-Catholic Christian				-0.0515	-0.0650
				(-0.43)	(-0.56)
Constant	-0.213**	0.346*	0.165	0.0428	0.0692
	(-2.95)	(1.97)	(0.17)	(0.42)	(0.07)
N	418	418	418	418	418
R^2	0.05	0.01	0.01	0.01	0.07

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

"Dem. Pres, Rep. Sen." indicates that the appointing president

was Democratic and the confirming senate was majority Republican.

A.3 Additional Results

The R^2 values from the OLS regressions vary by case type. Figure 10 plots R^2 values from estimating equation 6 in blue triangles and R^2 values from estimating regression 6, but omitting the *Universalism* variable, in red dots, by case type. The variation in R^2 across case types appears to primarily be caused by a difference in how much variation is explained by the control variables included in the regression.

Figure 10: R^2 Values
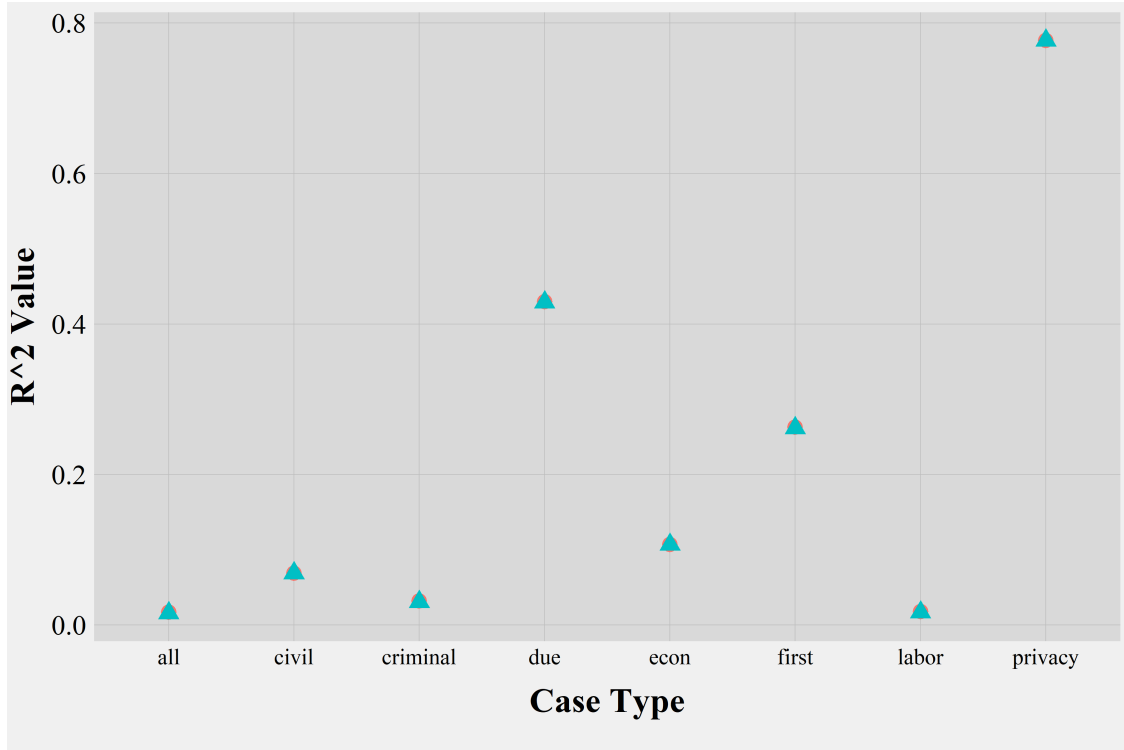
Because the dependent variable of interest, the direction of a judge's decision, is binary, there may be concerns about the validity of an OLS model. I estimate the logit model in Equation 7.

$$\log(P(UniversalVote_{jcit}) = \beta Universalism_j + X_j\gamma + \delta_{ct} + \epsilon_{jcit} \tag{7}$$

where $UniversalVote_{jcit}$ is an indicator variable equal to 1 if judge j or circuit c decided in line with the moral foundations prediction for universal values in case i during year t, $Universalism_j$ is the relative universalism measure for judge j, X_j are demographic characteristics of judge j (party of nominating president, race and cohort of birth), and δ_{ct} are circuit-year fixed effects. Standard errors are clustered at the judge level. Results are presented in Tables 17 and 18 and are consistent with the results found from estimating the OLS model.

Table 17: Logit regression using word count measure

	(1) All Cases	(2) Criminal	(3) Civil Rights	(4) 1st Amendment	(5) Due Process	(6) Economic Regulation	(7) Labor
Universalism	0.0395	0.0690	0.0334	-0.179	-0.0133	-0.0555	0.0546*
	(0.0239)	(0.0421)	(0.0798)	(0.150)	(0.254)	(0.0681)	(0.0249)
N	39001	12053	3620	572	373	3257	17936
Circuit-Year FE	Y	Y	Y	Y	Y	Y	Y
Additional Controls	Y	Y	Y	Y	Y	Y	Y

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

This table provides results from estimating the logistic regression using the word count measure of universalism. Each column estimates the model for a subset of cases, based on case tape. The coefficients shown are in log-odds units. Additional controls are party of appointing president and birth cohort. Results are directionally consistent with results from the OLS model, with the exception of the due process case category.

Table 18: Logit regression using word2vec measure

	(1) All Cases	(2) Criminal	(3) Civil Rights	(4) 1st Amendment	(5) Due Process	(6) Economic Regulation	(7) Labor
Universalism	0.00440	0.0908*	0.141**	-0.0651	0.198	0.0706	-0.00871
	(0.0198)	(0.0385)	(0.0493)	(0.165)	(0.218)	(0.0611)	(0.0224)
N	39001	12053	3620	572	373	3257	17936
Circuit-Year FE	Y	Y	Y	Y	Y	Y	Y
Additional Controls	Y	Y	Y	Y	Y	Y	Y

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

This table provides results from estimating the logistic regression using the word2vec measure of universalism. Each column estimates the model for a subset of cases, based on case tape. The coefficients shown are in log-odds units. Additional controls are party of appointing president and birth cohort. Results are directionally consistent with results from the OLS model.